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*Use of a CSCW Platform:
Professional Training Program Vs. General Education Training Program.*

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Abstract

The Reunion Island University uses a set of digital tools for face training and distance learning. The "Digital Technology Observatory" of the University launched a major survey among users to find out if these tools are suitable. This survey was supplemented by an analysis of the traces left on the different tools. Here we are particularly interested in the CSCW tool.

We show that, if according to the survey, the CSCW platform is suitable for all users, trace analysis shows that it is not really used for CSCW but primarily for file sharing. Moreover, according to the different training programs, the tool is used differently. Finally, CSCW appears essentially when there is Ministerial Guideline for doing it.

Keywords: CSCW, higher education, trace analysis.

1 Introduction

As other French universities [8], Reunion Island University provides two different training programs:

- professional programs: Institute of Business Management, University Institute of Technology, Higher School of Teacher training and Education, Higher School of Engineers, University Department of Health;
- general education programs: University Department of Law and Economics, University Department of Literature and Humanities, University Department of Human Science and Environmental Science, University Department of Science and Technology.

In Table 1 we see that students in professional programs (3064) are less numerous than in general education programs (8184). They are only 164 in the higher school of engineers versus 3645 in the department of law and economics

The University uses essentially two distance learning devices: Moodle for eLearning and a Computer Supported Collaborative Work (CSCW) platform, called "Bureau Virtuel" (abbreviated in "BV" in what follows) which is used only in five universities in France. For the moment, Moodle is used effectively for two goals: courses uploading and exam. The BV is a platform which allows to create groups on it and to share in these groups: folders, documents, URL, contacts, calendars, forums... Each year there is a students' training to the main functionalities of the platform. We studied more closely the BV because we wanted to know if there was effectively collaborative work.

Firstly, we present our methodology, secondly, our results.

2 Methodology

For our study we have two kinds of data:

- answers to a survey launched in 2015 among students and teachers,
- traces left on the BV platform.

| University departments | | number of students | | | | | number of teachers | | | | |
|--|--|--------------------|--------------|------------|-------------|------------|--------------------|------------|------------|------------|------------|
| | | in the dept | on the BV | % | survey | % | in the dept | on the BV | % | survey | % |
| <i>professional programs</i> | Institute of Business Management | 422 | 262 | 62% | 66 | 16% | 18 | 7 | 39% | 4 | 22% |
| | University Institute of Technology | 673 | 673 | 100% | 92 | 14% | 31 | 7 | 22% | 9 | 29% |
| | Higher School of Teacher training and Education | 1100 | 700 | 64% | 87 | 8% | 37 | 45 | 122% | 13 | 35% |
| | Higher School of engineers | 164 | 161 | 98% | 46 | 28% | 23 | 29 | 126% | 4 | 17% |
| | University department of Health | 1268 | 1268 | 100% | 133 | 10% | 17 | 23 | 135% | 5 | 29% |
| | Total for professional programs | 3627 | 3064 | 84% | 424 | 12% | 126 | 111 | 88% | 35 | 28% |
| <i>general education programs</i> | University department of Law and Economics | 3645 | 3321 | 91% | 633 | 17% | 63 | 49 | 78% | 11 | 18% |
| | University department of Literature and Humanities | 2918 | 2303 | 79% | 208 | 7% | 82 | 35 | 43% | 16 | 20% |
| | University department of Human and Environmental Science | 1471 | 1105 | 75% | 48 | 3% | 39 | 14 | 36% | 17 | 44% |
| | University department of Science and Technology | 1455 | 1455 | 100% | 202 | 14% | 94 | 92 | 98% | 35 | 37% |
| | Total for general education programs | 9489 | 8184 | 86% | 1091 | 11% | 277 | 190 | 69% | 79 | 28% |
| Total for Reunion Island University | | 13116 | 11248 | 86% | 1515 | 12% | 404 | 301 | 75% | 114 | 28% |

Table 1: number of people who work on the BV and people who have answered to the survey according to their departments

The Digital Technology Observatory has launched a very big survey of near 200 items among the users. We are interested here only with the items about the general use of digital technologies and the ones about the BV. As the survey was very big, some questions didn't get answer as we will see. As we can see in table 1, the percentage of answers was approximately the same in each type of programs, be it for students (near 12%) or for teachers (28%).

Concerning the traces, as we study collaborative work, we were interested in the different groups formed on BV and, for each group, in the traces it left [14]. The traces we had access to were completely anonymized. Our data have been related to the type of programs to which the group belonged. A preliminary work has been done by eliminating from this study, all groups in which there was no data. In table 1, we can see that there is near the same percentage of students on the platform (86%) in both type of programs but relatively less teachers in the general education programs (69% vs 88% for the professional).

In the next section we report our main results and we compare them with the results obtained by researchers who have studied the training in higher education in France.

3 Results of the Survey

3.1 Use of digital technologies

Only one teacher among 114 says, in the survey, that this is difficult to use digital technology. 89 among 114 use Internet firstly to communicate by email and 66 use it secondly to find documents and to be informed. 65 consider that the University digital equipment is insufficient.

In table 1, we see that if 12% of the students have answered to the survey, the numbers of answers according to the department are more heterogeneous (from 3% to 28%). It appears that students have no problem with the digital technologies. 43% use Internet primarily to communicate (20% use social network), 30% for studies or for work and 25% for leisure.

3.2 Use of the BV

58% of the teachers (66 among 114) and 25% of the students (376 among 1515) declare to rarely use the BV as we see in the next table.

| BV use frequency according to the type of programs | number of students | | | number of teachers | | |
|--|---------------------|---------------------|-----|---------------------|---------------------|-----|
| | total nb of answers | once a week or more | % | total nb of answers | once a week or more | % |
| professional programs | 424 | 225 | 53% | 35 | 12 | 34% |
| general education programs | 1091 | 914 | 84% | 79 | 36 | 46% |
| Total | 1515 | 1139 | 75% | 114 | 48 | 42% |

Table 2: BV use frequency according to the type of programs.

However, only 7 teachers among the non-users say BV is not suitable. Moreover, teachers don't answer to the questions to understand why they don't use it (107 no responses).

We also observe that the use frequency is different according to the type of programs among both students and teachers. 53% of the students of professional programs use it frequently vs 75% of the general education programs and 34% vs 46% for the teachers. So it could seem that the BV is less used in professional programs, we will see it's not really the case.

3.3 Which kind of use

Among the 48 teachers who use it frequently, they are 34 (71%) who use it to deposit documents and 27 (56%) to share with groups. *So we can consider that the first use is to share documents.* This is particularly true, knowing that if you want to share documents, you have to create groups. Moreover 48% of the students confirm to frequently download documents. In fact, only 5 teachers say explicitly that they use the platform for the groups.

| Teachers who frequently use the BV use it... | total | for groups | % | for document deposit | % |
|--|-------|------------|-----|----------------------|-----|
| professional programs | 12 | 8 | 67% | 10 | 83% |
| general education programs | 36 | 19 | 53% | 24 | 67% |
| total | 48 | 27 | 56% | 34 | 71% |

Table 3: BV main uses according to the type of program.

Once again there is a difference between types of programs but it seems that it is in the professional programs that the use is the most explicit (83% vs 67% to deposit documents and 67% vs 53% for the groups). 4 teachers of the general education programs don't explain at all why they use the platform.

3.4 Use of other platforms

What about the 66 teachers who don't use the platform. As we have seen, they don't give any explanation concerning the platform itself. 5 teachers say they use other platforms, but 4 of them frequently use the BV. So we can see that this is not the use of another platform that can explain why the BV is not frequently used.

In fact, the main reason is that they don't really use digital technologies for their teaching. Only 61 teachers among 114 declare using digital documents in their teaching and 13 teachers using rarely the BV put document on it.

4 Traces analysis

4.1 Use of the platform functionalities

In Table 4, we give, per type of programs, the total number of students on the BV, the total number of active groups and the average number of functionalities used in those groups. For example, there are 385 groups created on the platform for the professional programs. Each one of those groups hosts, on average, 58 documents.

We also indicate the standard deviation and the coefficient of variation that identify whether the behavior is homogeneous or if some groups are clearly distinguishable from others. If these numbers are high, we will check more precisely what's up in data.

| | nb of students on the BV | nb of groups | ratio nb groups/student | average nb of Members | average nb of Events | average nb of Contacts | average nb of Documents | average nb of URL | average nb of messages |
|---------------------------------|--------------------------|--------------|-------------------------|-----------------------|----------------------|------------------------|-------------------------|-------------------|------------------------|
| professional programs | 3064 | 385 | 0,13 | 12 | 20 | 3 | 58 | 4 | 2 |
| general education programs | 8184 | 641 | 0,08 | 26 | 26 | 2 | 48 | 0 | 0 |
| total | 11248 | 1026 | 0,09 | 20 | 24 | 2 | 51 | 2 | 1 |
| <i>Coefficient of variation</i> | | | | 241% | 624% | 1444% | 229% | 539% | 667% |

Table 4: total number of students on the BV, of active groups per programs, average number of members and average number of functionalities used in those groups.

We can see a first difference between the two types of programs: the number of groups relatively to the number of students is higher in the professional programs than in general education program (0.13 vs 0.08).

Three of the functionalities, “calls”, “notes” and “tasks”, don’t appear in the table because they are not used at all. Those tools can be used for collaboration and they are not exploited. It’s a first indication that the BV is not really used for collaboration.

“URL” deposits are also rarely used (2 URL per group). This seems singling Reunion Island University because according to Raby [12], students feel that access to Internet sites proposed by trainers is a great advantage of ICT.

Similarly, while the forums are also considered very popular tools for students, they are rarely used (only 1 Message per group). Nevertheless, Reunion Island University does not differ from other higher education institutions where, there too, the use is rare [12]. *These two last features are used only in the professional programs. In the general education programs their use is near 0.*

Feature “Contact” is not used a lot. This can be explained by the fact that the status of “contact” is rather ambiguous compared to the one of “member”. The very high coefficient of variation (1444%) indicates that this feature should be used by a little number of groups. In fact, the total number of contacts is 2423 and near half of them are in two groups belonging to the Higher School of Engineers. This school needs to keep in touch with its business environment out of University.

The “Events” concern the use of the diary or calendar. Here too, the high coefficient of variation (624%) indicates that its use is not uniformly spread across all groups.

Indeed, only 191 groups, among the 1026, use it. Among these 191 groups, only 54 have performed 50 or more events. These 54 groups are distributed evenly on the two types of programs

Ultimately, the only feature used by all groups is the documents deposit.

Those findings correspond to what we read in the literature on the subject. For Bruillard & Baron [4], the research in French higher education shows with regularity, a deficit in the use of the tools. Among these tools, Docq &al [7] indicate that the deposit of learning resources is the most appreciated by the students. This shows that the platform is less used for collaboration or cooperation, in the sense of Dillenbourg [6] than for the pooling of resources among peers or the dissemination of documents by the trainers. This last point is probably due to the fact that university teachers use learning device for their teachings essentially to *transmit* knowledge [5].

We have seen in section 3, with the survey, that students in general education programs seem to use more frequently the BV than those of professional programs. Traces analysis confirms it but not in the same proportion: 331 logins per student on average in the professional programs vs 361 in general the education programs.

Here, it seems that this is in the professional programs that the platform is more used. On possible explanation of this contradiction is that it is not the same use according to the type of programs. Students of general education programs download more documents (an average of 99 documents per student) than those of professional programs (88 per student), but they have a less diversified use of the platform.

4.2 Size and composition of the groups

We see that if the average number of members per group for the whole university, is 20, *there is a clear difference between the two types of programs: 12 members per group for the professional programs and 26 per group for the general education programs.*

| Group composition | nb of groups | Average nb of teachers | Average nb of students | Average nb of members |
|----------------------------|--------------|------------------------|------------------------|-----------------------|
| professional programs | 385 | 3 | 9 | 12 |
| general education programs | 641 | 3 | 23 | 26 |
| total | 1026 | 3 | 17 | 20 |

Table 5: average number of teachers and students per group

We can also see differences between the two programs in the composition of the groups: there is one teacher for three students in the professional programs versus one for eight in the general education programs.

The functionalities used and the size of the groups suggest that there are very few groups doing collaborative work and, if there are, they should appear more, relatively to the number of groups, in the professional programs.

4.3 Collaborative work

So, the main functionalities used indicate that the platform is rarely used as a tool for collaborative work. Group size seems to confirm this trend. Indeed, it is well-known that as the group size increases, group collaboration is not as effective as it could be [11], [10]. So we can suppose that it is not possible to get collaborative work in large groups which seems to be the size for most of the groups on the platform. For instance, for Anzieu and Martin [1] and Faerber [9], cooperation or collaboration can only take place in small groups. According to these authors, these small groups should not exceed 13 members.

So to find collaborative groups on the BV, we look at groups of 13 members, or less, using at least three functionalities of the platform. We obtain the following table.

| | total nb of groups | nb of collaborative groups | % | average nb of Members | average nb of Documents | average nb of messages | average nb of URL | average nb of Contacts | average nb of Events |
|----------------------------|--------------------|----------------------------|----|-----------------------|-------------------------|------------------------|-------------------|------------------------|----------------------|
| professional programs | 385 | 18 | 5% | 6 | 71 | 9 | 14 | 1 | 17 |
| general education programs | 641 | 19 | 3% | 7 | 56 | 1 | 1 | 4 | 98 |
| total | 1026 | 37 | 4% | 6 | 63 | 5 | 8 | 3 | 58 |

Table 6: collaborative groups

As we can see there is relatively more collaborative groups in the professional programs than in the general education (5% vs 3%). Moreover, those groups are more active on three features: documents, forum messages and bookmarks.

More interesting is that, when we have a look at the titles of those groups, 24 of them are concerned by ICT certificates. Those certificates require collaboration among students if they want to get them. So, when we look more closely at a possible CSCW use, we note that CSCW appears when there is a ministerial guideline that encourages doing so.

5 Conclusion

According to the main features used but also to the group sizes we observe that the CSCW platform of Reunion Island University is not really used for collaborative work. In general, this platform is mainly used to pool or disseminate documents. Those results confirm those of other researchers [4], [7].

When there is a possible CSCW use, we note that it appears when there is a ICT certificate that encourages doing so. This is one of the reasons why Reunion Island University decides that this kind of certificate will appear in each training program for the next four years. This is important because the Ministry plans that teaching in higher education will rely more and more on MOOCs. As MOOCs are based on various forms of collaboration [3], the students have to be prepared to face it. Indeed, their only use of social networks should not be sufficient as it has been shown: digital natives do not necessarily have sufficient mastery of the tools they handle [2].

Compared to other researches on the subject, what is new in our study is the presentation of the relationship between the use of a CSCW platform and training programs. Depending on the type of programs (professional vs general education) all students do not use it in the same way. This confirmed the heterogeneity between the different curricula in French higher education observed by Rey [13]. We insist on this point because students of general education programs come from more socially disadvantaged environment than those of professional programs (especially Health and Engineers). So we see that those students accumulate disabilities; that confirms the relationship between the “digital divide” and the “social divide” [15].

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