Weturtle.Org: A Web Community for Teacher Training and Sharing Resources in Educational Technologies

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Abstract In recent years, there has been a stronger than ever need in Italy for teacher training in digital skills and pedagogical and teaching innovations. This is also due to an increase in national funds and European resources available for innovation in the field of education. This paper first describes the main innovations in learning that are made possible by web-based and other technologies, and how they currently meet teacher training needs. Next, the authors present Weturtle.org, a practical example of a “Community of Practice” and the TPCK model, which enables an integrative view at the subject, pedagogical and technological levels, to face the challenge of learning innovation. In the middle section, Weturtle.org is described with a focus on the opportunities for teacher training and validation, not only as an active user of the community, but also as a trainer him or herself. Finally, the authors present browsing data from October 2018 to September 2019, final considerations and future developments for the platform.

Keywords Teacher training · Educational technologies · TPCK framework · Community of practice

1 Introduction

The evolution of digital products and services currently makes it easier to introduce technology to educational contexts for the purpose of fostering learning processes. This perspective has already been theorized in the pedagogical model of constructionism [1], in which learning is described as a process of constructing mental models, made possible by the collaborative construction of tangible objects (also called “public entities”) through technologies.

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Weturtle.org, the web community described in this article, represents an attempt to translate, in concrete terms, the integration of educational technologies and pedagogical models, inspired by the constructionist approach, and academic subjects.

The platform was designed by the startup TALENT srl, which has been active in the field of educational technologies for about four years. The company's mission is to promote educational innovation in schools and the development of soft skills, critical thinking and other human qualities in students, through the use of technological devices.

In this article, after an introduction on the current status of this technology in Sect. 2, the platform itself will be introduced in Sect. 3, followed by browsing data from October 2018 to September 2019 (Sect. 4); the final section presents final considerations and future developments for the platform.

2 Current State of Affairs

2.1 Training Needs in Digital Skills Among Italian Teachers

In recent years, the increase in resources and opportunities for teacher training in digital skills and didactic innovation, made possible by national and European investments, has paved the way for several changes in Italy.

An important boost came with the “La Buona Scuola” [2] (Good School) law, and was followed by a strategic plan for teacher training for the 2016–2019 period [3]. In the international context, 2017 saw the publication of DigComp 2.1 [4], the European framework for national policies on digital skills for citizens, and DigCompEdu [5], aimed specifically at teachers, educators and education stakeholders.

However, there are still critical issues in Italy, where there is only partial penetration of digital skills in schools. The 2018 Teaching and Learning International Survey (TALIS) [6] showed that only 47% of secondary school teachers regularly allow students to use technology in projects or classroom work, which is below the average in OECD and TALIS countries (53%). This can be partly explained by the average age of Italian teachers, which is currently the highest among OECD countries (49 years vs. an average of 44) and by the fact that only 52.2% have used teaching technologies in their formal education, against an OECD average of 56% and a TALIS average of 60.3%.

Regarding continuing education, although 68% of teachers in the 12 months prior to the survey participated in training that included teaching technologies, this is still the area of professional development where they report the greatest need. Only 35.6% of Italian teachers (OECD avg.: 42.8%, TALIS avg.: 49.1%) feel sufficiently prepared to use educational technologies.

Also, the context makes it difficult to use technology in schools: 31% of school managers report that the provision of quality education in their school is hampered by a lack or inadequacy of digital technologies for education (OECD avg.: 25%).

2.2 *Weturtle.Org: Between Theoretical Models and Changes in Online Learning*

Global innovations in online learning and training. Weturtle.org has its roots in an international trend marked by recent experiments based on web technologies that are transforming learning into a widespread, accessible, personalized and participatory process within online learning communities.

One example is the global Open Educational Resources (OER) movement, which, in many countries, has provided the impetus for individuals and institutions to share educational resources on thousands of educational sites and e-learning platforms, such as Moodle. Another relevant project is eTwinning, a platform launched as part of the eLearning Program of the European Commission. Its purposes is to enable teachers and staff in schools in many countries to collaborate and carry out projects within a European community of teachers.

MOOCs (massive open online course) are another innovative online learning model. The first examples of MOOC platforms (edX, Udacity and Coursera) began in the United States in 2011. Similar platforms appeared in Europe at around the same time, including EMMA, FutureLearn, Alison and Iversity, with free MOOCs from several European universities. In Italy two examples are EduOpen, which began from a project co-financed by the Ministry of Education, University and Research (MIUR), and brings together many Italian universities, and Federica.eu, developed by the University of Naples. A resource for online teacher education is the European Schoolnet Academy, a MOOC platform that offers free courses for teachers and educators in different subject areas.

The TPCK reference model Consistent with the aim to stimulate knowledge sharing processes through the creation of online communities, Weturtle.org specifically addresses teachers' training needs in the field of educational technologies and innovative educational methods. The reference model for the site was the technological pedagogical and content knowledge (TPCK) framework proposed by Mishra and Koehler [7, 8], which describes how the technological, pedagogical and academic dimensions can be successfully integrated into teaching practice. The community is an attempt to translate the model practically. In all content, there is strong integration between the features of the selected technologies, the academic topics and the didactic methodologies. Furthermore, as described below, the Tutorials section is directly connected to the technological dimension of the TPCK model and the Publications section to the pedagogical one, whereas Projects, Courses and Ebooks propose didactic paths in which the three dimensions are integrated.

Weturtle.org as a Community of practice. In recent years in Italy teachers' need for training in the field of digital and didactic innovation has led to informal initiatives by teachers and educational institutions, such as educational blogs, audio/video playlists, repositories and groups on social networks for sharing news and resources. These solutions, however, generally present obstacles including difficulty finding the resources (often not well organized and lacking search functions), and communications among users.

Weturtle.org was begun with the aim to create an online “Community of practice” for teachers—with the meaning proposed by Lave and Wenger [9, 10]—offering a user-friendly space with ease of access, research and resource sharing. Subscribers to the platform can publish projects subject to approval by the administrators, comment on uploaded content and rate it.

The community’s mission is also to encourage production and sharing processes, to allow teachers to emerge as content authors in their professional community, thus qualifying their professional identity as trainers of other teachers. Teachers with specific skills are given the opportunity to offer free or paid training products (webinars, projects and ebooks) depending on their preference. This helps to expand and innovate the professional identity of the teachers who want to put their skills to use on the knowledge market.

3 Weturtle.Org

3.1 *Browsing Weturtle.Org*

Weturtle.org’s home page has a top menu bar giving access to: the “Community” page showing all users who actively participate in the site by offering resources and training products; the “About us” page with information about the staff; the Store; and the Login area. In addition, it contains links to the platform’s social media pages (YouTube, Twitter Facebook).

A bar below gives access to the following sections:

- **PROJECTS:** this section contains all lesson plans, which can be found by filtering by educational technology, subject and specific kit/software. There are tags for each project allowing users to find projects that have certain features (e.g., they use a kit). This area has two types of content: brief ideas for individual lessons (marked with a light bulb icon) and full projects with multiple lessons and a progression of activities (marked with a page icon);
- **COURSES:** this area contains all online courses and webinars, future and past. For each course, users can view details about the author, an introduction, a list of contents and objectives, the cost (if it is available for sale) and instructions on how to take part. One recent development being offered is free online courses to give teachers complete and high-quality training in certain areas of educational technologies (e.g., educational robotics, digital storytelling, videogame making), including video lessons, exercises and reading materials, followed by paid courses for more advanced learners. Teachers can get a recognized training certificate for all courses, which they can register on the Sofia platform as proof of fulfilment of their continuing professional development obligations;
- **TUTORIALS:** this section hosts training videos that explore the basic and advanced features of the technologies used in the projects; the area targets users who need basic training in the tools or who want to acquire more advanced skills;

- **PUBLICATIONS:** scientific and educational papers by international experts can be consulted on this page. A short description in Italian is provided for each article, along with a link to the online resource where it can be found;
- **E-BOOKS:** the area contains a collection of e-books dedicated to technology and didactics; some of these resources are provided free of charge, others are for purchase;
- **BLOG:** this space contains informative articles on topics of interest to teachers (e.g. accounts of workshops led by trainers, news on educational events in Italy and abroad, focus on noteworthy people in the field of educational technologies).

There is also a search function on the menu bar.

Further down the home page, eight quick buttons related to the technologies discussed in Weturtle.org give immediate access to the projects, which are already filtered according to the icon clicked on. Just below that, the home page is divided into areas that contain previews of the latest content added. The spaces between these areas contain calls to action for visitors, such as registering with the site, sharing a project and offering a training course of their own.

4 Analysis of User Browsing Data

The browsing data from Weturtle.org shown in Fig. 1 refer to the period from September 30, 2018 to September 30, 2019. The term “Sessions” refers to the number of single interactions (e.g., browsing pages) with the site. “Users”: the number of unique visitors who visited the site; “New users”: the number of users visiting the site for the first time; “Page views”: the total number of pages viewed; “Pages/session”: the average number of pages opened during a session; “Average session duration”:

Fig. 1 User browsing data on Weturtle.org between 30 Sep. 2018 and 30 Sep. 2019

the average time the user is active on the site; “Bounce Rate”: the percentage of visits where the user only sees one page.

Unlike the period analyzed previously from November 2016 to March 2017 [11], during which promotion of the website was mainly informal, with no investment in marketing, the data reported correspond to a period when the first investments were put into the communication (especially on social media and in newsletters) and marketing strategies. Compared to the previous period, there was a significant increase in the number of visitors, sessions and overall page views, whereas the average number of pages visited per session (2.47 versus 2.67), the bounce rate (70.62% versus 64.28%) and the average session time (00:02:14 versus 00:02:34) remained stable.

Most users visiting the platform (over 60%) are in the youngest age group of 18 to 34 years. The distribution of users by geographical area shows that the platform is used throughout Italy, but particularly in the large urban centers (Rome and Milan, followed by Naples and Turin).

5 Final Considerations and Future Developments

This article introduced Weturtle.org, a platform that aims to respond to the training needs of teachers in digital skills and educational innovation. Weturtle.org is also a “hybrid” model that seeks to combine the philosophy of OERs with the value of qualifying teachers as trainers on the online knowledge market.

Regarding future developments of the content, all the sections are in a growth phase, partly because the network of collaborating teachers is expanding, as is the total number of users. The most significant development concerns the forthcoming launch of online courses on the main themes of educational innovation.

A feed system will be implemented to update registered users regularly on new, relevant content: this will help to personalize the browsing experience, making the community more efficient.

Further improvements to the interface are also in the pipeline. These will encourage users to interact more with each other in the comments function, a rating system (based on the average scores given by users), and other strategies related to custom notifications.

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