



Read, Watch, Do: Developing Digital Competence for University Educators

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Abstract. The paper presents and discusses the pilot experience of the EduHack course as it was developed in Spain by the Universidad Internacional de La Rioja (UNIR) in the first half of 2019. The EduHack course is proposing an active, participative and open approach to university teachers training in the use of digital approaches, that lets teachers experiment with ICT for learning strategies. Following an online learning phase, where participants were exposed to a set of ICT-enhanced teaching strategies and tools, a number of ideas on how to practically implement those strategies were collected among participants. Then, through the organisation of an EduHackathon, a hackathon targeted to university educators, participants had the chance to work in interdisciplinary groups to practically develop those ideas. The pilot experience of the course within UNIR has demonstrated that such an approach can be a valid complement to traditional teachers' training activities in the field of learning innovation and ICT for learning. Participants have actively contributed to all phases of the course, evaluating positively the course approach. Also, the teams formed during the EduHackathon have confirmed their commitment to keep on working on their ideas in the future.

Keywords: Digital teaching · Higher education · Teachers training · E-learning

1 Introduction: How to Train University Educators in Open and Digital Societies

Within Higher Education, the increasing use of Information and Communication Technologies (ICT) and the rising mainstreaming of blended and online teaching practices is challenging educators to be able to meaningfully use ICT within their teaching work. Specifically, new technology-based developments such as social networks and artificial intelligence are fostering collaborative and peer to peer learning, that seems to be a most effective way of learning with respect to traditional lecture-based dynamics [1]. In line with this, the traditional role of educators, as the ones who master the knowledge that needs to be transferred to students, is increasingly being questioned by educational researchers, who appreciate the possibilities offered by open and networked teaching approaches provided by ICT. New forms of active and social

learning are emerging that challenge the traditional role of teachers [2] towards the one of critical friends, mediators and facilitators [3].

This new role of teachers has strong implications on the way educators perceive themselves and interact with their learners. First, considering that learners today have a much easier and fast access to ideas, resources, and environments that can support their learning interests and choices, contemporary teaching should engage the learner in a social process knowledge co-creation instead of just letting them use the learning material presented by the teacher. Second, contemporary teaching should consider learners as individuals and autonomous agents within the learning process, allowing them to operate independently and learn at their own pace, in their own direction, and using their own connections. Third, contemporary teachers should look at their classroom as a learning network, where each connection between students represents a possibility for learning, using peer-to-peer pedagogies and group assignments over self-study and classroom-based didactic learning pedagogies. Fourth, they should focus their courses design on the learning process rather than on specific outcomes or competencies, since this will empower learners to think in terms of problems and solutions and will provide the possibility to inspire new perspectives and ideas. Fifth, learners should be encouraged to make learning choices and allowed to make mistakes, since choosing often leads to unexpected and unpredictable results, and while there is risk associated with the unknown, there is even greater reward and goodness.

In summary, contemporary teachers should be able to take full advantage of the possibilities offered by the open web, including social media platforms, through an increased degree of socialization and interactivity, access to open environments, and opportunities for peer-to-peer collaboration [3]. Ultimately what is at stake is the redefinition of both what it means to be an educator in the context of contemporary educational contexts and institutions and of how students can best learn in contemporary networked societies.

Redefining the role of teachers means changing the way educators plan their courses, license their materials, support knowledge creation among students, and evaluate learners' progress, and is therefore an extremely difficult and delicate process. Meaningfully introducing technology in teaching clashes with the fact that most university educators have never been trained to teach [2]. "The use of technology needs to be combined with an understanding of how students learn, how skills are developed, how knowledge is represented through different media and then processed, and how learners use different senses for learning." [2, p. 420]. This process is even more complicated since it has to do with a major cultural shift within the educators' self-perception, related to the need of rethinking and reshaping the roles played by teachers and students within the learning process and the underpinning knowledge production process, working in an open and transparent environment where all traditional implications of learning design, delivery, and assessment are questioned [4].

Against this background, universities are experimenting innovative ways to build competences of educators to modernise their teaching approaches by meaningfully using ICT in line with the emerging open and networked teaching paradigms. The challenge is to build skills and attitudes starting – in many cases – from very low ICT-

skilled teachers. In particular, the research accompanying the Opening Up Education Communication of the European Commission found that 50%–80% of students in EU countries never use digital textbooks, exercise software, broadcasts/podcasts, simulations or learning games, that most teachers do not consider themselves as ‘digitally confident’ or able to teach digital skills effectively, and that 70% of teachers would like more training in using ICTs [5].

This paper aims to contribute to the debate on how to build capacity of university educators to meaningfully change their teaching strategies through the use of ICT, by presenting a rather innovative attempt to build university ICT for learning teachers’ capacity designed by an international consortium of universities. Part 2 presents the approach and its innovation potential. Part 3 describes the way the approach has been applied in a real-life setting in the Universidad Internacional de La Rioja in Spain. Part 4 analyses the experience, looking for the acceptance rate of the approach among participants and for possible improvement strategies. Finally, Sect. 5, concludes the paper with a summary of the findings and potential future research directions.

2 The EduHack Approach to Teachers Training on ICT-Enabled Pedagogy

The [EduHack.eu](#) initiative, which is put forward by a consortium of universities and research centres from Belgium, Italy, Malta, Spain and the UK with the support of the European Commission, has developed a capacity building course for university educators, based on the idea that to be able to meaningfully teach in an open and networked society, educators need not only to *learn* how to teach with technology, but to *experiment* with it, in an open and collaborative way [6].

The starting point of EduHack is the need for educators to be able to critically use ICT beyond their teaching subject, so as to become examples of digital citizenship for their learners [7]. Many training initiatives are in fact failing in empowering teachers to transfer to students (also by example) the necessary skills that every citizen should master to actively be part of our open and participatory societies. We are talking for example of online identity and personal data management, capacity to legally use open content, ability to engage in intercultural dialogues, critical view on media, capacity to deal with ethical and privacy issues. In order to take these competences into account, EduHack is built on principles of co-creation, collaborative learning and student/learner engagement. In terms of general approach, the [EduHack.eu](#) course is drawing on educational paradigms such as networked learning [8], participatory cultures [9], connected learning [10], hybrid pedagogy [11] and Open Education [12].

The Competences at the Core of EduHack

The [EduHack.eu](#) learning experience starts with an online course, where learners can browse and select among 19 different activities in four areas: digital resources, teaching and learning, assessment and empowering learners. These four areas represent the core of DigCompEdu [13], a competence framework produced by the European Commission that targets educators at pan-European level with the aim to inspire and national and institutional teachers training initiatives [14].

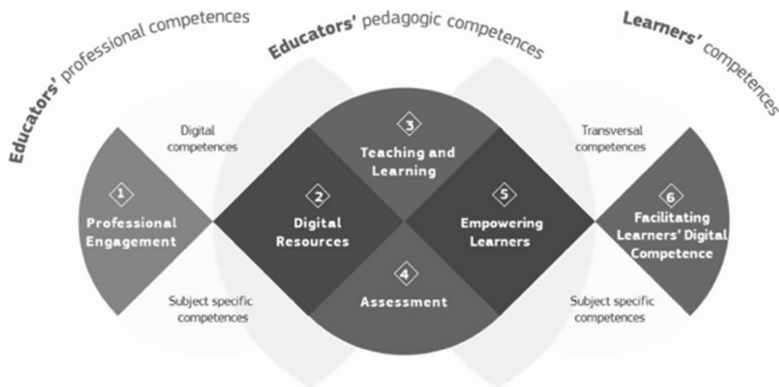


Fig. 1. The DigCompEdu competences framework.

The DigCompEdu structure has been selected as a starting point since it is grounded on a rather holistic understanding of educators' digital literacy. The framework does so by connecting the digital competences that 21st century educators should master (in the centre of Fig. 1) with their professional engagement activities (on the left) and with the impact that teachers can have on their learner's digital literacy (on the right). In other words, the framework connects the teacher's professional development path with the needed competences they shall master and with the impact that these competences shall have on their learners.

By taking such an approach, the DigCompEdu framework does indeed suggest a change in the role of teachers, by introducing meta-cognitive and self-development teachers' competences that will be key in contemporary learning settings based on critical thinking and participation [15]. The framework is built around six areas of competence: (1) to work effectively in an ICT-rich professional environment (2) to find, create and share digital resources, (3) to effectively use digital tools for teaching and learning, (4) to enhance learning assessment through ICT, (5) to empower learners and to foster learners-centred strategies through the use of digital tools and (6) to create digital literacy among learners, in terms of active citizenship and media literacy. The EduHack course is based on areas 2 to 5, that focus on practical knowledge, skills and attitudes that educators need to put in place successful ICT teaching strategies.

Online Activities: Read, Watch, Do... and Reflect

Each activity is composed by three components: Read, Watch, Do. The *Read* section corresponds to a short text with hyperlinks that gives an overview of the specific topic, the *Watch* section presents 2–3 videos (selected among existing openly available resources) that go deeper on the issue, and the *Do* part presents a practical task of the duration of around one hour that aims at putting in practice the knowledge acquired in the first two parts, most of the times thanks to the use of a specific online tool (such as Wikipedia, Socrative, Kahoot or Padlet). Also, each activity is providing a set of additional resources for learners who want to dig deeper in that specific theme. Examples of activities, taken from the Digital resources area, are: Search for Open Educational Resources, Modify existing digital content by using wikis, Create digital

educational resources, Curate and organise digital resources and Apply open licenses to your resources. In order to complete the activity, learners are then requested to reflect on their learning experience in an open way, so to develop also web publishing and blogging skills. Learners can do that through individual blogging or through a common blogging space that is provided by EduHack called the *Wall*.

The Hands-on Experience of the EduHackathon

Following the online course phase, where participants were exposed to a number of possibilities to meaningfully use ICT in teaching and for developing critical capacities of students, learners are invited to gather in presence for an EduHackathon. This event is a hands-on session where participants work, typically in small interdisciplinary groups, on a set of specific ideas to improve their teaching through digital means, based on and inspired by the activities they have run though the online course. The Eduhackathon can take different shapes and have different characteristics depending on the preferences and context of the organising university: it can last one or more days, it can focus on ICT pedagogies in general or on a specific challenge such as open education or innovative assessment, it can be focussed on newbies or on expert teachers, etc. The only requirement of the event is its hands-on nature: during the Eduhackathon, participants are in fact expected to collaborative plan and possibly produce mock-ups or beta versions of the ideas they have selected, so to demonstrate the feasibility of their ideas and their potential impact on their daily teaching.

The EduHackathon methodology has been borrowed from the world of rapid-prototyping, business-incubation and acceleration of innovation activities. In particular, the methodology is inspired by hackathon events, that are typically focussing on computer programming, where coders meet for a period of time to develop prototype products, which are then implemented by funders. Most famously, Facebook uses this method to develop nearly all its products and features. Also, the following kind of events have inspired the EduHack methodology: business accelerator events, which have eventually led to the creation of several well-known startups such as Dropbox, Game-Jams, where developers meet to collaborative develop online games, and problem-based learning approaches, which challenge students to learn through engagement in a real problem.

The Underlying Course Online Ecosystem

In order to support the Hackathon process and to allow a certain degree of virtuality in moving from the online course to the Hackathon organisation, a platform has been developed, based on a SPLOT system [16], to collect and discuss all the ideas proposed by participants as well as to gather, after the event, the digital artefacts created. Further, all the content produced by learners during the course, both in its online and in its face to face phases, are collected in a specific web environment, called *Hub*, that allow appreciating the connections between what learners have learnt during the online course phase and how they have put this in practice during the hackathon. As illustrated in Fig. 1, the EduHack course ecosystem is composed of three platforms: the online course platform, the Hub and the Hackathon web space. Those environments are connected through tagging system, so to allow to search for specific material and to highlight connections between teachers that share the same interests, skills, and areas of focus (Fig. 2).

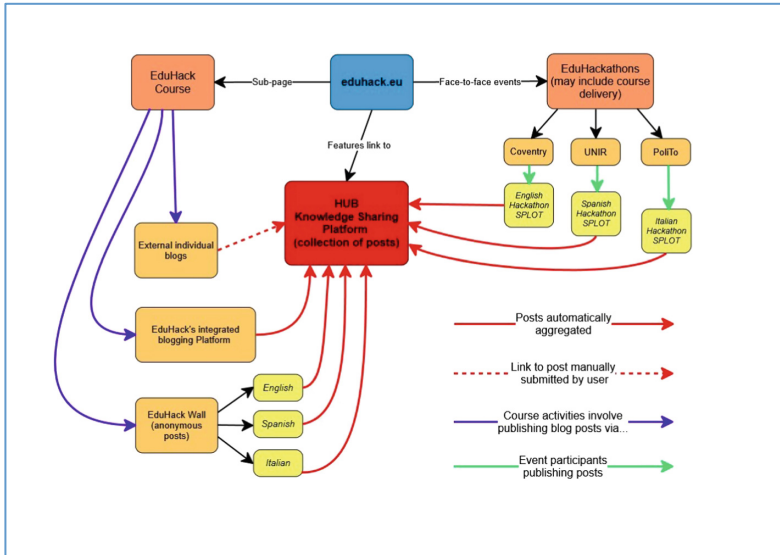


Fig. 2. The EduHack web ecosystem.

3 Description of the Course Pilot

This section will present the first pilot of the EduHack course, that was organised in Spain by the Universidad Internacional de La Rioja (UNIR) in the period April-May 2019. During the period 2019–2020, the project will be organising two more pilot courses in Italy and in the UK, to test the project approach in real-life university settings.

Course Design and Preparation

UNIR is a fully online university, therefore – in line with the flexible approach of EduHack – the online course and especially the EduHackathon were tailored to the characteristics of the institution and especially of the capacity and preferences of perspective participating learners. In the case of UNIR, potential participants are used to teach online, but they do so through the rather uniform approach of the university and are interested in exploring new ways of using ICT tools to enrich their teaching practice. Because of this, the course was designed with the aim to inspire participants to explore potential new tools, to be adapted – during the Hackathon – to the UNIR teaching environment.

During the course design phase, a number of meetings with key stakeholders within the university were organised to plan the course in line with the motivations, the learning styles, and the existing capacity of the target participants. In order to accommodate the preferences of the UNIR teachers. These meetings resulted in two conclusions: the EduHackathon could have been organised attached to the main conference organised every year by UNIR, and at the same time it would have been problematic to have teachers participating for more than one day. Because of these considerations, it was decided to organise a *blended EduHackathon*, where the first

typical phase of work of a hackathon (that deals with presenting, selecting and fine-tuning the ideas), was run online, through the organisation of a discussion Webinar and through collaborative work on the EduHackathon online platform.

Following this design phase, the timing and characteristics of the three phases of the course were designed, as shown in Fig. 3. First, four weeks of online course were held, paced by four webinars aiming at keeping the participants motivated and at answering to their doubts and questions. This phase was followed by an online collaborative moment during which the ideas proposed by the participants for the EduHackathon were discussed and teams were created: seven ideas were presented out of which four were selected to be brought forward by learners' teams. Finally, the EduHackathon took place.

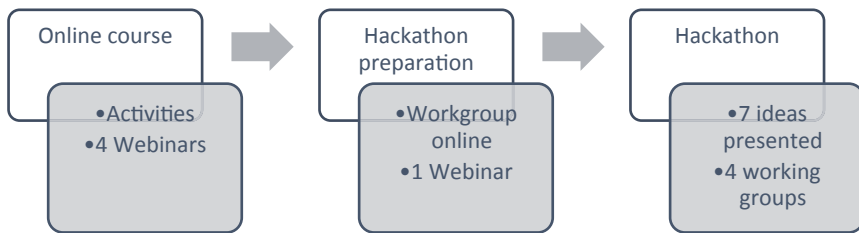


Fig. 3. The EduHack course within UNIR

Recruiting the right participants was key to the course success. This was done through a campaign among the educators community of UNIR, composed of strategic meetings with internal decision makers to motivate them to promote the course among the teaching population of their faculties, complemented by direct mailing to the UNIR faculty members (a total of 3.500 email messages were sent) and by a social media campaign. These activities resulted in a group of 52 registered participants, the majority of them (76%) being from the faculty of education. 8% was from the engineering school, 6% was from the UNIR branch in Ecuador and 10% was from other Spanish universities.

Online Course Phase

During the online course phase, participants were free to select their activities depending on their needs and preference. All the activities were available from day one, even if it was suggested to focus on one area per week. In line with the project approach, in order for an activity to be considered completed, participants had to reflect on the work done with a post on the EduHack online Wall. We registered a total of 165 reflective posts, plus 72 comments for a total of 237 interactions. The great majority of the posts actually reflected the work done within the various activities, providing a number of ideas on how to implement the proposed solutions in the context of the participants' daily work.

Looking at the most-liked activities can help understanding the learning needs of the participants and can help to better targeting the content of the online course for future editions. Even if it is too early to make a judgement on whether some activities should be restructured or improved, it is in fact important to keep track of the learners

preferences. In area *Digital resources*, the three most selected activities were *Search for Open Educational Resources* (taken 20 times) followed by *Curate and organize digital resources* (8), by *Modify existing digital content by using Wikis* (7) and by *Create digital educational resources* (6). In the *Teaching* area, the first activity was *Implement ICT-supported collaborative learning* (13) followed by *Design your own eLearning intervention* (7), *Foster knowledge co-creation among students* (6) and *Use games to improve learners engagement* (6). In the *Assessment* area, the two preferred activities have been *Use digital technologies to provide targeted feedback to learners* (14) and *Experiment with different technologies for formative assessment* (12). Finally, all four activities of the *Empowering Learners* area were taken: *Critically evaluate online tools* (11), *Appreciate opportunities and risks of personalization in learning* (10), *Check technical accessibility of platforms and resources* (9) and *Discover the cost of “free” commercial social media platforms* (7). Two main results emerge from the analysis of which activities were actually taken by the learners. First, all the four areas received a rather balanced attention, showing that the course content approach is in line with the areas of need of the UNIR learners. Second, learners privileged the activities that dealt with fostering learners collaboration, engagement and co-creation. As we will see later, this trend was confirmed by the ideas selected for the EduHackathon.

As said before, in order to demonstrate they had taken an activity, participants were requested to publicly reflect on what they had learnt through the *EduHack Wall*, that has therefore operated as a common open portfolio enabling course participants to show their progresses. As visible from Fig. 4, that presents the work done by participants on the Lino.it space prepared for the project for one of the course activities, the course participants were extremely active not only in exploring the proposed activities and tools, but also in reflecting on how these could be applied in their daily work.

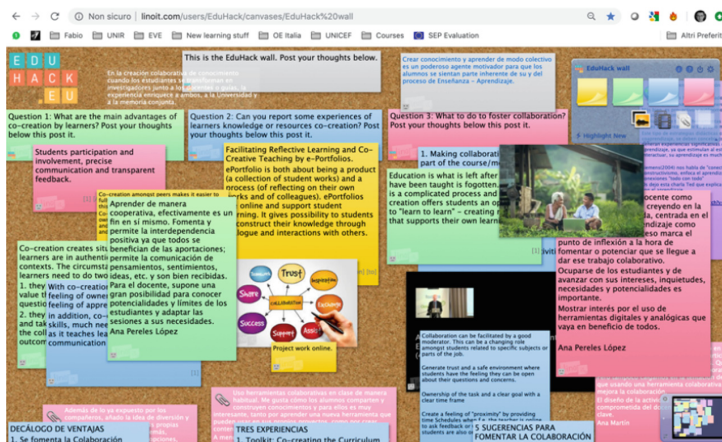


Fig. 4. The Lino.it space created for the course with participants posts

During the online course phase, continuous support was provided by the UNIR team, with 105 answered doubts by email, phone, or through face to face meetings.

Additionally four webinars were organised reaching over 100 attendees overall. While the first two webinars aimed at introducing the course content, the third and fourth webinars focussed on how to move from the course to the EduHackathon.

Ideas Collection Phase and EduHackathon

Following the four weeks of the online course, participants were requested to propose embryonic ideas that could be developed during the EduHackathon. A fifth webinar was organised to support the ideas elaboration process, during which a possible structure on how to present a project idea was provided. Seven ideas were proposed by participants and posted in the EduHackathon online space. During this phase some interesting dynamics took place: two ideas were merged following an agreement among the two promoters, one idea spontaneously gathered a team of three promoters, and all participants prioritised two ideas among the available ones. At the end of the process, four ideas, that had in common an interest for gamification and for learners collaborative knowledge production, were selected by the community to be worked out during the EduHackathon.

The EduHackathon took place in Logroño, La Rioja, Spain, on May, 15th, 2019, engaging 26 university teachers from UNIR. As previously mentioned, the objective of Hackathon was to encourage participants to apply the competences they had acquired through the online course with the objective to collaboratively design new digitally-supported learning experiences, experimenting with creative models and approaches to teaching. The four ideas selected during the previous phase were discussed in details during the event in small groups with the support of the organising staff. Each group was able to produce two things: a mock-up version of the tool or resource that the idea was about and a plan to further develop the idea.

As said before, the ideas generation and discussion phase was run online: this allowed focussing, from the very beginning of the EduHackathon, on practical work around the selected ideas. The EduHackathon was structured along two sessions: one aiming at finalising the ideas in details in a sort of *project form*, also identifying what would be needed to make them viable, and one aimed at preparing a mock-up of the idea to give an understanding of how the project and its outcome would look like. Following these two sessions, the groups rapporteurs presented the state of advancement of their work to the overall participants. All four ideas were presented with a view on a possible future exploitation, either within UNIR or as possible national and international projects. The EduHack team at UNIR will follow up with the teams in charge of these ideas in order to support them to make these developments a reality.

At the end of the EduHackathon, a total of 19 course participants, who had completed at least 8 project activities and had actively participated in the event, received a certificate of participation corresponding to 2 European credits (ECTS).

4 Analysis of the Experience

The EduHack course pilot at UNIR was assessed through two methods: teachers structured feedback, received through an online questionnaire, and participant observation by the UNIR project team. Both methods had in common five analysis

dimensions: (a) acceptance of the innovative model, (b) barriers to participation, (c) main dynamics during the event, (d) collaboration patterns emerging among participants, (e) future improvements.

Learners' Evaluation

Here we are presenting the results of the participants' evaluation of the online course and of the Hackathon, based on 13 responses received from participants.

As far as the online course is concerned, the most important result for the UNIR organising team is that all participants stated that thanks to the online course they had improved their digital skills and their capacity to use ICT in their teaching, and all but one participants stated that they will apply the knowledge they acquired through the course in their professional life. As detailed in Fig. 5, nine participants rated the course active and collaborative approach as very good, four as good, while no negative response was recorded.

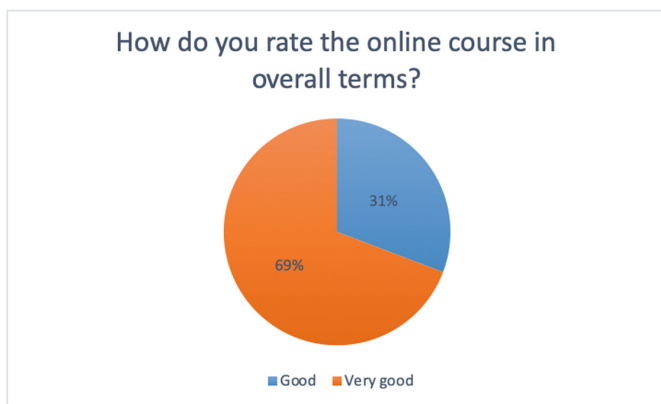


Fig. 5. Participants feedback on the online course

In qualitative terms, participants rated the content quality as well as the *read-watch-do* approach as well-fitting for their needs. Notably, three participants stated that they will use the course materials in the future as a repository of good teaching practices and tools. Also, participants appreciated the possibility to publicly reflect on their learning process and of reading the others' experiences: this confirmed that the reflective approach taken by the course was a valid one. The only negative comment was the lack of time to browse and complete all course activities prior to the EduHackathon, which shows actually a good motivation to explore all the activities of the course.

As far as the EduHackathon is concerned, all participants evaluated the experience positively, with 8 participants stating the EduHackathon approach and the collaborative work during the event was very good and 5 stating it was good. This data is fully confirmed by the UNIR team observation, that noted a very collaborative and creative atmosphere during the event. The feeling was that participants enjoyed a different way to discuss about ICT-supported learning innovation and that they appreciated being *in*

charge of both deciding which activities to take and of choosing which idea to develop or to participate into (Fig. 6).

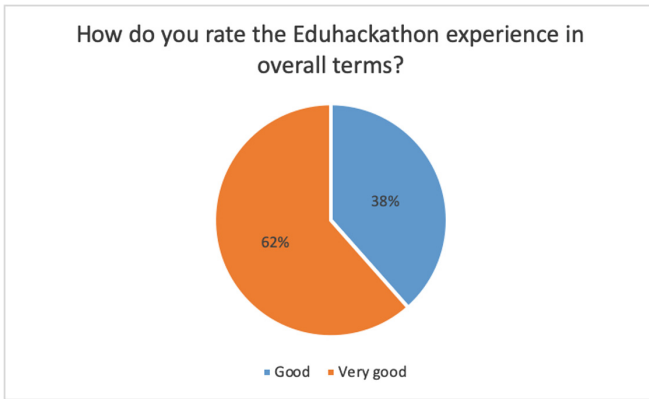


Fig. 6. Participants feedback on the EduHackathon

In qualitative terms, the features that participants liked the most about the EduHackathon were the possibility to get to know and to work with other professors, the interdisciplinarity of the working groups, the time allowed for the preparation process prior to the event and the possibility to further develop the ideas elaborated during the event. Notably, one participant reported that in these times of virtual contacts, taking one day to work hands-on with colleagues on shared problems is a luxury. On the negative side, the main weakness identified by the participants was the short time devoted to the Eduhackathon. This indication, which is somehow contradicting the fact that teachers are normally too busy to take more than one day for an activity such as the EduHackathon, will have to be considered for future editions of the course.

Participant Observation by the UNIR Team

Participant observation [17] has helped the UNIR team in charge of organising the EduHack course to both confirm the participants' feedbacks and to reflect on some important dimensions, that will be considered both by the next pilot courses and by the Guidelines that the project is producing to multiply the course use beyond the consortium can be reported. A first key question has to do with the acceptance of the EduHack innovative model. Participant observation confirmed that the course open and active approach was appreciated by participants. The aim of EduHack was to setup a learning experience that is Active, Open and Collaborative: we can say that the UNIR pilot stressed that such an approach is fitting with the preference of the UNIR participants. In particular, the requirement to reflect on the work done in each activity through an open blogpost did not represent a barrier for participation for learners, on the contrary it was appreciated since it allowed reflecting on strategies to implement the learnt approaches in educators' daily work. It must be noted that the most active participants in

the first pilot were rather experienced and ICT-enthusiast teachers, not newcomers to the field of digital education. A second question deals with the quality and purposefulness of the course content. Participants browsed all the proposed activities and did not provide any negative comment about them. Also, the way the content is presented, in the form of a short text plus videos plus one activity, encountered the participants appreciation. Finally, some participants proposed some further activities to be included in the next course iterations, showing a good degree of ownership of the learning experience. A third issue had to do with the complexity of the course web ecosystem, which did work without any major problem, even if some space for improvement exists. All three course environments (the course contents page, the reflection posts Wall and the EduHackathon web environment) were used appropriately and were rather well connected among themselves. Minor possible improvements were reported, connected to the fact that in an open environment such as the one proposed (where for example it is possible to post in an anonymous way) participants are not able to receive alerts when their posts get commented.

5 Conclusions and Future Work

The underlying hypothesis of the EduHack initiative was that by applying an active, participative and open approach to university teachers training in the use of digital approaches, teachers would not just acquire new knowledge, but rather would be able to experiment with practical activities, through an approach that we have codified as “Read, Watch, Do”. The research run around the pilot experience of the course within UNIR has demonstrated that such an approach can be a valid complement to traditional teachers’ training activities in the field of learning innovation and ICT for learning. In order to develop educators’ digital competences, that are able to respond to the need of empowering students for open and participatory societies, we believe in fact that traditional teachers training and innovative hands-on experiences such as EduHack should coexist. “Digital literacy is not a new literacy. This is to say, if digital literacy is simply reading and writing in a digital environment, there is no need for the new terminology. (...) Let us then accept digital literacy as a genre, a format and tool to be found within the domain of standard literacy, rather than a concept standing at odds” [18, p. 535].

Participants active contributions to both the online course and the face to face event, as well as the connection between the course content and the ideas proposed and worked out during the Eduhackathon, are indeed promising results for the mainstream of innovative teacher training approaches. This confirms that educators’ digital literacy, being a complex and socio-culturally sensitive issue, should be understood as a set of situated practices and attitudes. Digital literacy is in fact much more than the capacity to use ICT tools, and it should rather be considered as a set of capabilities associated with interacting with peers through digital tools, where the core is about communicating and collaborating with others and making sense of the available information [19]. The positive results and especially the participants’ enthusiasm around the EduHack pilot

course demonstrate a good readiness degree to engage in capacity building activities aimed not only at marginally improving their daily practices but also at transforming their role within contemporary open and collaborative learning settings.

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