Cultural heritage in primary education:
innovative teaching practices
CULT-TIPS

PEDAGOGICAL MODEL

EXECUTIVE SUMMARY

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The CULT-TIPS Pedagogical Model helps provide teachers and educators (e.g. museum educators) with a reference framework for teaching and using Computational Thinking (CT) in the field of humanities and, more specifically, cultural heritage and arts. In this sense, this Pedagogical Model aims at guiding teaching professionals in primary schools, by giving them some practical tools and suggesting some principles to follow.

CT is an analytical and methodical approach that involves breaking down complex problems into more manageable sub-problems, using a sequence of steps (dubbed algorithms in computer jargon), reviewing how similar problems may require similar solutions, and determining if a computer can efficiently solve said problems. Being at the basis of programming and coding activities, CT has been always associated with computer sciences and STEM disciplines in general. However, more and more researchers have started considering CT as cross-disciplinary, and its application to other subject areas as an effective way to teach this method. Accordingly, the CULT-TIPS Pedagogical Model is addressed to educators and promotes the shifting from traditional pedagogical approaches in humanities to a more innovative learning environment centred on the idea of "coding to learn" rather than "learning to code."

The Model has been built on the Compendium on Computational Thinking Methods (A1) and the Compendium on Art and Cultural Heritage (A2) developed by the Consortium. It is based on the learner-centred principles: 1. Including learners in the decision-making process about their learning; 2. Valorising learners' already existing knowledge, skills, competences (SKC); 3. Involving learners in the teaching process as co-creators.

Moreover, the CULT-TIPS Pedagogical Model has a series of features, which makes it extremely effective and efficient. First, the model is holistic in the sense that it provides a comprehensive perspective on CT and on how to teach it in non-STEM disciplines. Second, the model is practical as it encourages teaching professionals to use a "learning by doing" approach and to apply CT to real-world experiences. Third, it is engaging and stimulating inasmuch as it motivates and empowers students to manage their own learning. Fourth, the model is process-oriented, which means that learning activities follow the continuous improvement cycle principle and that repetition is seen as key to improve final outcomes. Lastly, the model is flexible in that it addresses common European challenges and is transferrable to different national contexts.

In order to ensure the quality of the learning process, the CULT-TIPS Pedagogical Model follows a Quality Assurance Framework, which is based on the Plan-Do-Check-Act quality cycle:

1. PLAN

Teachers should plan how to integrate CT into the curriculum as a cross-cutting method to apply to different subject areas. Curriculum planning should result in a written plan and be followed by detailed lesson plans. Integrating CT in the curriculum can disregard neither a thorough students' and teachers' needs analysis nor the budget for software availability.

2. DO

The teacher should assign tasks to their students, setting deadlines and providing all the necessary inputs. A checklist will help to complete this phase.

3. CHECK

Planning and Implementing need to be checked and evaluated to find out potential inconsistencies in the learning. A questionnaire will be key to effectively carry out this phase.

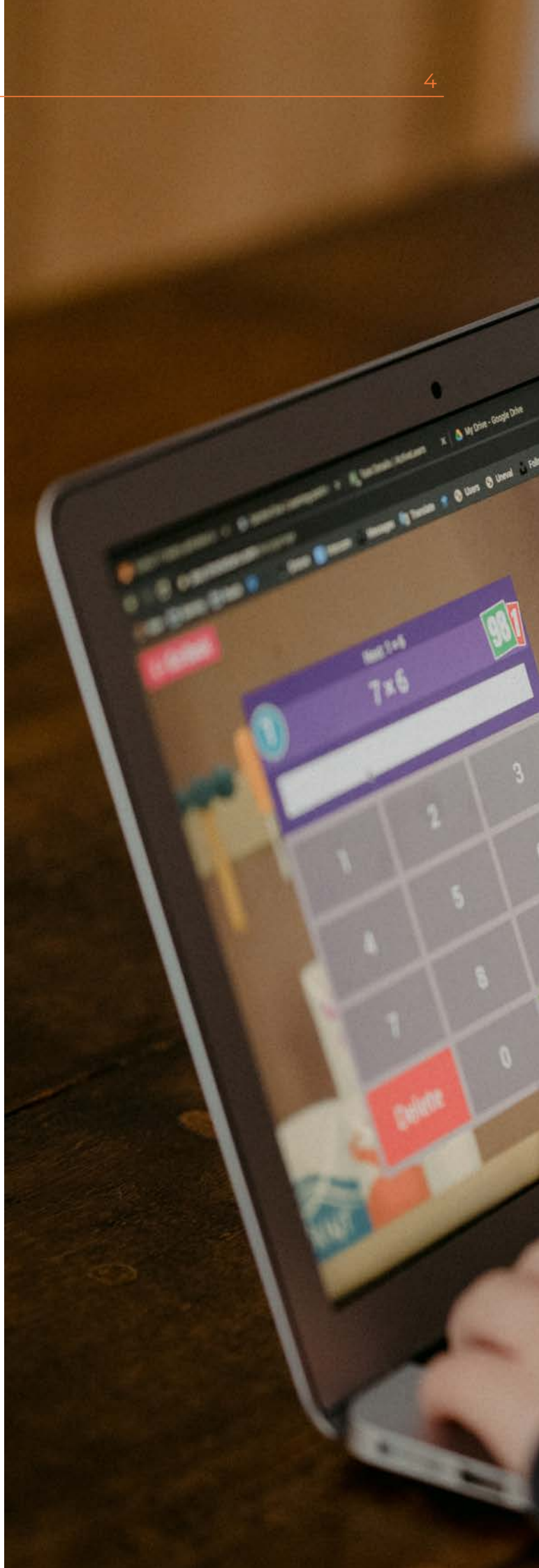
4. ACT

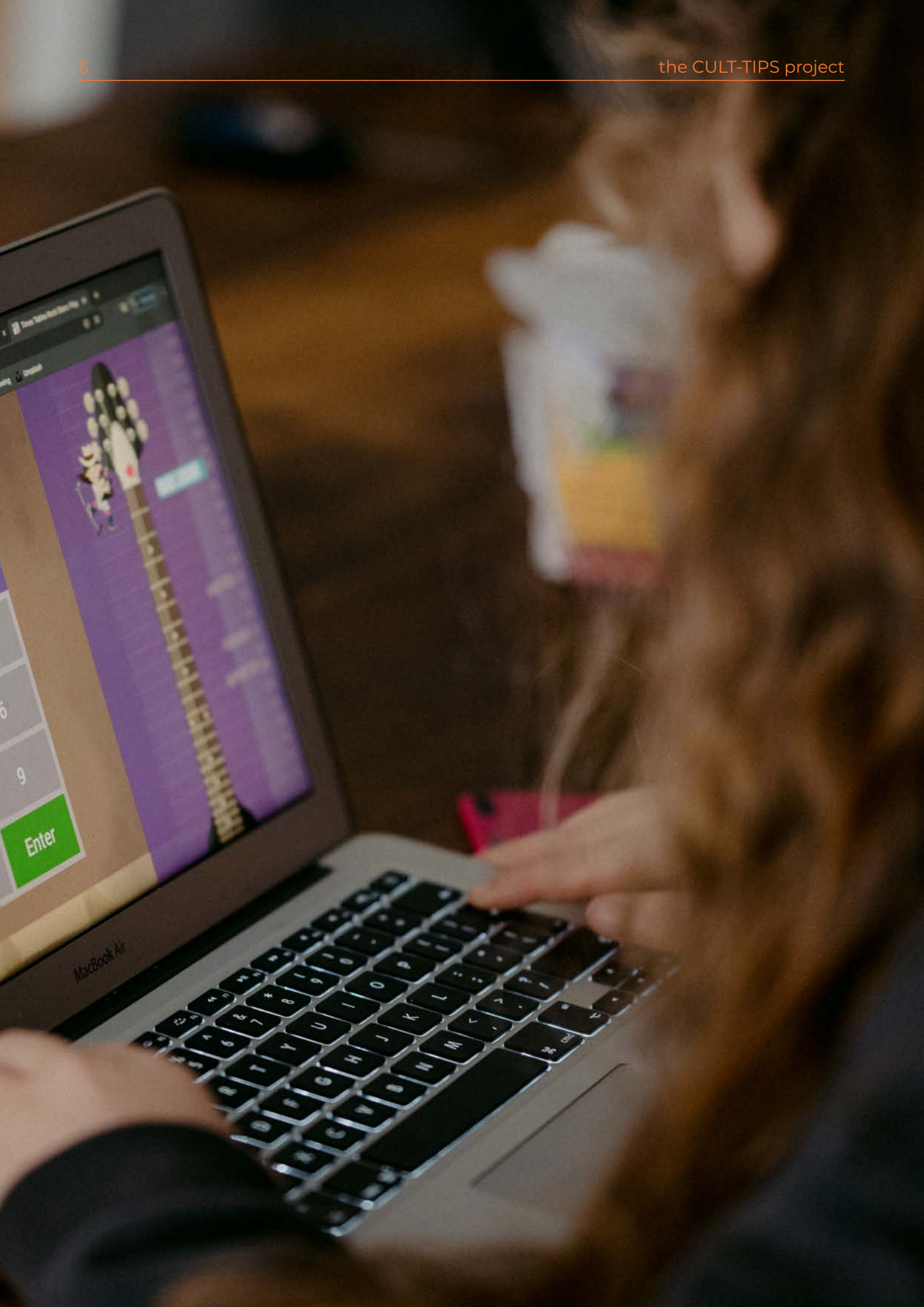
Evaluating leads to reflecting and giving feedback so as to improve the learning/ training activities. A questionnaire will be of use for this phase.

The rationale behind this Pedagogical Model is that of closing the gap between the KSC that students acquire at school and those that today's labour market requires. This ultimately means that students should become creators of knowledge rather than passive consumers. The main skills that CT contributes to acquiring are as follows: 1. Decomposition (breaking down a problem into smaller parts that can be solved more easily); 2. Pattern Recognition (identifying similarities in problems as a way to build solutions); 3. Abstraction (taking off superfluous details and focusing on essential elements); 4. Algorithm Design (creating a series of instructions to solve a problem); 5. Logical Reasoning (applying rules to problem solving); and 6. Creative Thinking (working with and generating new ideas).

The CULT-TIPS Pedagogical Model therefore turns traditional education into "SMART (sensitive, manageable, adaptable, responsive, and timely) education." Rather than teaching students notions that they are required to retain, this model encourages teaching professionals to provide students with some tools and empower the latter to find their own creative solutions to a given problem. This would, in turn, strengthen the student-teacher relationship and make students active contributors to their learning process.

In conclusion, the CULT-TIPS Pedagogical Model offers a reference framework that teachers and educators in the field of humanities and, in particular, cultural heritage and arts can use to develop their own learning materials and programmes. This Pedagogical Model will be supplemented by the CULT-TIPS toolkit (03).

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