Coursevo: A Multimedia Online Learning Platform to Support Onlife Communities and its Extension with Gamification Facilities

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Abstract. Coursevo (http://coursevo.com/) is a multilingual multimedia information system for managing courses, supporting learning processes and learning communities through the Web. Its multi-tenant architecture supports multiple instances of the underlying server infrastructure using the same core to serve the needs of multiple communities. An advantage of Coursevo in comparison with other eLearning systems is the emphasis that is given in the use of multimedia as a powerful learning means. Learning activities using multiple media can be more effective than doing it through a single medium (such as text), but what is important is combining media effectively. Coursevo is used in several vocational training and life-long-learning initiatives to establish and continuously support Onlife Communities. An Onlife Community is an aggregation that emerges in hyperconnected spaces when humans engage with other humans as well as with machines and natural entities in mindful interactions with sufficient human feeling to form webs of personal relationships. The paper presents how Coursevo is extended with gamification facilities to enable game-based learning scenarios within the context of the GAME IT project and beyond.

Keywords: Onlife Communities, Gamification, eLearning.

1 Introduction

The global competitiveness in economy the last years confirmed the need for an investment in knowledge development, to ensure not only basic literacies but also to secure

research development and growth for a sustainable future. To address this need the traditional model of education is not enough. We should underline, though, that traditional education, mainly relying on the so called "industrial model" of organization and management was an important innovation in itself as it bought education to the masses of people in the western countries, initially, and then to the whole world. For many years this model has prevailed, producing a sustainable education model and ensuring a steady flow of individuals to the tertiary sector. With the advent of the computer and the possibility of technology for the masses a belief was affirmed amongst governments and educationalists that technology would take education forward and there would be even greater benefits. This belief led to huge investments in the purchase of various types of hardware and software systems that would render the organization a solution that would not only meet their needs but surpass their expectations.

The prevailing mentality coupled with the "industrial model" of teaching is that the introduction of digital technology is the critical factor to modernize teaching and reap the benefits of ICT. This mentality is promoted by technology vendors that seek a way to increase their sales as well as governments that want an easy way to advertise their willingness to put forward "educational reforms". However, this prevailing mentality and resulting policies, fail to follow the practice of people when it comes to the use of technology for learning, especially outside the walls of classrooms. With the proliferation of ubiquitous computing technologies (especially mobile technologies) and the wide use of social networks to promote new personal learning opportunities, many people worldwide pursue a personalized approach to technology use and learning (Grant & Michael, 2015). This personalized mode of learning, which flourishes outside official educational systems and their "industrial mode" of teaching presents many challenges and opportunities for effective integration into mainstream education and professional training. This new way of learning is ideal for addressing life-long learning settings, especially when it comes to the need to continuously update and extend the technical knowledge of engineers, technologists and teachers in related disciplines.

To adequately address this need of recognizing and promoting the personalized use of technology to meet individual learning and training needs, there is a clear need to design and develop appropriate learning platforms and use them within appropriate learning and training frameworks for diverse learning modes ranging from face-to-face teaching and training to distant-learning. Pedagogical approaches that are focusing explicitly in the integration of technology to enable the set-up of learning environments that promote personalization are directly or indirectly related to the theory of constructivism (Duffy & Cunningham, 1996) a paradigm for teaching and learning that promotes personalization and rich interactions to offer opportunities for knowledge construction in a personally meaningful manner.

This paper suggests a new approach to teaching and learning employing digital technologies that goes beyond the traditional way to organize learning processes within virtual communities towards the so called *onlife communities.* Onlife communities incorporate contemporary trends related to the proliferation of digital technologies and the emergence of Internet of Things and Embedded Systems that make it possible to extend physical objects with new affordances, thus offering richer learning experiences and creating a much more dense web of personal relationships between members of a

community. This approach is complemented with a generic design for gamified learning experiences. The platform under consideration is Coursevo and we give all the details regarding how it supports the concept of onlife communities and how its existing features are extended to implement a generic gamification design.

2 Concept and Rationale of Onlife Communities

The overarching term that provides an inclusive framework to address all approaches that emerge in understanding and framing how people use modern digital technologies to establish effective ways of sharing knowledge, experiences and practices, develop skills and competences, socialize and enhance traditional ways of intimacy and interaction is without doubt the term virtual communities. In the following paragraphs, we present a historical overview of how this term emerged, speculate on its shortcomings and, finally offer a new term that tries to overcome these shortcomings: Onlife Communities.

2.1 The History of Virtual Communities and the Shortcomings of the Adjective "Virtual"

The term virtual community was coined by Rheingold (1987) in his seminal essay "Virtual communities – exchanging ideas through computer bulletin boards" where a virtual community is described is an emergent phenomenon initiated by a group of people that use networked computers to exchange messages or ideas[1]. The members of the group may well meet physically or not. However, not all such exchanges of messages and ideas end up in the establishing of a virtual community, which is an emergent phenomenon adhering to certain criteria (Rheingold, 1987):

> *"Virtual communities are **social aggregations** that **emerge** from the Net when **enough people** carry on those discussions **long enough**, with **sufficient human feeling**, to **form webs of personal relationships in cyberspace**."* [Emphasis added]

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[1] The first predictions, though, that computers organized in networks will give rise to this new social phenomenon were made in the 1960's by Licklider and Taylor that engaged themselves in research and development efforts to design and showcase the technologies that created ARPANET, the first virtual community. They wrote (Licklider and Taylor; 1968): *"These new computer systems we are describing differ from other computer systems advertised with the same labels: interactive, time-sharing, multi-access. They differ by having a greater degree of open-endedness, by rendering more services, and above all by providing facilities that foster a working sense of community among their users. [...] In most fields they will consist of geographically separated members, sometimes grouped in small clusters and sometimes working individually. They will be communities not of common location, but of common interest. In each field, the overall community of interest will be large enough to support a comprehensive system of field-oriented programs and data. In each geographical sector, the total number of users—summed over all the fields of interest—will be large enough to support extensive general purpose information processing and storage facilities. All of these will be interconnected by telecommunications channels. The whole will constitute a labile network of networks—ever-changing in both content and configuration."*

The above definition clearly emphasizes the social, subjective and time aspects of virtual communities: The social aspect is indicated by the observation that virtual communities are social aggregations where an adequate number of people participate and create personal relationships. The subjective aspect, i.e. the way each person experiences this connection with the others, is important and refers to the existence of sufficient human feelings without which there is no sense of belonging, no real connectedness between the members of the virtual community. Finally, there is a clear time aspect that is related to the emergence of the virtual community and its duration. Following this aspect, it is clearly possible in a certain situation to identify the existence of technology and possibly an adequate number of people that use this technology to connect with each other, but no community to establish or emerge because of the transient or temporary nature of the social and subjective context that is created. There are situations of transient or occasional social aggregations that do not have an adequate duration.

In light of the observations made above, we believe that the term "virtual community" although widely used is not appropriate for our purposes. A first critique is that this term does not adequately address the performative aspect of human behavior, especially as it is transformed by the advent of digital technologies. This is evident from Rheingold's definition cited above. This definition focuses on the structural aspects of virtual communities, i.e. that they are social aggregations around discussions. In this respect it is logically implied that the community is essentially the network, the set of nodes (people) and links between them. However, from a performative point of view (Moumoutzis et al., 2020) we should underline that if being is becoming, if self is something that is constantly changing, a dynamic process that is constantly (re)constructed then community is also a dynamic phenomenon and, consequently, a virtual community exhibits an even more dynamic evolution. In this respect, the emergence of a community, cannot only rely on vague criteria like "enough people" or "long enough" engagement in discussions and "sufficient human feelings". This vagueness is certainly related to the adjectives "enough" and "sufficient". How can we measure those quantities to decide if a virtual community has emerged or not? Why not give a chance to "not enough" people engaged "not long enough" in discussions to form a virtual community if "sufficient human feeling" exists? Consider for example a casual encounter of just two persons, a man and a woman, that meet for some days or even only one night and, as a result of this encounter, a strong mutual love emerges that may bond these two persons for years in separation before they meet again (or never meet again). The literature is full of such stories! Why not consider such encounters equally possible in the Net? On the contrary, a performative term would certainly account for such boundary cases on the basis that they have a significant impact on the participating persons: They are not the same persons after such kind of encounters, they become new persons. Indeed this is a critical quality of any community: Its power to change its members. Actually, it is the presence of this kind of power that makes traditional communities what they are! Why not attribute such power to virtual communities as well?

Apart from failing to address the strong performative aspect found in traditional communities, the presented framing of virtual communities, suffers from yet another significant shortcoming: The word virtual is loaded with negative connotations in the way it is currently used in every day communication. According to Wikipedia, the word

"virtual" is used to describe an item "when it is a representation or non-tangible abstraction of the physical object, or is a functional emulation or simulation of it". Consequently, a virtual thing presents itself like something that exists (or could exist physically) but it does not really exist. It's a mere representation, an abstraction, a simulation. We want to study communities not as substitutes of physical communities, but as extensions of them, as a rich environment for social interaction that has a purpose and real consequences in the world. In this respect we seek a term that will make clear this intention we have.

In search for an alternative terminology, we turn into a recent development by philosophers and scholars that study how modern digital technologies are changing our world. We refer to the Onlife Initiative (2015) that is presented in the next section.

2.2   The Onlife Initiative

The Onlife Initiative (2015) started as a project envisioned and implemented directly by the EC's Information Society DG in 2012. The project intended to explore the extent to which the digital transition impacts societal expectations towards policy making. The project outcome was the Onlife Manifesto (Floridi, 2015). The baseline of this text is that advent of digital technologies in all aspects of life has fundamental consequences in the human condition. It affects our reference frameworks, in a number of different domains including:

1. our self-conception (who we are);
2. our mutual interactions (how we socialize);
3. our conception of reality (our metaphysics); and
4. our interactions with reality (our agency).

The members of the Onlife Initiative decided to adopt the neologism "onlife" that Luciano Floridi had coined some years ago in order to refer to the new experience of a hyperconnected reality within which it is no longer sensible to ask whether one may be online or offline. Within this new reality that is brought about by digital technologies and their ever-increasing pervasiveness four important transformations are happening:

a. the blurring of the distinction between reality and virtuality;
b. the blurring of the distinctions between human, machine and nature;
c. the reversal from information scarcity to information abundance; and
d. the shift from the primacy of entities to the primacy of interactions

These transformations are testing the foundations of our philosophy, in the following sense, as exposed in the Introduction to the Onlife Manifesto (Floridi, 2015):

*"**Our perception and understanding** of the realities surrounding us **are necessarily mediated by concepts**. These work like interfaces through which we experience, interact with, and semanticise (in the sense of making sense of, and giving meaning to), the world. In short, **we grasp reality through concepts**, so, when reality changes too quickly and dramatically, as it is happening nowadays because of ICTs, we are*

*conceptually wrong-footed. It is a widespread impression that **our current conceptual toolbox is no longer fitted to address new ICT-related challenges**. This is not only a problem in itself. It is also a risk, because the lack of a clear conceptual grasp of our present time may easily lead to negative projections about the future: we fear and reject what we fail to semanticise. The goal of The Manifesto [...] is therefore that of contributing to the **update of our conceptual framework**. It is a constructive goal. We do not intend to encourage a philosophy of mistrust. On the contrary, this [...] is meant to be a positive contribution [...] so that we may have a better chance of understanding our ICT-related problems and solving them satisfactorily. Redesigning or reengineering our hermeneutics, to put it more dramatically, seems essential, in order to have a good chance of understanding and dealing with the transformations in (a)–(d) and hence shape in the best way the novelties in (1)–(4)."*
[Emphasis added]

2.3 Onlife Communities

We adopt the term onlife from the Onlife Manifesto to signify the current reality expressed by the above mentioned transformations (a)-(d) that directly address *"the shift from the primacy of entities to the primacy of interactions"* and go one step forward to embrace what process philosophy argues with respect to the primacy of *events* and *processes* as interactions between entities that are *becoming* through their interactions with other entities. This way, the major claims of the Onlife Manifesto can trigger very interesting consequences when the concept of *community* is brought into play with respect to the double blurring (a) between reality and virtuality and (b) human, machine and nature. Consequently, *Onlife Community* signifies the transcendence of "virtual communities" with the following tentative definition:

> ***Onlife Communities are aggregations that emerge in hyperconnected spaces when humans engage with other humans as well as with machines and natural entities in mindful interactions with sufficient human feeling to form webs of personal relationships.***

Note here that this is an adaptation of the notion of "virtual communities" keeping only the absolutely necessary precondition (sufficient human feeling) and extending the domain of interactions to incorporate machines and natural entities. Machines, here, are to be conceptualized as *universal objects* that are superimposed on other machines, natural entities or even humans to provide causality over the underlying chaos of the physical reality. As Brenda Laurel (2013) puts it:

> *"The fact that people seek to understand causality in representational worlds provides the basis for Aristotle's definition of universality. In the colloquial view, an action is universal if everybody can understand it, regardless of cultural and other differences among individuals. This would seem to limit the set of universal actions to things that everyone on the planet does: eat, sleep, love, etc. Aristotle posits that any action can be "universalized" simply by revealing its cause; that is, understanding the cause is sufficient for understanding the action, even if it is something alien to one's culture, back-ground, or personal 'reality'."* (Laurel, 2013, p. 94)

It is important to understand that the "blurring of the distinction between reality and virtuality" in the hyperconnected era is related to the transformation of real world objects into universal ones, following the above Aristotelian definition as described by Laurel. A real world object or process that has been enriched with new capabilities for interaction with humans via computer hardware and software integrated into it is more understandable in terms of causal relationships, more predictable in terms of its behaviors, less chaotic in its reactions to human actions.

Consider any kind of cyber-physical system such as autonomous automobile systems, medical monitoring systems, robots, or autopilots. All these systems are essentially enhancing real world objects or processes with "computer intelligence" that makes them more human friendly: easier to understand and interact with them. Due to the embedded digital technologies the capabilities of such objects or processes seem more "natural" as they provide affordances that are more intuitive for humans interacting with it.

In this respect, the meaning of the word virtual is not to be used as a synonym for artificial as in terms like virtual reality or virtual world. It is rather reframed to denote potentiality as being equally real to actuality, but in a different manner. This is exactly what Deleuze describes in his treatise of Bergsonism (Deleuze, 1966, pp. 96-98). This potentiality that is the essence of Deleuze's virtuality is the key concept that enables the exploration of how human Logos (reason), through causality, is transforming disconnected reality into hyperconnected stages where meaningful action and interaction is possible.

We could then stick to the adjective "virtual" to describe the new kind of communities brought about by digital technologies. However, we think it is more adequate to propose a new adjective instead to try to impose a new meaning to a word that has already a specific use in everyday language as we have already exposed.

3   Coursevo Use in the GAME IT Project

Within the context of the GAME IT project, a Coursevo (2021) platform instance has been deployed and being adapted and extended with core gamification features in order to be used for the set-up of the project course for mobility preparation of disadvantaged learners in the tourism and hospitality sector. The course will be available in two versions one for IVET and one for CVET. Furthermore, it will be localized in the national languages of the participating countries. This paper describes how this can be achieved using the already available functionalities and services of Coursevo along with the new functionality currently being implemented to support gamification elements that are expected to increase student engagement.

Before going into the Course organization using the underlying services and functionality (already available or being implemented), it should be noted that Coursevo is essentially a generic infrastructure that provides access to diverse repositories of learning resources to enable wider sharing and networking of the learning communities (Pappas et al., 2017). It integrates functionalities that allow for the flexible organization of digital content in collections, providing searching services that facilitate identification

of relevant content and its reuse. Apart from content organization and reuse, the platform provides effective communication services to enable online learning activities and communication between learners, before, during and after the learning activities that they are participating in within the overarching framework for onlife communities presented in the previous section.

The platform can also offer a reference point to external parties that wish to exploit project results to enrich current curricula and learning activities related with the GAME IT project topics. To enable the wider possible dissemination and reuse of the collected educational resources, the platform facilitates the use of Creative Commons licenses (CC) to provide certainty and clarity in the digital access and use of the underlying content. CC simplifies the administrative proceedings relative to the transaction of author copyrights. They grant to the author the possibility of designing a customized system of usage rights cession on the generated resources, allowing, for example, to establish a double system, in terms of economic rights: Free use of the resource for educative or without intention of profit uses, and at the same time, payment for use rights if the work is used with commercial aims.

In the framework of community building activities, particular emphasis is given to promote the development of communities of practice among the project's target groups. To this end, a community is launched to involve all users participating in the project into a continuous process of experience exchange and of continuous collaborative learning process.

In summary Coursevo allows for the organization of the learning material in digital form, the planning and elaboration of individual and group projects in the context of various types of educational activities, including activities foreseen in the project proposal such as multiplier and training events

Joining an activity space is an easy task that presupposes the existence of an account. One can sign in the platform by using his/her favorite social network credentials. There are two (2) options: to sign in with Facebook, or to sign in with Google. Alternatively, one can create a local account by pressing the button "Sign up Now "and enter his/her personal information in order to create a local account. There are specific policies that can be configured for the registration (free, moderated or security code registration) and the access (open or locked) of an activity space.

The GAME IT Coursevo instance can be accessed at https://gameit.coursevo.com. Currently, one project activity space is available that is used by the project partners to organize their regular teleconferences. This activity space also hosts the recordings of all teleconferences and can be used in the future as an alternative channel for message exchange (via its forum functionality) and/or for uploading of project materials (as an alternative to the Google drive currently used). After finalizing the GAME IT Curriculum, new activity spaces will be set up to host the two versions of the project course (for IVET and CVET), initially in English and finally in the national languages of the participating countries (one Coursevo activity space for each course version per language).

4 Establishing and Supporting Onlife Communities with Coursevo

4.1 Activity Spaces in Coursevo

The central concept for organizing content and people in Course is the concept of activity spaces. Activity Spaces are essentially a way to organize people and supporting services in different ways depending on the aim of the activity. In particular, Coursevo, support the following three types of Activity Spaces:

- **Courses** are activity spaces that provide all the necessary functionality to organize teams of distant-learners and offer training services to members of a community. This type of activity space can support various types of real world activities such as training events, multiplier events, short-term or longer-term workshops, courses undertaken within the context of a training programme etc.
- **Repositories** are activity spaces that provide functionality to collect and organize digital content in the form of Open Educational Resources so that it could be shared among the members of a community of practice. They essentially have functionality also available in the other types of activity spaces that facilitates the collection and organization of digital content. The difference is that in Repository Activity Spaces, the published content is expected to be quality checked and, thus, appropriate for wider dissemination even beyond the members of the communities of practice that developed it initially.
- **Projects** are activity spaces that aim at organizing teams of collaborating members of the community of practice with certain objectives (e.g. to organize a course or implement a specific event or other tasks).

4.2 Main Features of Coursevo

A number of tools and services can be activated whenever needed and used in any activity space (course, Repository or Project). The most important ones are presented next. To avoid confusion the presentation assumes that the corresponding tool or service is used within a course activity space (in case of other types of activity spaces the terminology and minor details of functionalities are different):

Course page: The course page is the entry point of a course and contains information regarding the course (title, description, objectives, etc.) and the responsible coordinators and main tutors. The main page can also contain information of the structure of the course, documents describing the course (such as the course syllabus) and also an introductory video that can be rendered by clicking the main activity picture and give a brief overview of the course.

Registered users: Every registered member can browse and view the public profiles of the learning community by selecting the option "Registered Users" on the left menu. The contact points and the information that the public profiles can contain are described later in this document.

Announcements: All announcements that have been posted are presented in the main page of this service. Whenever an announcement is created by the course coordinators or administrators it is added in the announcement board and optionally is sent by email to all course participants. This is a common and also important informative service in a course framework.

Calendar: All events in the course can be organized by using the Calendar service. By visiting this page the course participants have the opportunity to browse and get more information about past or forthcoming project events. Each event is attached with date, time and duration info along with an extended description.

Digital Content: This service takes over the storage and the organization of all digital material available within a course. The "Digital Content" service allows the creation of categories that will hold the digital resources. All content is processed in the system and an embedded quick view of common office documents, images and html pages is available. Audio-visual content is also automatically processed to enable the web-friendly viewing of such content.

The system also supports versioning of digital items and full history of uploaded digital items making possible to restore previous versions when this is needed. In of a course activity space, the digital content service enables the uploading of all course materials including references to external sources access via URLs. Further organization of the digital content to enable sequencing (a very useful feature for learners to provide orientation and study guidance) is provided via the Course Structure (see next).

Forums: In the forum space, course participants have the opportunity to discuss various topics, cooperate and exchange digital resources. This service can be configured optionally to allow automatic notifications of new posts and is an effective service that supports the asynchronous communication among the partners. The course forums are organized in categories that can host different discussion topics. The users are able to configure the notification service according to their preferences and by discussion topic.

Meeting Rooms / Classrooms (Video Conferences): When synchronous communication is needed, the "Classrooms" service of the platform can be exploited. The coordinators of a course can schedule meeting rooms by defining the date, time and duration of the meeting.

A classroom contains also a title and a description. When a classroom is created there is the option to automatically send email notifications to all course members. These notifications also contain a direct link that the users can follow to join directly the specific classroom. Alternative one can visit the course classrooms to view all future or past sessions. Finally, there is an option to live stream a video conference via YouTube in case of a public event.

During a video conference, the participants can communicate synchronously by using video, audio and text. All sessions can be recorded and keep track in this way of all project's meetings. When a recording is available the appropriate button with label "Playback" is active in the room panel as shown in the figure 6 below. The recording of a live session can be paused and continued at any time, giving the opportunity to the project coordinators to create multiple recordings of a live session. The use of breakout

rooms is also possible thus enabling the organization of discussion groups and/or working groups during a video conference.

Functionalities supported during a video conference include:

- Mute/unmute a participant's microphone whenever you wish by pressing the button on the top of the environment.
- Enable a participant's web camera using the camera button
- View the list of participants
- View the video of web cameras
- Presentation of slides
- Text messages of participants
- Writing text messages and sharing them with all participants

Course Structure: The "Course Structure" service presents all course activities. Each course can have an extended description and is associated with a collection of multimedia digital resources or other relative information from platform services such as discussions, announcements, questionnaires, polls etc. The "Course Structure" service facilitates the common view of the course activities and tasks and serves as a common monitor of the course progress per participating learner. Furthermore it is used to enable a sequential path in the course material and activities by participants. During this sequential access of the course structure, the course coordinators are able to see the progress of each participant while each participant can see when in the overall sequence he/she is currently. The elements of the sequence are initially inaccessible and become gradually accessible based on the participant's progress.

Workspaces: Learning activities may contain work that should be done in teams. Via the TIM platform the members can easily select their teammates and form working groups. The platform provides these groups with a virtual space called "Workspace" where they can view all working teams and have access to assignments and reference material. The work groups can also use private spaces for communication (forums, meeting rooms) and can upload digital content when a digital deliverable is requested.

Scheduling resources – Reservations: When performing a learning activity it is often useful to schedule the access of a limited resource. For example in the framework of the TIM methodology a training event may be needed that contains a theatre play with a small number of participants that all learning community should practice on. In such cases the "Reservation" service of the platform can be exploited. In this service the trainers are able to define the resources, the time availability slots and the participant capacity. The community members can reserve their participation and an automatic schedule is created that easily organizes the access to the educational activity resources.

5   Gamification in Coursevo

In summary, the overall approach to facilitating the gamification of learning experiences in Coursevo in order to address the needs of the GAME IT project, is based on a number of gamification mechanisms that can be found in the corresponding literature

such as Zichermann & Cunningham (2011). The table given next adopts the terminology used in that book to identify the gamification mechanisms that are adopted and presents in summary how the mechanism is or will be offered in the learning platform.

Table 1. Implementation of Gamification elements in Coursevo.

Gamification mechanism	Platform support
Badges - Reward the students for certain achievements	IMS Open Badges (https://openbadges.org/) Additionally, certificates are issued based on certain achievements. Both badges and certificates will be issued when certain criteria regarding grades (see below) are met. In particular for each badge or certificate, the Course coordinator selects one or more grade categories and gives the minimum number of points necessary to earn the badge or certificate. See rows below how grades are linked to certain statistics or goals achieved by students.
Points – Motivate students to work towards certain objectives	Points correspond to categories of Grades that are either provided by the system or specified by the Course coordinators. To specify how the corresponding points are accumulated, the Course coordinator has to specify grading of projects-exercises (missions - see below) and how system statistics are transformed into points. Manual grading is also possible (e.g. if the Course coordinator wants to award points for activities or performances that are observed outside the platform or need the intervention of teachers in order to be evaluated.
Leaderboards – Provide information about the performance of students	List of registered users in a Course and possible sorting based on certain criteria (e.g. badges earned, grades, etc.)
Missions – Provide engagement for student assignments	Projects-exercises in Workspaces.
Levels – Provide feedback and motivation for student progress	Levels are modelled as different badges connected to certain grades' categories where each different badge corresponds to different range of points.
Unlocking levels – Gradual access to certain materials and activities	Supported for the whole class depending on the progress in the sequence of the course activities (visible/not visible of certain units/lessons). Another way is to use the visibility property of certain digital content items, thus controlling when they are visible to the students.
Experience – Award students for reaching certain goals	Correspond to certain type of grades (points) that are linked to certain system statistics such as: • Number of forum posts • Time connected in teleconferences

Gamification mechanism	Platform support
	• Time connected in the platform • Number of downloads of course materials • Other possibilities are open based on the needs of the GAME IT Course
Avatars – Enable students develop their own identity within the Course	Each student has access to his/her profile and he/she is able to provide name, short cv. If these elements are used appropriately they can correspond to an avatar and not to the real identity of the student. The user profile also provides information about the participation of the student and will be enriched with the new elements (badges, points/grades etc.).
Appointments – they refer to certain time constraints to do a certain action in order to get a reward	This corresponds to project-exercises deadlines that specify when a certain mission should be accomplished. Rewards are points/grades corresponding to a certain mission/project-exercise.
Progress - Record the progress of the player in the Course	This is reflected in the information shown in the students' profile along with information on what needs to be achieved in order to earn more badges. Not all information will be available to the use profile. Student progress will be visible to the Course coordinators

Apart from the gamification elements listed in the table above, the learning platform supports a mechanism for sequencing the activities within a Course via the Course Structure feature described in the previous section. As soon as a Course Structure is defined for a course, the course coordinator is able to activate the sequencing service so that students are able to follow the structure step-by-step. The course coordinator is able to see the progress of all students. This feature will be further enriched with additional information for the course coordinator to make the monitoring of student progress more effective.

For the gamification of student assessments simple external tools are adopted that are linked to the Course material such as Kahoot (https://kahoot.com/) and Learning Apps (https://learningapps.org/).

6   Conclusions

As ICT advances, there are many research and development efforts focusing on the design of learning and training frameworks that take advantage of digital technologies to offer effective blended- and distant-learning opportunities for all kinds of students as well as for professionals during their vocational training and subsequent life-long learning paths during their career. In many cases, over emphasizing the technological means to build such frameworks leads to poor results and increases the disbelief in technology. The approach reported in this paper, tries to set an equilibrium between technology and pedagogy by offering a platform that is pedagogically informed and

combined with an approach that explicitly focus on professional training and continuous learning support within an overarching framework informed by current developments in reconceptualizing social structures within the so called hyperconnected era.

The learning design for the training framework presented in this paper puts particular attention to using a platform (Coursevo) that, in addition to supporting expected functions such as digital content repository, communication tools like personal messages, forums and teleconferences, it supports asynchronous and synchronous training sessions and gamification. The design has also taken particular care in integrating those features of Coursevo with an effective learning approach, namely onlife communities, where trainees develop their knowledge through a variety of interactive sessions involving information provision, discussion, evaluation and practical exercises. Trainees have the possibility to access the training material in the form of guides, documents, templates and invited to develop their own material, whenever possible, with the opportunity to access mentorship at every stage of the process. The approach also promotes a mixture of online learning with face-to-face meetings in a blended-learning setting that tries to exploit the best practices of both modes of interaction.

Acknowledgments

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