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Abstract

The Reunion Island teachers training school has decided to set up an ePortfolio platform to validate the “C2i2e” certificate for trainees. This certificate confirms their competencies in technology enhanced learning and digital education. Trainers and trainees of the school have been using this platform for the past three years. Here, we study their activities to understand the real use of the platform that has been done. To analyze their behavior, we look at the traces they left on the platform. These traces show that, while all trainees go on the platform to get the certificate very few of them do it for their own goals and when they do it, it is usually for sharing documents. For their part, only a few trainers of the school work with the platform. When they do it, it is to make documents available to their trainees or to collect their students' work.

Keywords: teachers training, traces analysis, ePortfolio.

Introduction

The Reunion Island teachers training school (Ecole Supérieure du Professorat et de l'Éducation de la Réunion, “ESPE”) trains preservice teachers of elementary and secondary school. This training alternates according to two periods throughout the year, a period in the ESPE when trainees follow the courses and a period in schools when they are in charge of a class. In their cursus, trainees have to validate a certificate (Certificat Informatique et Internet Niveau 2 Enseignant : C2i2e) that confirms their competencies in Technology Enhanced Learning (TEL) and in Digital Education. To do this, they have to perform a set of activities and to deposit the results on an ePortfolio platform. Trainers evaluate these works and propose whether or not to award the certificate to the trainee.

We have chosen Mahara as our ePortfolio platform. This platform is a complete system of e-portfolios, curriculum vitae and social networks that allows connecting users and creating online communities. This platform is very intuitive and very easy to practice. It takes less than two hours to train trainees and trainers to its use. The ESPE has set up this platform for the TEL courses but the platform is also at disposal to all stakeholders of the school to meet their own needs. Thus, some volunteer trainers and all trainees have followed this training. The goal of this study is to see if this platform has been used only for the TEL courses as preconized by the institution or if actors have used it freely for other goals. In the latter case, we try to understand how they use it and what these goals are.

When they use the platform, actors can create groups. In these groups, they can share views of portfolios, but also files in folders or launch forums. A view contains blocks that can contains text or artefacts (files, pictures, movies, and so on). All these objects and all the activity on these objects leave traces on the platform. Thus, to understand this activity we analyze these traces. In a first step, we explain the methodology we employed. In a second step, we present the results we got. Finally, in a third step, we propose an interpretation of these results.

Methodology

Users have left more than 800000 traces on the platform. To study these traces, we preprocess them according to Activity Theory (Engeström, 2014). This theory provides a theoretical framework that makes it possible to identify easily the various aspects of human activity. It is often used to analyze computer supported collaborative work. In the Activity Theory, to achieve his goal, the subject uses tools and relies on a community. This community follows rules and some division of labor. Thus, we linked all the traces we find on the platform to the user who has left them and to the group in which he was. The traces we got are the traces of “objects”: users, views, forums, blocks, artefacts... They are also the traces of actions on these objects: creation, modification...

In a first time, we will distinguish two categories of users: trainees and trainers. Then, among trainees, we will distinguish between preservice elementary teachers and preservice secondary teachers. We will also consider two types of groups: with or without a trainer. We want to see if a trainee has the same behavior in a group with a teacher than in a group without teacher. For all these categories of users, we have computed the average number and the coefficient of variation of a whole series of indicators: average number of sessions they have opened, average number of views they have created, average number of blocks and artefacts they have deposited in their views and in their folders...

Results

There are 2111 users on the platform: 2081 trainees and 30 trainers. Trainees can stay on the platform during three years, maximum duration of their training, whereas there is no limit of duration for trainers. All the trainees of the school have to use the platform to validate the C2i2e certificate but only trainers in charge of this certificate have to use it. There are only 13 trainers in charge of the certificate, thus we could consider than the 17 others use it for their own needs: it is not really the case. In the following, we present the users activity according to different indicators.

Number of opened sessions

Trainers go on platform 6 times more than trainees do. The average number of sessions for a trainer is about 120 and, for a trainee, only 20. However we have to be careful because the coefficient of variation for trainers is very high (189%). It means that some trainers go on platform very often and others very rarely. Indeed, when we look at data, we can see than one trainer have opened a session on the platform 975 times whereas 14 others less than 10 times.

Among trainees, there is also a difference but much smaller. On average, a preservice elementary teacher has opened 23 sessions and a preservice secondary only 14. This difference indicates probably a different behavior according to the category of trainees. Inside each subcategory of trainees, the coefficients of variation, that are around 90%, show that their behaviors are more similar to each other than the ones of trainers. Only 10 preservice elementary teachers among 1330 went on the platform more than 100 times and 18 secondary, among 751, more than 50 times. This similar behavior is due to the C2i2e that preconizes a regular use of the platform. However, the little average number of sessions (20) seems to indicate that most of the trainees use it only for this purpose.

Number of views, blocks and artefacts

The number of views blocks and artefacts gives an idea of the production of the user on the platform. For example, a trainee has to create at least one view with 10 blocks and eventually 10 artefacts to validate his C2i2e.

Once again, there is a big difference between trainers and trainees. Trainers have created five more times views than trainees (11 vs 2) and two more times blocks (49 vs 21) and artefacts (57 vs 22). Once again, the high coefficient of variation for trainers (143%) indicates that from one trainer to another there could be very big differences. It is the case; if we look at data, one teacher have created 72 views with 134 blocks and 159 artefacts and another one, respectively 73 views, 331 blocks and 255 artefacts whereas, on the opposite, another trainer has only created 2 views with 9 blocks and 15 artefacts.

What is very surprising is the homogeneity of the results of the trainees. Whatever the degree, elementary or secondary, the average of views, blocks and artefacts are the same. They have created on average 2 views with 21 blocks and 22 artefacts. Moreover, the coefficients of variations are low, around 30% for views and blocks and 50% for artefacts. Therefore, the behavior of one subcategory of trainees versus the other is very similar, but also inside each subcategory, from one trainee to the other, for most of them. Other information that we got, is that on average each trainee has created one more view than the C2i2e view. This additional view shows that the ePortfolio is not used only for the C2i2e.

Groups: creation, membership

As we have stated before, in the Activity Theory, we consider that the subject will rely on a group to perform his goal. Therefore studying the creations of groups or the memberships is necessary to understand the activity on the platform. For example, to validate their certificate, trainees will have to participate to one C2i2e group and to deposit in this group a view of their ePortfolio. Thus, each trainee has to participate at least to one group. If he participates to more than one group, it means that the platform is used for other goals than the C2i2e. As we will see, it is the case.

Concerning creation of groups, trainers create 70 more times groups than trainees. The average number of creations of groups by a trainer is 12 whereas it is only of 0.17 for trainees. It is easy to understand why. If they want to work with their trainees, trainers have to create groups otherwise, they will not be able to see the productions of their students. On the other side, trainees have just to deposit their

work in the group created by the trainer. They do not need to create group. Thus, the average number of creations of groups by trainee (0.17) means that some trainees have freely created groups for their own needs and not for their trainer. However, 0.17 creation is very few. It means that not all trainees have created groups.

If we look at subcategories of trainees, elementary vs secondary, there is not a big difference between them. The average number of creations for preservice elementary teacher is 0.18 and 0.16 for secondary.

Whatever the category of users, the very high coefficient of variation is to point out: 211% for trainers and 258% for trainees. When we look at data, we see that only 11 trainers among 30 have created more than 5 groups and 5 of them have created more than 20 groups. More interesting is that 3 of these “active” trainers are not “digital” trainers because they do not have in charge the C2i2e. Thus, we can consider that these trainers use the ePortfolio platform for their own needs. Only, 311 trainees among 2018 have created at least one group, 36 of them have created more than one group and 5 more than 2 groups. For them also, we can consider they have used the ePortfolio for their own needs.

Group membership is another useful indicator. The average number of memberships of a trainer is 7 times more than the one of a trainee (14 vs 2) and the coefficient of variation is much higher (209% vs 91%). If we look at the data for trainers, we see that the number of memberships in a group is more or less the same than the number of creations what is not surprising. Therefore, we find the same differences between trainers according to the membership indicator than according to the creation one. For trainees, the results are more interesting. First, there is a difference between elementary (2.71 memberships) and secondary (1.42 memberships). Therefore, on average, one preservice elementary teacher belongs to more groups. To understand this difference we have looked at the membership in groups without a trainer. A preservice elementary teacher belongs to 0.35 groups without a trainer whereas a secondary belongs to 0.25. Thus, they belong more or less to the same number of groups without a trainer. The difference in group memberships (2.71 vs 1.42) comes necessarily from the groups with a trainer. It means that trainers for elementary training use the platform more than the ones for secondary training.

Trainees’ membership in groups without a trainer is an indicator that they have used freely the platform for their own needs. However, the high coefficient of variation shows that not all the trainees belong to such groups. Actually, they are only one third out of them to do it; near seven hundreds trainees out of 2081.

The analysis of the group creations and the group memberships shows that trainers and trainees use the ePortfolio platform for their own needs. However, it is clear that this is only a small part of the trainers and a third part of the trainees. Among trainers, those working in the elementary courses use more the platform than those working in the secondary courses.

Forums and posts

Forums and posts are good indicators of the type of work on the platform. Here, these tools are very little used. It means that the work on the platform should be more cooperative than collaborative in the sense of Dillenbourg (Dillenbourg, Baker, Blaye, & O’Malley, 1995). The average number of forum creations is 0.19

and, for once, trainees create, on average, more forums (0.19) than trainers (0.13). However, trainers deposit more posts (2.13 on average per trainer) than trainees do (0.58). Here also, the coefficients of variations are very high: 347% for creations and 282% for deposited posts. The very little number of creations or deposited posts and these very high coefficients of variation indicate that only a few actors use the forums. If we look at data, we see that only 2 trainers and 211 trainees have created forums. 14 trainers and 414 trainees have deposited posts. Preservice elementary teachers create ten times more forums (0.28 creation per user; 191 creators) than secondary (0.03 posts; 20 creators) and deposit posts 6 times more (0.84 post ;363 creators) than secondary (0.13 posts; 51 creators). As we can see, the use of the forum by elementary teachers is much more important than the one of secondary school teachers. Anyway, these figures are very low. The fact that the training is a hybrid formation could explain this; most part of the negotiation and discussion take place during face-to-face courses.

Interpretation of results

If we summarize the previous results, we see there is only 16 trainers who really used the platform. The use by the other 14 trainers is too insignificant to be taken into account. It means that among all the trainers of the ESPE, around 50, only a third of them use the platform. Among the 16 “active” trainers, 13 of them have to use it to train the students in TEL courses and to validate their certificate C2i2e. Most of the time, these “digital” trainers have also used the platform for other goals than the C2i2e. If we consider the “non digital” trainers, only 3 of them have used the platform for their own needs. So, we can consider that most of trainers who do not teach TEL, tend not to use it themselves.

We wanted to understand for which purpose trainers use the platform when it was not to validate the C2i2e. Thus, we have looked at the name of their groups, the title of the views in these groups and who has deposited the views. There are two major kinds of use. The first consist for the trainer to make available to trainees documents they use in courses in face-to-face, or documents that trainees can exploit in their own class during internship at schools. In this case, the platform replaces the photocopier: the ePortfolio platform is rather a sharing platform. This is the way the 3 “non digital” trainers use the platform. They are the creators of most of the views and artefacts in the groups they have created and shared with their trainees.

The second type of use is done essentially by a few “digital” trainers who must provide other courses than the TEL courses. They ask their trainees to return their work to them through the platform. In this case, we can consider that the platform is actually used as an ePortfolio platform. In this case, trainees deposit most of the views and artefacts in the groups shared with their trainers.

Concerning the trainees, most of the time, they go on the platform to validate their certificate C2i2e or because one of the previous trainers asked them to do it. However, we have seen that there are only a few trainees who have worked on the platform among themselves in groups where there is no trainer. To understand which usage of the platform they have, we have looked at the name of the groups and the title of the views. It appears that most of the time the platform is used as a sharing platform where they deposit documents useful to teach when they are in

internship: the words “sequences”, “lesson” or the name of the lessons appear in many titles.

We have seen that there was a difference between the subcategories of trainees: preservice elementary teachers use the platform more than preservice secondary teachers do. We have seen also that this difference comes from the trainers. In fact, the three “non-digital” trainers work only with preservice elementary teachers and the difference comes from them. It means that “non-digital” trainers of preservice secondary teachers do not use the platform for their own needs.

Conclusion

We studied the traces left on an ePortfolio platform by trainers and trainees of the Reunion Island teachers training school. The analysis shows that if all trainees use the platform to validate their certificate C2i2e, few trainees use it for their own needs and when they do it, it is to share documents for their traineeship. A third part of the trainers, only, uses it. When they do not use it to award the C2i2e, they do it either to make documents available to trainees or to retrieve their students' work.

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