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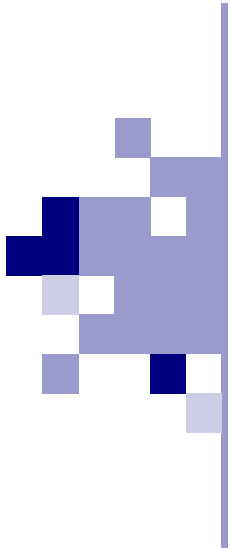
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LES CAHIERS DE RECHERCHE EN EDUCATION ET FORMATION

Evaluation of a Teacher Program in a French-Belgian university: the Use of Teaching Portfolios^{1 2}

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L'éducation et la formation constituent des enjeux fondamentaux pour la société contemporaine. Deux équipes de recherche à l'UCL se préoccupent de ces questions : le Groupe interfacultaire de recherche sur les systèmes d'éducation et de formation (GIRSEF) et la Chaire UNESCO de pédagogie universitaire (CPU).

Le GIRSEF est un groupe de recherche pluridisciplinaire fondé en 1998 afin d'étudier les systèmes d'éducation et de formation, réunissant des sociologues, économistes, psychologues et psychopédagogues. L'attention est portée notamment sur l'évaluation des résultats des systèmes éducatifs en termes d'équité et d'efficacité, sur leurs modes de fonctionnement et de régulation, sur les politiques publiques à leur endroit, les logiques des acteurs principaux ou encore sur le fonctionnement local des organisations de formation et l'engagement et la motivation des apprenants. Sur le plan empirique, ses recherches portent essentiellement sur le niveau primaire et secondaire d'enseignement, mais aussi sur l'enseignement supérieur et la formation d'adultes.

La Chaire de Pédagogie Universitaire (CPU) a été créée en mai 2001 et a reçu le label de Chaire UNESCO en septembre 2002. Elle assure également le secrétariat et la coordination du Réseau Européen de Recherche et d'Innovation en Enseignement Supérieur (RERIES), réseau européen des chaires Unesco sur l'Enseignement supérieur. Elle a pour mission de contribuer à la promotion de la qualité de la pédagogie universitaire à l'UCL, en contribuant à la fois à la recherche dans ce domaine et en coordonnant une formation diplômante en pédagogie universitaire (DES en pédagogie universitaire).

Ces équipes se sont associées en 2004 pour proposer les **Cahiers de recherche en Éducation et Formation**, qui font suite aux Cahiers de recherche du Girsef, dont 25 numéros sont parus entre 1999 et 2003. La série des Cahiers de recherche en Éducation et Formation a pour objectif de diffuser les résultats des travaux menés au sein de la CPU et du GIRSEF auprès d'un large public, tant les chercheurs qui s'intéressent aux questions de l'éducation et de la formation qu'auprès des acteurs et décideurs de ces deux mondes.

La compilation de l'ensemble des onze cahiers parus en 2004 est maintenant disponible dans un volume imprimé qui peut être commandé à partir du site www.i6doc.com, notre partenaire éditorial.

Par ailleurs, chacun des cahiers de la série, depuis le premier numéro, peut être téléchargé gratuitement depuis le site d'I6doc (www.i6doc.com) et depuis les sites du GIRSEF (www.girsef.ucl.ac.be) et de la CPU (www.cpu.psp.ucl.ac.be).

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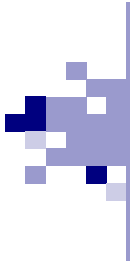
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Introduction

The objective of this paper is to analyze how teaching portfolios, when used as an integrated activity in a University teaching and learning program, could be an effective way to evaluate the impact of programs, by measuring the structure of the observed learning outcomes of this program.

Since years, teaching is part of faculty duties and roles, beside research and services; even it is rarely taken into account for promotion and tenure in the evaluation process (Kreber, 2002a). Most of the time, a good quality teaching is not valued and recognized in the faculty careers. Moreover, none initial training for teaching in university is formally required in most of universities, even if, most of them offer training activities for their own teachers, as part of their continuing educational development. This has been linked to important reports in the nineties (Boyer, 1990; Boyer Commission on Education, 1998; Smith, 1991). The 1990s witnessed mainly in North American, but also most notably in Britain and Australia, very interesting initiatives aimed at improving the quality of university teaching and learning and a growing literature on the "scholarship of teaching" (Kreber, 2001, 2002a, 2002b; Kreber & Cranton, 2000; Trigwell *et al.*, 2000; Weston & McAlpine, 2001).

In the European francophone community (France, French-speaking Belgium and French-speaking Switzerland), even if the concept is known by most higher educational researchers and faculty developers, this movement has not yet reached plainly the faculty development practices and policies in higher education institutions, with notable exceptions. However, the nineties have witnessed huge changes in universities pushing the importance of taking into account more than ever the quality of training offered at universities and faculty development strategies (Bourgeois, 2002; Frenay, 2003; Frenay & Saroyan, 2002; Rege-Colet, 2002).

To this end, research highlights specific concerns about inadequate student preparation in problem solving and higher level thinking skills (Biggs, 1999). Students' cognitive development is correlated with the pedagogical capabilities of instructors (Leinhardt,

1990). Professors who lack pedagogical abilities may not be able to foster the kind of cognitive development that is expected of university students, whereas good teachers are the ones who are able to get most students to use the higher cognitive level processes that more academic students use spontaneously (Biggs, 1999).

Professors, when confronted with the complexities of teaching, are often forced to rely heavily on intuition, common sense, and trial and error. To encourage teachers to improve the quality of academic programs, it is possible to conceive a pedagogical training program akin to teacher training programs for school teachers. An alternative (Biggs, 1999) to this is a distributed model of learning about teaching (Saroyan & Amundsen, 2004). This model points out the importance of building a philosophy of teaching and learning. "Improving teaching is not a matter of simply learning a swag of teaching competencies, teaching is personal and the context in which each teacher works is different (...). This requires reflection, a theory of teaching to reflect with and a context of experiences as the object of reflection" (Biggs, 1999). Reflection on teaching practice may improve teaching and develop pedagogical content knowledge (McAlpine & Weston, 2000; McAlpine *et al.*, 1999; McAlpine *et al.*, 2004).

This mechanism of action, reflection and improvement, that becomes more explicit or formal, may be the first step for teachers to become scholars of teaching. This development toward the scholarship of teaching can be summarized in a continuum of three phases, which is based on the assumption that all professors are experts in their discipline (Weston & McAlpine, 2001). *Phase one* is an intention to grow and develop knowledge about one's own teaching. *Phase two* is characterized by a professor initiating a transition from only thinking about his or her own teaching to discussing it with colleagues in the discipline. Professors begin to make explicit their pedagogical content knowledge, the knowledge that integrates their knowledge of the subject matter with their knowledge about teaching. *Phase three* is a shift toward growth in scholarship of teaching and is

characterized by an intention to share expertise and develop scholarly knowledge about teaching that has a significant impact on the institution and the field. Professors are actively and intentionally integrating teaching and the scholarship of discovery to become scholars of teaching.

The specific programme which will be of scrutiny in this paper attempts to provide opportunities for faculty - that come mostly when they are at phase one of development (they want to grow and develop their knowledge of one's own teaching) - to go a step further: being able to discuss it with colleagues, faculty developers and teaching staff. By asking them to create a teaching portfolio, it helps them to recognize that teaching is an important part of the role of a faculty member and that it can be shared and documented. Teaching portfolios foster university teachers' reflection on their own practice since portfolios require their documenting their own work and explaining its match with program competencies and objectives and in that way, develop their teaching competencies (Biggs, 1999; Brown et al., 1994). Furthermore, they may reveal the philosophy of teaching and learning underlining teaching activities. Therefore, teaching portfolios may constitute not only a learning tool in that they reinforce reflection on experience, but also an interesting means of assessment task if appropriate measures may be used to assess the observed learning outcomes in those portfolios (Frenay et al., 2004).

Furthermore, literature on students' approaches to learning in higher education showed that students at higher education differ widely in terms of what they conceive learning to be (Biggs, 1999; Leung & Kember, 2003), and that those conceptions are influenced by complex interactive factors. Overall, students tend to fall into two categories of quantitative accumulative or qualitative transformative conceptions (Meyer, 1998; Sfard, 1998). Students with lower

level accumulative conceptions perceive learning as involving accumulation and memorization of often isolated factual knowledge, largely for assessment purposes. In contrast, students with higher level transformative conceptions have an internalized focus and see learning as a process of understanding, integrating and deriving personal meaning.

There are number of complex interactive educational factors that influence students' conceptions of learning (Morris, 2001). One influence is that imposed by their previous experiences of learning. These existing conceptions will direct the way students tend to approach their current educational experience. The nature and quality of the teaching that students experience in tertiary education also influences their conceptions of learning. This issue is further complicated by the fact that the teaching approaches used by educators themselves are influenced by their own conceptions of learning and teaching (Kember, 1997). Teachers's conceptions of learning thus also impact on students' conceptions of learning (Dart, 1998). *Assessment* also has a strong influence on students' conceptions of learning. If assessment is designed in such a way that it requires reproduction of facts rather than understanding of the interaction between facts and concepts, this encourages students to have lower order rather than higher order conceptions of learning and resultant approaches to their learning (Tang, 1998).

Those teachers' related factors give another argument for programs to encourage teachers to write and reflect on their teaching experience but also, to write down their own conception of teaching and learning. It reinforces the need to examine the quality of the learning outcomes, being observed within the writing of portfolios, and more specifically to observe the structure of these outcomes by appropriate means.



How to evaluate structural levels of knowledge of learning and teaching

In the literature, the Structure of Observed Learning Outcomes (SOLO) taxonomy is probably the most well known and powerful instrument to assess the structure of learning outcomes (Chan *et al.*, 2002). It was developed by John Biggs (Biggs, 1999; Biggs & Collis, 1989) to reflect observed levels of outcomes of learning. These levels form a categorical hierarchy of increasing complexity. Student responses to a given question are placed into one of five predetermined categories according to the quality of the answers or responses. Because of its hierarchical nature, the taxonomy can be used to identify broadly at what level a student is operating (Hattie & Purdie, 1998). Although initially developed within the secondary school context (e.g. (Leat & Nichols, 2000)), the SOLO taxonomy has been successfully used in a number of ways in tertiary education: determining what students know and believe about their own learning, students' entering knowledge of a subject, and assessment and learning outcomes. (Boulton-Lewis, 1998; Campbell *et al.*, 1998; Morris, 2001).

The five levels range, on the basis of the structural organisation of the knowledge, from incompetence at the bottom of the hierarchy, in which responses are unstructured and irrelevant, to expertise at the top which involves high levels of abstraction (Boulton-Lewis, 1998; Hattie & Purdie, 1998; Morris, 2001; Tang, 1998).

At the *prestructural* level, an outcome is given which engages the respondent, but which contains nothing of relevance to the topic in question, which shows that nothing at all is known about the area under consideration or which elicits no meaningful response. Outcomes are classified as *unistructural*, when outcomes are relevant but contain oversimplified generalizations of only one aspect of the topic. When two or more relevant items are included, but these are presented independently and not linked or integrated with each other, they are classified as *multistructural*. Outcomes at this level involve selective and premature closure. The essential difference between the *relational* level and the multistructural level is that the presented items or parts are integrated, leading to presentation of a coherent whole

structure which has meaning. The issue of integration of coherence are of particularly importance at this level. Finally, the *extended abstract* level is the most "complete" level. Outcomes at this level demonstrate that the understanding of the integrated knowledge can be generalized or transferred to new situations or experiences and higher levels of abstraction.

It is believed that learning is enhanced the further up the taxonomy a learner moves, because in the upper levels what has been learned (knowledge) becomes more integrated and meaningful. The bottom three levels (pre-, uni- and multistructural) have been defined as quantitative, surface levels of learning, whilst the top two (relational and extended abstract) are understood as qualitative, deep-learning levels. These learners structure their learning to gain deep personal meaning and understanding (Burnett, 1999).

The SOLO taxonomy as a tool can be used for determining students' prior knowledge of their own learning and of their knowledge of the content and its structural organisation in a discipline. It can also be used in the teaching context to provide models of desired learning outcomes. Aspects of the SOLO taxonomy can be used for assessment of both the comprehensiveness of a response and of the degree to which elements in the response are related in a coherent manner (Biggs, 1993; Boulton-Lewis, 1998).

Boulton-Lewis (Boulton-Lewis, 1994; Boulton-Lewis *et al.*, 1996) proposed, as a modification and extension to the SOLO taxonomy, examples of levels in the formal mode that could be used as models to assess and describe students entering and changing knowledge of their own learning as they progressed through courses in higher education. These authors (Boulton-Lewis *et al.*, 1996) asked qualified, experienced teachers who were undertaking an in-service subject in adult learning to write statements about learning. They were asked to do this so that the lecturers could use the information to teach them, and subsequent students, more effectively. The responses were categorized at SOLO levels in the formal mode, based on their structural organization, and the content at each of the SOLO levels was analysed.

Eighty per cent of these lecturers gave responses at the multistructural level. This indicated that they had knowledge of many aspects of learning but could not explain it in an integrated and coherent way that would allow them to apply the knowledge flexibly to their own and others' learning. Most of them conceived of learning as quantitative rather than qualitative and stated that desired outcomes were facts and skills. From these results, the authors (Boulton-Lewis et al., 1996) stated it is important to organize teaching to facilitate the development of the learning behaviour one would expect of adults with some knowledge of the discipline rather than assume that the knowledge existed. These lecturers' multistructural perceptions may cause them to provide learning ex-

periences at this level, rather than at higher levels.

This review on the SOLO taxonomy shows that it can be an interesting tool to assess the structural elaboration of Faculty's conceptions of teaching and learning, produced in teaching portfolios, as a mean to look at how faculty reflect from their teaching experiences in their portfolios and build a philosophy of teaching and learning, that may then influence their teaching practices and students' experiences.

The purpose of this paper is to test this assumption and see how well it can be used for such purposes and ultimately, how well it can give inputs to evaluate the impact of a program aiming at developing teachers competences.

Methods

Data were gathered from a new Master program of University Teaching and Learning that was launched at the University of Louvain in Belgium in 2002. This program is structured around teaching portfolios to evaluate the development of teaching competencies, and abilities to reflect on practice. This program has been developed on a distributed model of learning.

Program description

This program is a one-year Master program (offered part-time, during the course of 2 years), offered to faculty members and doctoral students, aiming at improving their teaching by the mean of the development of a project, linked with their teaching practices. It aims at developing competencies at different levels (pedagogical, institutional, professional development). Competencies chosen for this program are adapted from a consensual work made by faculty developers and teachers, at the annual meeting of the AIPU, the francophone international association of teaching and learning in higher education (Parmentier, 1999).

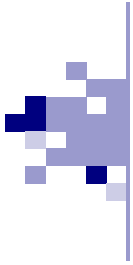
This program is divided in four components : the first is mainly theoretical, which involves different modules on main research on teaching and learning ; the

second, is mainly linked to practice, which implies for the candidate to successfully plan, implement and evaluate a teaching project in practice; the third aims at developing specific teaching skills and finally, the fourth is a capstone activity, involving writing of a teaching portfolio and presenting it for the University community. Seminars and individual meetings are planned along the 2 years to develop the candidates' capacity of critical reflection on their teaching practices and roles.

The portfolio is the only part of the program which implies a summative assessment. An important part of it is the writing of its own conception of teaching and learning in higher education.

Participants

Seven candidates fulfill successfully this Master diploma in September 2004. Those candidates came from various disciplines: engineering, agronomy, medicine, dentistry, physical education. All were having their PhD in their discipline. Two were tenured faculty members (10 and 25 years of experience), one assistant professor, two researchers and two administrative staff, but dedicated to accompanying first-year students and coordinating exercises and practica. Their age range from 30 to 55.



Procedure

All candidates finalized the capstone activity: the writing of a teaching portfolio organized around three main issues: 1) critical reflection and analysis of professional activities, related to teaching; 2) critical reflections and analysis of the project, developed throughout the course of the program and 3) writing of a statement on how they conceive today teaching and learning in higher education and how they link it with their professional development as teachers.

This last part of the portfolio – a written statement of their conceptions of teaching and learning and to link it with a prospective view of how they imagine their professional development, regarding to their teacher's roles - has a free-response format which requires from students to organise and transform knowledge about teaching and learning processes so that it can be used flexibly to develop and justify students' own philosophy of teaching in higher education. But, even major problems attend the assessment of free response and such assessments are often regarded as being unreliable and raise persistent methodological questions (Hattie *et al.*, 1999; Scholten *et al.*, 2002), the challenge of this paper is to test the SOLO taxonomy to assess these students' conceptions of teaching and learning and differentiate different levels of learning outcomes, that may help to evaluate the program itself.

Qualitative analysis of responses

From the original extension made to the SOLO taxonomy by Boulton-Lewis (1994, 1998), we did adapt it to analyze qualitatively the conceptions of teaching and learning to assess the first competence that the program is trying to develop for students, *"To adopt a representation of teaching and learning in higher education, such that it can help teaching activities to be efficient for student learning"*. This asked explicitly for linking both learning and teaching processes in a whole view.

The statements were categorized according to SOLO categories to differentiate quality of reflection: pre-structural, unistructural, multistructural, relational or extended abstract. The written statements of the portfolio were analyzed by two researchers: firstly, to identify the SOLO level of the statement and secondly, to analyze the content of students' conceptions (definition, factors, learning and teaching pro-

cesses, learning and teaching outcomes), as developed by Gillian Boulton-Lewis and colleagues (1994, 1996). As is common in qualitative research, the process for development and application of the protocol was iterative and interpretive, and therefore rigorous but unlikely to be replicable.

From previous research (Boulton-Lewis, 1994; Boulton-Lewis *et al.*, 1996), the conceptions were categorized according the following descriptions. At the *prestructural level*, there is no evidence of any knowledge of the processes involved in learning and/or in teaching. At the *unistructural level*, one main aspect of learning and/or teaching is understood and focussed on. At the *multistructural level*, several relevant independent aspects of learning and teaching are presented, but they are not linked into an overall structure. At the *relational level*, several relevant aspects of learning and teaching are identified and integrated into an overall structure and finally, at the *extended abstract level*, the integrated knowledge of learning and teaching is generalized to a new domain. The difference between a multi-structural understanding and a relational understanding, as described by the SOLO taxonomy, is significant in terms of conceptual development. The distinction between these two stages is that a multistructural conception can be developed through a learning in a quantitative way; whereas the relational stage rests on the student having also learned in a qualitative way (with a focus on structuring content knowledge) (Carew & Mitchell, 2002)

The levels are ordered in terms of various characteristics: from the concrete to the abstract; an increasing number of organizing dimensions; increasing consistency; and the use of organizing or relating principles. The model is premised on four factors described by Hattie & Purdie (1998, pp. 146-147): capacity, relationship, consistency/closure and structure.

Capacity : Each level of the SOLO taxonomy refers to a demand on amount of working memory or attention span. At the unistructural and multistructural levels, a student need only to encode the given information and may use a recall strategy to provide an answer. At the relational or extended level, a student needs to think about more things at once.

Relationship: Each level of SOLO refers to a way in which the question and the response interrelate. A unistructural response involves generalizing only in

terms of one aspect and thus there is little or no relationship involved. The multistructural level involves relationship in terms of a few limited and independent aspects. At the relational level, the student needs to generalize within a given or experienced context, and at the extended abstract level, the student needs to generalize to situations not experienced.

Consistency and closure: These refer to two opposing needs felt by the learner. On the one hand, the student wants to come to a conclusion and thus answers the question. But on the other hand, the student wants to be consistent so that there is no contradiction between the question and answer. Often when there is a greater need for closure, then less informa-

tion is utilized, whereas a high level of need for consistency is required to utilize more information when conceiving an answer. At the unistructural level, the student often seizes on immediate recall information, but at the extended abstract level, the student leaves room for inconsistency across contexts.

Structure: The unistructural response takes on relevant piece of information to link the question to the answer. The multistructural response takes several. The relation response makes more use of an underlying conceptual structure and the extended abstract requires more structure so that the student can demonstrate the he or she can deduce answers beyond the original context.

Results

The results of our analysis of written statements from the seven teaching portfolios demonstrate that a range of structurally different teaching and learning conceptions existed. These conceptions were categorized according to the five stages of the SOLO taxonomy: from unistructural to extended abstract, representing progressively more sophisticated cognitive structuring of teaching and learning conceptions. No statement was considered prestructural. Two statements were categorized at the unistructural level, one multistructural, three relational and one at the highest level, extended abstract. Having categorized each student response on the basis of its structural complexity, we examined the content students are referred to in each of the stages and found some commonalities between student responses in each group.

Unistructural conception of teaching and learning

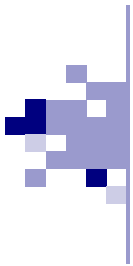
Two descriptions of teaching and learning conceptions from faculty were classified in this category. Their statements involved a simple serial listing of successive points with few if any links made between the different parts of the statement. One relevant aspect of teaching and/or learning is identified.

Example 1: The conception refers only to teaching, describing it on main issue: "Teaching is to put oneself in a project process". In this conception, no reference is made to her own teaching activities or discipline.

Enseigner c'est s'inscrire soi-même dans une démarche de projet. « *Vous êtes le maître d'œuvre de votre pratique quotidienne et chacun sait que la pédagogie s'invente tous les jours dans la chaleur affective de ceux qui la vivent* » (*Ecole-et-nature*).

From the 3 pages statement, this is written in the last paragraph in the conclusion, the rest of the statement refers to the general change in pedagogy from learning to e-learning, by explaining how, one author (Levan, 2004) sees that general change in the last years, without explicitly stating her own conception. The following paragraph summarizes in the conclusion what she keeps from that analysis.

Les réalités techniques du cybermonde innervent désormais toutes nos activités et il s'agit bien plus que d'une simple vague technologique. Elle transforme irréversiblement nos rôles et nos responsabilités d'acteurs. Le travail collaboratif moderne est une nouvelle aventure humaine et technologique qui se construit en avançant. C'est une innovation humaine et technologique qui se



construit en avançant. Avec la e-collaboration, certains (re)découvrent (dont je suis) que la communication est aussi influente sur la structuration des responsabilités dans nos organisations (logiques de pouvoir) que sur les fameux processus métier (logiques d'action) qu'on tente d'optimiser ou du moins d'adapter aux réalités économiques (Levan, 2004) (pourquoi pas pédagogiques).

Exemple 2 : The second statement begins by referring to the new teaching practices that the candidate was implementing in his teaching: a renewal and explicitation of his assessment practices to students. The statement is developing one main issue, the teacher's role to attain course objectives by the implementation of a summative evaluation system. No reference is made to teaching and learning processes, the reflection is mostly technical, referring how the teacher should organize its teaching in classrooms, without referring to students learning processes. It is organized along the following question: "how to change course outline without reducing content, but with a better efficacy in learning?" and his provisory answer: the implementation of a summative evaluation system, drawn from the externally assigned objectives, for quality assurance which may help to define the limits for the students and avoid students disruptive behaviors. It also then defines teacher's role: to measure students outcomes with objectivity, validity and reliability as a researcher does, when measuring a variable and keeping a controlled teaching environment along the externally assigned objectives.

Jusqu'où doit-on faire évoluer la forme du cours sans nuire au fond, mais avec la meilleure efficacité en termes d'apprentissage ? Aujourd'hui, la réponse qui me paraît la plus évidente est de placer les limites en fonction des objectifs qui ont été assignés au cours.

La mise en place du nouveau dispositif a fait apparaître de nouvelles contraintes : si le cours est basé sur des avis, des réflexions des étudiants, il faut disposer à temps de ces informations et s'assurer de leur qualité. Il est donc nécessaire de baliser le travail préparatoire réalisé par les étudiants : être strict sur le respect des consignes

dans la rédaction des rapports, organiser des tâches qui vont susciter des avis divergents chez les étudiants et ainsi se placer dans des situations de conflits cognitifs, mettre en place pendant le cours un environnement où les étudiants n'hésitent pas à émettre leur avis, même si celui-ci diverge de celui présenté par le prof ou dans le syllabus. Sur ce dernier point, la mise en place d'un système d'évaluation certificative externe pourrait être assez positif. (...)

Mesurer une variable avec toutes les qualités requises d'objectivité, de validité et de fidélité... Voilà un principe qui dirige chaque étape du travail de recherche scientifique. Lorsque le chercheur se fait éducateur, il n'y a pas de raison de déroger à cette règle de base. L'évaluation, en tant que mesure de la performance des étudiants va présenter de multiples implications, et entre autres :

- elle doit permettre d'attester, au terme de la formation, des qualités professionnelles du sujet ;
- elle est la carotte (le bâton) qui oriente les activités des étudiants vers les objectifs définis pour le cours/ l'année/ le programme ;
- elle fournit à l'enseignant une rétroaction sur l'efficacité du dispositif pédagogique mis en place ;
- elle donne à l'étudiant une idée de la qualité de son travail et participe ainsi à la mise en place d'un référentiel d'auto-évaluation.

Multistructural conception of teaching and learning

One statement was categorized as multistructural: it retained the sequential description of topics characteristic of unistructural statements, but elements of integration are introduced within paragraphs or sections: several relevant aspects of learning are identified, but are not linked into an overall structure.

Example: In this conception of teaching and learning, the candidate develops successively and independently a list of several characteristics of the teaching and of the learning. Each of them is well developed and linked to her own teaching and accompanying

activities, but there is no conceptual structure which can help to relate these two processes.

L'objectif principal de l'acte d'enseigner est, pour moi, de créer, animer et gérer des conditions et des situations propices à stimuler un processus d'apprentissage où l'apprenant effectue lui-même les opérations intellectuelles propres à assurer la construction et l'évaluation de ses connaissances. (...) Un « bon enseignement », c'est, entre autre, savoir déterminer besoins et compétences à acquérir, sélectionner et organiser des contenus, planifier l'intervention pédagogique et concevoir des situations d'apprentissage, concevoir et élaborer du matériel didactique, évaluer, rétroagir, communiquer, etc. C'est aussi collaborer, participer à des comités et des groupes de travail, participer à la vie facultaire et à la vie institutionnelle. Enseigner suppose que l'on possède un vaste répertoire de savoirs, tant dans les champs disciplinaire, que culturel, didactique ou pédagogique. L'enseignement exige aussi la capacité de résoudre des problèmes complexes, des qualités certaines de communicateur, des qualités relationnelles, le respect de l'élève, le sens de l'éthique, une bonne dose de créativité, etc. (...) Parmi ces responsabilités (délibérément fournies en vrac), j'en épingle trois qui me paraissent importantes : 1) faire confiance et respecter l'apprenant en l'aidant et le guidant dans sa prise en charge progressive de son apprentissage et de son développement personnel ; 2) s'assurer de la pertinence et de l'efficacité de la formation proposée (objectifs en accord avec les besoins de l'apprenant) et 3) s'assurer de la cohérence de la formation proposée avec les compétences visées en mettant en œuvre une diversité de pratique.

L'objectif principal de l'acte d'apprendre est de s'intégrer dans un processus actif et interactif qui concerne les domaines du savoir, du savoir-faire et du savoir-être. L'apprenant réorganise constamment la structure de ses connaissances, de ses habiletés, de ses attitudes et de ses valeurs, sur base des expériences vécues en formation ou en dehors. (...) Les responsabilités d'un apprenant : Qui n'a pas rêvé de l'apprenant idéal ! Pour ma part, à un étudiant lors de son parcours à l'université, je me contenterai de lui souhaiter : 1) d'être lui-même : de s'accepter

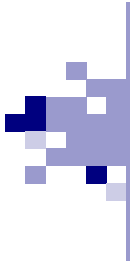
comme un être en développement tant personnel que professionnel ; 2) d'être actif : de maîtriser et d'exploiter de manière judicieuse et critique tous les éléments du processus d'apprentissage ; 3) d'être critique et autonome : de s'assurer de la pertinence et de l'efficacité du travail réalisé, de veiller à l'adéquation entre ses acquis, les compétences visées et le travail réalisé au sein du dispositif proposé, adapter son travail à son questionnement ; 4) d'être sociable : de collaborer et de faire bénéficier autrui de sa pratique et 5) d'être instruit : de maîtriser, d'intégrer et d'exploiter les savoirs (inter-)disciplinaires... et d'avoir la volonté d'en savoir plus si le besoin s'en fait sentir.

Relational conceptions of teaching and learning

Three statements were categorized as relational. The ability to compare and synthesize different perspectives is now extended to conceptualizing the structure of the teaching/learning processes as a whole. Several relevant aspects of learning and teaching are identified and are linked into an overall structure. A theme or argument was generated by the student and used to integrate the different aspects of the essay into a coherent whole.

Example 1 : This statement develops relevant aspects of learning and teaching along two opposite poles: traditional pedagogy and competency-based pedagogy. Learning and teaching processes are then used to define what those two opposite ways of conceiving pedagogy. She clearly states that she now is convinced that university teaching should be competency-based and that she acts accordingly as a teacher, even it was a long process for her, coming from a conception in teaching, at the beginning of her career, aiming at transmitting knowledge.

Je me suis rapidement sentie mal à l'aise par rapport à une pédagogie centrée sur la transmission de savoirs. Je réalisais que cela ne correspondait pas à la conception idéale d'un enseignement universitaire mais j'ignorais comment évoluer. (...) J'ai réalisé que je devais me détacher du contenu à transmettre pour m'investir dans d'autres objectifs. Parmi ceux-ci, celui qui m'a toujours paru primordial est le développement d'une démarche de réflexion et d'un sens critique transférables à toutes les situations de la vie professionnelle ou privée. (...) Ma conception de l'enseignement évoluait du modèle de la pédagogie



traditionnelle centrée sur les savoirs à transmettre vers le modèle de la pédagogie centrée sur les compétences *que les apprenants doivent acquérir au cours de leur formation.*

L'objectif de la pédagogie traditionnelle est de faire assimiler le programme en visant des compétences de restitution ou de savoir refaire. (...) Les étudiants sont rassurés par une pédagogie centrée sur les savoirs : ils savent exactement ce que les enseignants attendent d'eux et considèrent qu'ainsi, ils gagnent du temps pour apprendre encore plus. Acquérir et mémoriser les connaissances est la préoccupation majeure de l'apprenant. Celui-ci ne raisonne plus en termes de formation, de compétences à acquérir, de capacités à développer, mais en termes de connaissances et d'examen. (...) La pédagogie traditionnelle se préoccupe surtout de ce que fait l'enseignant, ce qu'il enseigne et la manière de le faire. Dans cette pédagogie, la connaissance d'une discipline est étroitement associée à l'aptitude à l'enseigner. (...) Les programmes centrés sur les contenus peuvent souffrir d'incohérence, d'hypertrophie et d'absence d'objectifs. Ils présentent parfois des inadéquations entre les besoins professionnels identifiés et le produit de la formation.

A l'opposé, la pédagogie des compétences vise à rationaliser l'action éducative et à la recentrer sur l'apprenant. Elle permet de répondre aux deux principales questions de toute action éducative : former quoi (développer quelles compétences) et pour quoi faire (quels besoins ?). Dans une pédagogie centrée sur l'apprenant, l'enseignant doit accepter de se remettre en question ainsi que l'ensemble de ses cours pour participer au développement des compétences visées par le programme de formation. Un tel modèle qui intègre des dispositifs de pédagogie active exige un investissement en temps beaucoup plus important de la part des enseignants. Cette pédagogie centrée sur l'apprenant et sur les compétences que l'on souhaite qu'il développe correspond réellement à ma conception actuelle de l'acte d'enseigner.

Example 2 : In this statement, the necessity to articulate teaching and learning is argued. The organizing principle is summarized as followed: "We have to overpass our teachers' interests and be more focused on the learner" and is explained as a change

of paradigm: from teacher-centered to student-centered teaching. From this assertion, teachers and learners roles are developed.

Au moment de clôturer ce travail, j'ai envie d'écrire tout simplement : « Nous devons dépasser nos intérêts d'enseignants et nous préoccuper davantage de l'apprenant ». En d'autres termes, c'est du réel changement de paradigme dont il est question : il s'agit de passer du paradigme d'enseignement centré sur l'enseignant à un paradigme centré sur l'apprenant.

C'est l'apprenant qui apprend ! L'étudiant a à s'approprier un ensemble de connaissances, qu'elles soient déclaratives, conditionnelles ou procédurales, il a à reconstruire, à réorganiser son « bagage » de connaissances initiales de telle sorte qu'il sorte plus riche de chaque apprentissage. Il s'agit donc d'une démarche active de construction du savoir.

Quels sont alors les rôles de l'enseignant dans cette perspective ? L'enseignant doit donner à l'étudiant l'envie de s'engager et de persévérer dans son apprentissage, ce qui implique (...) des contenus et tâches qui ont pour lui du sens, (...) de connaître le public apprenant, (...) de soutenir sa motivation tout au long de son travail. Un autre rôle bien évidemment crucial de l'enseignant est celui de la construction d'un dispositif pédagogique « efficace ». Un ingrédient me semble incontournable : la possibilité de confronter son savoir en construction à celui d'autrui (...) Dans cette conception constructiviste de l'apprentissage : l'enseignant devient un tuteur, un « compagnon cognitif » qui assiste l'étudiant à la fois dans ses démarches d'articulation des connaissances, dans la démarche du transfert, tout en l'aidant à réfléchir sur ses façons d'apprendre. On est donc bien loin de la conception de l'enseignant « dispensateur d'un savoir constitué » ! Un autre rôle de l'enseignant est celui de « modèle de rôle ». (...) Mes interventions en tant que conseiller pédagogique se sont vues enrichies et peuvent être relues à la lumière des principes dégagés (compagnonnage cognitif, nécessité de contextualiser la formation, de rendre explicites l'intérêt des apprentissages, etc.)

Example 3 : This statement is clearly relational as the first sentence presents the organizing metaphor from

which all aspects of teaching and learning are organized: the mountain metaphor, where the teacher is the mountain guide, which is altogether a model, a coach, a scaffold and will progressively fade.

Apprendre c'est escalader une montagne, tout en admirant le paysage et dans l'espoir de voir quelque chose de beau, d'inconnu, d'utile une fois arrive au sommet (...) Je vois maintenant l'enseignant idéal comme un guide de montagne... qui fait le parcours avec ses étudiants, depuis la vallée, jusqu'au sommet qu'il connaît bien. Il sait où mettre les pieds... Au début, il est le premier, ses étudiants attachés en cordée, il explique, il montre pourquoi il met les pieds ici plutôt que là.. et au fur et à mesure de l'ascension, il cède la place, il surveille les progrès de chacun, leur commente leurs faiblesses et leurs points forts. Son but est que tout le groupe parvienne au sommet. Il sait qu'après ses étudiants s'attaqueront à une autre montagne, sans lui... Il les invite alors à s'entraider, à « s'entre-évaluer », à s'auto-évaluer...

Ainsi, pour moi, l'enseignant a la responsabilité de donner aux étudiants suffisamment d'outils pour qu'ils puissent plus tard se débrouiller efficacement en situation professionnelle (autonome). Cela signifie qu'un bon enseignant :

- aide l'étudiant à se construire une synthèse et une analyse critique de sa discipline ;
- rend l'étudiant capable d'exprimer (par différents médias) ses connaissances et son point de vue
- soulève ou étudie des situations concrètes liées à ces disciplines
- invite l'étudiant à résoudre des problèmes concrets
- aborde la matière par des angles différents et multiplie les méthodes pédagogiques pour être reçu par le plus grand nombre
- poursuit des objectifs explicites
- renvoie un feedback sur les progrès et les productions de ses étudiants.

Mais, l'enseignement n'a de sens que s'il y a des apprenants... C'est un partenariat obligatoire, une symbiose (« Association étroite de deux ou plusieurs organismes différents, mutuellement bénéfique, voire indispensable à leur survie »-Larousse). Selon moi, les étudiants ont vraiment appris quand...

- ils sont capables de faire des liens entre les différentes parties d'une matière ;
- ils sont capables de mettre en pratique dans la vie de tous les jours les connaissances enseignées ;
- leur appropriation des connaissances s'accompagne d'une production de sens

Etre capable de restituer le plus fidèlement possible la matière n'est pas du tout pour moi une preuve d'apprentissage.

However, these three statements are not exactly at the same level. A distinction of sub-levels, within this category as proposed by some authors would be helpful (Burnett, 1999; Chan et al., 2002).

The first example could be considered as a *weak relational* statement, the organizing principle is there but is not totally developed: most of statements say what a competency-based pedagogy is not, by developing what traditional pedagogy is but don't developed in depth what it is. It's interesting to know that it was one of the most difficult statement to categorize, from unistructural (only speaking of distinction between traditional and competency-based pedagogy) to relational, as seeing this distinction as the organizing principle. The two raters were not agreeing at first.

The second is also developed along the idea of a change of paradigm: from teacher-centered to student-centered teaching but develops overall what a student-centered teaching should be and what it implies for the teacher. This statement was also difficult to categorize: either multistructural or relational, by the two raters. We finally agreed on relational, but it should also fit in the *weak relational* sub-level.

The third one is *sound relational*, as it organizes the all statement around the organizing metaphor.

Extended abstract conception of teaching and learning?

An integrated conception of learning and teaching is generalized to a new domain. Only one of the seven statements fall in this category.

Example: This statement clearly announces how teaching and learning are interconnected processes. She states for a learner-centered paradigm. The main organizing principle is how she conceives now learning, from a reinterpretation of her own evolution.



From then, she develops what it implies for teaching and teachers' roles and how, she imagines it will evolve for her in the near future, as she is changing of job: from being a teacher in higher education to becoming a project manager, responsible of in-job training of programmers. Furthermore, she extends her teaching conception and main principles to the way she is now building new professional relationships, by keeping same modes of action: dialogue, independence, being responsible and collaboration.

Aujourd'hui, j'ai envie de définir ainsi ma conception du processus "apprendre" selon les axes suivants :

- *apprendre est un acte interne et personnel : cela se passe dans sa tête ;*
- *apprendre est souvent intentionnel (...);*
- *apprendre, c'est transformer, approfondir, compléter, faire, défaire et refaire des liens : on est dans l'action !*
- *pour apprendre, il faut du neuf mais pas forcément*
- *on apprend en fonction d'e son but : apprendre demande un contexte (...)*
- *apprendre requiert une explicitation, une « conscientisation » (...)*
- *et enfin, les discussions avec les autres sont une véritable nourriture pour l'esprit en formation !*

On ne peut dissocier la conception d'apprendre de l'accompagnement des étudiants (tout comme les représentations de l'étudiant influencent son

apprentissage) : quoi de plus normal que de projeter sur les étudiants les représentations personnelles ? Ma conception de l'enseignement universitaire serait-elle « aider les étudiants à s'accomplir via les dimensions reprises ci-dessus » ? Cet accompagnement s'envisage alors sous deux angles : le pourvoyeur d'occasion d'apprendre (...) - 1 page explained this conception- et l'accompagnateur de jeunes adultes (...) - 1 page develops it.

Et demain ? Les défis seront différents de ceux rencontrés dans l'enseignement universitaire mais pas déconnectés : la formation d'adultes en situation professionnelle sera une nouvelle facette à apprivoiser de l'acte « apprendre » ; les compétences visées sont en relation avec les métiers de l'informaticien ; elles doivent être intégrées à la pratique professionnelle de la personne qui doit pouvoir s'y épanouir. Cette démarche me donnera donc l'occasion de poursuivre ma formation dans un autre contexte et de l'étendre à de nouveaux horizons.

Enfin, je tiens à souligner que sans avoir de connexion directe avec mes nouvelles charges, l'évolution de ma conception de l'enseignement m'a beaucoup aidée dans la construction de mes relations avec mes nouveaux collègues : dialogue, indépendance, responsabilisation et collaboration sont mes modes d'action.

Discussion

Our empirical investigation revealed that there was substantial variation in the way that teachers/faculty described their teaching and learning conceptions. These descriptions ranged from unistructural, in which students are focusing only on one main characteristic of the teaching and learning processes, to extended abstract conception, which were structurally sophisticated and included evidence of critical and/or creative thinking about teaching and learning processes. Teachers demonstrate reflection on their practice, by linking theories to their teaching activities, but at different levels of the SOLO taxonomy.

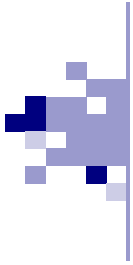
Some pick up relevant aspects of a theory but understand them serially: they fail to link them to specific aspects of their teaching activities. Three were at the unistructural or multistructural, but four of them were reaching higher levels of the SOLO taxonomy, relational and even extended abstract. This is in line with Boulton-Lewis and colleagues results for whom the most common levels they found in the description of conception of teaching and learning are multistructural and relational (Boulton-Lewis et al., 1996), even multistructural are more frequent especially for students (Boulton-Lewis, 1994). Their interpretation is that students and lecturers in tertiary education can describe some or many of the relevant aspects of the learning process, but have not organized the information sufficiently to view it as an overarching structure that they can apply selectively to different aspects of learning or teaching. At the relational level, they do perceive learning from an organized structural perspective. In our cases, lecturers do perceive learning from an organized structural perspective, but it is not yet fully developed. That's why we choose to refer to works of Burnett (1999) and Chan and colleagues (2002), which add sub-levels at multistructural and relational levels of the original SOLO taxonomy. It gives a broader and specific picture of the conceptions of learning and teaching. Probably, lecturers and students multistructural conceptions analyzed by Boulton-Lewis and colleagues would be more differentiated if taken into account sub-levels.

The implications of these results for tertiary teaching in the institution where this research was undertaken,

and probably in other institutions, are significant if one accepts that what lecturers know and believe about teaching and learning processes is likely to affect the way in which they go about teaching and by ricochet, the way their students learn. This seems quite encouraging in the case of evaluation of our program dedicated to teaching and learning in higher education, as most of our lecturers were having relational or extended abstract levels. More worrying are the two statements which are at the unistructural level: does this way of expressing their conception of learning and teaching reflect their teaching activities and their reflection on their teaching practice? If so, we should ask ourselves if this program attained its objectives, developing a critical reflection on its practices.

That raises debates about what is to be considered as learning outcomes of a program. Does the conception of teaching and learning are enough to assess learning outcomes of a program and evaluate this program? Are the teaching activities align with conceptions of teaching and learning? Do they fit with different levels of reflection of teachers? Do this reflection implies better practices and better learning for students?

The recent special issue of the Curriculum Journal (march 2005) raises this important question, as projects financed by Teaching and Learning Research Programme (TLRP) from the ESRC in UK were analysed by the Learning Outcomes Thematic Group to answer what they call themselves an apparently simple question: what are the learning outcomes that are being investigated in TLRP projects? They were defining, from a grounded analysis of projects, seven categories of outcomes: attainments (curriculum based measures of basic competence), understanding (of ideas, concepts, processes), cognitive and creative (imaginative construction of meaning, arts), using (how to practice, manipulate, behave, engage in processes), higher-order learning (advanced thinking, reasoning, metacognition), dispositions (attitudes, perceptions, motivations), membership/inclusion/self-worth (readiness to participate) (James & Brown, 2005). They were particularly concerned to examine



the metaphors underpinning the constructions of learning outcomes in the projects: learning as acquisition metaphor or learning participation metaphor (Entwistle, 2005; James, 2005; James *et al.*, 2005; Sfard, 1998).

In that sense, taking into account the conceptions of learning and teaching as a way to evaluate the efficacy of the program under scrutiny is not enough. We have much more materials in the teaching portfolios and further analyses should also examine the two different narratives asked from lecturers: one

on how they analyze their teaching practices and the second, on how they critically examine the specific project they were developing and implementing. Again, the SOLO taxonomy could be useful to analyze the structure of these two free format essays. It could identify their “ways of thinking and practising” in their teaching practices, as a way to describe the richness, depth and breadth of what they have learn through engagement with the given subject area in a specific content (Entwistle, 2005).

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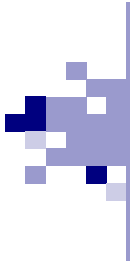
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