Guidance for allowing virtual classroom instruction and distance learning

Guidelines in relation to the COVID-19 pandemic

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Revision record

Issue	Date of issue	Summary of changes
01	03.06.2020	Consultation with the Aircrew Technical Bodies (TeB) meeting
02	18.06.2020	Extended to maintenance personnel
03	06.07.2020	Extended to ATCOs training, after consultation with the Air Traffic Management/Air Traffic Services TeB meeting
04	07.08.2020	Extended to OPS domain, after consultation with the Flight Crew Training Group (FCTR)
05	13.08.2020	Extended to Cabin Crew training, after consultation with the Cabin Safety Experts Group (CSEG)

1. Glossary

Glossary	
Training provider	Training organisations providing training for student pilots, pilots, students Air Traffic Controller, Air Traffic Controllers, Cabin Crew, maintenance personnel, authority personnel
Student	Civil aviation personnel under training: student pilot, pilot, student Air Traffic Controller (ATCO), ATCO, student maintenance personnel, maintenance personnel, cabin crew, authority personnel
'Instructor-centred'	When the instructor is responsible for teaching the student
'Student-centred'	Means that the student is responsible for the learning progress
'Blended training'	Includes different instructional methods and tools, different delivery methods, different scheduling (synchronous/asynchronous) or different levels of guidance. Blended training allows the integration of a range of learning opportunities
Classroom	A physical, appropriate location where learning takes place
Remote learning	When the student and instructor, or source of information, are separated by time or distance and cannot meet in a traditional classroom setting. Information is typically transmitted via technology (email, discussion boards, video conference, audio bridge or data carrier such as USB, DVD, etc.) so that no physical presence in the classroom is required. It can be synchronous or asynchronous.
Virtual classroom	A virtual environment, not physical, location where synchronous learning takes place
Computer-based training (CBT)	Any interactive means of structured training using a computer to deliver a content. It needs to be complemented with close assistance by an instructor
Distance learning asynchronous	Training situations in which instructors and students are physically separated. The teacher and the students do not interact at the same time. In pilot training it is applicable only in modular courses
Distance learning synchronous	Training situations in which instructors and students are physically separated. It is synchronous if the teacher and the students interact at the same time (real time).
E-learning	Training via a network or electronic means, with or without the support of instructors (e-tutors)
Mobile learning (M-learning)	Any sort of learning that happens when the student is not at a fixed, predetermined location, using mobile technologies
Web-based training (WBT)	Generic term for training or instruction delivered over the internet or an intranet using a web browser

2. Purpose of These Guidelines

(a) Due to COVID-19, the aviation training industry is currently experiencing a major shift to more on-line learning and instruction, such as distance learning and virtual classroom instruction.

(b) Nonetheless, on-line teaching requires careful thinking about how students and teachers are equipped for the change and serious consideration about whether the teaching style is still effective when taken out from the classroom and transposed to or mixed with technological devices. Moreover, inequalities are exacerbated when it comes to access to technology and digital devices, as many students may lack the connections and devices to learn remotely.

(c) This document provides guidelines for conducting theoretical parts of the training according to the applicable training program/syllabus in a virtual classroom. In order to maintain high-quality standards of training, hands-on practical training should be conducted as per the applicable training program.

(d) A reasonable balance between the different training methods should always be ensured so that the student achieves the level of proficiency necessary for a safe performance of all related duties and responsibilities.

(e) As an example, during cabin crew training there are numerous training elements that are usually taught through a combination of theory and practice.

(f) Even if this guidance material provides guidance for virtual classroom and distance learning, it does not mean that it is not required for the training providers to consider also practical training where appropriate and feasible.

(g) Some of the principles illustrated in this guidelines can also be applied to other remote learning methods, such as instructional videos (video tapes, DVD, CGrom[1], USB sticks, etc.), distributed by data carriers.

3. Scope

(a) Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, Commission Implementing Regulation (EU) 2020/357 of 4 March 2020 amending Regulation (EU) 2018/395 as regards balloon pilot licences, Commission Implementing Regulation (EU) 2020/358 of 4 March 2020 amending Implementing Regulation (EU) 2018/1976 as regards sailplane pilot licences:

(1) LAPL, PPL, SPL, BPL, modular CPL, modular ATPL, integrated CPL, integrated ATPL (up to the time allowed by ORA.ATO.305 and AMC1 ORA.ATO.305)

(2) Class and type rating courses (AMC2 ORA.ATO.125, AMC3 ORA.ATO.125)

(3) MCC Airplane system training (GM1 FCL.735A) and airline oriented training

(4) 100 KSA (“may include in suitable portions, classroom, e-learning, etc.”)

(5) CC Initial training course and examination (CC.TRA.220, Appendix 1 to Part-CC, AMC 1 Appendix 1 to Part-CC)

1 CGrom = Character Graphics Read-only Memory

(b) Regulation (EU) No 1321/2014 of 26 November 2014 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks:

(1) Maintenance licences

(2) Training for Maintenance: maintenance licences theoretical basic training (147.A.200)

(3) Theoretical Aircraft type/task training 147.A.300,

(4) Aircraft type examinations and task assessments 147.A.305

(5) Recurrent training, fuel tank safety, EWIS training, etc.

(c) Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council:

(1) Operator conversion training and checking (ORO.FC.220, ORO.FC.330)

(2) Recurrent training and checking (ORO.FC.230)

(3) Alternative training and qualification programme (ORO.FC.A.245)

(4) Command course (ORO.FC.205)

(d) Specific for cabin crew members:

(1) Aircraft type specific training and operator conversion training (ORO.CC.125, AMC1 ORO.CC.125(c) and (d))

(2) Familiarisation (ORO.CC.135, AMC1 ORO.CC.135)

(3) Difference training (ORO.CC.130)

(4) Recurrent training (ORO.CC.140, AMC1 ORO.CC.140)

(5) Refresher training (ORO.CC.145, AMC1 ORO.CC.145, GM1 ORO.CC.145)

(6) Senior cabin crew member training (ORO.CC.200, AMC1 ORO.CC.200(c))

(7) Single cabin crew member training (ORO.CC.255)

(e) Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011.

(f) National competent authority (NCA) personnel initial and recurrent training in all domains.

4. COVID-19 Shift to More Distance Learning and Virtual Classroom Environment

(a) An increasing number of European aviation training providers need to shift more of their theoretical knowledge instruction footprint to a remote/virtual environment to enable continuity of the planned training. NCA are encouraged to facilitate this change as much as possible.

(b) In the context of COVID-19, different ways of learning and communicating are necessary to successfully enable the continuation of the required training. Additionally remote learning will become very important.

(c) There are two aspects of remote/virtual environment applicable to training that require careful consideration:

(1) Distance learning;

(2) Substitute (or complement) face-to-face classroom instruction by virtual classroom instruction.

(d) When deciding to allow distance learning, if applicable, or virtual classroom instruction, the NCAs should require training providers to perform a risk assessment that, as a minimum, carefully evaluates whether:

(1) Students and theoretical knowledge instructors will have access to appropriate equipment to support remote learning/instruction or the shift from face-to-face to virtual classroom training;

(2) The teaching style remains effective in achieving the training objectives;

(3) The remote environment is able to reach each training objective (not all will be achievable, such as those related to OSD in pilot training).

(e) Most traditional training delivery system can have virtual equivalents, such as:

(1) A classroom can be physical or virtual;

(2) Tutorials can also be e-tutorials;

(3) Computer Based Training can be also be available online outside of the training provider's material;

(4) Demonstrations, including those supported by demonstration equipment where virtual reality technology can be applied;

(5) Exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations, and projects may be online in a small virtual classroom;

(6) The directed study including workbook exercises or assignments, is excellent for online Learning Management System use;

(7) In aviation industry field trips, aerodrome or aircraft visits, the instructor can present from industry field, whilst students can have an online session (e.g. using Open Broadcaster Software) with the possibility of asking questions;

(8) Distance learning both methods synchronous and asynchronous are already in common use;

(9) E-learning;

(10) Mobile learning (M-learning);

(11) Web-based learning.

(f) The training providers should reflect the agreed approach with a (temporary) update of the training manual. To shift from the face-to-face class to the virtual class is a transformation/

variation that must be managed according to the change management procedure described in the manuals of a training provider itself.

(g) Whether the change from the physical classroom to the virtual one is a major change, requiring the prior approval of the NCA or not, depends on the change management procedure and its approval by the NCA.

(h) Depending on the process in place, the organisation may need to request approval to deviate from its procedures.

(i) Temporary changes to the exposition or stand-alone procedure may be agreed by the NCA.

4.1 Distance Learning

(a) Distance learning is not new and is covered by the following provisions in the Aircrew Regulation, Part-66 and Part-147 Regulations:

(1) Part-ORA of the Aircrew Regulation, Section III – Additional requirements for ATOs providing specific types of training, already foresees in a special chapter for the distance learning course: Chapter 1 – Distance learning course.

(2) Part-ORA — ORA.ATO.300 General — explains in which cases the ATO may be approved to conduct modular course programmes using distance learning.

(3) Part-FCL, AMC to Appendix 3 in in relation to CPL and ATPL training courses allows only a limited form of remote learning stating 'suitable proportions of…e-learning', including for the ATP integrated course. This limitation makes sense as an integrated course, in contrast to modular course, is intended to ensure that 'theoretical knowledge and flight training in an aircraft or an FSTD will be integrated so that as the flying training exercises are carried out, students will be able to apply the knowledge gained from the associated theoretical knowledge instruction and flight training'.

(4) Part-66 Appendix III for type training: 3.1(f) Multimedia Based Training (MBT) methods may be used to satisfy the theoretical training element either in the classroom or in a virtual controlled environment subject to the acceptance of the competent authority approving the training course.

(5) Part-147 AMC 147.A.130 applicable to both basic training and type training.

(b) Distance learning is not directly addressed in the ATCO regulation but COVID-19 is reviving the need to explore online teaching, virtual classroom training and learning opportunities in this domain.

(c) When introducing distance learning, due consideration should be given to students' evaluation. For this reason, after finishing the distance-learning course, the training provider should have an evaluation meeting with the students at the training centre.

(d) In particular, in regard of theoretical knowledge instruction linked to flight crew type-rating training that often take place in different time zones, it may be useful to allow individual distance learning with feedback at a later stage.

(e) During distance learning, the progress needs to be more closely monitored. This can be done by additional (online) tests. For most courses, examination may not be acceptable online and should be done at a later stage. A short refresher training may be desirable.

(f) Internal audits:

Distance learning requires additional attention during internal audits.

4.2 Virtual Classroom Instruction

(a) In the context of the COVID-19 and the related restrictions mentioned in Chapter 2 above, virtual classroom training should generally be considered an accepted alternative to face-to-face classroom training in the context of classroom training as required for both modular and integrated courses. To that end, these guidelines provide further criteria for the NCAs to assess and accept arrangements for virtual classroom instruction.

(b) The face-to-face classroom instruction delivered by an instructor may be replaced by virtual classroom instruction, such as videoconferencing, if an acceptable level of communication and interaction is ensured with appropriate equipment and tools. The virtual classroom instruction should provide real-time instructor-led learning where students can interact, communicate, view and discuss presentations. The training provider should also guarantee that students make satisfactory academic progress and maintain reliable records for the completion of training.

(c) There are no requirements for IT infrastructure addressing personal data protection and security, change management, continuity, integrity, audits, user authentication privileges, logging of overall integrated system activity, etc.

(d) However, many training providers and air operators run their business in the paperless way with various types of IT tools, forming a more or less integrated IT system: VLE (Virtual Learning Environment), LMS (Learning Management Systems), Virtual Classrooms, Video Conferencing, cloud-based e-learning, progress tests from outsourced sites, E-books, Twitter, YouTube or other video channels, etc.

(e) Some backup guidance can only be found in the domains specific regulations mainly for record keeping.

(f) These requirements should be in place and constitute a crucial part of the Compliance Monitoring System.

4.2.1 Virtual Classroom Instruction – Level of Communication

(a) An acceptable level of communication should meet all the following criteria:

(1) Live interactive instructor-led sessions in an online learning environment within a shared online space;

(2) Maintain continuously an active and simultaneously exchange between instructor and student(s): dynamic and two-way flow of communication without delay;

(3) Able to share relevant training material as specified for the appropriate lesson, unit or course in the training manual;

(4) Maintain a “video and audio” interactive communication by taking into account non-verbal communication cues (tone of voice, facial expression …);

(5) Establish a policy for the use of the virtual classroom instructions such as “raise your hand, question, …”

(6) Monitor what the instructor’s screen displays;

(7) Ensure that students have tools to present learning content in different formats, as well as to implement collaborative and individual activities. The instructor should have the

particularly important role of the moderator who guides the learning process and supports group activities and discussions.

(b) Virtual classroom instruction requires the students and the instructor to interact equally – active participation, collaborative work, and communication are encouraged in this type of classroom. The instructor creates opportunities for both independent learning and learning from one another, and guides the students in developing and practicing the skills they need.

(c) Doing this at the student's own pace, as far as practicable, would enhance a student-centred training. This increases the motivation level of the students as well as their interest in the learning activities.

4.2.2 Virtual Classroom Instruction – Appropriate Equipment and Tools

(a) The equipment/tools needed for the virtual classroom instruction should ensure an acceptable level of communication without technical interruption during the virtual classroom instruction.

(b) The equipment should ensure the students identification (visual when needed) and, a continuous assessment of the level of communication with all students.

(c) The equipment should permit the instructor to achieve the same training objectives and quality of instruction compared to instruction within face-to-face classroom instruction as defined by the training provider.

(d) Generally, smart phones are not considered adequate for presenting video and images, although they may be very effective for attending a lecture.

4.2.3 Virtual Classroom Instruction — Instructor

(a) The training provider and air operator should ensure that the instructor delivering virtual classroom instruction:

(1) Has received appropriate training covering at least learning style, teaching method associated to virtual classroom instruction, such as videoconferencing, and a familiarisation to the used virtual classroom instruction system,

(2) Demonstrates his ability to manage time, training media and equipment and tool to ensure that the training objectives are met,

(3) Performs any necessary assessment of the student(s) including proper identification of the assessed student.

(b) Over the course of the virtual classroom instruction, the students should be encouraged by the instructor to participate at regular intervals. This can be achieved by a variety of activities such as brainstorming, small group discussion, collaborative and individual tasks, Q&A sessions, etc.

4.2.4 Virtual Classroom Instruction — Student

(a) Creating positive learning environment, engaging students and encouraging active participation helps students achieving the learning objective.

(b) During the virtual classroom instruction, there should be opportunities for frequent interaction between student and instructor, student and other students, and student and content: instruction in a synchronous virtual classroom can only be successful with the active participation and engagement of the students. This creates a positive learning environment and helps the students achieve the expected outcomes

4.2.5 Virtual Classroom Instruction — Acceptable Level of Academic Effectiveness

1. Maximum number of students and training times

The maximum number of students should be established considering the capability of the tool to maintain an acceptable level of communication and it should be adapted to the training objectives. Ideally, it should avoid exceeding a maximum number of 12 students.

Training design should take into account that students may find virtual classroom training more tiring than traditional classroom training and the daily training hours may therefore need to be reduced.

A break of reasonable time should be planned for every hour of virtual classroom instruction.

2. Attendance records

The instructor delivering the virtual classroom instruction should be responsible for the attendance records of the students by ensuring the students are in the virtual classroom instruction with the appropriate level of communication during all the virtual classroom instruction.

3. Interruption of connection, loss of communication

Interruption of connection and loss of communication amongst individual participants can happen during a virtual classroom session.

The training provider should develop a policy on the progress of such a session, repetition of instructed training element and re-involvement of participants affected by the temporary loss of connection.

Non-attendance should be managed in accordance with the "non-attendance" policy as in a face-to-face classroom instruction.

4. Examinations/Evaluations

When examination or evaluation is necessary in virtual classroom, positive identification of students should be assured. Oral exams or remote forms could be used, provided the system used is the same for all students.

4.3 Training System Feedback Loop

The training provider should ensure that:

(1) The participants report strengths and weaknesses of the training system (training environment, training programme, assessment/evaluation) and suggest improvements;

(2) The instructor keeps an effective time management;

(3) Discussions among classmates is facilitated;

(4) Feedback system for student is elicited.

5. Oversight by NCAs

NCAs should have access to the virtual classrooms and sample the training.

Intensified oversight is recommended in particular in the initial phase.