



**Experiencing augmented reality on cultural heritage applications in iVET  
(CultApp)**

**Intellectual output IO2: Online Teacher Training Programme**

IO2 – A3: Curriculum of the online teacher training programme

*Augmented Reality for Cultural Heritage Education (AR4CHE)*



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**Course name:** Augmented Reality for Cultural Heritage Education (AR4CHE)

**Short overview of the training course**

**Course description**

Europe's Cultural Heritage (CH) is considered a shared source of remembrance, understanding, identity, dialogue, cohesion, and creativity for Europe (EU Decision 2017/864). Fostering Cultural Heritage education is also becoming a relevant issue within the initial vocational education and training (iVET) sector. Key drivers of these innovations are teachers enabled to stimulate learners' curiosity, motivation, and cultural awareness. Augmented Reality (AR), which allows experiencing real objects in a joyful and fascinating way, seems an appropriate tool for achieving these pedagogical goals.

The fact is that there is a lack of supporting tools for teachers with focus on how to integrate CH-related topics into their teaching and learning strategies by using AR.

Thus, this training course offers teachers a unique opportunity to acquire relevant digital, media, and pedagogical skills and competencies needed for the successful incorporation of AR when planning, developing, and implementing didactical activities related to art and CH. Teachers will learn about AR technology, reflect its pedagogical value for inspiring learners for CH-related topics, design and develop AR-based learning content, and plan and implement AR-based teaching and learning scenarios into their subjects to successfully promote Europe's CH.

The course will be delivered fully online based on an asynchronous learning platform, which will facilitate self-regulated and flexible learning.

The course is divided into five self-contained modules dedicated to any aspect of using AR in the context of CH education.

After successful completion of the course, a certificate of achievement can be issued upon request.

**Target groups**

The primary target group of the training course are iVET teachers of subjects such as Art, History, Media Design and/or production. The proposed subjects seem appropriate for integrating AR-based scenarios for promoting CH-related topics.

In addition, teachers from secondary schools or higher education sector dealing with related subjects might be addressed by this course.

Furthermore, the course and/or separate modules are open for cultural workers,





	personnel from museums, tourism agencies, city municipalities engaged in promoting cultural assets and touristic destinations.
Course objective	The objective of the training course is to enable course attendees to integrate CH-related topics into their professional activities by using Augmented Reality. In particular, the course aims at empowering teachers to plan, develop, implement, and evaluate pedagogical activities for promoting CH via AR.
Course delivery	<p>The course will be delivered via asynchronous online learning platform Moodle <a href="http://www.ar-cultapp.eu">www.ar-cultapp.eu</a>, which will provide the opportunity to learn in a flexible and digitally-supported way. All course teaching and learning materials will be made available to registered attendees for free.</p> <p>The registration on Moodle is very easy and will take you only a few minutes. You will find the instructions on how to get registered in the course in the <a href="#">AR4CHE User Guide</a>.</p>
Intended Learning Outcomes	
	<p>Upon completing the training course, attendees will be able:</p> <p>In terms of KNOWLEDGE:</p> <ul style="list-style-type: none"> <li>to understand the concept and pedagogical value of CH</li> <li>to explain the concept of AR</li> <li>to describe the technological environment for the use of AR;</li> </ul> <p>in terms of SKILLS:</p> <ul style="list-style-type: none"> <li>to identify, install, and deploy available AR tools and applications for pedagogical purposes;</li> <li>to create teaching materials and learning content for the use in AR</li> <li>to assemble simple AR applications.</li> </ul> <p>in terms of COMPETENCIES:</p> <ul style="list-style-type: none"> <li>to assess the impact on and benefits for teaching and learning in the context of Cultural Heritage education</li> <li>to design and implement suitable pedagogical projects for Cultural Heritage-related subjects using AR;</li> <li>to foster learners' curiosity and motivation to learn CH-related topics through AR.</li> </ul>
Teaching and learning strategies	
	Due to the specifics of the course delivery format, the traditional role of a teacher – as a guide, mentor, or instructor - will be skipped. A teacher will not be physically present during the course delivery. It means that teaching materials to be used will





	<p>be designed and delivered in a self-explaining and interactive manner in order to facilitate an autonomous acquisition of knowledge, skills, and competencies by course attendees. Also, applied teaching methods will focus on keeping motivation and retaining course participants, such as:</p> <ul style="list-style-type: none"> <li>• Self-study materials (chapter by chapter): textual, illustrated</li> <li>• audio and video content (linked or embedded)</li> <li>• hands-on exercises (i.e. try out an AR Editor, develop a concept)</li> <li>• Exercises supported with download materials (sample files, footage)</li> <li>• Glossary</li> <li>• FAQ</li> <li>• Discussion Board/Forum</li> </ul>
Course structure	
	<p>The course is divided into five learning modules with the focus on the practical application of Augmented Reality for cultural heritage education. The modular structure of the curriculum should make it possible to consider the needs of the participants regarding the flexibility of the course offerings, time economy, transferability to different fields of application.</p> <p>You can complete either any separate module(s), or the entire course.</p>
Course workload	60 hours
	<p>The estimated workload of 60 hours covers all the time you will invest into studying of the entire AR4CHE course.</p> <p>First, it includes the self-enrolment procedure to the course, familiarization with the online learning environment, studying the course curriculum and supporting materials.</p> <p>Second, the workload covers your learning activities, such as reading and reflecting upon the course materials, consulting the dictionary for translating some words or statements, viewing learning videos, consulting suggested links to additional materials, making exercises for self-control.</p> <p>Third, the workload includes your possible collaboration activities with peers on Forum.</p> <p>Finally, it covers time for the preparation to the assessment after each module, and performing assessment attempts. It might turn out that you would need less (or more) time to complete the course or each module.</p> <p>Therefore, the workload of 60 hours is supposed to give you a general orientation. The learning process will, in fact, happen very individually.</p>
Requirements for participation	
	<p>This course can be attended without previous knowledge in Augmented reality. Previous knowledge and experience of media education and cultural heritage are</p>





	<p>not essential, but helpful.</p> <p>Due to the specific of the course delivery format, attendees are expected to have the attribute to learn in a self-determined, self-regulated, and reflective manner.</p>
<b>Assessment</b>	
	<p>Upon completing each module, you will be invited to proceed with a Multiple Choice Test. Each test comprises 10 questions, each question has only 1 right answer. Each test is considered as passed by having scored at least 7 correct answers. Should you have achieved less than 7 correct answers, you will be invited to repeat the test again. The number of attempts is unlimited. Therefore, the right answer will not appear if you provide a wrong response.</p> <p>This assessment is considered as self-assessment. It means the assessment serves only for the purposes of the self-control, to check to which extent did you acquire the knowledge and skills.</p>
<b>Alignment with VET (Vocational Education and Training) standards</b>	
	<p>According to the European Standard for the transnational transferability of professional skills, the entire course of 60 hours is equal to 3 ECVET points. This might be helpful for iVET institutions that are interested in adopting the AR4CHE course to a formal learning context.</p>
<b>Recognition of achievements</b>	
	<p>To celebrate the accomplishment of each module of the AR4CHE course, the AR4CHE badges can be earned. They are supposed to document your personal achievements and to show your progress towards finishing the entire course. The badges will be available to users enrolled in the course, and relate to the activities that happen inside the course.</p> <p>The more detailed information about how to earn a badge is provided in the <a href="#">AR4CHE User Guide</a>.</p>
<b>Short description of the modules including indicative content:</b>	
	<p><b>Module 1: Dynamising the cultural heritage in education through AR (Workload: 10 hours)</b></p> <p>1.1 CH: meaning and importance for the European Union 1.2 Challenges of Cultural Heritage Education 1.3 AR: impact on users, difference from VR 1.4 AR as a medium to experience Cultural Heritage 1.5 AR in education for promoting Cultural Heritage</p> <p>Responsible: ITT Marco Polo</p>





	Contributor: Effebe
	<p><b>Module 2: AR – how it works from the technological viewpoint (Workload: 15 hours)</b></p> <p>2.1 Functional elements of AR</p> <ul style="list-style-type: none"> <li>- Devices (smartphone, tablet, head mounted display)</li> <li>- Components (camera, sensors, ...)</li> <li>- Applications</li> <li>- Content formats</li> </ul> <p>2.2 Generating Augmented Reality (methods and case study)</p> <ul style="list-style-type: none"> <li>- Marker based recognition (MBR)</li> <li>- Location based recognition (LBR) - beacons</li> <li>- Simultaneous localization &amp; mapping (SLAM)</li> <li>- Suitability, strengths, and weaknesses of the methods</li> </ul> <p>2.3 AR editing tools and development platforms</p> <p>Responsible: PAIZ Contributor: NART</p>
	<p><b>Module 3: AR content production (Workload: 15 hours)</b></p> <p>3.1 The AR content creation process (research, selection, acquisition, storyboard, edition, storage, distribution)</p> <p>3.2 Creation of own content versus obtaining external content</p> <p>3.3 Dealing with OER: creative commons licenses, copyright</p> <p>3.4 Show the story: storytelling for promotion of culture, arts and history</p> <p>3.5 AR editing tools: input formats (text, images, audio-visuals), editing methods</p> <p>3.6 Output formats, distribution and dissemination of AR content</p> <p>3.7 Practice of content creation and production about Cultural Heritage</p> <p>Responsible: CCS Contributor: PAIZ</p>
	<p><b>Module 4: Project Exercises (Workload: 10 hours)</b></p> <p>Course attendees are expected to use prepared exercise material in form of sample files like texts, images, audio, video to assemble three simple AR projects related to CH using a free available AR editor (Blippar) to learn and improve own producing skills.</p>





	<p>Responsible: Agora Niekée</p> <p>Contributor: FHM</p>
	<p><b>Module 5: How to set up an AR project applied to CH in the class</b> <b>(Workload: 10 hours)</b></p> <p>Our instructional design approach represents a mix of Design Thinking model and ADDIE model.</p> <ol style="list-style-type: none"> <li>1. Empathize: analyse your target groups (learners), their needs and your own pedagogical goals, your stakeholders, technological environment, your own skills. Which CH-related topic(s) might be represented/explained via AR? What might be achieved by learners via using available technical sources, time, and budget? Etc.</li> <li>2. Define: based on the analysis results, formulate a solution for solving your pedagogical problem (into which subject shall you integrate CH-related topic? Which AR tools shall you use? What effect do you expect to achieve by your learners? Etc.)</li> <li>3. Design phase: plan a lesson/session/project based on the set learning objectives (phase 1 + 2). It's about planning teaching, learning, and assessment strategies, planning AR-based content and selection of concrete tools needed for its production, assigning tasks and roles (of learners, stakeholders, eventually other teachers), delivery format, etc.</li> <li>4. Development phase: production of content, preparation of specific AR learning and teaching activities; pretest of technical solution and eliminating bugs.</li> <li>5. Implementation phase: conducting an AR-based lesson/project as prepared under phases 1-4.</li> <li>6. Evaluation: assessing the effectiveness of the AR project – are the learning goals set achieved?</li> <li>7. Rollout and dissemination: how to present learners' AR project to the wider audience?</li> </ol> <p>Responsible: FHM</p> <p>Contributor: Agora Niekée</p>

