The use of new Technology in Higher Education: From Unlearning to wiki use Appropriation in a French Business School: a Case Study

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Abstract :

It is widely agreed that the development of new technology in higher education is of particular importance. Yet, with a few exceptions, little is known about the conditions of appropriation by learners in this specific context. This paper attempts to address the relationship between the appropriation of new technology and the process of unlearning. We investigate why and how the actions modifying old knowledge can favour the use of collaborative and virtual technology. The framework of the paper is built on a review of Giddens's theory of structuration and learning theories, with particular focus on the concept of unlearning (Nystrom and Starbuck 1984). Unlearning is defined as the questioning and destruction process of knowledge, logic and patterns established, in order to propose new responses and behaviours. The empirical study proposes the analysis of the process appropriation of wiki technology by 300 students in a French business school ["Euromed Marseille"] in their workgroup sessions. We use a case study methodology (Eisenhardt 1989, Yin 1990) based on a qualitative investigation (Miles and Huberman 1984) and a combination of different collection. The results show that unlearning of traditional workgroup methods clearly facilitates appropriation of wiki technology. In other words, the unlearning-learning process appears to be essential to create virtual collective knowledge. Furthermore, this research provides some evidence about the factors that influence the speed of unlearning – deviant behaviours and tensions within groups, weak ties among group members, various expertise and visions, flexible collaboration... Finally, we discuss the implications of these findings for research and practice, and also make recommendations to encourage unlearning opportunities in the process of new technology appropriation.

Key words: appropriation, unlearning, wiki, higher education, qualitative research

Introduction

This paper deals with wiki appropriation in the specific context of higher education. It seems relevant considering both the substantial increase in new knowledge technologies in these organisations and the continued difficulties of appropriation by learners.

Even if a large community of researchers has studied the implementation and use of new technology, little is known about the effective conditions of appropriation by learners in this specific context. Our case study takes place in Euromed Marseille, a French Business School. We analyse the process of appropriation of wiki technology in working group sessions of 300 students.

Throughout this case study, we attempt to answer questions that seem important for the appropriation process: What are the reasons for the appropriation of new technology to often fail? What are the components of resistance associated with the use of a computer-based tool such as wiki? How can we facilitate the appropriation of a wiki to involve learning and innovation in virtual groups? From a literature review, another question emerges: Is the unlearning process a solution for the appropriation of wikis?

The first part of this article presents wiki technology and the main theories we utilize in our research. The research methodology, collection and data analysis are discussed in the second part. The results provide recommendations in order to create favourable conditions through an unlearning-learning process. Furthermore, they allow the building of an environment which facilitates wiki appropriation and therefore collective knowledge and innovation. The discussion and conclusion of our research constitute the last part of this article.

1. Technology appropriation conceptual framework

1.1 Wiki Technology Presentation

Wikipedia is the most recognised “wiki” in the world. But what exactly is a wiki? Quite simply, a wiki is a website developed around a “wiki engine”, the same collaborative server software as Wikipedia. Its design allows for anyone to edit, complete or modify any page of a wiki. Ward Cunningham (Portland, Oregon, USA) created the first wiki in 1995. His idea was to build a tool where computer scientists could share knowledge, information and advice. He wanted a very quick tool, open to everyone, and named it “wiki”, the Hawaiian word meaning “quick”.

A wiki project runs on a free software collaborative authorship tool – the “wiki engine” - which is a mark-up language similar, at least conceptually, to HTML, but easier to implement. It allows multiple users to edit a single document and interlock multiple documents, and generates archives of the changes made to each. Readers are invited to evaluate the quality of the production. The participants commonly follow a few basic policies that are essential to keeping the project running smoothly and productively. To ensure security from hackers, a robust mechanism for peer review exists. Business schools and universities are becoming more and more interested in wikis.

A wiki is simple and powerful, easy to use and quite playful. However, as with every collaborative tool, the user needs to be guided throughout its use. Furthermore, frequent communication facilitates network development and helps to sustain it over time (De Sanctis and al 2003). Experiences prove that wikis strengthen group cohesion and permit knowledge harmonization. They also permit the sharing of competencies and knowledge when working on common projects (Agostinelli 2006).

In our case study, we have tried to analyse how the appropriation of technologies emerges, and how to find new methods of working in groups.

1.2 Contributions from the Theory of Structuration

Defining the theory of structuration in a few words would be a utopian idea. What we can say is that it is an attempt to reconcile theoretical dichotomies of social systems such as agency/structure, or subjective/objective perspectives. The approach does not focus on the individual actor but on social practices.

Over the last 20 years, structurational approaches have become an important theoretical perspective within the Information Systems (IS) research community (De Vaujany 2003). IS researchers began suggesting the analysis of implementation and use of Information Technologies (IT) as a structuration process.

Many researchers like Barley (1986), Orlikowski (1992), De Sanctis and Poole (1994) - following Giddens' structuration theory (1979, 1984) - have shown a growing interest in general management and information systems management. They try to understand how the design, implementation and use of a computer-based tool can modify the conditions of interaction and favour either the reproduction or production of social structures.

In our research, by drawing on Giddens' theory within the sub-stream of its application in an IS context, we attempt to answer the following questions: What are the reasons for the appropriation of new technology to often fail? What are the components of resistance associated with the use of a computer-based tool as wikis? How can we facilitate the appropriation of a wiki to involve learning and innovation in virtual groups?

Collaborative tools are often based on an indirect appropriation, influenced by previous use, social structure and individual behaviour. After some time, the direct appropriation of the tool - often through unexpected use - emerges.

De Sanctis, et. al. (2003) give us guidelines for understanding learning networks. They argue that frequent communication facilitates the development of a network. Evidence suggests that a coordinator or a mediator is necessary in a virtual group. These authors recognize the importance of facilitators who are willing to help the adaptation of new technology, and contribute to the success of learning. Routines are essential in online forums like wikis.

Nevertheless, resistance behaviours appear during the implementation and use of new technology. Lapointe and Rivard (2005) identified five basic components of resistance: behaviours (indifference, lack of interest, complaints and coalitions), object (the implementation of an information technology), subject (a group or an organisation), (perceived) threats, and initial conditions (those that may influence how threatening an object is perceived to be). This resistance behaviour within groups varies in nature and intensity during implementation. The object of resistance can also change during the implementation from the system itself to its significance, for instance. Furthermore, the authors explain how inappropriate responses can even provoke, ultimately, a resistance escalation.

Reviewing De Sanctis and al (2003) and Lapointe and Rivard (2005), we can advance the hypothesis that to prevent such a reaction when using a wiki, one must find a work objective for the respective working group and edict structures to build a solid environment. According to De Sanctis, et. al. (2003), using online forums, it is necessary to establish constraints such as limitation, structure, and rules. If we transpose this proposition to wikis, we need to define new structures of work in groups. What can be a solution for the finalization of these new ways of working in virtual groups? Could this solution be representative of the unlearning concept? This is what we attempt to demonstrate in our research.

1.3 From unlearning to wiki use appropriation

Nystrom, Starbuck (1981, 1984) and Hedberg (1981) performed several studies concerning "unlearning" in a crisis context, with particular interest for top managers.

"Unlearning is a process that shows people they should no longer rely on their current beliefs and methods" (Starbuck 1996). The author explains that without unlearning, we shape our perceptions. Scientists tend to avoid new paradigms until indisputable evidence convinces them. According to Starbuck, the essential requirement for unlearning is doubt. Bo Hedberg (1981) adds that unlearning must precede the learning of new behaviours.

Nystrom, Starbuck (1981, 1984) and Hedberg (1981) demonstrated that organisations need to unlearn in order to survive. These authors also suggest that unlearning is necessary to improve one's own knowledge and to create innovation in one's work. Through different stories – The Swedish Defense Ministry in 1988 with the anti-submarine warfare (Starbuck 1996), crises in different American industrial companies between 1970 and 1975 (Nystrom and Starbuck 1984) – they underline how top managers are intricately involved in their organisation's survival and success, and how they can guide them *into* crises. "Top managers' ideas dominate organizational learning, but they also prevent unlearning […] Past learning inhibits new learning" (Nystrom and Starbuck 1984). Starbuck (1996) shows us how "learning often cannot occur until after there has been unlearning".

To prevent organisations from crisis, Starbuck (1996) invites top managers to turn all events and messages into stimuli in order to unlearn. According to Starbuck (1996), they must be attentive to signals: dissatisfaction must be a reason for doubting current beliefs and methods, experimentation is a way to deviate from usual practices and create new opportunities, disruptions and surprises must be studied closely to turn them into opportunities for unlearning, all dissents and warning have some validity, collaborators who disagree are both right, you need to listen and consider stranger thoughts (even if you belief it is strange), all causal paths carry influence in both directions, and dialectic reasoning is a generalization of two-directional causation.

In coherence with these authors on concepts of unlearning, we attempt to transpose these recommendations for top managers to our students' virtual working groups. Crises are convenient situations for unlearning. To unlearn, one must change one's beliefs and procedures. These beliefs may have been accurate, but have proven irrelevant for an electronic revolution. This is the reason why the implementation of new technology often fails: People must change cognitive structures, but they often resist and maintain old procedures. In our case, how can we influence the creation of collective knowledge and innovation in our students' groups? Students need to unlearn the old methods of working in groups. To innovate and create new knowledge, unlearning is required.

To facilitate unlearning and prevent the "group-think" effect, the introduction diversity can be a potential solution, and we test this in our case study. Groupthink is a type of thought exhibited by group members who try to minimize conflict and reach consensus without critically testing, analyzing, and evaluating ideas (Janis 1972). A group working together for an extended period can be involved as a cohesive in-group and they cannot readily change their way of working. If we introduce new team members, from different countries, with different ideas and ages, the groupthink effect will be avoided and unlearning will have a chance to succeed.

By introducing a new tool in our working group sessions, we have created a disruption in our students' work methods. We attempt to perform analysis in the different groups, and to determine which aspects were the most effective and why. In addition, we will demonstrate how unlearning traditional methods and behaviours facilitate the appropriation of new technology.

2. Research Methodology

Before presenting the method of data collection and analysis, it is necessary to clarify the context of the empirical study. This includes the nature, the content and the actors within the case environment.

2.1 Case study presentation

Our empirical study takes place in a French business school, Euromed Marseille. We explore the wiki appropriation within a core course on the "Euro-Mediterranean Management Approach". For this lesson, 300 students used wiki technology in their workgroup. In groups of five students each (60 groups in total), students had to produce, on a weekly basis, a wiki on their interpretation of the Euro-Mediterranean Management Approach. After every class session there was an assignment given for the next course. The pedagogical aim was to foster a "learning by doing" approach by working continuously on the co-creation of their course understanding (Baets and Van der Linden, 2000).

This experiment was conducted over four months, a sufficient period during which to encourage the building of a virtual community of practice. In addition, to promote this new pedagogical approach and assist students in their wiki use, an assistant organised formal workshops with all groups. This allowed the progress of wiki to be regularly evaluated. At the end of the course, each student handed in with the assistant a self evaluation – focused on the competencies that the course aimed to develop – and a peer evaluation of each team member.

Moreover, a blog (personal teacher's web-blog) was used as a virtual tool to support the course. It contained lists of interesting books, papers, websites and powerpoint files of course discussions. All communication between teachers and students was performed via the blog, and any relevant news about the course was posted on the site as well.

2.2 Collection and data analysis

We try to assess the relationship between the two concepts of appropriation and unlearning through a case study methodology (Eisenhardt 1989, Yin 1990), based on the study of wiki use in higher education. This case study allows us to examine the resistances to wiki use, the link between wiki use and the unlearning process and its key dimensions.

A qualitative investigation has been chosen (Miles et Huberman 1984) based on a single-case study. This methodological choice is justified and relevant when the case presents a unique and original characteristic, and allows testing and completing of an existing theory (Yin 1990).
Furthermore, our methodology proposes an original Action Research based on a trinomial. One of the authors is teacher of the Euro-Mediterranean Management Approach course (EMA course), and as such, he wore two hats, as both expert and researcher. A second author is the assistant for the EMA course and collected data during workshops with groups, wiki assessment, etc. Finally, the third author guided the data analysis. The experience of researchers implicated in the actual case allowed developing a true sector-based expertise and an extensive understanding of the case situation and context. The aim of this intervention approach is to build an in-depth understanding of how the groups work and produce knowledge (David 2000) with wiki technology.
However, it should also be noted that intervention research requires delicate data collection to control the data authenticity. The case study has been designed using a combination of different collection methods. First, the collection of primary data included both centered interviews with groups (60 interviews about one hour for each), and notes of participant observations collected during the workshops. Second, we organized the collection of secondary data (Weick 1993) through wiki assessments, and self and peer evaluation documents. This collection provided a data triangulation and robust chain of evidence (Miles et Huberman 1984). The data analysis was qualitative through a thematic content analysis (Bardin 2001) and has been achieved with the assistance of Nvivo (qualitative data analysis software), organizing the verbatim in categories of themes and under-themes.

3. Wiki use: the link between Appropriation and Unlearning

To explore the relationships between wiki use and the unlearning process, we first analysed the key barriers and types of resistance associated with the appropriation of wiki technology. This first step allowed us to identify various dimensions of unlearning.

At the end of the four month period, the following results were noted: 18 wikis were excellent, 30 wikis were good or quite good, and 12 wikis were unsatisfactory. Almost all excellent wikis corresponded to groups that quickly adopted the technology. The good wikis refer mainly to groups that succeeded in wiki appropriation through a consequent period of unlearning. The progression had been realized step by step until emergence of real understanding of wiki interest and the concrete use of its functionalities. In spite of the support by an assistant, some groups failed in wiki use.

3.1 Resistance to wiki use in Higher education

. If wiki is an accessible tool in terms of functionalities, its collaborative logic raised some issues into workgroups, where several types of resistance appeared.

Firstly, the shared knowledge and experience logic of wiki disturbed the classic workgroup methods. These classic workgroup methods appear more as individual work combinations than collective work. The usual work function within student workgroups favors the sharing of minimum parts (usually by a division of labor) and the working of each separate division by each member individually. In classic workgroups, one individual plays the role of coordinator, centralizes different work and harmonizes the whole. Yet, to create a good collective work on wiki, it is necessary to revise the modalities of classic workgroups.

Wiki requires a virtual collective creation. Work sharing is extremely limited. Each student publishes directly his/her work on wiki and interacts with others. Wiki logic does not need a coordinator or leader because wiki harmonization is not centralized and stimulation of the group is virtual through the multiplication of interactions on the wiki. The Sensemaking becomes more and more virtual and collective. Some groups seem to get paralyzed with the non-physical process of Sensemaking . Data analysis reveals that most of the groups continued to manage this process by multiplying the physical meetings. *"We do not manage to work directly on the wiki. We have to meet two or three times a week to discuss work. We know that we waste time but ..."* However, there is a complete disconnect between the building of physical and virtual Sensemaking. Sensemaking in the virtual way necessitates trying and directly exploring interactions on wiki.

Secondly, the wiki logic of "building a site" breaks with the classical approach of finalized work. Students demonstrated a clear preference for final work production that doesn't adhere to the building approach of wiki. Indeed, we noted a strong resistance to the online edition and publishing. *"We have not published our interpretation because it is not completely finished, and we prefer to wait… We don't want to be assessed on uncomplete work"*. Often, leaders of a group emphasize this phenomenon while wanting to control the content of interpretation and comments. The censorship actions of leaders do not foster the wiki appropriation. "*I prefer that the others send me their work or their comment before I put them online. It allows me to check the content. And often, I must start again*." On the contrary, the learning of trust within a group is an essential step for virtual co-creation.

Thirdly, another resistance to wiki appropriation seems to be the fear of plagiarism and inter-group competition that induces an equal resistance to online edition. *"Why work for others ?"* Wiki is a open website and numerous groups refused "to play the game" for fear of being copied. It is necessary to note that in business schools, the competition between students or groups is particularly strong. The open logic of wiki is perceived by students as a threat to their involvement. "*Personally, I do not find it normal that the other groups can come on our wiki and copy our work. The wiki does not value our involvement".* If the trust development within groups seems problematic to students, trust between groups is not at all perceived.

Finally, a fourth barrier interrelated to the others concerns the visibility of wiki, the possibility that their work quality is assessed by people who they do not know. Very quickly after the beginning of the wiki

experiment, students became aware of this visibility. *"Can we block or restrain the access to our wiki? In fact, we were faced with a problem. External people came on our wiki to add comments which are rather critical. An individual, for example, criticized our holism definition."* These peer exchanges, instead of being beneficial to the workgroup, seemed on the contrary to be annoying and worrisome.

These barriers to wiki appropriation require an unlearning process of classic workgroup methods, especially in terms of coordination, communication, leadership…

3.2 The necessary the unlearning process of classic workgroup methods

Introducing wiki in the workgroup is analogous to a separation that could speed up new learning. Some groups use this separation to forget their old habits and quickly benefit from wiki. Nevertheless, this concerns only a minor part of the groups. The other groups do not understand this breaking-away process. We witnessed several types of resistance and sometimes a process of "commitment escalation". This phenomenon refers to the trend reflected in investing additional resources into an apparently losing proposition (Staw, 1981). Here, the "commitment escalation" shows itself when groups continue to use their usual workgroup methods instead of learning new ones. Students invest more time and energy to prove that their habitual work modalities can function, while it is doomed to failure. What are the traditional workgroup modalities that are concerned by unlearning process in the case of wiki appropriation?

Unlearning applies here to a large number of workgroup parameters, methods and behaviours.

Firstly, coordination modalities seem to be concerned. Moving from a physical to a virtual coordination requires the reduction of, at the very least, task sharing and leaves a large autonomy for group members to develop trust and rethink the coordinator's role. Indeed the leader must stimulate the virtual interactions instead of control the content of work. Dissatisfaction can act as a key motivation factor to extend the wiki richness.

Secondly, it seems necessary to review communication methods. Wiki appropriation requests that communication between group members goes exclusively through this technology rather than e-mail, phone, one to one meetings. Wiki must become the primary communication and discussion tool. This implies the acceptance of wiki building logic rather than the finalized logic of classic work, as well as the acceptance of diversities of perspectives, instead of the usual harmonization and coherence.

Thirdly, unlearning process, which may be the most important aspect, must affect the competition logic of classic workgroups, and the fear of being copied and/or criticized. Wiki use requires taking the benefit of knowledge sharing through supporting exchanges within a group, as well as with other groups, and through dialogue with peers. The richness and quality of wiki highly rely on the understanding of collective sensemaking and co-creation interests. *"If each of us has an idea and that we share it, we shall have two ideas"*. Students must break with the hidden work evaluated just by a tutor, because it is the work exposition which creates the wiki quality . By taking over this logic, groups can research connections with other groups and/or other websites.

Data analysis reveals that these elements can be made easier by four key factors. We will now present these four dimensions that accelerate unlearning process.

3.3 Essential dimensions of unlearning process in the case of wiki use

3.3.1 Weak ties among group members

The first dimension that facilitates unlearning process are the weak ties among group members. Granovetter (1973) distinguished between "strong" and "weak" ties. Strong ties exist when people see each other frequently over long periods of time. The relationship is close and intimate. Weak ties are the opposite, weakly tied individuals see one another infrequently and their relationships are casual rather than intimate.

Weak ties in workgroups mean that members are not in the habit of working together or do not have "friendly" relationships. In the studied case, unlearning process was facilitated, thanks to these weak ties. Weak ties seem to accelerate the challenge of usual workgroup behaviours and methods. It may be explained through the absence of a habitual way of working together and the lack of collective experience and identity. These groups quickly accepted playing the game of virtual collaborative learning. We observed that this kind of group appropriated wiki technology and its functionalities more rapidly than other groups.

In addition, these groups also show a larger capacity of exploration and adaptation, allowing them to take advantage of cooperation and sharing logic. These students had strong ties with other groups and were less involved in a competitive approach. At the final assessment, their wiki co-creation had been widely superior to the average. In other words, weak ties within groups seem to favour the creation of virtual communities of practice. Thus, we can underline that the composition of groups with weak ties create opportunities of unlearning and foster the appropriation of wiki knowledge sharing logic as well as its collaborative functionalities.

3.3.2 Diversity of group members

The second dimension of unlearning is the diversity of group members as suggested by Nystrom and Starbuck (1984). The collective unlearning capability relies on knowledge diversity and on the exchanges within the working teams.

Diversity in the student workgroups consisted of the variety of views, age, experience, qualification, beliefs, origins, nationality… The heterogeneity seems to be an essential dimension of adaptive and creative behaviours, especially if communication between group members is frequent (De Sanctis, et. al., 2003). Indeed, diversity allows developing virtual interactions and can produce "creative pressures" that encourage a logic of debate. In other words, diversity is similar to a source of unlearning or a double-loop learning process (Argyris and Schön, 1978), defined as the questioning and modification of existing norms, procedures and objectives. Moreover, diversity permits the detection and correction of errors in workgroup behaviours and methods. When group members have different interpretations and views, it creates a challenge to collective knowledge-base and routines, which in turn drives the exploration of new possibilities (March, 1991).

The studied case reveals that diversity limits the commitment escalation process (Staw, 1976, 1981) thanks to a bigger trend for introducing doubt in the usual methods, beliefs and behaviours. And at the same time, it reduces the phenomenon of groupthink (Janis, 1972) through a decrease in risk aversion. Moreover, the plurality of views and knowledge permits wiki groups to revise the role of each in a virtual way. *"In our group, we rarely agreed. Usually we look all the time for a consensus in order to begin to work. But with the wiki, we understood that it was not necessary to find a point of agreement because each one can express his views differently without damaging the coherence of the work."* Variety of mental models facilitates unlearning process as well as various and rich learning. In conclusion, our empirical study shows that diversity accelerates unlearning process and the collaborative technology appropriation mainly through introduction of doubt and uncertainty in usual workgroup methods. It also creates the rapid acceptance of the debate logic of wiki and discussion in the sense of idea exchanges. It is therefore essential to control the group composition in order to obtain a sufficient diversity between group members.

3.3.3 Conflict emergence

The third dimension of unlearning process needed to facilitate collaborative technology appropriation is the emergence of tensions and conflicts within workgroups. In the studied case, several groups had been ineffective in wiki use because of poor relationships and experiences in the past. These students did not want to work together. For these kinds of groups, unlearning process occurs with the emergence of conflict. With the help of the assistant, tensions and conflicts allowed the deconstruction of past relationships. Thus, wiki technology appeared as an opportunity to escape the tough, physical meetings.

Concretely, conflict permitted the start of unlearning process first based on individual strategies of avoiding. In other words, lack of motivation for workgroups on a one-to-one basis can be compensated by the possibility of virtual commitment. Afterwards, virtual interaction and commitment enable new group cohesion. This result underlines that it is better to facilitate conflict emergence than to restrain it. Conflict acts as an unlearning facilitator authorizing new operating rules. Moreover, we observe that after the conflict stage, the group became aware of its collective capability of co-creation and new relationships appeared. These relationships were based more on mutual trust, an actor's acceptance of responsibility and a commitment to the virtual workgroup. *"Once the conflicting situation was resolved, we were able to define new methods of work and to develop serene relations".* For these groups, unlearning process allows wiki use as well as creation of collective identity.

Conflict and disorder induce a self-organization process authorizing the emergence of appropriated behaviour rules. Finally as the structuration theory suggests, we observe that wiki introduction in workgroups modifies the rules of interaction as much as social practices restructure technology in order to combine it with new rules.

3.3.4 Experimentation and deviant behaviours

The fourth dimension that accelerates unlearning process is the presence of deviant behaviours in workgroups. This dimension is clearly interrelated with the dimension of diversity. Deviant behaviours and experimentations on wiki allow revising the usual task sharing and coordination modalities. Some students who were normally controlled or censured by the other group members or the group leader, found the possibility to express themselves freely with the wiki.

For example, the third lesson of the Euro-Mediterranean Management Approach class dealt with personal development. In the groups, students had to interpret the course. We observed that several students took advantage of this theme to propose original development on their own approach of personal development. These eccentric developments, sometimes completely inopportune, provoked a surprise effect within the groups and fostered unlearning process. In other words, as the other students were not authorized to delete these developments, they appropriated wiki in order to give coherence to wiki work and add personal comments. The workgroup modalities seem to "jostle", and a virtual community of practice can emerge. Wiki becomes the coordination and communication place for workgroups, and members embrace the wiki collaborative functionalities. Thus, we believe that it is critically important to value the logic of experimentation and to take risk of inopportune perspectives.

Discussion and conclusion

The research results proposed by this paper confirm the interest in studying the appropriation process of collaborative technology and its link with unlearning theory. Our research shows several barriers and types of resistance to changes that may impede the appropriation of wiki logic and functionalities. These barriers require an unlearning process related to workgroup methods and behaviours. In order to facilitate wiki use, unlearning process concerns primarily coordination modalities, communication methods and workgroup approaches. Four dimensions – weak ties among group members, diversity of group members, conflict emergence and deviant behaviours – seem to influence unlearning process. Our results exhibit two main fields of actions for practitioners interested in implementing collaborative technology in workgroups.

First, group composition is a key element in the unlearning-learning process. It seems necessary to ensure a sufficient level of diversity between group members and create new work groups with weak

ties among members. Secondly, in terms of workgroup management, it appears important to encourage and value deviant behaviours, and an experimentation logic on the wiki, as well as to ensure conflict emergence rather than minimize these aspects.

However, these first exploratory results highlighted through our empirical study should be, of course, qualified. It appears clearly that one case study is not sufficient to validate the identified dimensions. Further research is needed in other learning contexts of higher education or other contexts of wiki use in other activities. Moreover, several questions remain to be addressed: Are the four identified dimensions specific to our case study? How are these dimensions connected? Do other dimensions exist in other contexts? Can the finality of workgroups affect unlearning process and its link to the identified dimensions?

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