A Theoretical Model for Pedagogical Innovation: A Tripartite Construction of Pedagogical Innovation Focusing on Reasons for and Means of Innovating

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Abstract. In the face of turmoil experienced by universities today, a significant change is anticipated, which proves to favour innovation. In order to complete the existing body of knowledge on pedagogical innovation, I explore through qualitative research, the various elements taken into account by teachers while innovating. Drawing on discourse recorded by professors at the University of Montreal, I have extracted the parameters relating to pedagogical innovation, and would therefore like to propose a new theoretical model. Considering reasons for and means of innovation, the construction of pedagogical innovation is dependent on the professor, the students, the Scholarship of Teaching and Learning, institutional culture, disciplinary culture and the reality of the outside world.

Keywords: parameters of pedagogical innovation, construction of pedagogical innovation.

Apprehending educational innovation

The contextual framework of the university today invites and works on the assumption of organisational and pedagogical innovation in order to achieve the effective change desired (Wildavsky, Kelly and Carey, 2011). Consequently, organisational and pedagogical innovation is one of the main focus of all actors in higher education. I therefore deem it relevant to render pedagogical innovation an object of study.

Pedagogical innovation corresponds to a change that he defines as, "*an intentional action that aims to introduce something original into a given context, and it is pedagogical as it seeks to substantially improve student learning in a situation of interaction and interactivity.*" (Béchard, 2000, p. 3), which was later expanded upon with: "*In a university context, pedagogical innovations are often described as everything which is not lecturing, the method still used by the overwhelming majority of professors.*" (Béchard and Pelletier, 2001, p. 133).

More recent research works have shed to light the seven Distinctive Notions which build the concept of pedagogical innovation for thirty-two professors of the University of Montreal (Walder, 2014a):   the notions of *Novelty*, *Change*, *Reflection*, *Application*, *Technology versus Pedagogy* and *Human Relations*. In other words pedagogical innovation is:

"*a new way of teaching, unlike those commonly used; it is bespoke and surprises students. Consequently, it heralds a change driven by a transitory adaption to pedagogical objectives and the new student profile. It stems from a reflection that is pedagogical, intellectual, creative, psychological and sustained, and that shapes itself progressively through a multi-level and multi-impact process linked both to the audience and the discipline or the technology and that aims to improve quality, like a desire to make the subject understood and foster success. Unlike technological innovation, the innovation is only pedagogical if it is constructed by pedagogical thinking, in particular in human relations at the will of the personality of the devoted professor.*" (Walder, 2014a, p. 200)

Pedagogical innovation types hinge on two major aspects which interact (Walder, 2014b). These are firstly the social aspect and secondly the technical aspect. Social dimension articulates around pedagogical innovations related to support schemes, professionalisation, concept of teaching, interdisciplinarity and interculturality. I can observe that the categories of pedagogical innovations relating to the professor's concept of teaching, interdisciplinarity and interculturality did not exist in the classification of Hannan & Silver (2000). Technical dimension includes pedagogical innovations related to tools and pedagogical approaches. In this way the social aspect would translate professors' desire to impart in-depth learning to students and to promote academic persistence with the aim of preparing students for their future profession.

The primary reasons which motivate professors, in this university strongly committed to research, to develop pedagogically innovative projects may be categorised into seven action plans: 1) Captivating, 2) Supporting, 3) Problem-solving, 4) Improving, 5) Re-adapting, 6) Communicating and 7) Creating, and can be theorised in three major phases, 1). Desire to establish a relationship of trust, 2). Intentionality to change and 3). Integration of the desire to change within human relationships (Walder, 2014c). In other words, for the interviewed professors it is a question of the desire to establish a relationship of trust with the intention of captivating and supporting students, an intentionality to change in order to provide a solution and improvement, and about the integration of the desire to change within human relationships, with the aim of re-adapting through communication and creation (Ibid).

Integration of a pedagogical innovation project articulates around eight successive optional stages in the pedagogical innovation process which are: the source of the pedagogical innovation choice, the intervention type, support, integration, pedagogical innovation evaluation, pedagogical innovation, continuity and improvement,

propagation, and finally, consequences (Walder, 2014d). The preliminary and subsequent stages to integrating pedagogical innovation reveals to be the most prominent. Yet, the process of pedagogical innovation may revolve around 'how to innovate' and the ensuing results.

Many barriers litter the path of innovative teachers and have been classified in six obstacle types (Walder, 2015). The first one concerns professors, whilst the second is linked to technical aspects. The third is related to student difficulties, whereas the next one picks up on obstacles connected to the institution and the fifth deals with student assessment problems, while the last one looks at the discipline. These two last obstacle types were not mentioned in the results of Sunal and Hodges' (1997) research study.

After exploring the conception of pedagogical innovation for university professors, the main reasons driving university professors to develop projects relating to pedagogical innovation, the types of pedagogical innovation proposed by professors, the conditions and approaches are specific to pedagogical innovation, the challenges or obstacles encountered during pedagogical innovation and the process and given the lack of knowledge about elements or parameters taken into account when a professor innovates, this is what will now interests me. Therefore, the research objective is to identify, describe and explain the parameters, the elements, that influence the construction of pedagogical innovation. I explore the following research question: What are the parameters that influence the construction of a pedagogical innovation?

What do we know about the parameters that influence the construction of pedagogical innovation?

The existence of three parameters has been put forward in previous research. These are, in particular, the students' commitment (Bédard and Béchard, 2009), the disciplinary culture (Donald 2002) and the institutional culture (Hannan and Silver, 2000).

Students' commitment

Pedagogical innovation implies that students play an active role in their learning, and therefore requires a commitment from them - an aspect that Bédard and Béchard (2009) focused on within the context of the integration of pedagogical innovation into the curriculum. To recall, according to the authors, three characteristics allow for pedagogical innovation in the curriculum: 1) disciplinary epistemology, 2) student commitment and 3) institutional culture.

Disciplinary culture

In the context of teaching, discipline often refers to a particular domain of knowledge. Certain researchers (Becher and Kogan, 1980; Clark, 1983) view discipline through a structural framework emphasising the way in which fundamental elements of the organisation of the higher education system manifest themselves. Another defines discipline as being characterised by "*its own body of concepts, methods and fundamental aims*" (Toulmin, 1972). I also evoke Fischer et al's definition of disciplinary culture (2001): "*all explicit knowledge and implicit aspects prevailing within a discipline and which influence the production of new knowledge and communication about existing knowledge*" (Prediger, 2004, p. 14). Others define disciplinary culture through the community that it represents. Here disciplinary culture refers to a system of values shared by members of the scientific community within the same discipline. In this case, discipline not only constitutes a specific area of scientific activity, it also represents a community of researchers using a unique "*disciplinary matrix*" (Kuhn 1962). Thus, the modus operandi is driven by the influence of certain controlling values relating to the personality of academic actors. Whitley (1976, 1984) views discipline as an organised social group. Finally, Dressel and Mayhew (1974) define a disciplinary domain as a body of knowledge that includes a reasonably logical taxonomy, specialised vocabulary and an

accepted theory with a systematic research strategy with techniques for replication and validation.

Thus, organised by disciplinary culture, each "*academic tribe*" (Becher, 1989) defines its own identity and fiercely defends its intellectual field of study in order to cold-shoulder any dissident. Entering into the lair of an academic discipline calls on a need for loyalty towards the group and adherence to its norms. The disciplines act like tribes rather than communities. Territorialism reigns over rational decision-making and competition restricts cross-disciplinary access. Becher (1989) also observes that specialisation leads to greater fragmentation, as specialists focus on their own sub-domains, while ignoring connections with others. Thus, the culture of a discipline seems to be a key concept relating to intellectual work which, in certain cases, is likely to present an obstacle to research and thwart interdisciplinary collaboration (Coast et al., 2007). Furthermore, resistance to innovative ideas remains intrinsic to academic communities, leading to the phenomenon of "*organised scepticism*" (Merton, 1973). Nonetheless, disciplinary culture may have a positive influence on pedagogical innovation as mentioned by Donald (2002), who further states that this is witnessed when the intellectual development of students remains a priority.

Institutional culture

By way of introduction, I have carefully considered the university context, where I have observed the existence of discourse and even institutional policies dedicated to fostering pedagogical innovation. Hannan and Silver's (2000) contribution in bringing new knowledge to pedagogical innovation in higher education is significant. Between 1997 and 1999 they conducted qualitative research amongst two hundred and twenty-one (221) professors practising in fifteen (15) universities in England, with their main interest during the second phase of their research being in institutional culture. This consisted of in-depth case studies at the universities in order to assess the impact of

structure, processes and institutional culture. It appears that the orientation of the educational policy of the university establishment in which the professor teaches has a significant impact on the development of pedagogical innovation (Hannan and Silver, 2000). Innovators have been patiently waiting for support for pedagogical innovation, whether it be financial, specialised, institutional, or related to human or technical resources. In particular, institutional support comes out as a fundamental pillar in terms of support.

Methodology

I chose the qualitative approach because it is easy to adapt whilst in use and whilst progressively constructing the object of the survey itself. I emphasise its ability to describe, in detail, several important aspects of the social life pertaining to real culture and experience and its ability to allow the researcher to account for the internal point of view (Pires, 1997). Through data collection that took place at the University of Montreal, a Quebec French-speaking institution strongly committed to research, I conducted semi-structured interviews with 32 assistant, associate or full professors - all recipients of an excellence in teaching award - and a group interview with five of these same professors. The full transcript of the recorded individual interviews and the group interview produced four hundred and fifty (450) pages of verbatim. I empirically constructed theories from the professors' discourses, thus using the analysis method proposed by grounded theory. A grounded theory is developed and validated simultaneously, through a method of constant comparison between the reality observed and the emerging analysis (Glaser and Strauss, 1967). Thus, the theorisation provides assurance that the result is, as it should be, "*solidly grounded in empirical data*" (Paillé, 1994, p.150). To employ this iterative process of progressively theorising a phenomenon, I followed the six fundamental steps (coding, categorisation, connection, integration, modelling and theorisation) (Ibid). Open coding, categorising elements of the discourse of the

interviewed professors revealed five hundred and fifty-seven (557) sub-themes, substantive categories and axial coding, which has allowed for the consolidation of fifty (50) themes, the formal categories. As calculated by QDA Miner, the 70% required to guarantee coding validity was achieved or exceeded for 25% of the material. Selective coding is comprised of the fundamental steps of Paillé's (1994) integration, modelling and theorisation, aiming for "*the final integration of the theory in terms of a central category, a narrative line that reaches the core of the phenomenon, and synthesises it in a few phrases.*" (Laperrière, 1997, pp. 320-321). It is a case of the ordered reconstruction of the lecturers' discourses which has enabled me to reveal different forms of reconstruction of the experience of pedagogical innovation according to the professors. All of the remarks have been identified, then the dynamic of the studied phenomenon replicated and theorised through meticulous reconstruction. This third phase was carried out against a backdrop of theoretical sampling and continual comparison during all the phases. The result of this approach is a theory empirically based on a phenomenon, in other words, validated by facts. These operations relating to the theorisation were carried out manually.

Findings

Known parameters that influence the construction of pedagogical innovation

Let me begin by confirming the prior knowledge I identified accordingly. Analysis of this research results has enabled us to confirm the existence of three (3) parameters constituting pedagogical innovation, previously put forward by earlier research. These are, in particular, the students' commitment (Bédard and Béchard, 2009), the disciplinary culture (Donald, 2002) and the institutional culture (Hannan and Silver, 2000). My research results confirm the fundamental importance of the students' commitment. They not only need to actively participate during lectures, but also to work harder than they are used to for lectures delivered in the traditional way.

Consequently, the results of my research show that some pedagogical innovation is common to all disciplines and that some is specific to two or three of Becher's (1989) categories of discipline. I can, within the ambit of my research, put forward the hypothesis that the Pure versus Applied science dimensions influence pedagogical innovation. Observing that the Applied dimension appears in the top two most represented categories, I emphasise the importance of the outside environment on pedagogical innovation. Consequently, I underlign the relationship between discipline and innovation, which appears to be a determining criterion in terms of its involvement in the integration of pedagogical innovation in teaching. Disciplinary culture may therefore have a positive effect on pedagogical innovation as mentioned previously by Donald (2002), who further states that this is witnessed when the intellectual development of students remains a priority. Subsequently, the results of my study also confirm that the orientation of the educational policy of the university establishment in which the professor is teaching has a considerable impact on the development of pedagogical innovation (Hannan and Silver, 2000). Pedagogical innovation support, whether it be financial, specialised, institutional, or in human or technical resources, has been long awaited by innovators. In particular, institutional support is highlighted as a fundamental pillar in terms of support. Nevertheless, its absence has unfortunately been observed and is supported by my analysis which brings to light the fact that the university institution seems to promote only the pedagogical innovation which affords it exposure, if possible at an international level, and technological innovation, to the detriment of pedagogical innovation.

New parameters that influence the construction of pedagogical innovation

From the analysis and discussion of the results, I also identified five (5) new parameters that I will explore in detail below. They have led to my realisation that the factors that define the way in which the university teacher constructs pedagogical innovation are

based, amongst other things, on the conception of the act of teaching, the personality of the professor, dialogue between peers and the conception of learning. It also seems that the student becomes an active collaborator, a co-constructor in pedagogical innovation and that the professor uses the reality of the outside world to arrive at a better understanding and enhanced retention of the subject. I will now reveal, in detail in the following points, the five (5) new parameters that influence pedagogical innovation. They are based on the professor's conceptions of student learning and the act of teaching, the presence of teaching expertise at the University of Montreal, on the student as co-constructor of pedagogical innovation and the integration of the reality of the outside world.

Professors and their conception of student learning

Professors' conception of student learning guides them in defining how they can innovate. Remaining attentive to comments made by their students and their academic results, the way in which the students learn is one of the determining factors used by university teachers in establishing their assessment. I note that the interviewed professors state that for the most part they aspire to offer in-depth learning in order to improve retention of information, a key issue for a number of them. University teachers attempt to master this in-depth learning, on the one hand, by making an impression on the students, by shocking them, so that the information conveyed takes on its full importance, which means being understood and then deeply ingrained in the triggering phenomenon over and above the information itself, and, on the other, by attempting to bring the outside world into the classroom so that the students incorporate a certain aim in the teaching of the subject to be conveyed, which is otherwise sometimes too abstract.

Professors and their conception of the act of teaching

The conception of the professors' act of teaching is a key factor, as much in their undertaking of pedagogical innovation as in the manner in which the university teachers construct pedagogical innovation. Specifically, their conception of the act of teaching, based on their experience, partially student-based, plays a not insignificant role in their approach towards employing pedagogical innovation. It is a case of either replicating what has been experienced as a student, or teaching in a radically opposite manner. In the same vein, professors' dissatisfaction in delivering lectures in a traditional way may drive them to turn to pedagogical innovation. Undoubtedly, the personality of the university teacher may grant them a preference for pedagogical innovation or, on the other hand, acceptance of their knowledge, which serves to reassure them and thus prevents them from taking risks.

The presence of teaching expertise at the University of Montreal

The concept of the Scholarship of Teaching and Learning (SoTL) (Boyer, 1990) advocates the recognition and rewarding of teaching activities dedicated to developing student learning within universities. I had the honour of being able to conduct individual interviews and a group interview with assistant, associate and full professors at the University of Montreal, all recipients of an excellence in teaching award, which corresponds to one of the two conditions closely linked to the SoTL (Boyer, 1990), that of being a "*good*" teacher, striving to improve student learning, attentive to student satisfaction and worthy of the recognition of their peers. Through an analysis of the results, I subsequently detected the presence of Hutchings and Shulman's (1999) three criteria in the practices of the interviewed professors. Moreover, the publication of articles and books, which are mainly shared, and oral discourse at pedagogical meetings or conferences allow university teachers to share knowledge about their practices and publicise their pedagogical innovation. This demonstrates the existence of the second condition which is closely linked to the SoTL, which holds that university

teaching is considered a field of study in itself, and fundamental knowledge of teaching and learning is considered an additional discipline in developing expertise. In addition, pedagogical innovation becomes an object of study for professors who try their hand at new teaching experiences. Their teaching no longer involves the simple practice of their profession; it becomes an area for research and experimentation. At the same time, I have noted formal as well as informal dialogue between the professors about their pedagogical innovation, which then forms the object of critical peer assessment. In this regard, the interviewed professors confirm the adoption of their own innovation by others, but they also mention that they draw inspiration from innovation by their peers, which serves to confirm that members of the university community are starting to take ownership of the results. I distinguish the four dimensions of the multidimensional model (Trigwell, Martin, Benjamin and Prosser, 2000) which entails sharing knowledge of one's practice, reflecting on one's practice, communicating about the subject of one's practice and conceptualising one's practice. The participants in my research have extensive in-depth knowledge of the discipline and subject taught, they strive to perfect the pedagogical and didactic episteme of the discipline with the help of training, aim to share research with peers and arrange self-assessment of their pedagogical innovation. Here I identify the characteristics specific to the SoTL (Kreber, 2005). In this regard, I can confirm the presence of the practice of the SoTL at the University of Montreal. Specifically, I distinguish the SoTL related to an act of intelligence or artistic creation as it respects Hutchings and Shulman's (1999) three criteria: (1. It becomes public, 2. It becomes the object of examination and 3. It becomes the object of critical peer assessment, and even more so once members of the university community start to make use of the results). Although still reserved, the SoTL at the University of Montreal is distinguished by the passion of the community's university teachers; it is only awaiting the institution's permission to fully come into its own. There are two main reasons I feel the university institution may be convinced to render the SoTL official at the University

of Montreal. The first resides in the simple fact that the SoTL encourages, facilitates and is even based on the assumption that there is transferability of pedagogical innovation from one discipline to another, in this way allowing inter-faculty synergies to be rekindled. The second formalises the end of the traditional solitude of professors who reach out for peer support without threatening the independence and freedom of each university professor. Unconditionally, the professors interviewed entrusted me with publishing and sharing their pedagogical innovation, they participate in discussions at pedagogical meetings, draw inspiration from their peers, observe the adoption of their methods and also compare their innovative practices. The presence of the SoTL at the University of Montreal appears to be a key element in the propagation of pedagogical innovation, not only from an internal point of view through the various faculties, but also from an external one when, passionate and attentive, venturing beyond their research career, these researchers publish their innovative practices.

The student: co-constructor of pedagogical innovation

The presentation, analysis and discussions relating to the results of my research have shown the students' participation in the preparation or the realisation of pedagogical innovation. As co-constructors, they thus become the professors' collaborators, finding themselves of increasing value. Beyond this, professors also have the desire to develop, through this collaboration, certain intellectual autonomy in the student, and to recognise their experience and knowledge. Moreover, it appears that this new situation entails a changing relationship between the professor and their students. In this way, collaboration leads to reciprocal trust and an extremely strong pedagogical relationship.
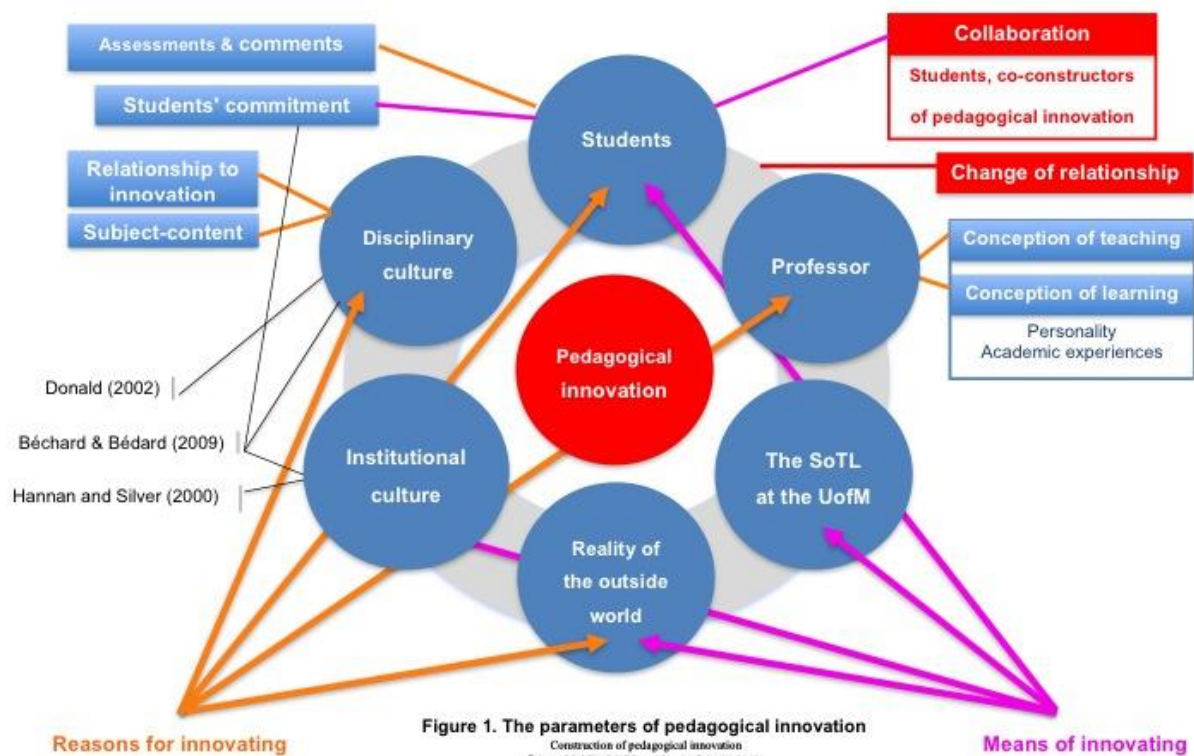
The reality of the outside world

Throughout the presentation, analysis and discussions relating to the results of this research, the last key element I have updated is the desire to bring the reality of the outside world into the classroom, which seems to be stated as being as much a constraint as a support. Nevertheless, the professors are ready to examine it, investigate

and then harness it in order to integrate it into their teaching not only to provide students with better understanding of the subject, but also to support and guide students towards their future professions.

Discussion

Towards an updated theorisation of the parameters constituting pedagogical innovation

With there now being agreement that the three (3) parameters previously studied and highlighted - to recall, the students' commitment (Bédard and Béchard, 2009), the disciplinary culture (Donald, 2002) and the institutional culture (Hannan and Silver, 2000) - underpinning pedagogical innovation are now confirmed, and that five (5) new ones are now expressed in the above points, I can now reveal my model relating to the parameters which constitute, influence and drive pedagogical innovation by means of figure 1 below.

Figure 1. The parameters of pedagogical innovation
Construction of pedagogical innovation
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Thus, the construction of pedagogical innovation is dependent on the professor, the students, the SoTL, the institutional culture, the disciplinary culture and the reality of the outside world. I observe two categories of parameters: reasons to innovate and means of innovating. Reasons to innovate come from the reality of the outside world, from professors through their conception of teaching (personality and academic experiences), their conception of learning, from students through assessments and comments on the teaching input of the professor and the disciplinary culture owing to the content of the subject and the link to innovation. Means of innovating call on the reality of the outside world, institutional culture, the SoTL and students through their commitment, and especially their collaboration as co-constructors of pedagogical innovation, which entails a change in the relationship between professors and their students.

Conclusion

A tripartite construction of pedagogical innovation

Results have emerged from new knowledge on the different parameters constituting pedagogical innovation. I have retraced, in particular, the progression relating to the integration of pedagogical innovation, risk-taking, obstacles encountered and solutions found. A method of constructing this experience emerges. In fact, professors draw inspiration from essential elements, and surround themselves with particular partners, their students and their peers. Their colleagues are sources of inspiration and recognition while the students co-construct pedagogical innovation together with their professor. Thus, the construction of the professor's experience in pedagogical innovation becomes tripartite.

Now that I have put forward an updated model of the parameters constituting pedagogical innovation, it would be of great interest to envisage the following further exploration: this research has allowed me to identify a new relationship established

between professors and their students, encouraged, or even driven by student involvement in the co-construction of pedagogical innovation. I believe it would be interesting to explore this pedagogical relationship in order to better understand it and define it in detail. I believe it to be of particular importance to question ourselves about the effect that this new relationship may have as much on students, and perhaps even on their academic persistence, as on professors in their practice of teaching. On a different note, the presence of the reality of the outside world as a reason to innovate as much as a means for innovating calls on involvement of the highest degree. Do these results not constitute hypotheses regarding the erosion of the ramparts of the university institution leading towards a rebirth for the foundations of the future? It would be interesting to conduct an in-depth study into this question.

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