**Template: IO1.D – Guidelines**

*Partners should develop guidelines for teachers and policy makers. The guideline for teachers is divided into 3 modules; the guideline for policy makers has only one module. Each module is divided into chapters and each one of them consists in 3 – 4 paragraphs (around 300 words each). For each paragraph it is necessary to provide the users with external links to deepen the contents.*

* Guidelines for teachers providing methodological and operative insights to make them able to effectively design ICT based science teaching learning objects for their lessons.
* Guidelines for teachers’ self-assessment to identify shortcomings in using digital tools in natural science education.

The Guidelines will be structured in 4 clusters of information providing a set of easy to use set of information and references to support teachers:

* Desirable digital competencies for teaching science - Cluster 1
* Teachers’ self assessment - Cluster 2
* Appropriate tools for professional development - Cluster 3
* Appropriate tools for teaching science using digital tools - Cluster 4

Guidelines for School Directors and Policy makers in order to outline a suggested strategy for the mainstreaming of the implementation of innovative ICT based approaches to teach Sciences at Secondary school level and to introduce them as part of the teachers’ professional qualifications through a more aware and structured mastering of Digital Competences.

Reviews will be produced by the Higher Education experts starting from their National Context (Italian, Irish and Swedish) in order to produce a transnational comparison highlighting the common transnational aspects and the specific needs of the different national systems.

**Title of the Module**

|  |
| --- |
| **Introduction** |
| *Please briefly summarize the contents of the module* |

|  |
| --- |
| **Title of Chapter** |

*Please copy and paste the following table for each one of the paragraphs.*

|  |
| --- |
| **Title of Paragraph 1** |
| *Please make sure the length of the paragraph is between 300 and 500 words* |

|  |
| --- |
| **Online Resources for Paragraph 1** |
| *For each paragraph, please mention at least 2 online resources. The structure to be used for the online resources is the following*  *Title of the resource (link)*  *Description of the resource (around 20 - 30 words)*  *Example*  **ICT and science education: promises and usages**  (https://journals.openedition.org/rdst/632)  This article analyses constructivist pedagogical approaches related to the use of ICT for science education. |

**Guidelines for Teachers**

The guidelines for teachers aim at providing methodological and operative insights to make them able to effectively design ICT based science teaching learning objects for their lessons.

The Guidelines should be structured in 4 modules providing a set of easy to use set of information and references to support teachers:

The Guidelines are organized in 4 main modules:

|  |  |
| --- | --- |
| **Title of the Module** | **Coordinator** |
| Desirable digital competencies for teaching science | Soderton University (SE) |
| Teachers’ self assessment | Genova University (IT) |
| Appropriate tools for professional development | Limerick Institute (IE) |
| Appropriate tools for teaching science using digital tools | ? |
|  |  |

**Module 1 – Desirable digital competences for teaching science**

This module aims at presenting the methodological and operative indications to be used in order to plan and implement alternative learning pathways for teaching Science based on the full exploitation of ICT based methods and teaching tools.

**Chapter 1 –**

* 1. -
  2. –
  3. –

**Chapter 2 –**

* 1. –
  2. -
  3. -

**Chapter 3 –**

* 1. -
  2. -
  3. -

**Chapter 4 –**

* 1. -
  2. -
  3. -

**Module 2 - Teachers’ self assessment**

**Chapter 1 – ????????**

* 1. - ??????
  2. - ??????
  3. - ??????

**Chapter 2 – ????????**

* 1. - ??????
  2. - ??????
  3. - ??????

**Chapter 3 – ????????**

* 1. - ??????
  2. - ??????
  3. - ??????

**Module 3 - Appropriate tools for professional development**

**Chapter 1 – ????????**

* 1. - ??????
  2. - ??????
  3. - ??????

**Chapter 2 – ????????**

* 1. - ??????
  2. - ??????
  3. - ??????

**Chapter 3 – ????????**

* 1. - ??????
  2. - ??????
  3. - ??????

**Module 4 - Appropriate tools for teaching science using digital tools**

**Chapter 1 – ICT Learning objects**

* 1. – learning objects
  2. – task (including scientific content to be taught)
  3. – the role of the teacher
  4. – expected outputs and possible difficulties for students
  5. - examples

**Chapter 2 – ????????**

* 1. - ??????
  2. - ??????
  3. - ??????

**Guidelines for School Directors and Policy Makers**

The guidelines for School Directors and Policy Makers have the aim to outline a suggested strategy for the mainstreaming of the implementation of innovative ICT based approaches to teach Sciences at Secondary school level and to introduce them as part of the teachers’ professional qualifications through a more aware and structured mastering of Digital Competences.

The Guidelines are organized in 3 main chapters:

|  |  |
| --- | --- |
| **Title of the Module** | **Coordinator** |
| Desirable digital competencies for teaching science | Soderton University (SE) |
| Existing gaps | Genova University (IT) |
| Remedies | Limerick Institute (IE) |

**Chapter 1 – Desirable digital competencies for teaching science**

* 1. -
  2. -
  3. -

**Chapter 2 – Existing gaps**

* 1. - Sweden
  2. - Italy
  3. – Ireland
  4. – Europe

**Chapter 3 – Remedies**

* 1. – Sweden
  2. – Italy
  3. – Ireland
  4. – Europe