Identification of good practices for teachers and students training activity in the ENVRIPLUS project

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We elaborated basic guiding principles that will be used to improve the content of the ENVRIPLUS e-Training Platform for multimedia education of Secondary School level teachers and students. The purpose is to favour teacher training and consequently students training on selected scientific themes faced within the ENVRIPLUS Research Infrastructures. "Best practices" could positively impacts on students by providing motivation on promoting scientific research and to increase the awareness of the Earth System complexity and Environmental challenges for its preservation and sustainability. Best practice teaching strategies represent an inherent part of a curriculum that exemplifies the connection and relevance identified in education research. The actions are designed to develop thinking and problem-solving skill through integration and active learning. Relationships are built though opportunities for communication and teamwork. Best practices motivate, engage and prompt student to learn and achieve.

SCIENTIFIC METHODS

BIODIVERSITY and CLIMATE CHANGE

(storms and floods, landslide, ocean acidification, biodiversity reductions, ice cover reductions...)

LIVING with NATURAL PHENOMENA

(earthquake, volcano eruption, tsunami)

and ASSOCIATED RISKS

(environmental contamination and pollution)

RESOURCES/SUSTAINABILITY of our PLANET

(fishery, food, energy...)

To implement and to test the consistency of these basic guiding principles, we will elaborate questionnaires designed both for Secondary School level teachers and the most suitable and effective tools. In fact, multimedia devices such as lap-top computer, tablets, smart-phones, school smart boards are very common tools already at disposal of the school community. They can host educational supports and transfer concepts through text, images, videos and games.

Principle	Note/short description	Teacher training	Student training
Create active participants rather than passive observer	Laboratorial, technological resources in classroom daily practices, hands-on activity	✓	
Start from near and real case	Identify topics, develop questions, plan inquiry, divide tasks research information and share learning process and content	✓	✓
Start from key-concept	Conceptual framework: change, global, evolution ..	✓	✓
Connect the use case to the school subjects	Connectivity and interaction among disciplines	✓	
increase individual consciousness and involvement	Empowers students to take ownership of their learning	✓	✓
Privilege visual content to text content	Facilitate learning, solicit imagination and stimulate a vision shaping	✓	✓
Include a 'wiki-like' section	Empowers students to exploit and share their knowledge	✓	✓
Include competitive environment/ actions (e.g., game)	Empower commitment and provide gratification	✓	✓
Create a repository of images, *url* links	Empowers students to exploit and share their knowledge	✓	✓
Be inclusive in respect to learning disability	Raise self-esteem and reciprocal respect	✓	
Stimulate students direct production of dissemination material	Increase motivation through exploring individual interest	✓	
Provide tutorials	Create a comprehensive guide	✓	✓

CREATE ACTIVE PARTICIPANTS RATHER THAN PASSIVE OBSERVER, favouring activity that includes the use of laboratorial, technological resources in classroom daily practices and hands-on activity. Students should interact with others to construct meaning from new ideas and concepts based on their background knowledge. Active learning is fast-paced, fun and personally engaging because students have the opportunity to try things out, use their senses, ask questions and discuss with others. Assignments should be designed to draw upon the skills and knowledge that students have or must acquire.

START FROM NEAR AND REAL CASE.
Dealing with issues close to or directly affecting the students daily lives my help in engaged students in identify topics, develop questions, plan inquiry, divide tasks research and share information, i.e. in region prone to natural hazards, such as earthquakes, landslides ..., or pollutions.

START FROM KEY-CONCEPT, that may provide a conceptual framework of thinking in a universal dimension. The purpose is to provide a conceptual framework underlying concepts such as change, global, evolution, diversity, interdependence, values and perceptions and sustainable development.

CONNECT THE USE CASE TO THE SCHOOL SUBJECTS. Connectivity and interaction among disciplines involve the connection among different knowledge and experiences both for teachers and students who can participate and share own skills and competencies for a common goal.

INCREASE INDIVIDUAL CONSCIOUSNESS AND INVOLVEMENT.
Empowers students to take ownership of their learning, by letting students choosing and engaging self-evaluation, peer review, and feedback to teacher.

PRIVILEGE VISUAL CONTENT TO TEXT CONTENT. Visual content can come in many forms, but the most common examples are images, video, slideshows or info graphics. Visual content has become increasingly popular. Studies show visuals are processed 60,000 times faster than text. This means that images are better at grabbing the attention, thus making them quicker and more effective than text at communicating key information.

INCLUDE A 'WIKI-LIKE' SECTION. A section editable by all registered user that allows users to create. edit, share ad exchange documents directly on the live site, without access to the full-featured administration interface.

INCLUDE COMPETITIVE ENVIRONMENT/ACTIONS. Both games and edutainment explicitly designed for educational purposes. This approach can be used to balance subject matter with gameplay and the player ability to retain, and apply said subject matter to the real world. Edugame satisfy the important need to learn by providing enjoyment, passionate involvement, structure, motivation, ego gratification, adrenaline, creativity, social interaction and emotion in the game itself while the learning takes place.

CREATE A REPOSITORY OF IMAGES, URL LINKS. Empowers students to find their own information and connections, expanding the extent of knowledge also on the basis of personal interests and inclinations and to exploit and share their ability and competence.

BE INCLUSIVE IN RESPECT TO LEARNING DISABILITY. Inclusivity represents a full range of human diversity with respect to ability, language, culture, gender, age and of other forms of human differences.
Principles of inclusion will be taken in account to raise self-esteem and respect. Principles of inclusion will be taken in account to raise self-esteem and respect.

STIMULATE STUDENTS DIRECT PRODUCTION OF DISSEMINATION MATERIAL. Increase students motivation through exploring individual interest and the direct production of multimedia equipment, lectures and presentation, graphic tools, posters and videos, interview.

PROVIDE TUTORIALS. Create a comprehensive guide exhaustive and easy to use, identifying needs, organizing content, organizing information, finding and citing sources.