# Communityware Goes to School

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## ABSTRACT

Schools are facing a new challenge. They must reverse the perishing of local communities, central to a democratic society, at the same time helping them to open to the world, also by teaching students the competencies needed to become citizens of the global village. In the paper we discuss how *communityware,* i.e. systems sustaining communities, can help educators in this challenge. The discussion is rooted in the experience of a school in Venice, Italy, with a communityware system, Campiello. The use of Campiello promoted the capabilities of students to manage knowledge, an active use of new technologies, and a learning process that involves the local community.

### Keywords

Communityware, learning community, project-based learning, innovative interfaces.

## 1. INTRODUCTION

The Calvi School, for children aged 11-13, is located in Castello, a neighborhood of Venice that is still a lively and popular area, not only a tourist attraction. Its teachers all share the idea that the school must be an active subject in the neighborhood. To achieve this goal, they integrate traditional teaching with project-based activities designed for exploring historical, cultural and social features of the area. School projects are designed so to involve different disciplines, including in the effort external actors such as elderly and cultural associations. Most of the work is presented to the community during an annual feast. The effort of the teachers enlightens the school as a center for keeping alive community memory and building up community culture, activating a learning process that makes students more aware of their environment. It is however important to point out some difficulties experienced before the adoption of Campiello. First, it was problematic to motivate students and the projects often involved only a limited number of students. Second, the learning process failed to extend to the whole community. The results of the projects were in fact available only for a very limited period of time and in few places. After this they were archived, becoming very difficult to access. Even during this limited time, the reached population was limited, mainly students' relatives. Finally, the process had a limited continuity relying mostly on the continuity of the teaching staff. The representations of the outcomes of the projects (e.g., handwritten paperboards and video-recordings) made them difficult to update, integrate and access. To a certain extent each project was a world of its own. The possibility to activate a learning cycle where previous projects enrich the following ones and where the flow between the school and the community is continuous fully relied on the teachers. Aware of these limitations, the teachers agreed to collaborate to the design and experimental usage of Campiello (Campiello, 1997-2000; Agostini et al., 2000a).

Campiello aims at supporting the exchange of information among people living in and visiting art cities. Its goal is to turn local inhabitants and tourists into active participants in the creation of local knowledge, enhancing their chance to comment on, critique, and make use of it. Since a detailed description of the system is not possible, let us point out some of the main Campiello features. First of all, Campiello provides multiple user interfaces: large interactive screens, paper, and PC (Web). These interfaces have been selected for supporting ubiquitous access to knowledge and for assuring a high degree of accessibility and usability by the whole community (e.g., elderly). Second, Campiello stimulates an active usage of knowledge by providing different degrees of participation in the insertion, revision, and enhancement of knowledge. In particular, users can insert new items and topics; they can rate and comment existing items; they can answer to questions specified by the article's authors and point to additional materials. Finally, Campiello supports personalized interactions through recommendation of articles based on user preferences and past behaviors (Glance et al., 1998).

## 2. IMPACTS ON LEARNING

The involvement in Campiello had a strong impact on the Calvi School. First, we observed that Campiello played an important role in *reinforcing* the perception that students have of themselves as a learning community, assuring a greater continuity to the learning process. Gradually, teachers and students became aware of the possibility to take advantage of the "memory" built by previous students. Campiello fostered a trend that sees no longer isolated projects, but a learning cycle across years and classes, in a truly collaborative effort that involves students and teachers alike. Second, Campiello helped to *enlarge* the learning community by increasing the visibility of the produced material and assuring a wider audience. It proved to be a good way for connecting different generational communities, but also for connecting the school with other information providers. The support provided for this cross-fertilization is a relevant achievement of Campiello. In fact, often this would have not happened without Campiello, even when the material was already available through other communication media. What made the difference was the feeling that Campiello provided of a common ground. Campiello has also changed the capability of presenting the work of the school to "the world". Previously, projects were mainly

designed to increase the awareness of students on their environment. Campiello involvement has allowed looking at a project as a communication media, acknowledging that as important as awareness are the exchanges with the external community that help to keep the environment alive. This leads us to the third point, the *improvement* of knowledge handling and exchange. Before the adoption of Campiello, the school projects were difficult to access, update, integrate, and reuse. The digital format of information and its management through a semi-structured knowledge base per se overcome these problems through various services (e.g., search, and easy modification). These possibilities reinforce the learning process making its outcomes more permanent. Moreover, in the previous years the teachers were forced, for practical reasons, to adopt a single format for each project. Thanks to Campiello, they have been able to integrate different media, e.g. combining text and pictures with audio and video. The richness of the media allows adopting the most suitable media, but it also allows teaching various techniques at the same time (e.g., writing, drawing, video-recording). The possibility to specify relations among different articles (possibly inserted by different authors) showed to enforce looking for correlation and learning by analogy. The awareness of the potential audience stimulated students to be concise and to adopt a writing style "attracting" readers. This lesson, according to teachers, is particularly relevant for students of this age, which often have difficulty in synthesizing concepts. Fourth, Campiello has fostered the appropriation of new technology. At the beginning of the collaboration, the school did not have any computer laboratory. However, at the end of the project the school was independent with respect to the design and production of electronic multimedia content, even if no formal training has taken place. From the educational point of view a strong impact of Campiello is the students' understanding of the Internet potentiality in term of being active providers of information instead of mere passive consumers. Students understood that Internet is different from a library where just expert people can add new books in the shelves. While at the beginning they knew just about the global accessibility nature of the media, at the end of the project they appreciated a broader range of characteristics such as the continuous and quick growth of the knowledge and, again, the possibility of being prime actors in this process.

Our experience shows that communityware can play an important role in making students feel as members of a community within a wider community. This feeling relies on the awareness of having a common *memory*, playing an active role in the construction of such a memory, and taking active part in the social practices for keeping it alive. As we have observed in Campiello, communityware can both facilitate the feeling of "belonging, having a common ground" and provide the technological substrate for keeping the community memory alive. For making this possible the system must support different participation forms, from simple fruition up to commenting and content production, in order to promote a smooth transition from peripheral participation to full membership in the learning community. In addition, based on our observations, we can claim that communityware can help students to grasp the basic competencies needed for becoming citizens of the "global village", both in terms of information management and active usage of new technologies. On the short term we think that schools can benefit from the involvement in existing communityware experiences. On the longer run, it is necessary to define a combined research agenda for educators and technologists to develop communityware that better meet the need of schools.

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