A Study of the Acceptability of a Web 2.0 Application by Higher-education Students undertaking Collaborative Laboratory Activities

Sandy El Helou
Ecole Polytechnique Fédérale de Lausanne
1015 Lausanne, Switzerland
sandy.elhelou@epfl.ch

Denis Gillet
Ecole Polytechnique Fédérale de Lausanne
1015 Lausanne, Switzerland
denis.gillet@epfl.ch

Christophe Salzmann
Ecole Polytechnique Fédérale de Lausanne
1015 Lausanne, Switzerland
christophe.salzmann@epfl.ch

Chiu Man Yu
Ecole Polytechnique Fédérale de Lausanne
1015 Lausanne, Switzerland
chiuman.yu@epfl.ch

Abstract

This paper presents the findings of a study on the acceptability in higher education of a Web 2.0 collaborative application, namely eLogbook. The latter offers several features for sustaining collaboration and supporting personal and group learning. It was introduced to students taking a laboratory course that spans over one semester and mainly consists of in-class group experiments. In this paper, we present eLogbook. We then describe our hypotheses as well as the qualitative and quantitative methods used to evaluate the usefulness and usability of eLogbook in a formal learning context. Finally, we discuss our findings and its implications.

1. Introduction

Between 2000 and 2007, *eMersion*, a Web-based environment was used in the automatic control laboratory course offered at the Swiss Federal Institute of Technology in Lausanne (Ecole Polytechnique Fédérale de Lausanne or EPFL in French). It consisted of an applet allowing students to connect to remote machines and run experiments [1]. Furthermore, students saved and shared their files using the *eJournal*, a shared electronic notebook. Those tools have proven to be useful in the context of the laboratory course. Today, we witness the increased popularity of Web 2.0 easy-to-use applications that pioneer social networking, collaborative authoring and sharing. This motivated the move from the traditional *eJournal* to a more general Web 2.0 collaborative application, which has the "look-and-feel" of trendy social software, incorporates Web 2.0 features, and centralizes the access to the course resources for the short-term community of tutors, teachings assistants and students involved in the course. This is believed to increase its acceptability among the students, thus triggering their participation in the computer-aided learning activities and enhancing the personal and group learning experience. eLogbook was developed and continues to evolve following a participatory design approach, taking into account the needs of the different online communities using it and their degree of satisfaction vis-à-vis its functionalities and interface design. This paper summarizes the findings of a first empirical study on the students' acceptability of eLogbook in the context of the laboratory control course. The rest of the paper is organized as follows: Section 2 reviews related work. Section 3 introduces eLogbook. Section 4 presents the hypotheses. Section 5 describes the context of the study. Section 6 summarizes the evaluation methodology. Section 7 discusses the results obtained and their implications. Section 8 concludes the paper.

2. Related Work

Web 2.0 social software tools supporting social interaction are increasingly popular. In 2006, they joined the list of the most visited Web sites [2]. Their success is due to their low entry barrier, their user-friendly interfaces and their easy-to-use features fostering participation. Editing a wiki page, tagging a friend in a picture, uploading a movie, bookmarking an interesting blog and subscribing to news feeds, are all part of this new realm of the "Read-Write" Web 2.0. The terms "e-Learning 2.0" [3] and "Personal

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Learning Environment" [4] refer to the application of social software in education. They account for a shift from traditional LMS mediums used to store course material and conduct mandatory discussions, to lifelong learning platforms where different knowledge resources such as course material, blogs, podcasts, and archives of unplanned discussions are aggregated, shared and augmented in a bottom-up approach for future exploitation. e-Learning 2.0 is still in its early phases and has not yet gained in popularity. A previous study [5] aimed at examining the role of social software in education reveals that students often use social software for sharing media files with their friends, but rarely for educational purposes. Another study [6] shows that the most popular medium adopted in formal learning contexts for distant communication is still the email, and that wikis and blogs are not yet widely used. The authors of the studies argue that, for social software to be adopted in education, new learning models and fine-tuned tools with clear added values are needed. In this paper, we discuss how eLogbook, a Web 2.0 application based on a new interaction model and having several value-added features, was perceived by students in a formal learning context.

3. eLogbook

eLogbook (http://eLogbook.epfl.ch) is a freely accessible Web 2.0 collaborative application deployed by EPFL. It aims at sustaining collaboration for online communities. It is based on the 3A interaction model [8]. The latter takes its roots from Activity Theory [9] and distributed cognition [10] but is particularly focused on aiding the design of collaborative environments. It allows a straightforward and smooth translation of the needs, structure and goals of a community into the design requirements of a software application sustaining collaboration within that community. It consists of 3 main constructs: activities, actors and assets. Any user and any agent or Web service performing actions on behalf of him/her are considered as actors. An actor or a group of actors conduct activities with specific objectives. They distribute roles and tasks among them, produce and share digital assets (i.e. documents, media files, archived discussions), in order to meet their goals. The model takes into account Web 2.0 features: entities can be tagged, shared and rated. Moreover, actors can define relations between elements. For instance, two actors can be "friends" or "colleagues" and an asset can consist of a "reply" for another one. Since the eLogbook follows the 3A model, it can simultaneously serve as a community and activity management system, a social networking site, as well as a repository for producing, managing and sharing assets. Its context-sensitive view (Fig. 1) consists of a central element surrounded by three main regions respectively dedicated to activities, actors and assets [11]. When an entity is selected as the context or the central element, the surrounding areas display the entities related to it along with their relation and the associated actions that actors can perform. Consequently, just by changing the type of the focal point from an activity to an actor or an asset, the interface can serve different purposes, while maintaining the same layout structure.

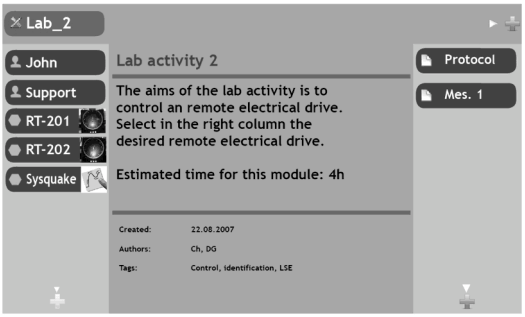

Figure 1: The context-sensitive view.

Awareness "cues" of different types are seamlessly incorporated in every area through the use of symbolic icons and colors and the modification of the information display order.

4. Hypotheses

We evaluate eLogbook acceptability following the technology acceptance model [12]. We claim that the eLogbook perceived ease-of-use and usefulness is positive. We discuss below the reasons behind our claim.

As it was mentioned earlier, for students to freely replace a familiar application by a new one, the latter must have clear added values in terms of its usefulness as well as its usability. With respect to the application usability, previous researches in the field of the CSCW have reported the problem of low participation and the lack of personal incentives in early CSCW apparatus [13]. With the success of social software tools, we claim that a user-friendly, bottom-up, and easy-to-use working environment has a higher acceptability potential among students than traditional tools. It motivates them to use it more frequently, taking advantage of its added values in the context of their work, and actively participating in the achievement of their group assigned tasks [14].

Concerning the application usefulness, we expect eLogbook to improve personal and group learning, thanks to its main added values: centralization and contextualization. To start with, eLogbook offers a central repository where knowledge artifacts ranging from wikis, measurements, snapshots and reports can be aggregated, easily shared and collaboratively annotated using bottom-up Web 2.0 features such as social tagging [7] and rating. In addition, it centralizes the access to the course required Web tools such as the applet needed to run experiments on remote machines and the visualization tool used to analyze measurements. Moreover, eLogbook serves as a communication and networking platform. Last but not least, it provides a framework for representing the community of learners, tutors and teaching assistants, through a flexible definition and a dynamic distribution of roles and tasks among them. Thus, by simultaneously providing a flexible community representation tool, a communication platform, a shared repository offering Web 2.0 features as well as a central access point to the required tools, we expect eLogbook to be successfully adopted by students as an adequate personal and group learning environment. We describe in the following section the context of our empirical study. Then, we summarize the methodology adopted to test our hypotheses and we discuss our results.

5. Context of the study

5.1. The automatic control laboratory course

Undergraduate students enrolled in engineering programs at EPFL are invited to use eLogbook for one semester in the context of an automatic control laboratory course. The latter integrates hands-on laboratory sessions that aim at studying experimentally the behavior of dynamical systems. The laboratory sessions deal with different thematic modules. Moreover, the experiments are conducted in groups of 2 to 4 students. In order to perform the planned experiments, students are supposed to connect through an applet to remote machines, as shown in Figure 2. They also have access to "Sysquake remote", an Apache module based on "Sysquake". It helps understand control systems and analyze the saved measurements in the frequency and time domains. Each group is supposed to handle a report at the end of the semester. Moreover, each student should pass a final oral examination. The number of students who took the course in spring 2008 was 90. Since eLogbook was used for the first time in the course, we did not want to involve all students before getting a preliminary feedback regarding its acceptability. The selection fell on the 20 mechanical engineering students taking the course. As a matter of fact, previous years have shown that they are more comfortable with the course material than students from other academic backgrounds. Consequently, in the case where the appropriation of the new environment would not as effortless as expected, they would still be able to allocate time to learn it. It is worth noting that the mechanical engineering students involved in the study were not forced to use eLogbook in the laboratory course. They could still share files, communicate, and connect to the applet and "Sysquake remote" without relying on the proposed application. Providing other alternatives than eLogbook and letting students evaluate for themselves whether or not it is worth using it is a key point in testing its acceptability.

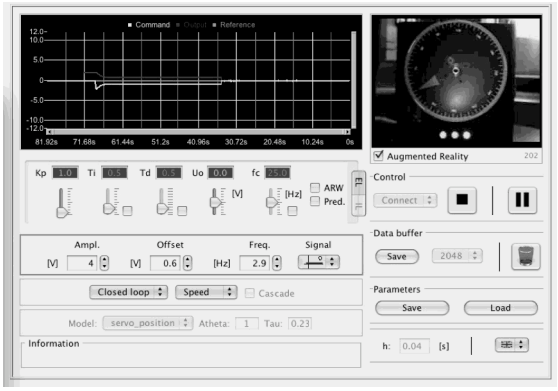

Figure 2: Applet for remote control experimentation on a servo-motor.

5.2. The role of eLogbook

First, we explain how eLogbook was used to represent and structure the short-term community involved in the laboratory course. From the 3A interaction model perspective, the learners and the teaching assistants are all considered as taking part of a mother activity aimed at achieving the course learning goals. Thus, a space called "TP" ("Travaux pratiques" or practical work) dedicated for this mother activity was created with the roles "student", "teaching assistant", and "technical support" distributed among its members. A description of the "TP" was added to the space wiki. Useful documents such as an introduction to "Sysquake remote" were posted as assets in the space. The description and the tasks related to each of the 3 modules were also made

available. In addition, a subspace of the main "TP" space was created for each group, so that its members could run and analyze experiments, learn together and submit the final group report. A teaching assistant was assigned to each group. As it was explained earlier, eLogbook centralizes the access to the course Web tools. In fact, based on the 3A model definition of actors, the applets allowing students to connect to remote machines are considered as members of the course related activities. Therefore, they were accessible from each group space. Moreover, eLogbook shows a preview of measurement files saved as assets and suggests to open them using "Sysquake remote".

Second, we describe how eLogbook was introduced to the students. The first session was divided into two parts. All students were requested to attend the first part, during which we explained how the applet could be used to remotely connect to the laboratory machines. During the second part of the session, only the 20 mechanical engineering students were explicitly asked to stay and eLogbook was very briefly introduced to them. In addition, a short screencast on how to use eLogbook to connect to the applet, save parameters and share them with others was posted online. It is worth noting that the screencast does not detail all the eLogbook features such as searching, tagging, rating and linking assets and spaces.

6. Evaluation methodology

We use three different methods to evaluate the usability and usefulness of eLogbook. We rely on one quantitative method, which consists of logging all students' actions throughout the semester and analyzing them. The remaining two methods used are qualitative. Of the 20 students who were invited to use eLogbook, 18 filled a questionnaire, which consists mostly of 7-point preference scale questions. The response options ranges from Disagree (1) to Agree (7). No comparative study was done, and so in order to better understand and complement the questionnaire results, individual interviews with seven students were planned. The questions asked during the interview and in the questionnaire can be grouped into the following categories: general usability questions, general usefulness questions, usefulness and usability of eLogbook as a central access point to the course resources, a shared data repository, and a communication platform, and acceptability of its context-sensitive Web interface. There were also open questions inviting the students to elaborate on the eLogbook advantages and disadvantages. The two tables below lists the questionnaire and interview questions.

Table 1: Questionnaire

I	*General usability Questions*
	I am satisfied with the ease of use of eLogbook.
II	*General usefulness Questions*
	eLogbook helped me in the laboratory course.
	The direct access to the modules, and the applets from eLogbook helped me.
III	*Usefulness and usability eLogbook as a central asset repository (for sharing, centralizing, annotating and classifying assets)*
	Have you created and saved files using eLogbook?
	Did you share files with other people using eLogbook?
	Have you used eLogbook to annotate your files (by tagging, rating, and editing the wiki)?
	Have you used the "search" button?
	I quickly found the information I was looking for.
	The notification by email of a creation new file in your workspace useful to you.
IV	*Usability and usefulness of the context-sensitive view*
	The simultaneous display of actors, assets and spaces (i.e. activities) was useful.
	Would you like to have an option to customize the colors and size of the peripheral regions and the central zone?

Table 2: Interview Questions

I	*The usefulness of eLogbook as a central access point*
	Did you connect to the applet, from distance via eLogbook?
II	*The usability and usefulness of elogbook classification and searching features*
	Did you often scroll down the list of assets? Why?
	Did you often click on the "Back to me"? Why?
	Did you use tags? Why?
	Did you use the keyword and tag search button (The interviewer show the location of the button in the interface)?
	Do you prefer to have criteria to sort lists manually, instead of relying on automatic sorting?
IV	*Usability of the context-sensitive view*
	Did you like the color scheme of eLogbook?

Would you prefer that all regions have the same color (The interviewer shows a snapshot where the background is white for all regions)?
Did you understand the meaning of icons?

V *Usefulness and usability of the navigation in the context-sensitive view*

Did you notice that an Actor could be a human as well as a device?
Would a small separation be more useful?
Was the navigation in the contextual view useful?
Did you notice, what happens when you change the center element (The interviewer shows the different cases and asked the student to explain what he/she understands from each case)?

VI *Other Questions*

Do you have any suggestions? Any positive or negative comments concerning eLogbook?

7. Results & discussions

The user's satisfaction with the ease of learning and using eLogbook was slightly below the median of the 7-preference scale. This indicates the existence of usability problems. It also explains why the answers to the question of whether or not eLogbook helped the student in the laboratory course have an average of only 3.38, but with a relatively high standard deviation of 1.9. To better identify the encountered usability problems and examine the usefulness of eLogbook in formal learning contexts, we evaluate each of its value-added features described in Section 4, separately. We examine how eLogbook was used as a central access point to the course resources and tools, a discussion platform, as well as a central data repository. We focus on the usage of its particular Web 2.0 features allowing a bottom-up data classification. We also assess the success of its context-sensitive interface, which unlike traditional LMS has the "look and feel" of trendy social software sites.

7.1. Usefulness and usability of eLogbook as a central access point

The answers to the question of whether the direct access to the modules and the applet from eLogbook helped the students has an average of 4.48 and a median of 4.5, the two values being above the median of the 7-point preference scale. This shows that students were quite satisfied with the role of eLogbook as a central access point to the course resources and tools. The recurrent positive comments given during the interviews and in the questionnaires regarding that feature also support this claim. To complement the qualitative evaluation, we observe the eLogbook usage frequency throughout the semester. From the 20 students to whom eLogbook was introduced, only one did not activate his/her account. Moreover, 68.4% of the students used eLogbook between 3 and 21 days during the semester. This suggests that its usage was not confined to the 3 laboratory modules. The graph below (Fig. 3) shows the number of students connected to eLogbook during the semester days. We can observe usage peaks corresponding to the 3 modules (corresponding to the 3 circled days in the graph). Moreover, on the days before the oral defense (indicated by a straight line in the graph), there were more connections than on the remaining days. This suggests that users visited eLogbook during the semester and before the exam to study, run experiments, and check the assets saved in their group space.

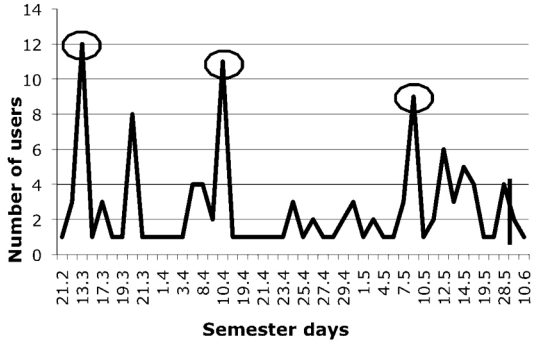

Figure 3: Students daily connections.

One could consider that since the percentage of students connected to eLogbook during any laboratory session did not exceed 60%, the acceptability of eLogbook as a central access point ought to be questioned. Nonetheless, this number is satisfactory knowing that students usually work in pairs during the laboratory hours and run the experiments from the same PC. With this in mind and to better evaluate the stickiness factor of eLogbook throughout the semester, we examine its usage at the group level. We consider that a group used eLogbook for completing a module if at least one of its members was connected to eLogbook during that module. The result is that except for one group who did not use eLogbook during the third session, all used it to fulfill the tasks related to the three modules. Moreover, in 55% of the cases, no more than 50% of group members were connected to eLogbook at one time, which confirms the idea that there is tendency

to work in pairs on the same PC. Another interesting remark is that "social contagion" effects are noticed inside groups, as the usage frequency of eLogbook was consistent among members of the same group. The student decision of adopting the work medium and "sticking" with it is influenced and dependent upon his/her group's attitude towards it. If at least one group member is comfortable with the tool, he/she will drive his/her group towards using it. Inversely, if one member has a negative experience with it, he will confer his/her dissatisfaction to other group members, which will negatively affect the tool's adoption. For instance, Group C1, which was the only group who didn't use eLogbook during the last module, consisted of two members who connected to eLogbook only twice during the whole semester. Inversely, if we observe the behavior of Group C3, we see that all of its members used eLogbook more than 8 days during the semester. In the future, further experiments involving a bigger number of groups will be conducted to study the underlined "social contagion" effect.

To sum up, the results of the quantitative and qualitative studies show that students accepted eLogbook as a personal learning environment [15] centralizing the access to the course resources, Web tools, and produced learning artifacts. Still, it is important to find out why eLogbook was not "sticky" for the 6 students who did activate their account but used eLogbook only once or twice thereafter, and why one group stopped using it during the third module. Evaluating of the usage of eLogbook as a shared data repository helped identify some usability problems.

7.2. Usefulness and usability of eLogbook as a central data repository

During a remote experimentation session, students save, share, visualize, analyze and adjust the related parameters and measurements. This is a prerequisite for understanding the material, working on the report and getting prepared for the oral defense. The applet offers several options for saving measurements. Students can choose to send them by email, download them to the local disk, or save them in eLogbook. In this section, we examine whether eLogbook was chosen as a central data repository and whether its different asset production, sharing, management and classification features were useful and easy-to-use.

80% of the students who filled the questionnaire stated that they have created and saved files using eLogbook. The analysis of the logs shows that a total of 177 assets were produced, with an average of 12.64 assets per student and a standard deviation of 9.56. This high standard deviation can be explained by the fact that students were working most of the time in pairs using a single PC and a single eLogbook account, as discussed previously. Moreover, 71.2 % of the assets created in eLogbook, were produced from the applet and only 42% of those assets were shared with other group members. The gap between the created and shared measurements can mainly be explained by the fact that measurements were subject to a selection process, and only the best ones were kept and shared at the end of the session. The remaining 28.8% of the assets produced consisted of module summaries, reports and snapshots taken with "Sysquake remote". Furthermore, students used the wiki feature, which is associated by default with every asset, in order to add comments related to their experiments as a preparation for the final report.

Next we address the students' usage and perception of the eLogbook sharing mechanism. Figure 4 summarizes the different sharing alternatives used by the students. Groups are sorted in ascending order according to their size. Furthermore, the different stripes, from the darkest to the lightest, respectively correspond to the percentage of assets shared with members having a specific role in a group, posted in a group space, posted in a subspace of the group space, sent to team members individually and finally made public. The graph shows that regardless of the group size, the most frequently way of sharing assets is posting them inside the group or inside a subspace of the group. Interestingly, members of the group C1 used a sharing option that was not introduced to the students: sharing assets within a group, but on a role-dependent basis. In their case, most of the assets were shared among members taking the role "student" in their group, while the person holding the role "teaching assistant" was not granted any right over these assets.

We also examine the acceptability of the eLogbook asset management and classification features. The answers to the question of whether students quickly found what they were looking for have a mean of only 3.36. In addition, during the interview, students stated that it wasn't easy to find assets in the workspace; they often had to scroll down a long list to find what they were looking for. This clearly indicates that the main difficulty was in organizing and finding all the different assets.

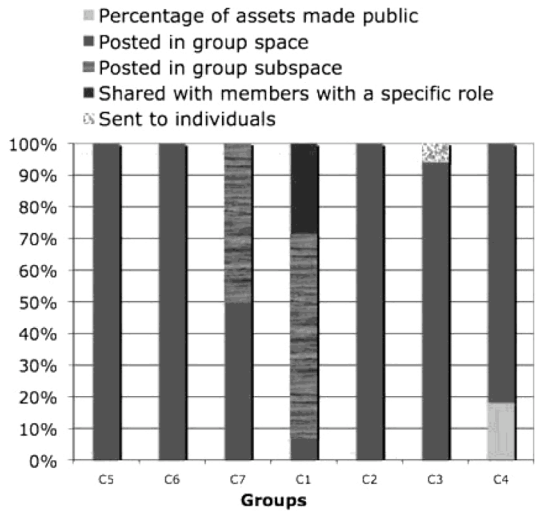

Figure 4: The different ways chosen to share assets within each group.

eLogbook does offer a keyword and tag search option for finding assets. This option returns a list of assets containing in their name, description, or tags a word similar to the one specified by the user. Unfortunately, the questionnaire, the interviews, and the analysis of logs reveals that not a single student used the keyword and tag search option. The interview results show that the problem has more to do with the usability of the search feature than with the feature itself. As a matter of fact, all the interviewed students stated they didn't even notice that a search button existed. In addition, eLogbook does offer annotation and classification features. First, it is possible to arrange assets in a bottom-up approach by simply tagging them. Second, rating assets such as measurements and snapshots is a way of classifying them from the worst to the best ones. These two features are located in the vicinity of the central element name in the context-sensitive view. Nevertheless, according to the questionnaire results, only 41.17% mentioned that they had annotated their assets using eLogbook. The analysis of the logged data shows that this annotation was mostly limited to leaving some comments and description in the asset wikis. However, no tagging and very few ratings were observed. When we asked the interviewed students, why they didn't use tags, three of them said that that the utility of that feature was not obvious to them. Nonetheless, when we showed them during the interview how an asset can be labeled with multiple tags shared among their peers and how tag search helps in easily finding assets, they approved the feature's added value. The remaining students answered that they were acquainted with other traditional top-down approaches such as creating folders. In fact, there is a possibility to create subspaces to cluster assets but only two groups grouped some of their assets using this technique. Nonetheless it wasn't intuitive for everyone to make the connection between the notion of a space for grouping assets and the concept of "folder". Since the bottom-up tagging approach was not common and the top-down approach not intuitive and easy to use, 5 out of the 7 groups agreed on long and very specific asset naming conventions. In the group C3 for instance, assets were named as follows: [Old] Module 2 - Exp 2.2.1., [New] Module 2 - Exp 2.2.1.

With respect to the asset management and classification problem, three measures will be considered in the future. First, the position and design of the search feature will be changed. Second, the usefulness of social tagging in classifying assets will be emphasized during the introductory session. Moreover, the top-down classification of assets into "folders" or specific spaces will be made more explicit and easier to use. After that, we will be able to compare which classification approach is actually preferred by the students.

7.3. Usefulness and usability of the context-sensitive view

In this section, we discuss the students' reaction to the contextual Web 2.0 interface. As the students noted it, one of the main eLogbook advantages is the fact that its interface is "casual" unlike traditional e-Learning platforms they had to use in other courses. In the following lines, we describe how students perceived different interface characteristics.

First, we examine whether students actually grasped the "3A model philosophy" behind the interface design and whether they found the way in which information was displayed useful for their work. To start with, we went through different interface snapshots with the interviewed students, to check whether they understand how it works. The result was that they were all able to tell exactly what kind of information is displayed as the type of the center element changes. Concerning the usefulness of this view, and according to the questionnaire results, students found it beneficial to simultaneously see the actors, assets and activities related to the central focal element. Moreover, they all welcomed the idea of treating machines as actors. They liked the fact that when they visit their group page, they see the machines listed in the actors' area and decide which one to connect to depending on its displayed status. In addition, when the interviewed students were

asked whether they liked the navigation in the context-aware view, only one answered negatively and stated that he/she would have preferred a more hierarchical structure. In the future, we are planning to show a history of visited pages to help the user remember where he/she came from. The last question in this category was related to the order in which entities were listed in the view. We asked the interviewed students whether they prefer to be provided different sorting criteria (e.g. by date, type, creator) instead of relying on an automatic smart system sorting, as it is the case now. The result was that 5 of them prefer to be given the options and be able to sort manually. This feature will be implemented in the next eLogbook version as a user-customizable recommendation system.

Second, we observe the student's perception of the eLogbook color scheme. A previous experience with a community of practice (CoP) showed that the CoP mediator preferred to have a white background for all regions (Actors, Activities and Assets), as this is deemed more professional for the CoP members. Inversely, 6 of the 7 students interviewed liked the eLogbook color scheme as it is now. Still, when we showed another alternative with a homogeneous white background, 2 of them preferred it to the actual one. In the next release, we will provide the students with two different views: a default one in which the 3 separate regions have different colors, and another one with a homogeneous white background. Nonetheless, it won't be possible for students to define their own colors and dimensions for the different interface areas, as 88.89% of those who filled the questionnaire said that they wouldn't be interested in such an option.

The last concern related to the interface design is the students understanding of icons. Always in an attempt to render the working environment less formal and more familiar, icons are used as intuitive metaphors to convey different meanings. For instance, when the central element is an asset, a crown is added next to the picture of each of its owner. In the same way, when the central element is an activity, green, red, and orange bullets respectively indicate actors who accepted, refused and have not yet decided to join the activity. When the mouse is put over any icon, a text message appears explaining what information or action it represents. Only 1 of the 7 students interviewed said that he had a problem understanding the meaning of a single icon. The student didn't try to put the mouse over the icon to get an explanation. All the remaining students were able to easily tell what each of the icon of the context-aware view stands for.

7.4. eLogbook as a discussion platform

The analysis of logged data indicates that eLogbook was mainly used as a shared repository of assets, but not as a means for communication outside laboratory hours. Apart from two students who left comments for each other within their group space, all the remaining students relied on email or a combination of email and Skype in order to communicate with each other and with the teaching assistants. In the new version, which will be used by students in December 2008, we will examine whether the recently embedded synchronous discussion tool, which includes the possibility of saving archived conversations as workspace assets, will increase the added value of eLogbook as a contextual discussion platform and convince students of using it for communication.

8. Concluding remarks

In this paper, we have introduced eLogbook, a Web 2.0 application supporting interaction and enhancing personal and group learning. It can simultaneously serve as a flexible community and activity management tool, a communication platform, as well as a central data repository offering bottom-up classification features. We have presented and discussed the results of a study on the usefulness and usability of eLogbook in the context of a laboratory course offered at EPFL. The experiment involved a small but representative sample of students and came to complement the previous studies made with members of communities of practice. A quantitative study based on the logs associated with a qualitative study based on questionnaires and interviews, show that the students were satisfied with the context-sensitive view that had the "look and feel" of social software application and was based on the 3A interaction model. Moreover, results imply that by consisting of a central access point to the course material, the community members and the knowledge artifacts as well as a mash-up for the required experimentation and visualization Web tools, eLogbook presented enough value-added features for the students to freely accept it as a personal learning environment. Nevertheless, and even though students used it to exchange assets, they still relied on emails and Skype to discuss issues related to the course. In the next semester, we will examine whether the newly added feature of conducting synchronous discussions and saving them as assets in eLogbook will successfully drive students into using it instead of their traditional communication tools.

Furthermore, the study helped detect problems with organizing and finding data in eLogbook assets repository. Surprisingly, and despite their popularity in social software systems intended for leisure and social networking, tagging and rating were not used to classify assets in a bottom-up approach. Students preferred the classical approach of grouping assets into folders, an option which was more time consuming in eLogbook. In the future version, we will introduce through examples the potential benefits of using Web 2.0 features for assets classification. We will also make the classical approach more intuitive and efficient. Then, we will be able to conduct a comparative study on the usage of those two different classification techniques. Finally, additional studies involving more students will be conducted in order to further assess the role of social software in education.

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