ICT-INOV
MODERNIZING ICT EDUCATION FOR HARVESTING INNOVATION

D4.4 and D4.5 Report on plenary instructor training events in Porto and Hanoi

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Content

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Executive summary

ICT-INOV intends to promote innovation skills in higher education by combining design thinking and gamification methodologies to increase the capacity of students and instructors in ICT higher education to apply knowledge towards resolving the world's critical concerns. Design thinking allows students to think creatively about how technology may improve people's lives and contribute to addressing modern challenges. Gamification increases student participation in learning, particularly in activities that foster innovation.

The ICT-INOV learning intervention has been designed to address all facets of fostering innovation in higher education, including the establishment of physical innovation labs, the design and implementation of a digital learning platform that promotes gamified design thinking, educational activities that students deploy online while collaborating in groups, instructor training, and community building for organisational capacity to promote innovation.

This document presents a summary of plenary ICT-INOV instructor training activities, which aim to build the capacity of educators and organisations towards deploying emerging learning approaches, such as gamified design thinking, towards building innovation skills among students, preparing them to become active professionals and citizens that help address modern challenges.

The ICT-INOV strategy for instructor training involves 2 phases. During the first phase, a series of joint training events have taken place with the engagement of all partners. This constitutes Task 4.4 of the proposal in the context of Work Package 4 Capacity and Community Building. These events aimed at developing foundational understanding of design thinking towards innovation developed a group of ICT-INOV “ambassadors”. During the second phase of instructor training, the ICT-INOV ambassadors take the knowledge and practical skills they develop to their organisations, delivering a series of 4 – 5 events at each partner site that ensure an ongoing

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instructor capacity-building process spanning the project implementation period. This corresponds to task 3.4 of Work Package 3 Implementation and Piloting. The local instructor training events are considered necessary, as instructor training cannot be viewed as a one-time event but rather as a continuous improvement process.

This report summarises the outcomes of Task 4.4, namely the plenary instructor training events. Two in-person events took place, as foreseen in the project proposal. The first occurred in Porto, hosted by Porto Polytechnic, from January 31 to February 4, 2022. The second occurred in Hanoi, hosted by Hanoi University, from June 27 to July 1, 2022. In addition, 2 more preliminary, short virtual events took place to facilitate further instructor capacity to adopt gamified design thinking.

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1. Preliminary, short virtual instructor training, February 25, 2021

1.1 Location, time, context, and duration

The 1st plenary instructor training event took place on February 25, 2021, in the context of the project kick-off meeting, which took place virtually due to COVID-19 restrictions. The purpose of the event was to expose educators who teach at project partner sites to design thinking principles and practices. The event was aimed as a first-contact introductory session on how to foster innovation capacity through gamified design thinking approaches. The event took place during the 2nd day of a wider consortium meeting. It had a duration of 3 hours. It was organised early in the implementation period to facilitate partner collaboration on innovation skill building and prepare related activities at each partner site.

1.2 Participants

A total of 35 individuals attended the event, representing all project partners. The participants are educators in Computer Science or Engineering principles at partner sites.

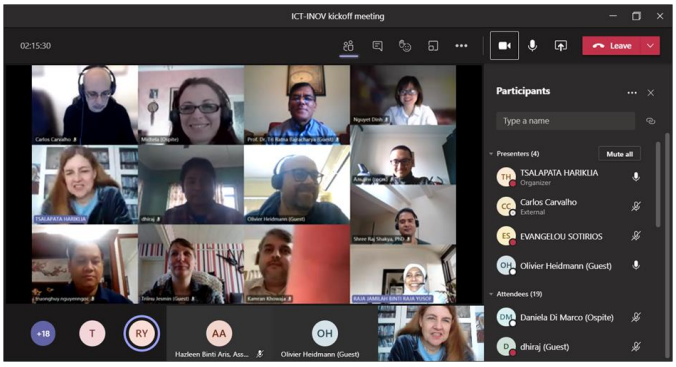

Figure 1. Participants in the 1st plenary virtual instructor training event on February 25, 2021.

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1.3 Description of activities

During the event, participants had the opportunity to be exposed for the first time to the concept of design thinking. The event focused on how design thinking is a user-centered approach that helps develop solutions to difficult challenges by considering the experience of users, based on their exposure to a proposed solution.

The event included 2 sessions:

The first sessions focused on **design thinking concepts**. Participants were familiarised with well-accepted design thinking steps, such as problem discovery and empathy, through which designers strive to understand the real parameters of a problem through research, identification of user needs through a process of empathy that helps designers identify real, as opposed to perceived requirements, ideation or brainstorming through a series of exercises and practices that help bring out the creativity of the design team, selecting a solution to turn into a tangible prototype, and evaluating the prototype through the engagement of characteristic users.

Participants also developed an understanding of the circular nature of the design thinking process, namely, designers may revert to any of the above steps if they find that the prototype they have designed must be enriched to effectively address user needs.

The second session focused on **design thinking practical exercises**, during which participants were exposed to practical design thinking activities that can be deployed in the classroom to support design thinking steps, such as empathy, problem discovery, ideation, prototyping, and evaluation of ideas. They worked in 3 teams, using online workspaces to edit jointly owned files for brainstorming and idea-sharing purposes.

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1.4 Feedback and dissemination

The event was very positive, as it was an early engagement with design thinking principles and practices. More on the event is available on the ICT-INOV project portal, see 1st plenary instructor training event February 25, 2021 (ictinov-project.eu), which provides access to the design thinking overview presentation as well as the hands-on workshop worksheet used during the event.

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2. Preliminary, short virtual instructor training, November 2 – 3, 2021

2.1 Location, time, context, and duration

The 2nd plenary instructor training event took place in the context of the 2nd ICT-INOV consortium meeting on November 2, 2021. The event's purpose was to engage participants in a hands-on session that demonstrated how design thinking could be deployed in classroom contexts, helping develop the innovation capacity of students. The event lasted 3 hours, spread over 2 separate days.

2.2 Participants

The event was attended by approximately 25 individuals who are educators in Computer Science and Engineering programs at partner sites.

2.3 Description of activities

To demonstrate the deployment of design thinking practices, participants were engaged in a workshop introducing solutions on the topic of "**Bringing Internet to the world**". More specifically, they were encouraged to consider how users will deploy internet solutions for communication, education, crisis management, or other purposes.

To reach their solutions, partners worked in 3 teams. They engaged in a series of practical exercises that support team building, identification of team values, problem discovery through research and establishing associations, and problem statement definition in an accurate manner that allows the introduction of viable solutions, ideation, and prototype design.

Participants used a number of tools in the form of exercises that can help guide design thinking activities in the classroom. The tools are available for partners to support their future design thinking efforts.

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Finally, the partners reviewed an early version of the ICT-INOV design thinking platform from the student and teacher's point of view.

From the point of view of students, they experienced how the platform supports team collaboration for solution synthesis by building on team member ideas. Participants further experienced how teamwork outcomes in each step of design thinking can be published in the platform in a manner that allows group work even if all individuals are not in the same room.

From the educator's point of view, they experienced the learning activity and course creation process, which facilitates design thinking deployment.

2.4 Feedback and dissemination

The session built on the work that took place during the first virtual training event on February 25, 2021. It went further by allowing participants to engage in design thinking through the proposed ICT-INOV collaborative learning platform. The virtual setup of the event demonstrated that it is particularly useful for promoting innovation-building activities in teams collaborating from a distance, for example, in distance learning contexts imposed due to COVID-19 restrictions. More on the event is available on the project portal at 2nd plenary instructor training event, 2-3/11/2021 (ictinov-project.eu), a page that describes the event and provides access to the worksheets used during the workshop.

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3. Plenary instructor training at Porto Polytechnic, Porto, January 31 – February 4, 2022

3.1 Location, time, context, and duration

An instructor training event took place from January 31 to February 4, 2022, in Porto, Portugal. The event took place in hybrid mode, with 16 individuals attending in person, while an additional 7 individuals received a compressed version of the training on February 17, 2022. The event was a standalone full training activity for 1 week, as foreseen in the ICT-INOV project proposal. The event's purpose was to provide participants with in-depth practice on deploying design thinking activities for innovation in classrooms.

3.2 Participants

It was attended by 16 individuals from Porto Polytechnic (PT), University of Thessaly (GR), University of Malaya (MY), University Tenaga National (MY), National University of Computer and Emerging Sciences (PK), EU-Track (IT), and Tallinn University (EE). While the event was organised to be attended by representatives of all project partners, participation from Tribhuvan University (NP), Kathmandu University (NP), Hanoi University (VN), and Von Newmann Institute (VN) was not possible as participants were not able to receive visas as consulates were closed or in-operational due to COVID-19 restrictions. Furthermore, participants from ISRA University (PK) were not able to attend in the last second as they tested positive for COVID-19 in a test required for flying the day before the flight to Porto. Participants were educators in Computer Science or Engineering programs at partner sites.

For the participants who could not participate in the training in Porto, a virtual event took place a week later on February 11, 2022 and lasted 2 hours. The event was attended by 8 individuals

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from ISRA University (PK), Hanoi University (VN), Von Neumann Institute (VN), Tribhuvan University (NP), and Kathmandu University (NP).

3.3 Description of activities

The Porto Polytechnic Vice Rector opened the event and received symbolic gifts from the University of Malaya. The event covered fundamental principles and practical application of design thinking. A full agenda was developed for the week-long activities (below for the full agenda). In summary, participants engaged in the following:

On day 1 of the event, participants engaged in creativity, warm-up, and team-building exercises. They were presented with the central topic of the workshop, namely the problem to which they were challenged to introduce solutions, which was "**Green IT**". To facilitate the work, participants followed a presentation on sustainability.

Subsequently, participants worked on creativity exercises, which aimed at encouraging the participation of students in innovation activities. The exercise that participants worked on challenged them to design something of use to someone by integrating predefined geometric shapes.

Then, participants worked on team-building exercises, which aimed at either breaking the ice among class members or getting team members to know each other better. The exercise they worked on challenged them to discover the interests and hobbies of everyone in the room based on questions on a bingo card, with the person who completed the questions first being the activity winner.

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Figure 2. A view of the teams working during the Porto training event, January 31 – February 4, 2022.

On day 2 of the event, participants engaged in problem discovery, implementing exercises on project research, the establishment of associations, setting up and conducting interviews, and other activities. They designed a "user persona", namely a description of a characteristic user. To achieve this, participants were exposed to tools such as a user map, a description of what a user sees, hears, feels, and is exposed to, and the user's journey, a description of user experiences throughout her life, which led to needs and desires of today. Teams presented the findings of their problem discovery work.

On day 3 of the event, participants in ideation activities. They worked with their team members to introduce a broad Teams presented their work to the entire group.

On day 4 of the event, participants engaged in solution synthesis and prototyping. They designed posters of their suggested solutions focusing on key concepts, users, the deployment of ICT for delivering their ideas, design outlines, and potential marketing steps.

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On day 5 of the event, participants presented their final solutions to the entire group. An award ceremony took place to reward the hard work of the week. Furthermore, a discussion followed with further recommendations on deploying the proposed classroom activities.

Figure 3. The teams from Pakistan (left) and Malaysia (right) present their solution during the Porto training event.

Participants deployed the latest version of the ICT-INOV digital collaborative learning platform throughout the activities, similar to the foreseen deployment of digital services in real-life classroom contexts.

Participants worked in 4 teams, each focusing on a different aspect of green IT, including recycling and reuse, extending hardware life, crowdsourcing, and reducing energy consumption. This demonstrates that even when a group starts with a common topic to be addressed with design thinking, such as green IT, individual teams may focus on different, more specific aspects of the wider challenge.

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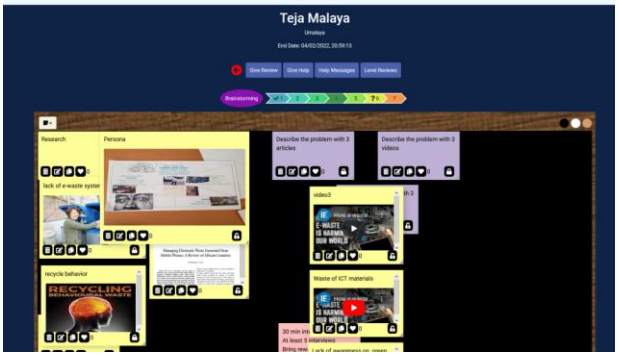
Participants will transfer the knowledge and experience they developed during the event to their academic organisations, training additional groups of instructors with the objective of capacity building on innovation skill development.

Figure 4. The Porto Polytechnic Vice Rector opened the activities and received symbolic gifts by participants (left); and group photos of the participants (right).

Some screenshots of the projects developed by participants in the ICT-INOV digital learning environment can be viewed below.



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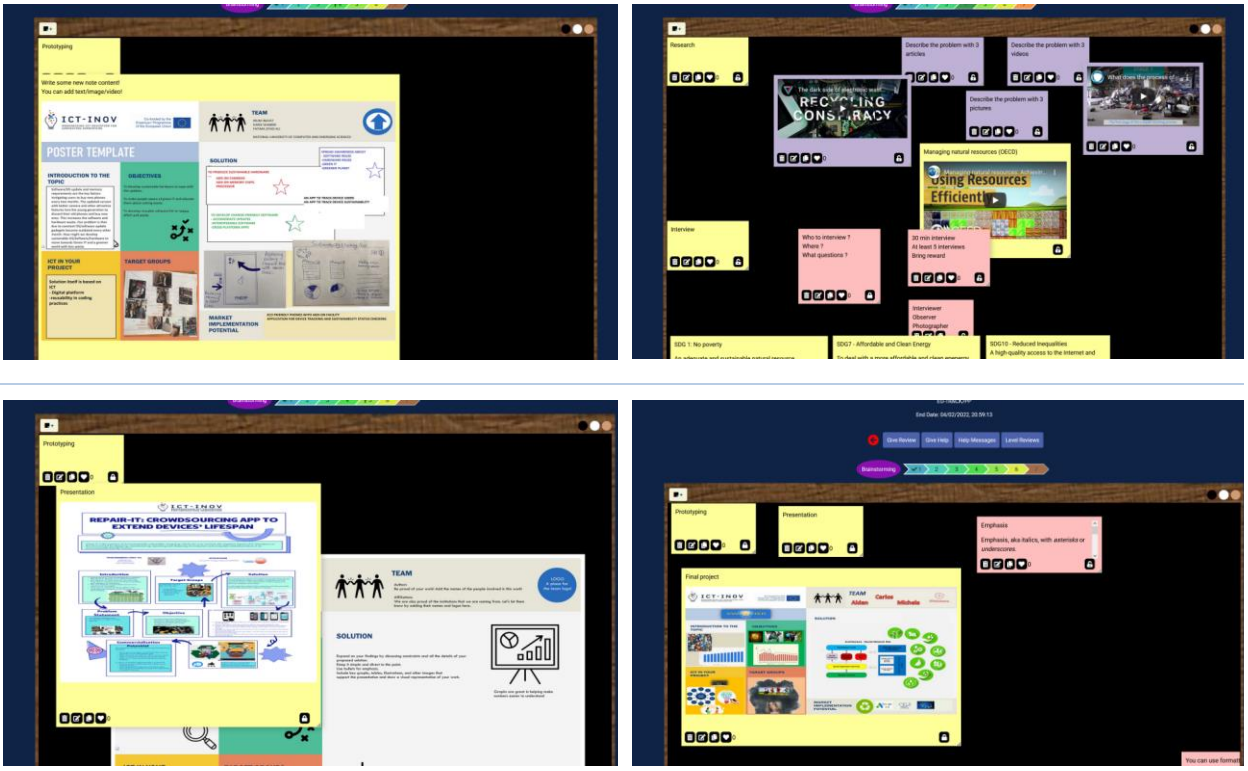

Figure 5. Projects on "Green IT" developed by participants in the Porto training event.

3.4 Feedback and dissemination

The event was very useful to project participants, who had an opportunity to engage hands-on in design thinking activities for innovation in a face-to-face workshop. Conducting activities in person is considered highly advantageous for developing participant experience to enable the transfer of their knowledge in the classroom, targeting students and training events targeting fellow educators for promoting wider adoption of the proposed learning intervention. More information on the event is available on the project portal at [3rd plenary instructor training event 31/1 – 4/2/2022 (ictinov-project.eu)](), including a full event agenda, an overview of the workshop conducted, and dissemination of the event. The event was promoted in the press and on the

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internet through a press release. As a result of the dissemination activities, over 14 internet articles were published online in printed versions of news outlets, in addition to numerous posts on social media reaching broad audiences. Information is available on the same link. Sign-up sheets of participants are available upon request.

Following are dissemination activities at the event.

Press releases

A press release was issued on the event on 07/2/2022. See more

Internet articles

Event presentation on KarditsaNews news outlet, Greece, 7/2/2022. See more.

Event presentation on Taxydromos newspaper, Greece, 7/2/2022. See more.

Event presentation on TheNewspaper news outlet, Greece, 8/2/2022. See more.

Event presentation on MagnesiaNews news outlet, Greece, 8/2/2022. See more.

Event presentation on eThessalia.gr newspaper, Greece 8/2/2022. See more.

Event presentation on GreeceIT.gr outlet, Greece, 8/2/2022. See more.

Event presentation on Larissa News outlet, Greece, 8/2/2022. See more.

Social media

Event presentation on the University of Thessaly social media pages, 07/02/2022. See more.

Event presentation on the University of Thessaly social media pages, 07/02/2022. See more.

Event presentation on the Creative Technologies Learning Lab social media pages, 03/02/2022. See more.

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Event presentation on EU-Track social media pages (Facebook profile), 31/01/2022. See more.

Event presentation on EU-Track social media pages (Instagram profile), 31/01/2022. See more.

Event presentation on EU-Track social media pages (Facebook profile), 01/02/2022. See more.

Event presentation on EU-Track social media pages (Twitter profile), 01/02/2022. See more.

Event presentation on EU-Track social media pages (LinkedIn profile), 01/02/2022. See more.

Event presentation on EU-Track social media pages (Facebook profile), 03/02/2022. See more.

Event presentation on EU-Track social media pages (Instagram profile), 03/02/2022. See more.

Event presentation on EU-Track social media pages (Twitter profile), 03/02/2022. See more.

Event presentation on EU-Track social media pages (LinkedIn profile), 03/02/2022. See more.

Event presentation on the University of Malaya social media pages (Facebook profile), 11/02/2022. See more.

On partner portals

Event presentation on the partner portal - Creative Technologies Learning Lab, University of Thessaly portal, 4/2/2022. See more.

Event presentation on the organisational portal of the Department of Electrical and Computer Engineering of the University of Thessaly, 9/2/2022. See more.

Event presentation on the partner portal – EU-Track, 05/02/2022. See more.

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4. Plenary instructor training at Hanoi University, Hanoi, June 27 – July 1, 2022

4.1 Location, time, context, and duration

An instructor training event took place from June 27 to July 1, 2022, in Hanoi, Vietnam. The event took place in person. It was a standalone full training activity with a duration of 1 week, as foreseen in the ICT-INOV project proposal. The event's purpose was to provide participants with in-depth practice on deploying design thinking activities for innovation in classrooms. It complemented the Porto training event that took place from January 31 to February 4, 2022, by introducing additional activities, thus broadening the range of knowledge of participants and by reaching additional instructors.

4.2 Participants

It was attended by 26 individuals from Porto Polytechnic (PT), University of Thessaly (GR), University of Malaya (MY), University Tenaga National (MY), National University of Computer and Emerging Sciences (PK), ISRA University (PK), Tallinn University (EE), Tribhuvan University (NP), Kathmandu University (NP), Hanoi University (VN), and Von Newmann Institute (VN). Participants from EU-Track (IT) were not able to attend in the last second as they tested positive for COVID-19 ahead of their flight. Participants were educators in Computer Science or Engineering programs at partner sites.

4.3 Description of activities

The Hanoi University Vice Rector opened the event, wishing participants a successful and productive week. The Vice Rector received symbolic gifts from participant organisations.

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The event covered an overview of the activities of design thinking methodologies for the practical application of design thinking steps. A full agenda was developed for the week-long activities (below for the full agenda). In summary, participants engaged in the following:

Figure 6. The opening of the Hanoi training event by the Vice Rector of Hanoi University, June 27, 2021.

On day 1 of the event, participants received an overview presentation of design thinking and commonly accepted steps of problem discovery, empathy, problem definition, ideation, prototyping, and evaluation. They were presented with the central topic of the workshop, namely the problem to which they were challenged to introduce solutions, which was "**Sustainability**".

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To facilitate the work, participants followed a presentation on sustainability, which was complementary to the one they received in Porto, providing new insights into the challenges faced by society in the 21st century.

Figure 7. Participants receiving a presentation on sustainability and engaging in creativity exercises.

Participants then worked on creativity-fostering exercises, which they can use when structuring their own design thinking activities. The creativity exercises aim to demonstrate to students that everyone is inherently creative and capable of designing innovative solutions. The exercise

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participants worked on was “30 circles”, which challenges individuals to turn circles into recognisable objects.

Subsequently, participants worked on team-building exercises. The exercise selected for this training event included a paper-rock-scissors contest, through which individuals get to meet and play with each other, thus breaking the ice. Additional activities were suggested for participants to use as alternatives when structuring design thinking steps.

Finally, participants received a demonstration of the latest functionality of the ICT-INOV platform, which they would use throughout the week for publishing their work. The demo focused on both the student and educator services of the platform. Participants experienced how to create new activities and courses as teachers.


Figure 8. Participants engage in team-building exercises.

They then registered for a course specifically designed for the training week and in groups, simulating the way students use the platform in innovation activities.

On day 2 of the event, participants engaged in defining a team logo and name, which provided an identity for their team.

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Subsequently, they engaged in problem discovery. This included researching the general topic of sustainability on the internet, selecting one idea they would like to work on, and describing the problem through articles, images, and videos retrieved from the internet. Then, participants researched the problem in-depth by establishing associations with people, places, and feelings.

Furthermore, they received recommendations on structuring and delivering interviews, including how to select the questions and the setup of an interview and providing a small reward to respondents.

Participants then summarised their results into a “user persona”, namely a description of a characteristic user, using a tool of their choice from a toolset of empathy map, user’s journey, karma map, and others.

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Figure 9. Participants working in groups.

On day 3 of the event, participants presented the results of problem discovery and user persona analysis to the group. In addition, they published their findings on the ICT-INOV platform, simulating the role of students, in order to become familiar with its functionality.

The next step was for participants to engage in problem redefinition. Based on their research of the problem they had selected and the analysis of user needs, desires, and feelings, they defined a point of view statement in the form of "how might we introduce a solution that addresses a specific need of a particular user group". Each team presented their point of view statement to the entire group and published it on the ICT-INOV platform.

On day 4 of the event, participants engaged in ideation activities. They worked with their team members to introduce a broad pool of ideas that could be synthesised to create a solution. Teams presented their work to the entire group. They engaged in exercises that encouraged them to consider solutions that require broad funding, solutions feasible with little funding, solutions starting with a different letter of the alphabet, which challenges users to engage different parts of their brain, and the "6-3-5" exercise in which each team member in a group of 6 writes 3 ideas

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in the context of 5 minutes while in subsequent steps team members elaborate on the ideas suggested by their peers. These exercises help introduce a broad range of ideas.

Subsequently, teams worked on idea evaluation. To achieve this, they engaged in the “now-wow-how” exercise, where they were asked to categorise ideas into the most approachable, innovative but still feasible, and ideas for future consideration. Through this exercise, participants selected an idea for prototyping. They documented their work in the ICT-INOV platform.

Subsequently, participants engaged in solution synthesis and prototyping. They designed posters of their suggested solutions focusing on key concepts, users, the deployment of ICT for delivering their ideas, design outlines, and potential marketing steps. They documented the posters on the ICT-INOV platform.

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Figure 10. Teams presenting their final solutions.

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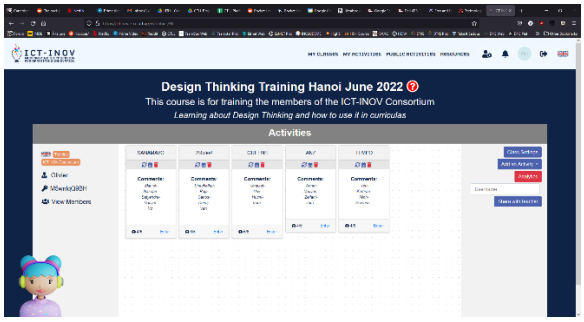
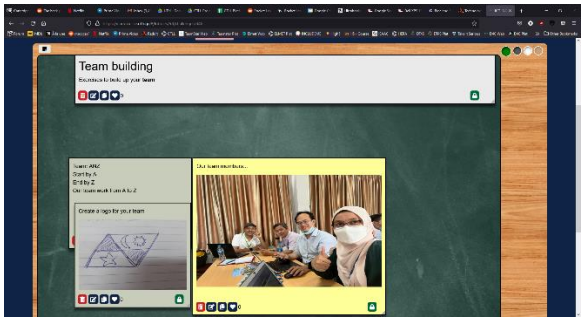
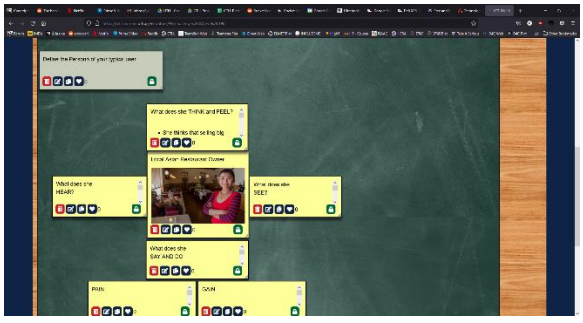
On day 5 of the event, participants continued the solution prototyping process. In addition, they worked on a presentation summarising the week's work. The presentation included the team's name and logo, the problem they selected, their suggested solution, the sustainability goals to which the solution is related, the use of technology in their solution, and marketing ideas. Each team presented their final solutions to the entire group. An award ceremony took place to reward the hard work of the week. Furthermore, a discussion followed with further recommendations on deploying the proposed classroom activities.







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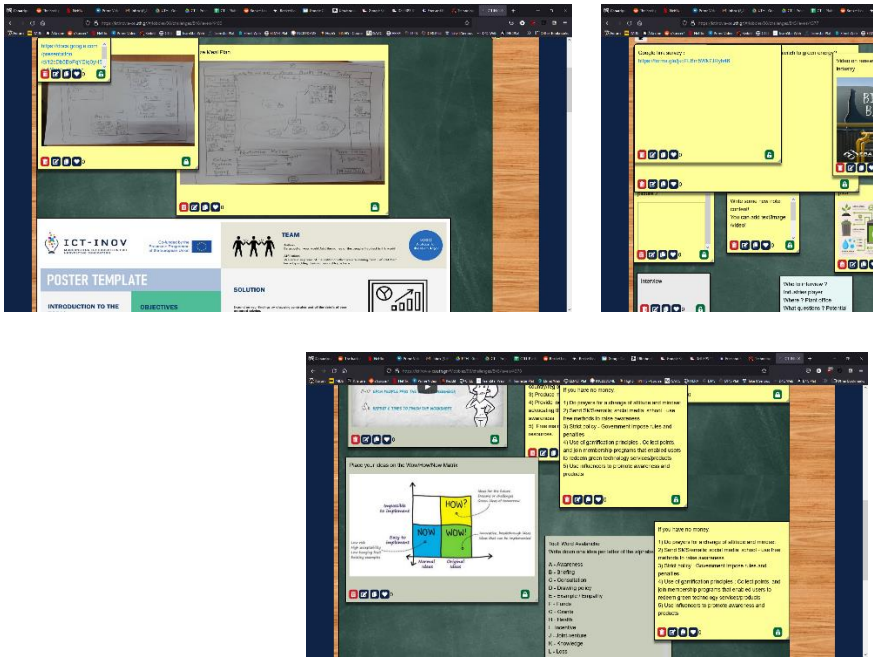

Figure 11. Screenshots of team projects in the ICT-INOV platform during the Hanoi training week.

4.4 Feedback and dissemination

The event was very well received. Participants filled in a questionnaire in which they commented on the usefulness of the activity towards building their capacity to deploy the ICT-INOV gamified design thinking methodology in their courses, using both the ICT-INOV digital learning platform and the ICT-INOV physical labs for innovation skill development. More information on the event is available at [4th plenary instructor training event at Hanoi University, 27/6 – 1/7, 2022 (ictinov-project.eu)](). As a result of the dissemination activities, over 10 internet articles were published online in printed versions of news outlets, in addition to numerous posts in social media reaching broad audiences. Information is available on the same link. Sign-up sheets of participants are available upon request.

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Following are dissemination activities at the event. Additional articles that the consortium is unaware of may have been published due to the press release.

Press release

A press release was issued on the event 1/7/2022. See more.

Internet articles

Event presentation on FoititikaNea news outlet, Greece, 1/7/2022. See more.

Event presentation on TheNewspaper news outlet, Greece, 1/7/2022. See more.

Event presentation on AlfaVita news outlet, Greece, 1/7/2022. See more.

Event presentation on KarditsaNews news outlet, Greece, 1/7/2022. See more.

Event presentation on MagnesiaNews news outlet, Greece, 1/7/2022. See more.

Hanoi training event on Taxydromos news outlet, Greece, 1/7/2022. See more.

Social media

Event presentation on the Creative Technologies Learning Lab of the University of Thessaly social media pages 1/7/2022 see more and more pictures and more pictures.

Event presentation on the University of Thessaly social media pages 1/7/202. See more.

On partner portals

Event presentation on the Hanoi University Faculty of Information Technology portal 12/9/2022. See more

Event presentation on the Creative Technologies Learning Lab of the University of Thessaly portal 1/7/2022. See more

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Event presentation on the organisational portal of the Department of Electrical and Computer Engineering of the University of Thessaly 1/7/2022. See more

Event presentation on the organisational portal of the University of Thessaly 1/7/2022. See more

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Conclusions

This report presented the plenary instructor training events that took place in the context of the ICT-INOV project. The events aimed to develop the competences of a tight group of educators at all partner sites, who, in turn, will transfer this new knowledge to their colleagues through local instructor training events. The events presented in this report constitute deliverables 4.4 and 4.5 of the ICT-INOV project. The local training events constitute deliverable 3.4 and will be documented in a separate report.

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