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RESEARCH ARTICLE

Higher education challenges to teaching practices: perspectives drawn from a multidisciplinary peer observation of teaching program

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Teachers in higher education are now, all over the world, challenged to shift their practices towards a new paradigm focused on students and their learning. However such appeals rarely take into account that changes may proceed from current didactic practices and relate with teachers' awareness about his/her own performance. The peer review model of peer observation of teaching is seen as an important opportunity to improve teaching practices, an opportunity that can be fostered within a multidisciplinary peer observation scheme. Aiming to go deeper on the role of current practices and teachers' awareness about their performance to improve teaching practices in higher education, some research data collected during a multi-disciplinary peer observation of teaching program are presented and discussed. It can be concluded that multidisciplinary collaboration can be a path for mutual enrichment, not only by recognizing among the other ways of doing those that can be transposed into our field, but also by recognizing weaknesses and strengths in ourselves.

Introduction

Teaching in higher education has for some time been the focus of worldwide attention in research and other programs. Higher education is called upon to change in order to adapt to deep social changes dictated by widespread democracy models and knowledge marketization in a global society (Donnelly 2007) and teachers are confronted with new demands at all levels of their activity (Karagiannis 2009; Vieira 2009).

Concerning teaching practices, as stated by Bell and Mladenovic (2008, 735), a teacher focused conception with 'a content-centered approach' is being replaced by a 'studentfocused conception with a learning-centered approach'. Although a vast literature argues that didactic practices are deeply rooted in the cultures of universities and departments (Franks et al. 2007; Knight and Trowler 2000), the demands for pedagogical improvement in higher education are rarely accompanied by detailed discussion of current teaching practices and how they are related to the specific fields of knowledge. The prevailing disciplinary vision of teaching practices explains part of this problem, creating the idea that the improvement of teaching practices can be a homogeneous process equal to all participants, whatever the field of knowledge they are addressing. In fact, just as experiences of collaborative work are few, so too are the opportunities for teachers to become aware of differences that depend on specificities of the fields of knowledge or academic departments to which they belong.

This paper presents the results of a study developed within a multi-disciplinary peer observation of teaching (POT) program developed within a partnership between two Faculties of a Portuguese University, one on Psychology and Education and the other on Engineering, aiming to enhance the teaching quality of their lecturers. This POT program brings together lecturers from the two Faculties within a peer review POT model (Gosling 2002, 2005) that aims to appraise the lecture profile of teachers of both faculties and to improve teachers'

practices and professional development. If lecturers' professional development is fostered by their experience within the POT program as a long-term training activity, the appraisal of teaching practices profile was carried out with main research objectives as to draw the lecture profile of participant teachers in order to identify its strengths and weaknesses.

This article focuses on these two main research objectives. In the following sections we will present the study, its theoretical and methodological framework, and its results. We begin with a review of the relevant literature focusing on the peer review POT model and its disciplinary or multidisciplinary organization. Next, we will cover the methodology of the study, which includes the organization of the POT program concerned. The results will then be presented and discussed, keeping in mind the research aims and their implications for further research.

Peer observation: main trends

Gosling (2002, 2005) distinguishes three POT models, according to the observer objectives and position. In the *evaluation model*, the objective is to evaluate the teacher and the observer occupies a higher position in the organizational hierarchy of the Faculty /University; in the *professional development model* the observer is an expert /a senior and the objective is to improve teachers' professional development; in the *peer-review model*, the objective is also to improve teachers' professional development but the observer is a peer who is often also observed (Weller 2009). Having in mind the peer review POT model, Bell defines POT as a

> collaborative, development activity in which professionals offer mutual support by observing each other teach; explaining and discussing what was observed; sharing ideas about teaching; gathering student feedback on teaching effectiveness; reflecting on understandings, feelings, actions and feedback and trying out new ideas. (Bell 2005, 3, cited in Bell and Mladenovic 2008, 736)

In this sense, POT is a 'continuous process of transforming personal meaning' (Peel 2005, 489), which ensures consolidated transformations in the participants' perspectives on teaching and learning, instead of just small changes in specific aspects of their performance as is the case in short term training initiatives. As stressed in Hammersley-Fletcher and Orsmond (2005), the main aim must be the empowerment of the reflective practitioner (Schön 1983). In a paper that does a literature review of what is advocated as reflective teaching and evaluates the professional development proposals for teachers' reflective practice, Mena Marcos, Sanchez and Tillema found that only a small percentage of analyzed texts related with how to conduct the process of reflection (4.30%) and a smaller percentage are related to observation in the classroom, (Mena Marcos, Sanchez, and Tillema 2011).

Several authors emphasize the effectiveness of the peer review POT model in order to change lecturers' pedagogical practices, specifically in comparison with expert observation, coaching, workshops (Bell and Mladenovic 2008), and classroom observation (Shortland 2004). For this reason, the key aspects of peer observation that affect peer development are widely investigated (Byrne, Brown and Challen 2010). The POT as a form of social relationship is one of these aspects. Weller (2009) and Siddiqui, Jonas-Dwyer and Carr (2007) discuss how the power relationship between the observer and observed takes a core role in distinguishing between Gosling's (2002, 2005) three models. In fact, if POT always generates a threat (Shortland 2004) when used for management control and assessment of performance, that threat will not only be increased, but it will also prevent any of the benefits previously outlined (Peel 2005). Assessing reports from teachers involved in POT programs, McMahon, Barrett and O' Neill (2007) identified six conditions to ensure that teachers do not lose control over their POT experience: freedom to choose whether to participate in POT; choosing the observer; choosing the observation focus; choosing the methods and means of providing feedback; having control over the use of the observation results; and what takes place after the observation.

The voluntary nature of POT, and the non-judgmental constructive nature of the feedback offered to the observed must be emphasized to enable the benefits identified for POT (Bell and Mladenovic 2008). The balance between the observer and observed is not just a vital aspect of satisfactory power control; it also plays a crucial role in enabling the benefits of POT, given that playing the role of observer is of fundamental importance to become aware of teacher and student behavior and attitudes, as well as to learn about other ways of being a teacher.

Peer observation also generates an epistemic and cultural relationship, and this is particularly evident in a POT model where the participants belong to different disciplinary fields. The differences between university courses and fields of knowledge (Casey et al. 1997, cited in Murphy, McLaren and Flynn 2009) and the impregnation of local cultures into lecturing practices have been

considered good arguments to choose participants belonging to the same disciplinary area in a POT peer review model (Knight and Trowler 2000; Clark et al. 2002, cited in Weller 2009). Nevertheless, the emphasis on mutual trust between the observer and observed, sharing a common context, has recently been questioned. Hammersley- Fletcher and Orsmond (2005) consider that the emphasis on trusting each other is overrated in relation to a true reflection on the teaching practices. Weller (2009, 26) goes further, arguing that the lack of discussion concerning the role of the *peer* in the peer-review model 'potentially reinforces narrow, individualistic and parochial constructions of teacher professionalism thatenable resistance to changes to practice', and 'perpetuates the self-protective urge to fabricate a performative understanding of professional identity and its development' (Weller 2009, 33).

As a consequence, a multidisciplinary POT model will be beneficial if it is able to maintain the atmosphere of sharing and mutual learning, and to the extent that it encourages lecturers from different Faculties and departments to communicate with one another.

Multidisciplinarity is also one of the greatest challenges the universities face today, as part of a general approach of innovation which aims to promote interdisciplinary practices in higher education (Franks et al. 2007). Universities are traditionally discipline-structured institutions (Sá 2008) and this is why the move from a disciplinary framework to an interdisciplinary one will be a slow human process (Folch and Ion 2009) which needs to be achieved through small, concrete and effective changes (Karri 2009).

A multidisciplinary model of peer observation may then be one of these concrete and effective changes, providing the setting for a collaborative process through interdisciplinary dialogue (Orillion 2009). In this process, the participants will identify similarities and differences in their didactic practices, which they will want to understand and frame, and they will open up to perspectives and behavior previously enclosed within the boundaries of their departmental or disciplinary cultures. As Winberg (2008, 365) put it in an article on the training of engineering lecturers:

> Higher education studies and the engineering disciplines differ fundamentally in many ways: how knowledge is produced, what kind of knowledge is valued, as well as how one teaches or communicates this knowledge. In order to work successfully across their disciplinary boundaries, engineers and educators need to find ways to identify, explore, and negotiate those differences. Collaboration is likely to be strengthened when engineering and education partners acknowledge the complexity of their different ways of knowing, and are open to the potential for both generic and disciplinary-specific forms of teaching and learning.

The POT Program and data collection

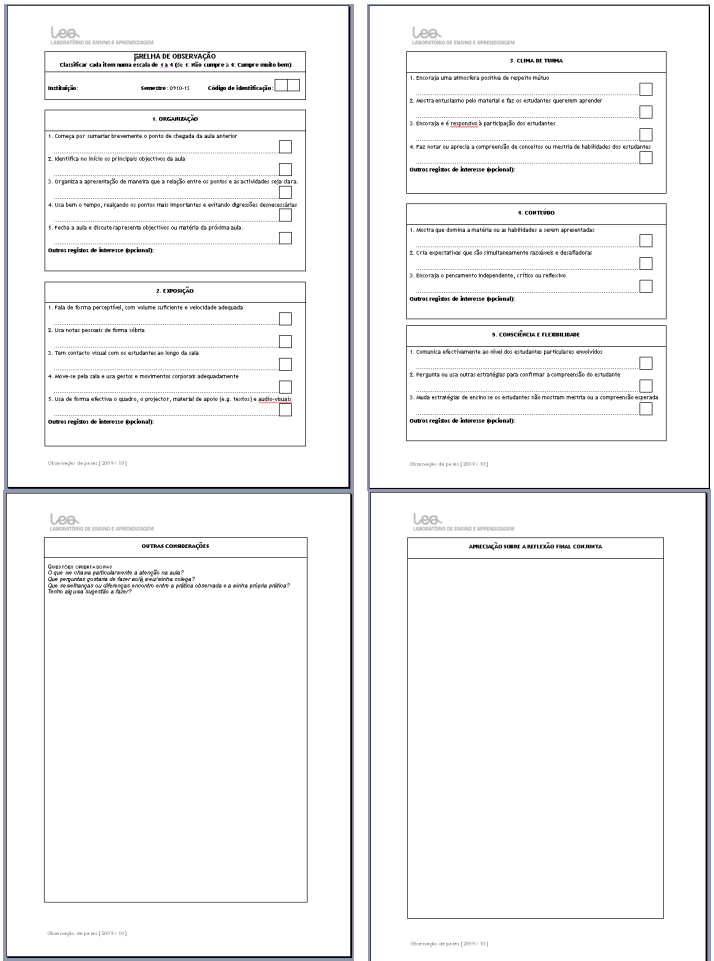
The POT program design started with a meeting of teachers from both Faculties, the aim of which was to draw a POT protocol (Table 1). It is important to note that the participants in this meeting had different backgrounds in relation to POT in general. As a consequence, the discussions to design the POT protocol were themselves an opportunity to share experiences and to negotiate a common perception of the whole initiative. A consensus was developed around the need to integrate each observation session into the pedagogical process of each class, considering pre-observation and post-observation moments. Emphasis was placed on the importance of the pre-observation moments, to establish the curricular context and the underlying teacher-student relationships and teacher concerns. In relation to the post-observation moment, emphasis was placed on the importance of the feedback, and on the associated communication skills, in order to foster reflection and professional development. Thirdly, the role of the peer in the peer observation activities was defined in order to clarify its place in a peer review model. Finally, the training opportunities associated with the observer's role were addressed, leading to the inclusion of questions and specific moments in the POT protocol, aiming to stimulate observer reflection.

Table 1. The protocol used for peer-observation of classes

Before	During	After
The teacher (observed) informs the two observers about the lecture that they are going to attend: ▪ Course information sheet ▪ Position of the course on the degree program, and in relation to other courses in the same semester ▪ Classroom conditions ▪ Class characteristics ▪ Students previous knowledge in relation to the objectives of this lecture ▪ Possible teacher concerns	During the lecture, the observers take notes according to the observation form recommendations and other criteria that they consider appropriate.	The teacher (observed) and his/her two observer colleagues discuss to reach a consensus on immediate feedback recommendations. Each observer uses the form to write down his/her thoughts about the lecture, according to the following topics: ▪ What was most striking? ▪ What questions would I like to ask to the teacher? ▪ What similarities / differences were found in relation to my own lecturing practice? ▪ Can I make any recommendations? Consensual comments are then added to the "Final joint remarks" section of the form.

Afterwards, it was necessary to define the parameters to be observed. With the objective of designing an appropriate form, some observation forms used at other universities were employed. In the course of the discussion, participants converged in the direction of the observation form (Figure 1) used at various US academic institutions, such as at the North Idaho College and Highline Community College (North Idaho College 2010).

Figure 1. Overview of the observation form



The second section of observation form was inspired in F. Vieira's work (Vieira 2004) and asks the observer to compare the observed class with his/her own classes, offering the observer four leading questions addressing observation subjects that were not covered by the closed response items: 1) What was most striking? 2) What questions would I like to ask to the teacher? 3) What similarities / differences were found in relation to my own lecturing practice? 4) Can I make any recommendations? Finally, the third section covers the post-observation reflective discussion.

Even without covering all types of classes / lectures in existence at the Faculties involved, this form appeared to the participants as the best option to be used in the most common cases, and its fields were considered relevant to improve lecturing practices. In fact, the items in these fields, together with the activities defined for the pre-observation phase, cover all dimensions that Chism (1999) and Fink (2008) associate with effective teaching: 'subject matter competence, preparation and organization, clarity, enthusiasm, and interpersonal rapport' (Chism 1999, cited in Murphy, McLaren and Flynn 2009, 226). The topics in the last field were adapted from the POT record sheets used by Vieira et al. (2004) and contribute significantly to enhance self-awareness of the observer.

Finally, to ensure the multidisciplinary nature of the peer observation, the POT observations were organized into four-member teams (quartets): two from Engineering and two from Psychology / Educational Sciences. Each quartet carried out four observations, two at each Faculty, and each member was observed once, and observed twice (one lecture at each Faculty).

To make it possible to appraise the lecturer profiles of the participants, the items comprised within the first five fields were graded using a four-level scale ranging from 1 (*not good*) to 4 (*excellent*).

To reach the intended goals, descriptive statistical analysis was used on quantitative data, and combine with qualitative results. The descriptive statistical analysis focused on frequencies and measures of central tendency, such as mean and median. The second section, related to qualitative date, come from 31 of the 40 observation forms. All data content analysis was done using the N-VIVO 8 package, and the information was grouped into the following emergent categories:

- Negative aspects
- Positive aspects
- Suggestions
- Wider questions

N-VIVO 8 offers source coding features that were used to associate the observation forms to categories, and reference coding, which in our case correspond to phrases or expressions representing an assertive proposition.

POT findings

To characterize the lecturers' profile of the teachers involved, quantitative and qualitative analysis of the observation forms was performed. The complete sample included 20 forms completed during the corresponding observations in each of the two Faculties. In total, 40 observation forms were received.

Discriminative analysis of frequencies shows a positive tendency concerning scores distribution in the majority of items.

Table 2 shows the organization of all the scores according to the mean. Three groups of items can be identified: the group of items with scores equal to or above 3.5, which expresses the idea of *excellence*; the group of items with scores between 3.0 and 3.5, which expresses the idea of *well done*; and the group of items with scores equal to or below 3.0, which expresses the idea of *acceptable*.

Table 2. Item organization according to the average scores

a) Equal or above 3,5:
Organization: 1) Begins by briefly summarizing where the previous session left off [3.53]; 2) Identifies major objectives of today's class at the beginning [3.50].
Delivery: 1) Speaks distinctly, with sufficient volume and appropriate speed [3.58]; 3) Makes eye contact with students throughout the room [3.53].
Classroom climate: 1) Encourages a positive class atmosphere reflecting mutual respect [3.58].
Content: 1) Shows mastery of the subject matter or skill being presented [3.92].
Awareness and flexibility: 1) Communicates effectively to the level of the particular students involved [3.71].
b) Between 3,0 and 3,5:
Organization: 3) Organizes presentation so that the relationship between points or activities is clear [3.31]; 4) Uses class time well, allotting more time to more important aims/points and avoiding unnecessary digressions [3.32]; 5) Wraps up session and discusses objective and/or assignment for next time [3.19].
Delivery: 2) Uses lecture notes sparingly if at all [3.46]; 4) Moves around the room and away from the lectern and uses gestures and body movement effectively [3.23]; 5) Uses chalkboard/overhead projector/handouts/other audio-visual aids effectively [3.30].
Classroom climate: 2) Shows enthusiasm for the material and makes students want to learn [3.35]; 3) Encourages and is responsive to student participation [3.34]; 4) Notices and praises student skill mastery or concept comprehension [3.15].
Content: 3) Gives clear explanations using appropriate vocabulary and examples [3.18].
c) Equal or below 3,0:
Content: 2) Conveys expectations which are both reasonable and challenging [2.94].
Awareness and flexibility: 2) Asks questions or uses other strategies to check frequently for student understanding [2.74]; 3) Shows appropriate flexibility in shifting teaching strategies if students don't show the expected comprehension or mastery [2.94].

The items with highest scores are: 'Shows mastery of the subject matter or skill being presented' – 'Content' field - (on average 3.92); 'Communicates effectively to the level of the particular students involved' ('Awareness and flexibility'); 'Speaks distinctly, with sufficient volume and appropriate speed' ('Delivery') and 'Encourages a positive class atmosphere reflecting mutual respect' ('Classroom climate'). On the other hand, the items with the lowest scores are associated with the 'Awareness and flexibility' field – 'Shows appropriate flexibility in shifting teaching strategies if students don't show the expected comprehension or mastery'; 'Asks questions or uses other strategies to check frequently for student understanding' - and with the 'Content field - Conveys expectations which are both reasonable and challenging'.

Presenting now results coming from qualitative data, it must be said that they are presented according three groups: negative and positive aspects record by observers and further recommendations. The negative aspects were subsequently divided into three groups as shown in Table 4, relating to students, to teachers, and to organizational aspects. Likewise, the positive aspects were analyzed according to their dependency upon climate issues, upon the teacher's work, and upon the work done by the students. Finally, the recommendations made by the observers were grouped in two main types, relating to the specific teacher under observation, and to teachers in general (at institutional level).

Broadly, it is possible to say that issues related to teachers' performance are larger than those related with students' behavior or organizational and class climate issues. Also, in a general view positive features are larger than negative ones. However, comparing positive and negative aspects noted by observers it is possible to point out that students' behavior contribute less to positive climate than to growing difficulties. Even, negative issues due to teachers' performance are larger, when compared with students' amount, positive features related to teachers' performance are larger.

Table 3.Negative aspects of the observed session, extracted from the qualitative responses.

Observed session: Negative aspects	A: Relative to students	B: Relative to teachers	C: Organisational
1: Visual contact does not reach everybody	0	1	2
2: Organisation of class space	0	4	8
3: Big classes	1	0	3
4: Some students are inattentive	4	2	1
5: Uninterested students	12	6	0
6: Students do not raise questions	1	0	0
7: Difference in the quality of the assignments did not lead to teacher action	0	1	0
8: Centred on the teacher's presentation	1	10	0
9: Mismatch between methods and classroom characteristics	0	2	2
10: Communication difficulties	0	2	1
11: Lesser effectiveness of strategy	6	15	1
12: Ill-defined rules	0	3	0
13: Monotone presentation	0	2	0

In what concerns the students, there were 12 references to lack of interest, and 4 to inattentive attitudes. There were also 6 entries reporting lesser effectiveness of the adopted strategy.

The references relating to teacher performance are higher in relative terms, and concentrate on lesser effectiveness of the adopted strategy and on aspects centred on the teacher's presentation, which can be correlated to the lack of interest on the part of the students. Other less referred issues, but also indicative of low teacher performance, bring into evidence communicational aspects related to a defective organisation of the learning structure.

Finally, the identified negative aspects highlight the importance of organizational issues that become relevant when referring to classroom adequacy, and to ensuring minimum conditions of visual contact

between teachers and students. Some of those problems are directly related to the difficulties and negative aspects previously referred in relation to the students, namely their lack of interest.

Table 4. Positive aspects of the observed session, extracted from the qualitative responses

Observed session: Positive aspects	A: Climate	B: Teacher	C: Students
1: Relaxed climate	1	0	0
2: Dynamic session	2	1	0
3: Dynamic management of the session	8	4	1
4: Classroom laid out in U shape	1	0	0
5: Teacher-student relationship	12	5	0
6: Adequacy to the target group	1	10	0
7: Articulation between the objectives of the session and the work done in the previous session	0	2	1
8: Enables the students to solve problems autonomously	0	1	0
9: Structured presentation	1	4	0
10: Teacher's effort	0	2	0
11: Promotion of student argumentation	1	2	1
12: Appropriate complexity of the selected examples	0	1	0
13: Problem solving methodology	0	2	0
14: The teacher asked questions during the class	0	1	0
15: Promoted the participation of students	4	6	0
16: Promoted motivation	3	7	0
17: Promoted reflexive thinking	2	4	0
18: Curricular meaningfulness	1	8	0
19: Centred on work done by the students	1	1	3
20: The work done continued from the previous session	0	0	1
21: Data processed by the students was reused later	0	1	1
22: Respect for the students in the class	0	0	1

There are four categories that refer to the work done by the students, shown in the last four rows of Table 4. Those four categories contain a total of 7 references. There's another set of references that are centred on climate aspects, namely good dynamic management of the session and teacher-student relationship (rows 3 and 5 on Table 4). However, a large number and wide diversity of sub-categories relate to the action of the teacher, such as adequacy to the target group, and the promotion of participation and motivation of students (rows 6, 15, and 16). Table 4 also brings into evidence a close proximity between those sub-categories associated to teachers' work and those related to climate issues.

The observers also left suggestions to the teachers that were observed and their practices, as well as to teachers in general, including the observer him/herself, which are summarised in Table 5.

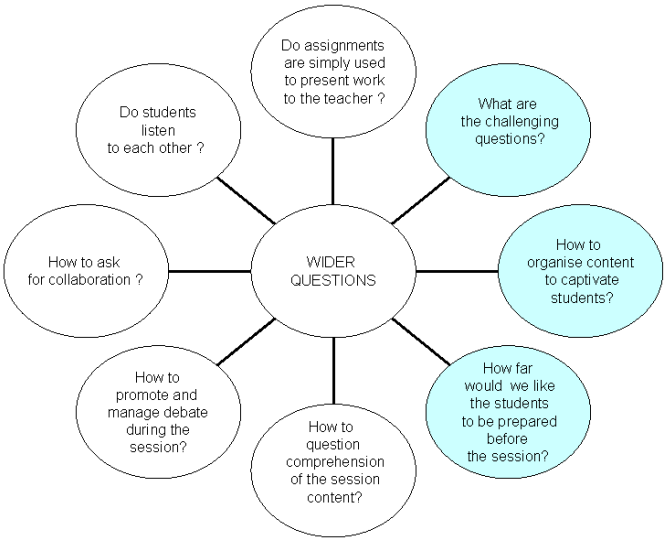
Table 5. Suggestions left by the observers to individual teachers or to teachers in general

Suggestions	A: All teachers	B: Individual practice
1: Learn how much respect is deserved by a session	1	0
2: Educate students for responsibility	3	0
3: Checking student comprehension needs to be improved	0	1
4: Exploit application alternatives	0	1
5: Ask for the intervention of other groups	0	1

6: Student participation might be better promoted	0	2
7: Use the inquisitive method	0	1

The remarks and comments left by the observers also enabled us to identify some wider questions resulting from the peer observation process, that were returned to the teachers under observation, and which seem to affect the observers' practices. Those wider questions, summarize in Figure 2, can be divided into two main groups, one related to planning the lecture (how to organise content to captivate students, how far would we like the students to be prepared before the session), and the other one to how the lecture unrolls with the students and the effect upon their learning outcomes.

Figure 2.Wider questions resulting from the peer observation process.



Discussing peer observation findings

Results converge to the idea that the greatest weaknesses of the observed didactic practices are the concern with student learning and the ability to manage it in a teaching context. At the same time, they indicate that the strengths of observed didactic practices refer to how the teacher delivers the class, making it reasonably interesting and creating an enjoyable environment. In fact, the items with the highest scores seem to embody a class where, on the surface, everything seems to go well.

Lower results, coming from three items, above referred ('Content' field, item 4.2) 'Conveys expectations which are both reasonable and challenging', and in the 'Awareness and flexibility' field, items 5.2) 'Asks questions or uses other strategies to check frequently for student understanding' and 5.3) 'Shows appropriate flexibility in shifting teaching strategies if students don't show the expected comprehension or mastery') are, broadly, related to the teacher's ability to adapt to the students, aiming to promote their learning. The first implies the pedagogical content knowledge (Shulman 1986), involving a didactic transposition, which also requires awareness of students' profiles and contexts. The latter requires the teacher to be aware of the students' learning, checking understanding and revising strategies. This is related with previous literature revision statements, namely those concerned with higher education teaching need to change from a content centered approach to a student focused approach (Bell and Mladenovic 2008). So, it seems that the weaknesses of the observed teachers are still related to the concern with student learning and the ability to manage it in a teaching context. Also it is related with teaching reflection promotion build on experiential knowledge, namely to be critical and work collaboratively (Mena Marcos, Sanchez and Tillema 2011).

Although tentatively, we risk proposing that teachers seem to perform better when they are dealing with aspects of the class management that they can control in advance or that are dependent on their own initiative, and worst when they need to deal with situations requiring adjustments to class contingencies and students' initiatives.

This interpretative perspective is confirmed by the further results, coming from qualitative analysis.

The figures presented previously show that those issues centered on intentional teacher actions achieve the highest scores, both in positive and negative aspects, pointed out by observers. Negative aspects related to organizational categories were related to classroom management. Those referring students' inattentive behavior achieve the highest scores of negative aspects. Also negative were classes centered on teacher's presentation. On the opposite and referred as positive aspects were the opportunities for interaction with the students and promoting their participation. As an interpretation it can be said that there is a relation between negative issues connected with students' behavior and classes centered on teachers' presentation as it seems to be a relation between teachers' interactive behavior and students' participation in class.

A close proximity between those sub-categories associated to teachers' work and those related to climate issues, indicating that the observers look to classroom climate as a result of the work done by the teachers.

Previous interpretation related to connection between negative issues connected with students' behavior and classes centered on teachers' presentation and connection between teachers' interactive behavior and students' participation in class, are reinforced by wider questions that concern observers – how to evolve students in the classroom is the huge challenge.

Final remarks

The main objective of this article was to draw the lecture profiles of participant teachers in order to identify their strengths and weaknesses, resulting from peer observation.

Regarding this objective, it is possible to conclude that the lecturers' profile of the participating teachers is a good one, but also that teachers continue to focus on teaching, more than on learning. In other words, university teachers continue to be far more concerned with their performance as teachers than as supporters of the students' learning processes. They perform very well when delivering their classes, making them reasonably interesting and creating an enjoyable environment, but they are not so well prepared to deal with situations requiring adjustments to class contingencies or autonomous students' initiatives.

In a wider approach we may conclude that experiment gave teachers an opportunity to reflect upon their practices as a result from observing peers. This conclusion must be taken even in present POT experience thatbroughttogether teachers from different fields of knowledge and departmental cultures.

Although, exposing teachers' general lecture profiles, and some of the specificities arising from departmental and involved epistemic cultures, suggest that changes and improvements to teaching and learning at university should take into account the characteristics of the fields of knowledge, experience shows that there is a teacher' profile that can be common, and commonly observed. Therefore, it is possible to consider, in conclusion, that multidisciplinary collaboration can be a path for mutual enrichment, not only by recognizing among the other ways of doing those that can be transposed into our field, but also by recognizing weaknesses and strengths in each one performance. This is not only a conclusion that could be profitable to enlarge POT model within other Faculties from Porto University and it could be followed word while.

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