

Extending Design Thinking with Emerging Digital Technologies Newsletter

December, 2023

Exten(DT)² Ghent meeting

The third face-to-face project meeting was held in Ghent between 27 and 29 September 2023. Team members from Sweden, Greece, the UK, Belgium, Norway and Ireland reflected on the pilot year of the project and discussed strategies to cope with emerging challenges that they may face while implementing design thinking (DT) projects in the second year of the project. They also discussed the extended versions of project technologies including MaLT2, SorBET, ChoiCo, nQuire for students, which have been modified following teacher and student feedback.



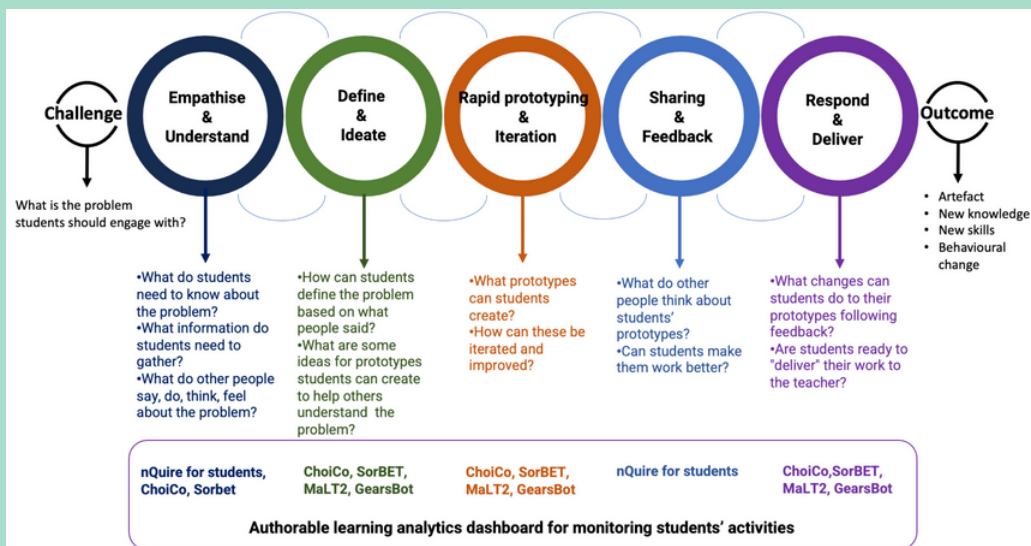
Exten(DT)² team members in Ghent, Belgium

Workshop with teachers on ‘Design Thinking with Digital Technologies’

Team members developed and trialed training material for teachers about design thinking and emerging technologies. The training material focuses on what design thinking is, the new digital design thinking model that the Exten(DT)² team has developed, the extended version of project technologies and the revised design thinking activity plan. Partners will use the material in workshops with teachers to be delivered in the next few months. Teacher workshops will be free to attend. More information can be found on the project website: <https://extendt2.eu/call-for-teachers/>

New Digital Design Thinking Model

Upon reflection on the use of the Double Diamond design thinking model in pilot activities of the first year of the project, the project team identified that students and teachers had difficulties understanding and applying this model to teaching. Therefore, a new design thinking model that can be delivered through the use of project technologies has been developed with input from all partners. The model's starting point is a challenge or problem students are asked to engage with and the final outcome is the production of artefacts (digital or physical) and improvements in students' knowledge, skills and attitudes. A number of prompting questions intend to help teachers and students engage with each stage of design thinking.



Exten(DT)² digital design thinking model

New versions of technologies

Responding to feedback from pilot activities, the team has upgraded project technologies. In the upgraded version of ChoiCo, users can create choice-driven simulation games on a real map. In the extended version of SorBET, two players can play the game simultaneously using their hands with any computer camera, thus promoting collaboration, communication and discussions. In the upgraded version of nQuire for students, the process of building a mission has been simplified, guidelines on how to design and evaluate survey questions have been developed, filters to navigate through studies have been developed, and a classroom management system to sort out schools, classes and students has been added. GearsBot, a virtual robotics tool that supports a 3D robotics simulator using either drag-and-drop blocks of code or Python is also added to the list of project technologies. A password-protected platform for teachers and students has been developed hosting all project technologies and enabling teachers to create activities for each phase of design thinking. Teachers and students can access all project technologies via this platform.

Dissemination activities

The NKUA team participated in the "Researcher's Night" 2023 in September in Athens, Greece, disseminating the extended educational tools of the project to students, parents and teachers who had the opportunity to use the project technologies and learn about the project's activities and goals. Students designed and printed 3D models with MaLT2, played and modified geolocation games with ChoiCo, and played and modified AR classification games using their gestures with SorBET.

The paper entitled 'An Embodied Instrumentation Approach for Spatial Thinking development using Geospatial technology' was presented at the 13th International Conference "ICT in Education" in Greece by Marianthi Grizioti and Christina Gkreka. They discussed how existing institutionalised educational tools such as ChoiCo and SorBET can be extended with emerging technologies and the added pedagogical value that these technologies can bring to learning.



The 'Researcher's Night' 2023 in Athens, Greece

In September, Marcelo Milrad gave a keynote speech to the Brazilian Association of Mathematics Education on "Computational Thinking (CT) and Learning Analytics in Mathematics Education: Enhancing the programming experiences for Teachers and Students". In this talk, Professor Milrad described the challenges related to how to promote CT across disciplines using different digital tools, methods and learning analytics. In this context, some examples from the exten(DT)² project were presented and discussed.



NTNU Team member assisting participant to use project technology in Norway

The NTNU team visited an International school in Norway in October to disseminate project activities to teaching and administrative staff and run a design thinking activity with some students and teachers using ChoiCo. Teachers at the school, during two days, had the opportunity to use the Exten(DT)² technologies, navigate the project’s website and get connected with project members to learn more about the project’s activities. Importantly, researchers and teachers had the opportunity to exchange ideas and thoughts on design thinking, the use of technologies in the classroom, discuss challenges and identify ways of support.

In October, the Exten(DT)² project delivered a presentation at the Third International Workshop on Computational Thinking, Code Skills and AI in Schools carried out in Växjö, Sweden. In this session Chronis Kynigos highlighted the efforts underway in our project giving a lecture on “The exten(DT)² project - Extending Computational Thinking with Emergent technologies joined with constructionist media: the case of AI, AR, 3D printing”.

In November, the Exten(DT)² project partners delivered an online session on 'Design thinking and emerging technologies at schools across Europe' entitled: "Reflections on the first year of implementation of Exten(DT)²" The event was part of the European Open and Digital Learning Week 2023 organised by EDEN Digital Learning Europe. In this session Chronis Kynigos highlighted design thinking with constructionist technologies, Christothea Herodotou, Sofia Papavlasopoulou and Marianthi Griziotzi discussed implementations of design thinking at schools across Europe, Carina Girvan discussed evaluation methods and pilot results, Marcelo Milrad and Marianthi Griziotzi focused on extending technologies with emergent technology affordances and Manolis Mavrikis discussed opportunities and challenges of AI.



Professor Kynigos at the presentation given in Sweden in October