



**EASA**  
European Aviation Safety Agency

# Instructional systems design

The fundamentals of course design

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# Instructional Systems Design

- ISD supports the creation of courses that develop the student's skills and knowledge
- ISD provides a framework to support **change management**:
  - Ensure that students and training organisations achieve their learning objectives
  - And reach the desired performance standard
  - Through appropriate use of a variety of learning methods and environments
- Used since the 1970s in US Army training
- And it is extensively applied in learning technology

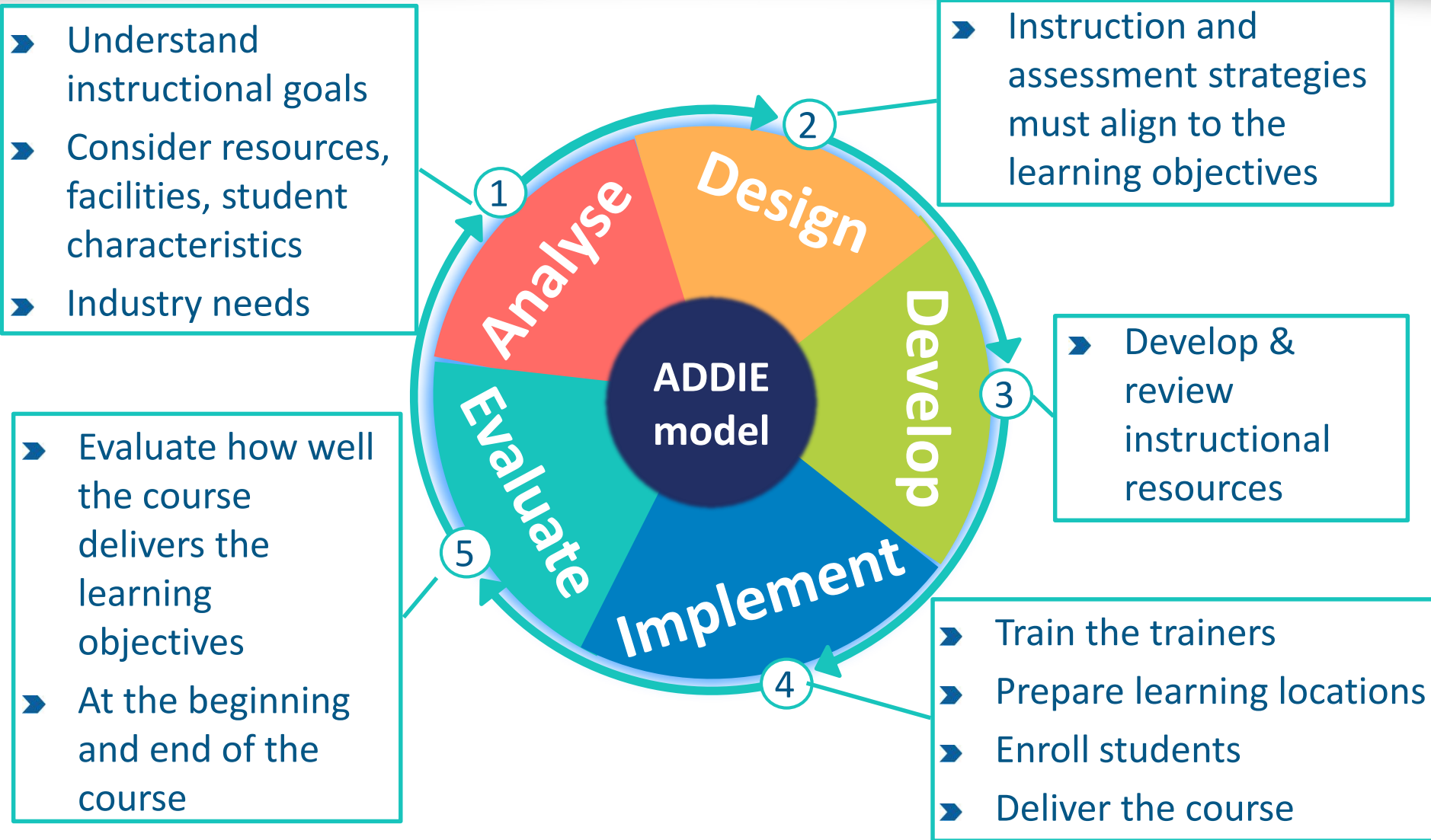


# Where ISD is mentioned in AMC/GM

- AMC1 FCL.310; FCL.515(b); FCL.615(b):
  - ATOs are required to produce a training plan for each of their courses based on the ISD methodology
- AMC2 ORA.ATO.230(a):
  - a) *An ATO that delivers theoretical knowledge instruction for **professional pilot licences** should ensure that:*
    - 1) *the courses are designed and developed using the ISD methodology, which is supported by a robust and effective management system*
- GM5 ORA.ATO.230(a):
  - Describes the ADDIE framework as an example of ISD

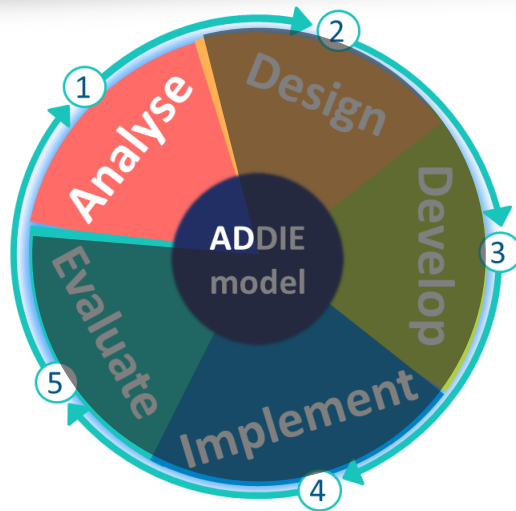


# ADDIE model as an example of ISD





# ADDIE model: 1. Analyse – instructional goals



- **Instructional goals** are described in the **AMCs**: preamble to AMC1 FCL.310; FCL.515(b); FCL.615(b)
- *After completion of the training, a student pilot should:*
- *be able to understand and apply the subject knowledge in order to be able to identify and manage threats and errors effectively;*
- *meet at least the Area 100 KSA minimum standard.*

## ➤ **Get other inputs:**

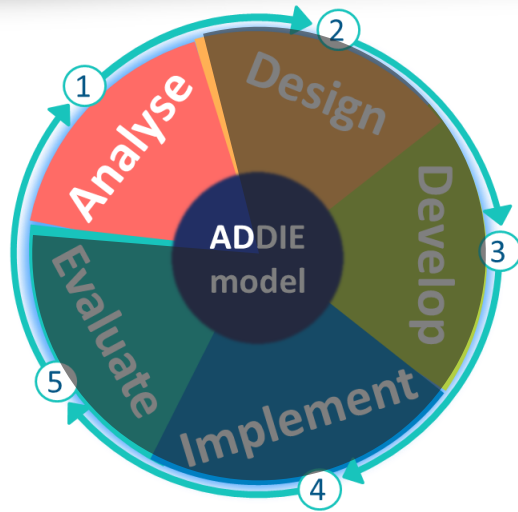
- E.g. needs of industry, feedback from a partner AOC holder, safety priorities identified by NAAs

## ➤ **Get input from later phases of training:**

- More directly available for integrated courses
- ATOs offering modular courses can check where their students go on to



# ADDIE model: 1. Analyse – resources, student characteristics



- **Match** learning resources & methods to the instructional goals: e.g. AMC1 to Appendix 3
- Classroom work, lessons, tutorials, e-learning,
- Demonstrations, including those supported by demonstration equipment,
- Directed study,
- Progress tests, Area 100 KSA assessments, maths tests

## ➤ Use **appropriate** facilities: AMC1 to Appendix 3

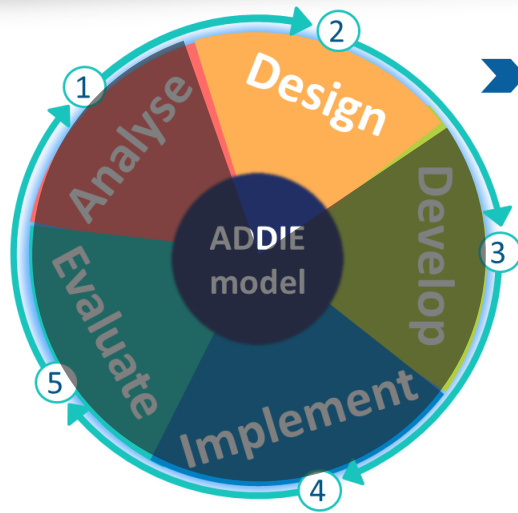
- Exercises that use demonstration equipment or training devices,
- Aerodrome or aviation industry field trips...

## ➤ Student characteristics:

- **Define** what knowledge / experience / level of competence is ideal on course entry and how “**gaps**” are to be filled



# ADDIE model: 2. Design

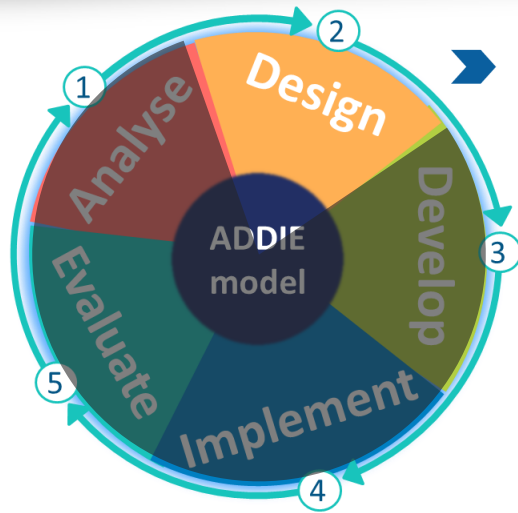


- **Align** the instruction methods to the learning objectives
  - Define the activities that the students / instructors will carry out
    - Where, and with what resources

- **Plan** the course so students can develop **progressively**  
preamble to AMC1 FCL.310; FCL.515(b); FCL.615(b)
  - The LOs do not provide a ready-made ground-training syllabus
- Check that you align with the LOs through the ATO **compliance monitoring** scheme



# ADDIE model: 2. Design



## ➤ Develop the **training plan**:

- Plan the logical sequence & duration for instruction / study / assessment
  - No need to treat each subject individually
  - Integrate Threat & Error Management, Area 100 KSA elements throughout the course

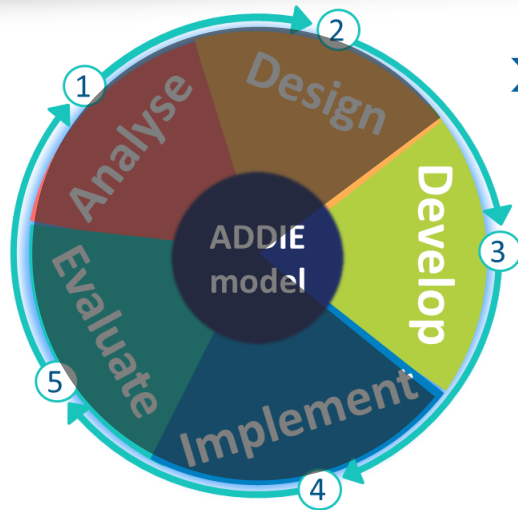
## ➤ Include a **standardised & dynamic assessment & testing system** AMC2, AMC3, AMC4 ORA.ARO.230(a)

- Including when to assess/test
- Define acceptable performance levels
- Plan **revisions** to training management tools
- Talk to the Competent Authority





# ADDIE model: 3. Develop

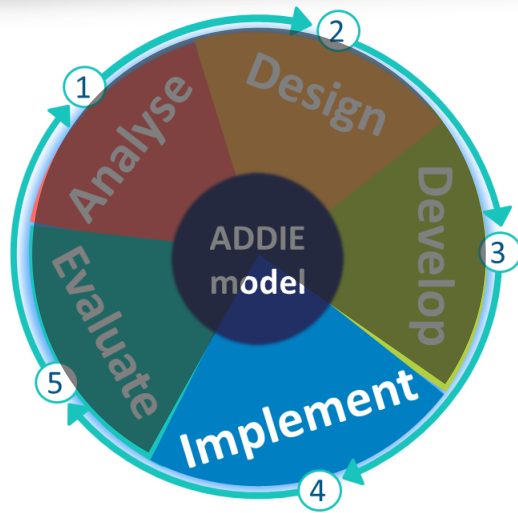


- Develop new instructional resources & revise existing ones
  - (AMCs & GMs to ORA.ATO.230)
  - Include guidance & training for instructors

- Validate the appropriateness of the new/revised course elements
  - **Compliance monitoring** to check all required elements are covered
  - **Feedback** from instructors at the ATO, pilot study with students
  - **Revise** the resources as appropriate



# ADDIE model: 4. Implement

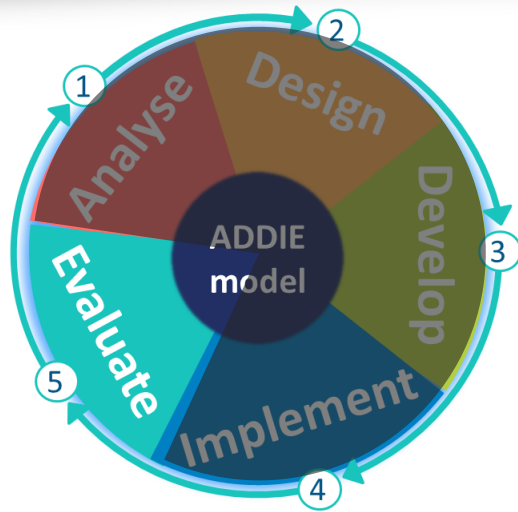


- **Train** the instructors GM4 ORA.ATO.230(a)
- **Prepare** the locations where instruction will take place
- **Update** procedures
  - Templates for records

- Update the **Training Manual** AMC1 & AMC3 ORA.ATO.230(a)
  - Training Plan
  - Appendices: sample assessments, tests
- Run any **pre-entry evaluations** and trainings
- Deliver the revised course



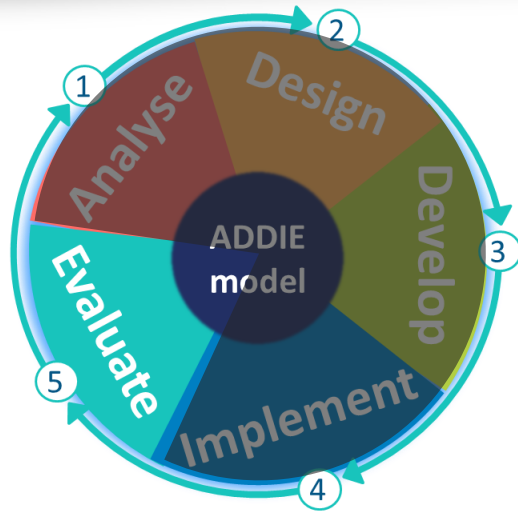
# ADDIE model: 5. Evaluate



- **Initial evaluation** that the resources are suitable
- **Summative evaluation** to check:  
GM2 ORA.ATO.230(a)
  - **Learning goals** are achieved
  - **Students** perform to an acceptable level in TEM & Area 100 KSA
  - **Instructors** perform to an acceptable level
  - Perception of students / instructors' **satisfaction**
- **Feedback** from later phases of training, AOC partners, progress of ex-students following course completion



# ADDIE model: 5. Evaluate continued



## ➤ Ideas for evaluation:

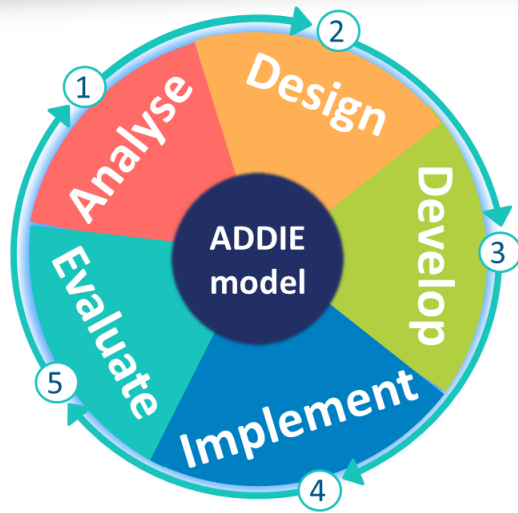
- **Anonymised** aggregate results per assessment / test / cohort
- **Variation** in rate of student progress against ATO norm / ideal standard

## ➤ Keep records:

- **Statements** with dates of completion
- **Individual** student progress
- **Outcome** of course evaluation to guide future improvements



# ISD: summary



- Provides a framework for ATOs to **manage** the **changes** to their TK courses
- Applies **educational best** practices
- The goal is to enable students to efficiently and effectively acquire the **required** knowledge and skills, taking into account their **current training needs**



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**Thank you for your attention**

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