



ProjectTERECOP: Training course curriculum					
module	subject	objectives	Training methods		hours
			Face to face course	e-learning	
1	Introduction: “breaking the ice”	<p>to help trainees relax and ease</p> <p>to help trainees learn each other's names and personal/professional information.</p> <p>to identify individual learning needs and goals, expectations and possible learning difficulties</p>	<p>The trainer and each trainee introduce him/herself in 2-3 minutes or (alternatively): the trainees in groups of two interview each other for 5 minutes and introduce him/her shortly in 2 minutes to the whole class</p>	<p>Trainees post a message in the forum introducing him/herself</p>	1
2	<p>Agreeing on a "didactic contract"</p> <p>Assigning readings on constructivism and constructionism to the trainees</p>	<p>to ensure a consensus between trainer and trainees on the training objectives, contents and methods</p> <p>to generate interest in the topic of the training</p> <p>to make arrangements necessary for the smooth running of the course</p> <p>to give a few key ideas on both pedagogical issues and to invite the trainees to read and analyse the assigned papers</p>	<p>The trainer presents the overall aim, the specific objectives of the course, the training methodology and the expected training results.</p> <p>Short presentation/introduction /guide to read of the papers.</p> <p>The trainees are invited to express their own expectations, opinions, suggestions and ideas.</p> <p>The session finishes with an agreement between trainer and trainees on the above mentioned issues (and on everything else that might emerge in the training class)</p>	<p>The “didactic contract” is uploaded by the trainer in the Document area of e-class</p> <p>4 selected papers become available for trainees through e-class</p>	1

			leading to the formulation of a "didactic contract".		
3. robotics as learning object (or getting started with robotics)					
3.1	Why robotics in education	<p>To motivate trainees to use robotics in education, to conceive robotics as an innovative technology that can create a rich interactive environment encouraging constructivist learning and supporting the realisation of meaningful, authentic, collaborative learning tasks , opportunities for design and construction, and development of student thinking</p> <p>To discuss why Lego Mindstorms NXT technology can be used as the tool for accomplishment of the above learning tasks</p> <p>To provide a first introduction to the Lego Mindstorms NXT Educational kit and software</p>	<p>Trainees work in groups of 4-5 on a relevant question based on the uploaded paper (see next column), they present and discuss their ideas, the trainer makes a synthesis</p> <p>Presentation of slides on the Lego Mindstorms NXT Educational kit and software followed by open, cooperative discussion within the classroom</p> <p>Exploring the hardware components, browsing the Lego Mindstorms NXT brick menus through lab activity in groups of 4-5 trainees</p>	<p>the paper “Constructivist Learning Using Simulation and Programming Environments” , (<i>Calum Tsang</i>) available in e-class</p> <p>the trainees publish and exchange opinions on the same topic in the forum of their eclass</p>	3
3.2	A first approach to Lego Mindstorms NXT	<p>To make the trainees able to create simple programs, to read the sensors and to activate the motors using basic programming blocks within the Lego Mindstorms NXT software, to assemble robots in different configurations for solving/studying a given problem/scenario, to create meaningful</p>	<p>Practical lab exercises in groups, allowing each group to build his own robots and to make his/her own programs, followed by group discussions</p> <p>Use of LEGO Digital Designer software, pictures of already constructed robots, worksheets</p>	<p>Presentations and software available in e-class</p>	8

		programs to control the robots, to observe if the robot has the desired behaviour and if not, to be able to repeat the process until reach a reasonable solution			
4. theory (Costructivism, constructionism, project-based learning)					
4.1	How the use of technology (alternative: robotics tecnology) in school class could change the traditional teacher-centred model of knowledge transmission ?	<p>to activate trainees' any prior knowledge of the subject</p> <p>to bring the experience of all trainees into play during the session</p> <p>to exploit the experience and creativity of all trainees</p> <p>to introduce trainees in the subject of the course through their own experience</p>	<p>Brainstorming:</p> <ul style="list-style-type: none"> - The trainer defines the problem - Encourages an enthusiastic, uncritical attitude among trainees - Tries to get everyone to contribute and develop ideas - No criticism of ideas! - Notes down ideas that come out of the session - Makes a synthesis summarizing trainees' ideas as they emerge from brainstorming. 	The trainees are encouraged to find, share and present on qualitative resources / papers (one or two) about the role of technology in education through the forum of their e-class and dropbox utility.	1
4.2	constructivism and constructionism in education	<p>To offer to trainees a constructivist and constructionist view of learning</p> <p>Trainees to conceive how the constructivist and constructionist principles may be applied in education focusing on the creation of a student-centered learning environment and on the artefact creation as part of the learning outcome based on</p>	<p>Trainees work in groups of 4-5 on a specific question based on the uploaded paper (see next column)</p> <p>trainees present and discuss their ideas</p> <p>The trainer makes a synthesis</p>	<p>The paper “Ackermann E., (2001) Piaget’s constructivism, Papert’s constructionism: What’s the difference?” available for trainees in e-class</p> <p>the trainees publish and exchange opinions on the same topic in the forum of their eclass</p>	1

		authentic and real life experiences			
4.3	project-based learning	To recognise the educational advantages of project-based learning as a model for classroom activities that shifts away from the classroom practices of short, isolated, teacher-centered lessons and instead emphasizes learning activities that are long-term, interdisciplinary, student-centered, and integrated with real world issues and practices.	Trainees work in groups of 4-5 on a specific question based on one of the uploaded papers, present and discuss their ideas, the trainer makes a synthesis	The paper “Using LEGO Robotics in a Project-Based Learning Environment” (M. Carbonaro, Marion Rex, Joan Chambers) available for trainees in e-class the trainees publish and exchange opinions on the same topic in the forum of their eclass the trainees are encouraged to evaluate the particular learning experience described in the paper (based on specific criteria) through the forum of e-class	1
5. Robotics as learning tool (or designing projects with robotics)					
5.1	Features of a robotic project Methodology for organizing a project	Trainees will be able to Specify important features of a robotic project according to constructivist and constructionist approach. Describe a framework for design robotic project.	Trainees work in small groups. They make a list of important features of a robotic project. Trainer summarizes and makes a list. Using the outcome of previous discussion trainees and trainer construct a general framework for robotic projects.	List can be published in the appropriate folder of their e-class (Documents).	1
5.2	Study an example of a project: “Setting a	Trainees to be able to recognise appropriate strategies and tools for each stage of the	Trainees read the description of a project developed in five stages.	Worksheets and support material are available through e-class.	8

	bus in motion”	<p>project.</p> <p>To identify appropriate activities for students in each stage.</p> <p>To describe the teacher role in each stage.</p>	<p>They analyse each stage according to the teaching strategies, students and teachers activities.</p> <p>They organise their ideas in a form of a table.</p>	<p>Work of each group is available in their folder in e-class</p> <p>A common description of each stage may published by the trainer in the documents folder.</p>	
5.3	Apply the model to a new project	Trainees to be able to apply the model of the project the have study	Trainees, in groups of 4-5, are asked to use the tables they have completed during previous sessions in order to develop a new project.	Trainees use forum, chat and groups components of e-class to exchange ideas and drafts.	3
5.4	Presentations	Trainees to get feedback from peers and trainer.	Each group presents their project.	Trainees make their projects public (Groups)	2
6	course evaluation	To assess the course design, content, pedagogical approaches and delivery	<p>Interviews with trainees using structured questionnaires centred on objectives, activities and contents of the pilot course.</p> <p>Writing up an evaluation report</p>	The evaluation results and reports are published and discussed in the public space of the e-class.	2