STE(A)MonEdu training offer

Presenter: **Ioannis Zaharakis, CTI, Greece**

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STEAM on Edu

1

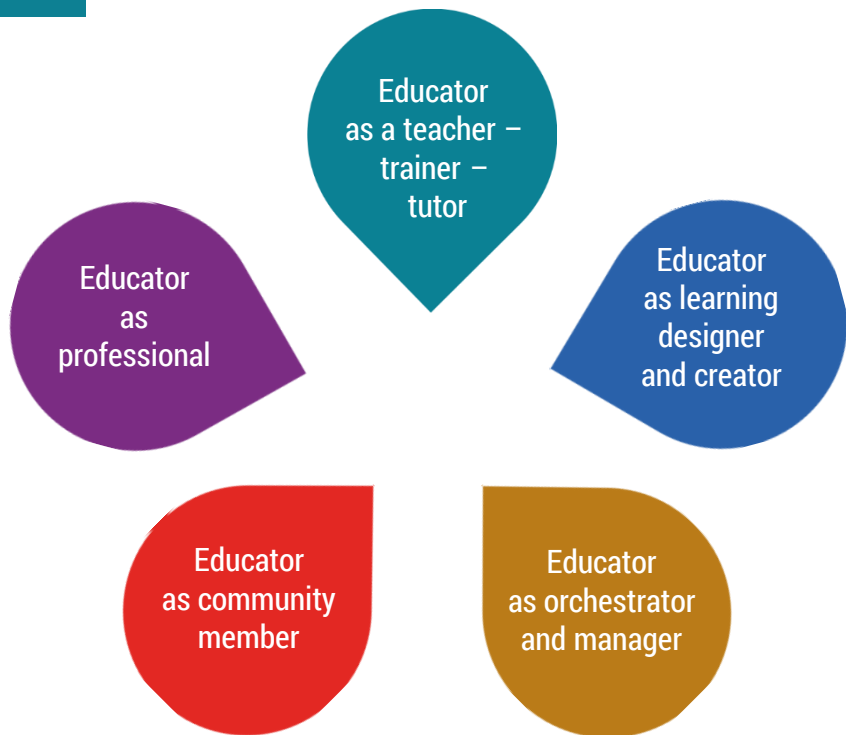# The STE(A)MonEdu training progamme as a whole

From the competence framework to the training offer

1 **The STEAMonEdu competence framework**

Educator as a teacher – trainer – tutor

Educator as professional

Educator as learning designer and creator

Educator as community member

Educator as orchestrator and manager

- The proposed competence framework
  - Highlights the multidimensional role of the educator
  - Composes the profile of the future educator
  - Requires multifaceted update, education and active participation
- The STEAMonEdu project organizes
  - A massive open online course
  - A blended training course

1 **The training programme at a glance**

The **MOOC**

- A multidimensional approach towards design, orchestration and implementation of STE(A)M education
- Duration of six weeks
- Free participation
- Workload of 5-6 hours per week
- Planned for end April 2021

The **blended learning course**

- Focus on specific STE(A)M aspects and competences
- Knowledge and experience exchange in the context of STEAMonEdu community
- Duration of two weeks
- Participation after selection
- Planned for September 2021

2

The massive open online course

Design, orchestration and implementation of STE(A)M education

2 Who is the MOOC for

- All individuals interested in STE(A)M education
  - Active educators
  - Education managers/directors
  - Students or graduates

- Background
  - General knowledge of pedagogy and educational practice
  - Standard skills on information systems and computing

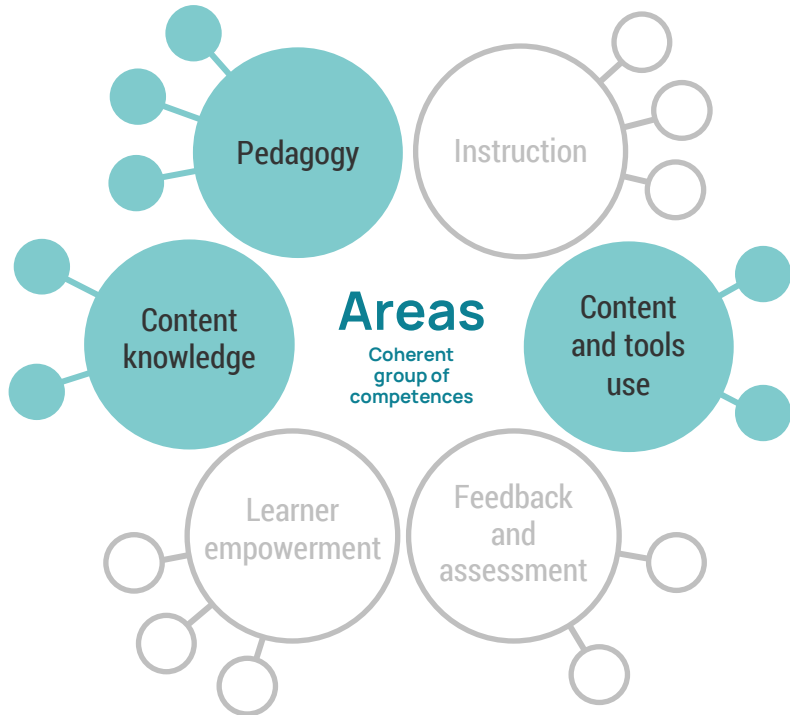**2** **How it is delivered**

- CTI online MOOC platform *
  - Self-running presentations
  - Activity and interview videos
  - Study documents
  - Forum discussions and participants interaction
- Technical requirements
  - Laptop/tablet
  - Internet connection
  - Standard audio-visual peripherals

* https://mooc.cti.gr/steamonedu.html

2

Educator as teacher – trainer – tutor

1st perspective (week 1)

Areas
Coherent group of competences

- Pedagogy
- Instruction
- Content knowledge
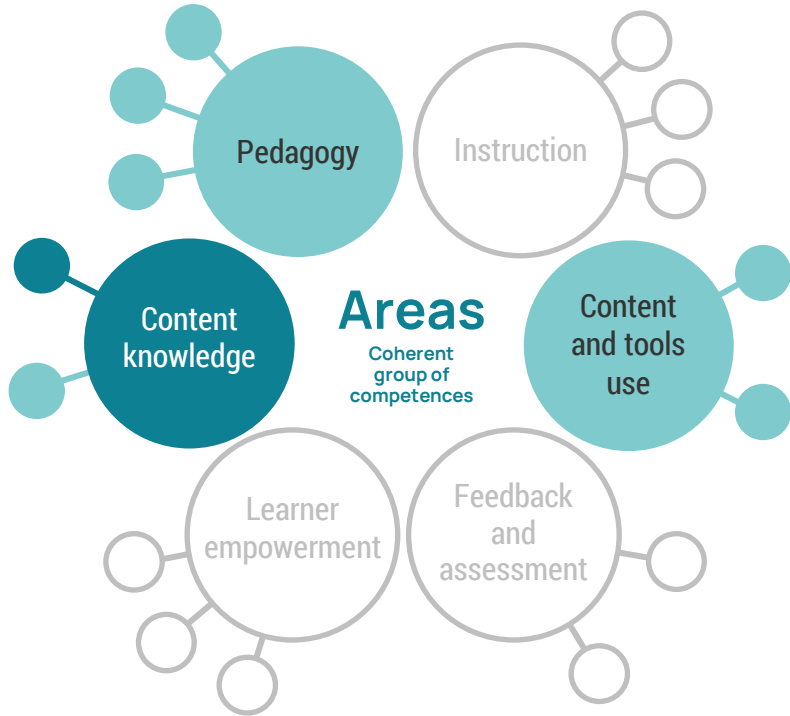- Content and tools use
- Learner empowerment
- Feedback and assessment

- Content knowledge
- Pedagogy
- Content and tools use

2

Educator as teacher – trainer – tutor
1st perspective (week 1)

Areas
Coherent group of competences

- Pedagogy
- Instruction
- Content knowledge
- Content and tools use
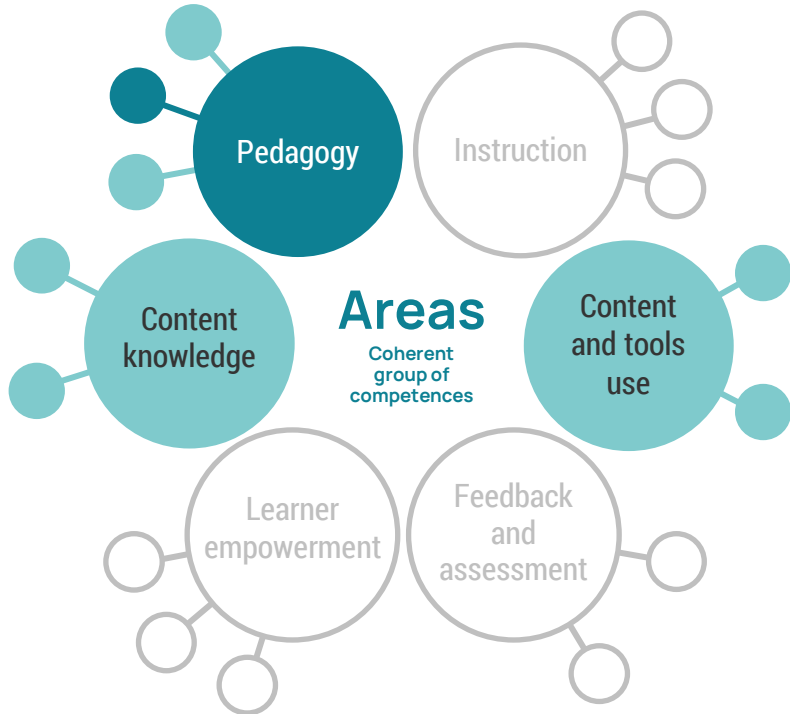- Learner empowerment
- Feedback and assessment

- **The STE(A)M educational approach**
  – What STE(A)M represents and means
  – From STEM to STE(A)M
  – Interdisciplinarity, transdisciplinarity and metadisciplines
  – Convergent and divergent skills

Educator as teacher – trainer – tutor
1st perspective (week 1)

Pedagogy

Instruction

Content knowledge

Areas
Coherent group of competences

Content and tools use

Learner empowerment

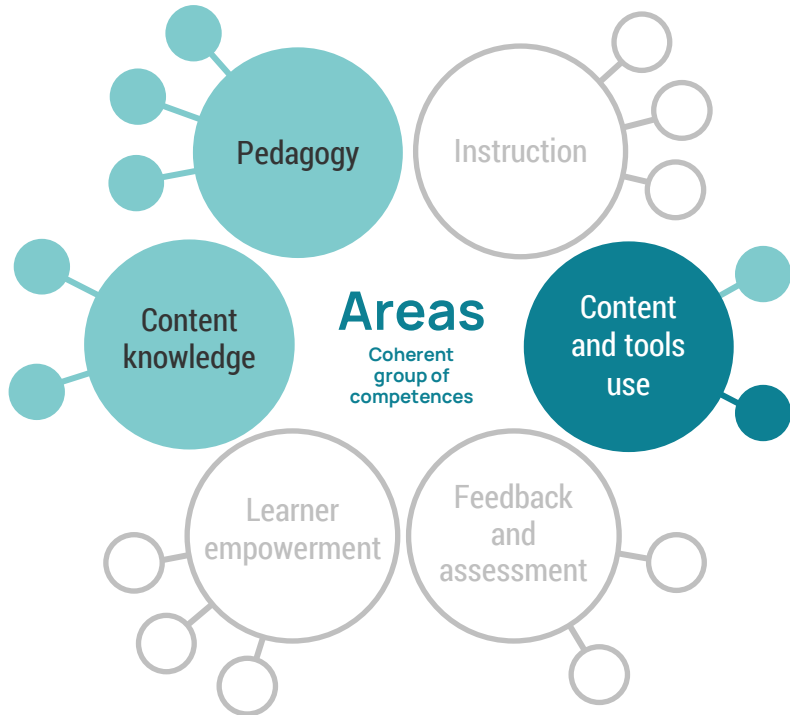**Feedback and assessment**

- The STE(A)M educational approach

- Teaching and learning techniques
  - Fostering critical thinking and creativity
  - Five important STE(A)M skills to teach in school
  - Six basic steps to create a STE(A)M classroom

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Educator as teacher – trainer – tutor
1st perspective (week 1)

Pedagogy

Instruction

Content knowledge

Areas
Coherent group of competences

Content and tools use

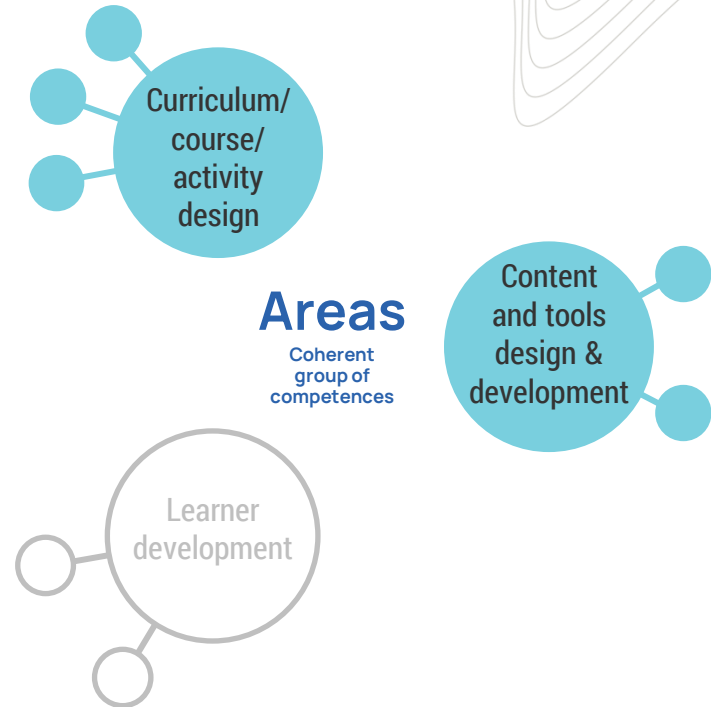Learner empowerment

Feedback and assessment

- The STE(A)M educational approach

- Teaching and learning techniques

- Content and tools selection for STE(A)M education
  - Software, apps, techniques
  - Examples, case studies
  - Exchange of experiences

2

Educator as learning designer and creator
2st perspective (week 2)

- Curriculum/course/activity design
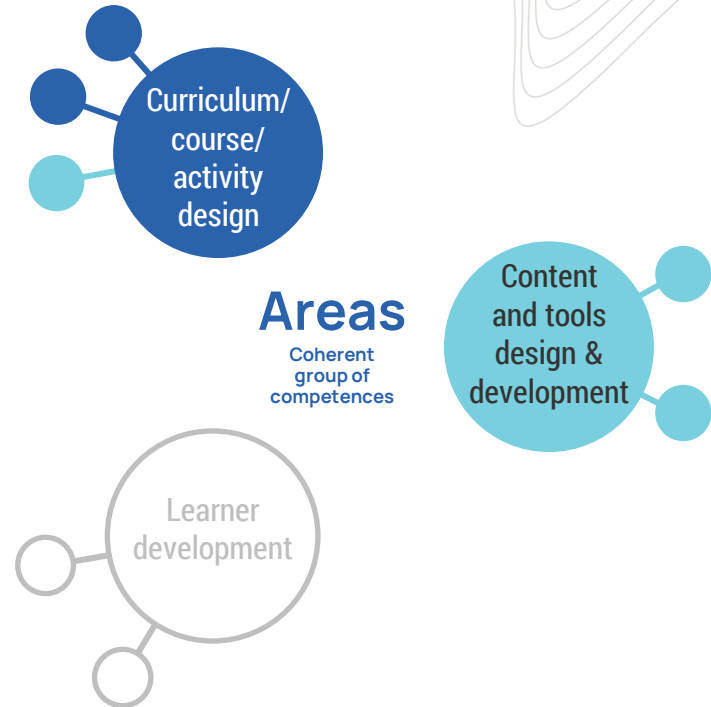
- Content and tools design & development

Curriculum/
course/
activity
design

Areas

**Coherent
group of
competences**

Content
and tools
design &
development

Learner
development

2

Educator as learning designer and creator
2ˢᵗ perspective (week 2)

- Design of STE(A)M-related activities and courses
  - principles of designing,
  - process and steps to be followed,
  - opportunities,
  - quality aspects,
 - potential risks,
  - assessment, etc.

Curriculum/
course/
activity
design

Areas
Coherent
group of
competences

Content
and tools
design &
development

Learner
development

2

Educator as learning designer and creator
2st perspective (week 2)

- Design of STE(A)M-related activities and courses

- Create and modify appropriate content for STE(A)M education
  – Discovery of available digital tools
  – Activity creation using well-established tools, such as Turtle coder and Scratch

Curriculum/ course/ activity design

Areas
Coherent group of competences

Content and tools design & development

Learner development

2
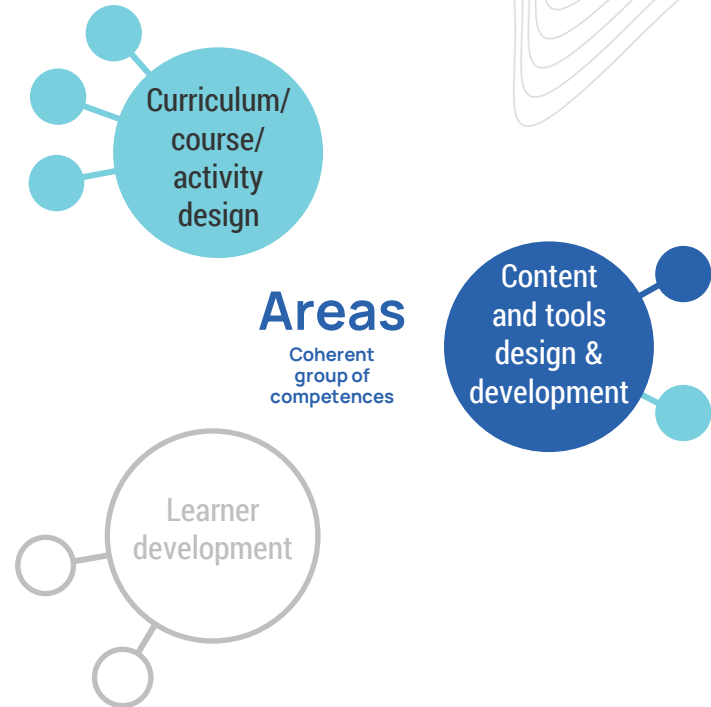
Educator as orchestrator and manager
3rd perspective (weeks 3 and 4)

Educational procedure management

Areas

Coherent group of competences

Resource management

- Educational procedure management

- Resource management

2

Educator as orchestrator and manager
3rd perspective (week 3)

Educational procedure management

Areas

Coherent group of competences

Resource management

- Teaching organization methods
  - Time management
  - The GTD methodology
  - Inquiry-based strategies
  - Methods for effective lesson plans

2

Educator as orchestrator and manager
3rd perspective (week 3)

Educational procedure management

Areas

Coherent group of competences

Resource management

- Teaching organization methods

- Classroom management methods
  - The classroom emotional setting and the student-oriented classroom
  - Handling unexpected situations
  - Classroom space-design

Educator as orchestrator and manager

3rd perspective (week 4)

Educational procedure management

Areas

Coherent group of competences

Resource management

- Educational resources management

- Lab management methods
  - Lab space and culture
  - Makers Manifesto
  - Handling technical problems

2

Educator as orchestrator and manager
3rd perspective (week 4)

Educational procedure management

Areas

Coherent group of competences

Resource management

- Educational resources management

- Lab management methods

- Human resource management
  – Collaboration and communication
  – The Working Out Loud communication method
  – The Scrum team collaboration method

2

Educator as community member
4th perspective (week 5)

- Community building

- Application of policies

Community building

Areas

Coherent group of competences

Application of policies

2
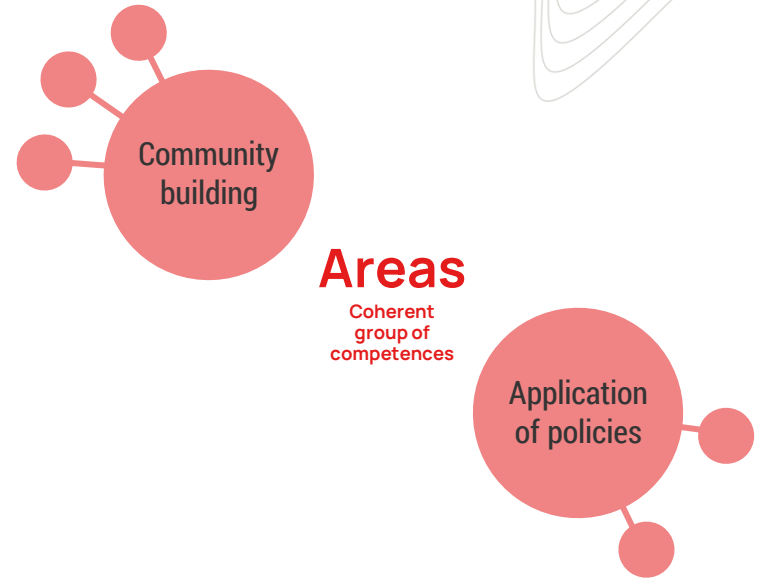
Educator as community member
4th perspective (week 5)

- STE(A)M communities of educators
  - What is a CoP and what are its success factors?
  - Netiquette
  - The Psychology of the Digital Age *
 - Selected STE(A)M educator CoPs

Community building

Application of policies

Areas
Coherent group of competences

* John R. Suler, The Psychology of the Digital Age: Humans Become Electric, Cambridge University Press, 2015.

2

Educator as community member
4th perspective (week 5)

- STE(A)M communities of educators

- Research and business communities for STE(A)M education
  - Citizen Science
 - Benefits and examples of communities

Community building

Areas
Coherent group of competences

Application of policies

2
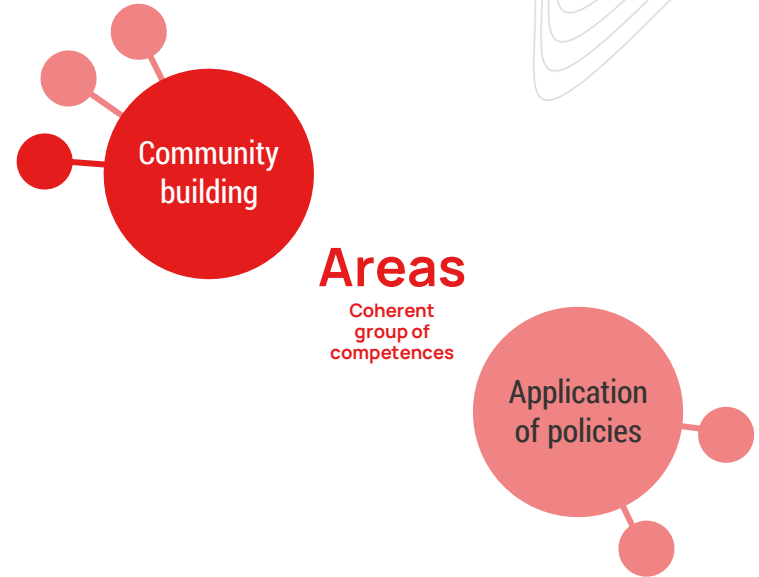
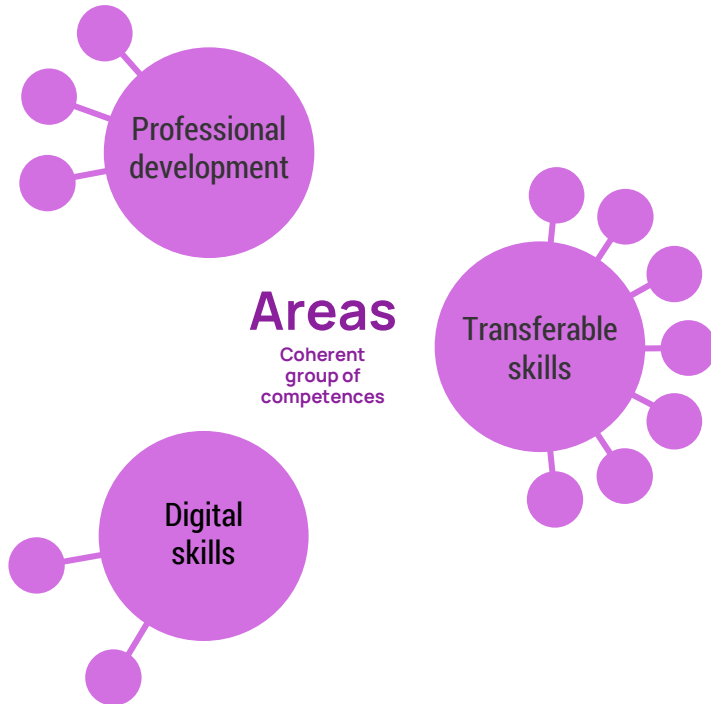# Educator as community member
4th perspective (week 5)

- Policies that promote STE(A)M education
  - Public policy definition
  - EU level policies
  - National and regional trends
  - Policy making tools
  - Clear and effective advocacy messages creation and communication
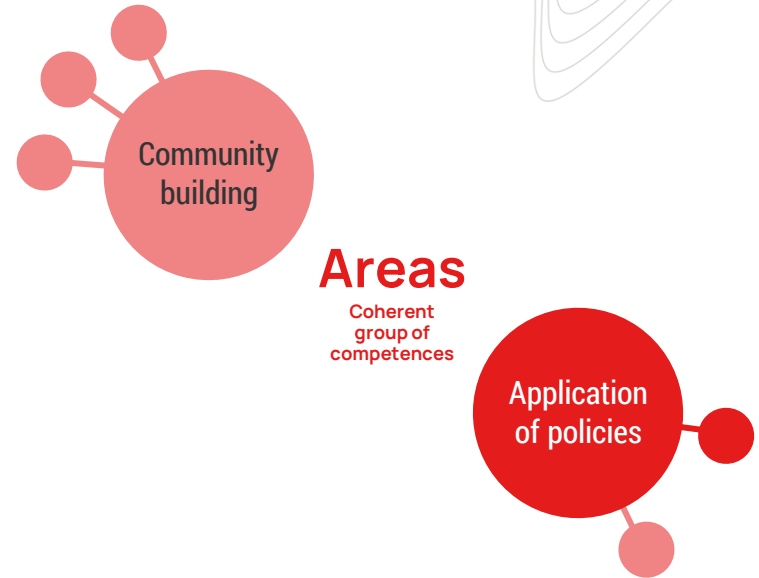
Community building

Areas

Coherent group of competences

Application of policies

Educator as professional
5th perspective (week 6)

Professional development

Digital skills

Transferable skills

Areas

Coherent group of competences
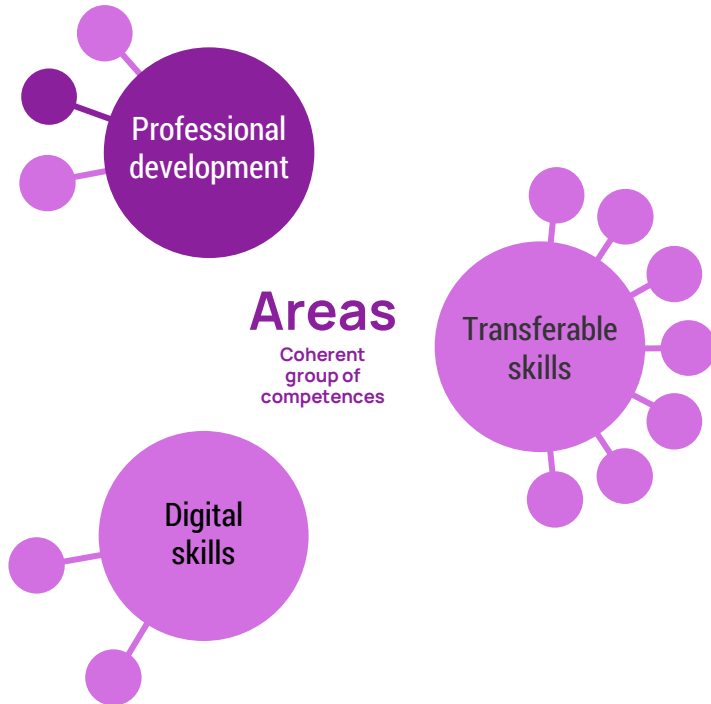
- Professional development
- Digital skills
- Transferable skills

2

Educator as professional
5th perspective (week 6)

Professional development

Areas
Coherent group of competences

Transferable skills
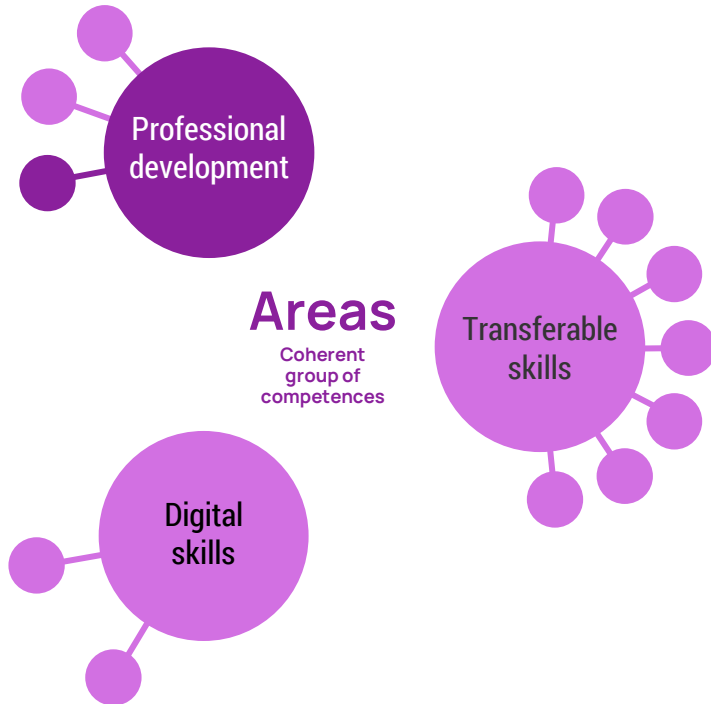
Digital skills

- Research activities in STE(A)M education
  - Scientific knowledge and research
  - Basic research methods
  - Reporting and dissemination
  - Ethical aspects

2

Educator as professional
5th perspective (week 6)

Professional development

Areas

Coherent group of competences
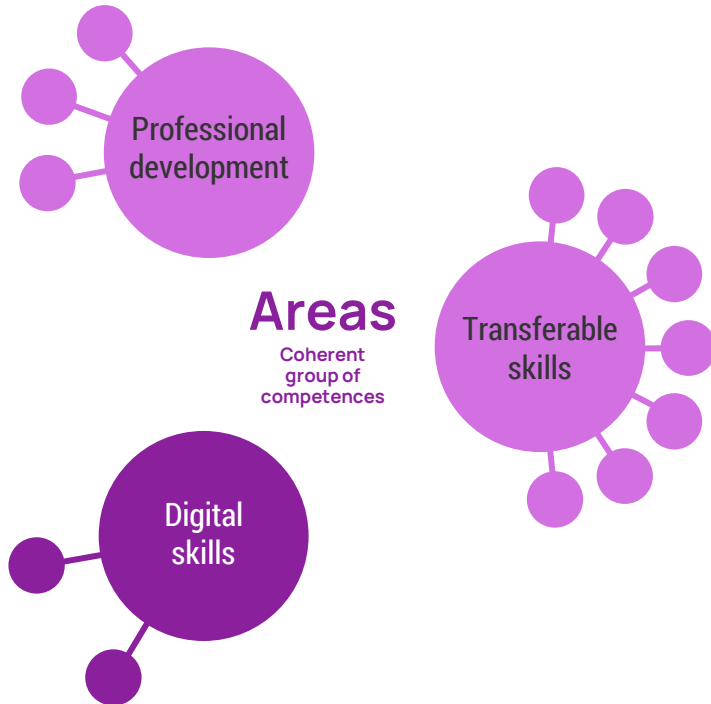
Transferable skills

Digital skills

- Research activities in STE(A)M education

- Lifelong learning related to STE(A)M education
  - CPD
  - Stakeholders and training opportunities

2

Educator as professional
5th perspective (week 6)

Professional
development

Areas

**Coherent
group of
competences**

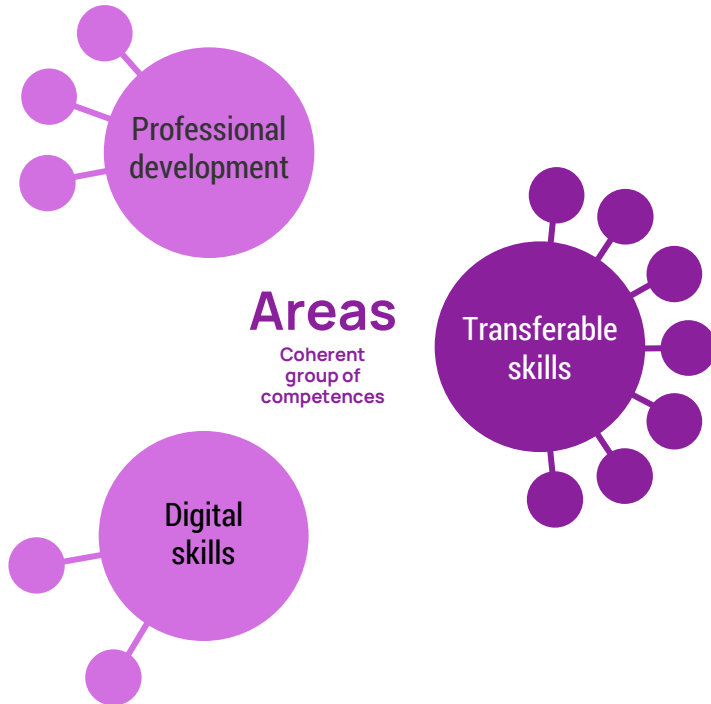Transferable
skills

Digital
skills

- Digital skills
  - DigComp and DigCompEdu frameworks
  - The SELFIE tool
  - European policies on digital skills

2

Educator as professional
5th perspective (week 6)

Areas

Coherent group of competences

Professional development

Transferable skills

Digital skills

- Digital skills

- Transferable skills
  - Definitions and purpose
  - 21st Century Skills
  - LifeComp
  - UNICEF Global Framework
  - Essential skills for STE(A)M educators

3

The blended learning course

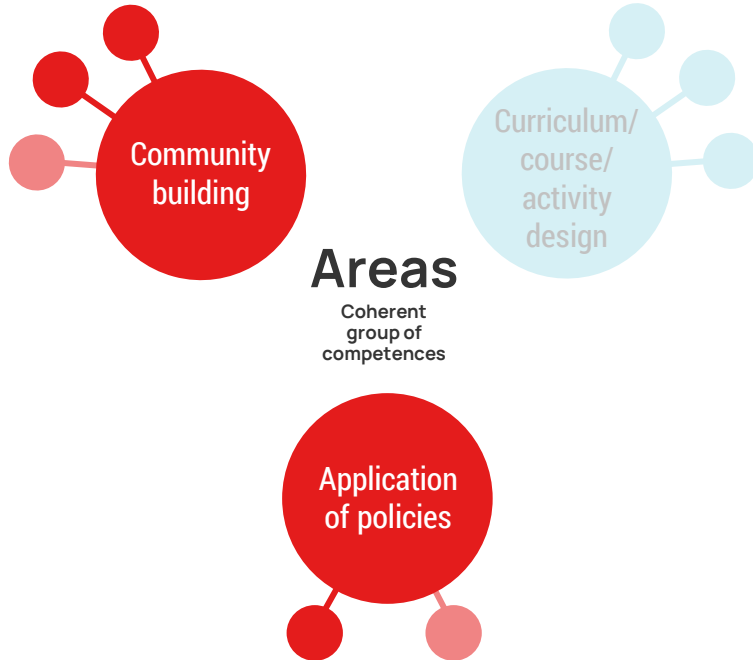Delving deeper into STE(A)M practice and competences

3 What, how and who of the blended learning

- Focus on further development of two perspectives
  - The educator as learning designer and creator
  - The educator as community member

- Delivery methods
  - Live lectures, self-running presentations and documents
  - Cooperative participant activities
  - Interaction through the STE(A)MOnEdu community

- Small group of participants that completed MOOC successfully

3

Blended learning goals
2nd and 4th perspectives (weeks 1 and 2)

Community
building

Curriculum/
course/
activity
design

Areas
Coherent
group of
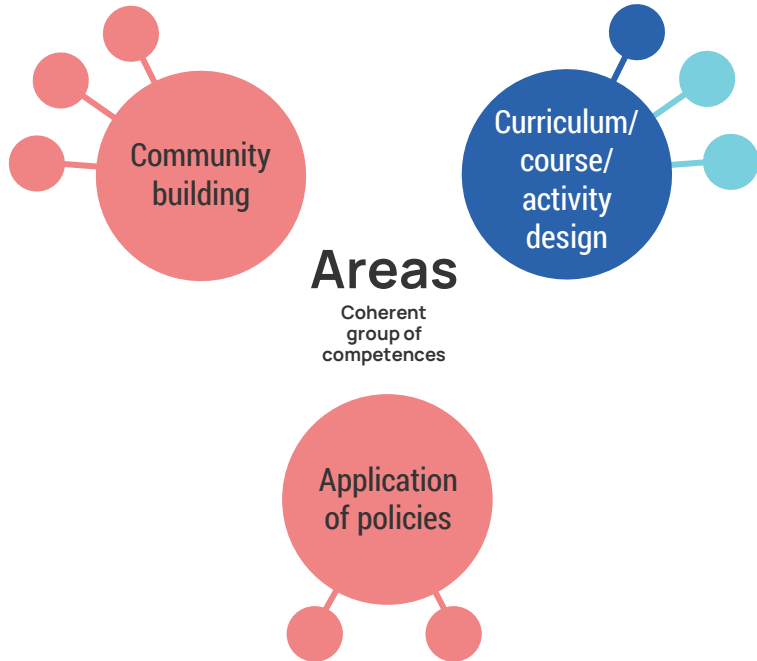**competences**

Application
of policies

- Knowledge and experience exchange in the context of the community

- STE(A)M competence framework and educator profiles

- Promotion of new educational policies

3

Blended learning goals
2nd and 4th perspectives (weeks 1 and 2)

Community building

Curriculum/ course/ activity design

Areas

Coherent group of competences

Application of policies

- Knowledge and experience exchange in the context of the community

- STE(A)M competence framework and educator profiles

- Promotion of new educational policies

- Curricula design and development

- STE(A)M activity templates

4 Epilogue

> " Art is made to disturb, science reassures
> Reality only reveals itself when it is illuminated by a ray of poetry
>
> Georges Braque, 1882 - 1963

Thank you for your attention!

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