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Peer instruction: continuing teacher education in higher education

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Abstract

Teachers in higher education have little pedagogical information to support their practice; therefore, it is essential for universities to promote formal opportunities for teachers to reflect about their practices. Does a peer instruction program for in-service teachers continuing education offered one week per semester effectively promote changes in teachers’ pedagogical practices? This study aims to analyze if a week of peer instruction among teachers is an efficient program and to verify its effectiveness on pedagogical practices of teachers that experienced the program. In doing so, it also aims to point out the impressions that teachers have to improve the implemented program. For three years, the university promoted conferences and workshops on teaching practice for the teachers of undergraduate and graduate programs. The focus was on peer instruction, with a few outside and outstanding conference speakers on subjects related to teaching. After three years, teachers anonymously answered a questionnaire, which then received statistical analysis. The results were interpreted with theoretical support from Freire, Nóvoa, and Garcia. We found that more than half the teachers stated they had implemented changes in their daily practices related to the strategies they used and as a result of their students’ learning. The study points out that peer interaction, study, and instruction favors teachers’ reflection on their daily practice and facilitates the attitude necessary for implementing changes in their routines. Involving teachers in their continued education is as important as presenting innovative teaching methodologies.

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E-mail address: marili.vieira@mackenzie.br Paper reports practice implemented on the basis of an institutional plan for a twenty-year period.
1. Introduction

In Brazil, teachers in higher education must have finished their master's degree in order to teach undergraduate students. This means that higher education teachers have little pedagogical information to support their practice; therefore, it is essential for universities to promote formal opportunities for teachers to reflect about their practice. The institution's success is directly related to the effectiveness of teaching or, more specifically, to the rates of student's learning.

Different institutions accompany their teacher’s daily pedagogical practices in different manners. Does a peer instruction program for in-service teachers continuing education offered one week per semester effectively promote changes in teachers' pedagogical practices? This study aims to analyze if a week of peer instruction each semester among teachers is an efficient program and to verify its effectiveness on pedagogical practices of teachers that experienced the program. In doing so, it also aims to point out the impressions that teachers have to improve the implemented program.

In recent years, we have seen and witnessed great changes in our society, technological, economic and political changes. The impact of these changes reveals and brings a new way for humans to think and act. Rios corroborates this idea: “in contemporary society, the rapid changes in the world of work, technological advancement, setting in the virtual society [of] virtual communication and information greatly strain what happens in schools, increasing the challenges for an effective democratic achievement” (Rios, 2001:11).

In their studies, Placco & Silva (2000) state that these changes require a new way of being, require a new citizen and, consequently, bring new educational requirements.

How have these issues been faced by teachers in general? How have they been faced by schools and, in our case, by higher education institutions and teachers? In a way, teachers all know what they want to achieve, but what kind of direction has been taken to achieve higher rates of learning; to achieve a kind of student that becomes autonomous in his quest to learn?

As historical institutions, schools and universities in Brazil are all summoned to be ahead in relation to the changes in society. Universities feel the effects of these changes, but they also needs to promote changes, to be ahead of them.

Periodic reforms of course curricula in higher education can be used as mechanisms to impose changes, creating new distributions of subjects, different time dispositions and course durations. However, these changes do not guarantee to reach the professors in their conceptions of education and pedagogical practices.

It is, therefore, evident that changes in the educational conception of higher education and the demand for the establishment of citizens among young people require intense research and studies of how to develop higher education teachers qualified for the task.

According to Arroyo (1999) and Garrido (2000), new ways of teaching and of being a teacher cannot come by decrees, as some people would wish. However, they will come as a result of critical thinking and reflection over one’s conception of teaching, learning, and education. It will not be instantaneous but will demand a process that will involve teachers to become conscious of their pedagogical practice.

Teachers should base their educational design on a process that articulates their understanding of human development and learning. As citizens in a rapidly changing society, teachers should dominate, very well, the discipline they teach and link it to other areas of knowledge in an interdisciplinary modality. As professionals and as citizens, they should also have and demonstrate a willingness to learn constantly and to learn new ways of learning to keep up with the technological, social, and conceptual changes (Vieira, 2002).

Hernández (1998), in his studies, points out that most teachers offer some resistance to learning because they seem not to like to confront the fact that they do not know something. When confronted with new information they feel that their experience and their self-identity are being threatened. Therefore, they become anxious and insecure.

When a university reforms its curriculum and expects the teachers to adopt new paradigms and new pedagogical designs for teaching, it should also be concerned about how it will promote teachers' continued education to help them effectively implement the desired curriculum changes.

How can that be done? How can a university work, systematically with its teachers to guarantee their new teaching skills and new attitudes toward their pedagogical practice?
2. Continuing teacher education

First, it is important to understand that in Brazil, teachers in higher education officially have no previous education to become teachers. Few institutions offer courses that teach theories about learning and teaching. Therefore, teachers enter classrooms only with tacit knowledge of teaching, constructed through their experience as students.

Consequently, higher education institutions that prime students for excellence need to invest and create continuing education strategies for teachers.

Several authors consider that continuing teacher education must occur in loco in the same schools teachers work in. It seems that the work place offers great chances for reflection and opportunities for interaction among colleagues around the daily problems and doubts. Consequently, it increases the possibility of transforming professionals as postulated by Garcia (1999) and Placco & Silva (2000), amongst others.

To promote changes or to form a new kind of teacher implies the necessity of implementing a dialogue that favors one’s reflection about his or her role as a teacher, reaching out to identify errors and to redirect actions toward a new practice with a responsible and active attitude. This approach to teacher continuing education may guarantee the beginning of a new conception of learning and teaching for the ones being trained because it will flow from inside the teacher’s conviction.

According to Knowles (see Garcia, 1999), the teacher’s social role is learnt from the daily solutions to problems encountered. Therefore, a program for in-service teacher continuing education must come forth not from the gaps within their daily practice, but from the possibilities they find from their experiences. Arroyo (1999:153) demonstrates the same point of view and adds that we must '[... ] [be] explicit and cultivate the teacher’s role, values, [and] knowledge put in practice daily, through their experience [...]'. A author that alerts us to part from teachers experience is Canário (1998). He proposes that teachers should learn to be teachers in the schools they teach; their professional identities are forged in their workplaces while constructing their teaching theories.

It is, therefore, important to consider the pedagogical knowledge of teachers: knowledge that is forged and fortified through daily classroom practice from the beginning of their careers, permitting them to compare reality and theory and construct their own theoretical foundations.

Peña (1999:153), while defending this same idea that we part from teachers’ practice, offers still another point of view, stating ‘[...] the attachment to already established theories and research increases difficulties when introducing new ideas’. Therefore, it is important to consider in-service continuing education as a long process of reflection about daily practice, as proposed by Placco (1994), Pimenta (2000), Schön (2000), Zeichner (1993), amongst others.

Pimenta (2000:27) states that teachers’ daily practice contain important elements, such as problem making, intentional solutions to problems, confrontation of complex situations, methodological experimentations, and radical attempts of didactical innovations that have not yet turned to theories.

In other words, to solve unprecedented situations and problems that are common in classrooms, teachers end up creating their own strategies.

In-service teacher continuing education is just that: the possibility to confront and compare practice and theory, living the so-called praxis. Therefore, teacher continuing education must allow interaction amongst teachers and the articulation of knowledge from experience.

Placco (1994) also states the importance of considering the interaction amongst different dimensions characteristic of teacher’s identities that are ethical, pedagogical, emotional, and political. In their daily labor, teachers will be confronted with situations that call for their conscious position in these different aspects, and they will, therefore, call upon their own culture, knowledge, affections, and ethics.

Zeichner (1993) also defends that through dialogical reflection and thinking, a teacher becomes conscious of the tacit knowledge that sustains his decisions and may be able to theorize and transform them if necessary.

Garcia (1999) also proposes that a conscious and reflective practice implies that the teacher is the subject that learns and structures his knowledge, from his own experience.

Therefore, it would be best that in-service teacher continuing education be organized in the school, or better, the university that the teachers work in alongside peers. Together and individually with the mediation of a more experienced peer, they might systematically think and reflect about their actions and roles as teachers.

However, for there to be critical thinking and reflection, provocation needs to exist, therefore there needs to be a problem to solve. That will promote critical thinking and reorientation of daily practice.
Canário (1998), in accordance with Zeichner’s (1993) idea, reaffirms the importance of the reflection taking place in a group, once the professional identities gain strength in the school where teachers develop daily practice. It is in the school that teachers create strategies and socialize professionally with other teachers, contributing not only to their own formation but also to the formation of the other teachers and for the schools’ image and identity.

Nóvoa (1997: 24-25) points out that

A teacher continuing education program may have an important role in configuring a new educational professional, stimulating the emergence of a professional culture in the bosom of the teachers and in the schools’ cultures. […] The teacher is a subject, a person […] yearning, therefore, to find spaces for interaction among his many dimensions, personal and professional, permitting his appropriation and the establishment of meaning to his practice.

The following session will describe the program based on these premises.

3. Case Study

The construction and maintenance of a democratic society is the most important role of a university. However, that very statement implies some contradiction. A university serves to structure and construct a critical and autonomous citizen, but, at the same time, the university provides a qualified labor work force. The research done in universities must be innovative, but it also has to supply the necessities of society. These tensions become apparent in the classroom in the interaction that takes place during the teaching-learning process (Aguiar Neto, Rizzo and Vieira, 2014). Teachers, therefore, need space to speak out and share these tensions in the process of structuring their professional identities.

The present professional scenario in Brazil, in any professional area, demands a new educational proposition for higher education along with the implementation of new political and educational orientations that incorporate modern concepts of learning, teaching, and assessment. In consequence and aiming to advance these new propositions, the pedagogical process of professional and higher education must develop competencies that requires knowledge and attitudes that are grounded in social, economic, regional, and national contexts that surround the institution (Aguiar & Vieira, 2014).

This has called for a profound and thorough curriculum reform, implemented in the last three years. To increase learning results and effectively reform its curriculum, Mackenzie Presbyterian University developed a systematic in-service continuing education programme for its teachers. The peer-conducted training sought to establish a spirit of confidence and trust in an atmosphere where teachers could share experiences of success and difficulties with one another.

Paulo Freire (1996:16), a Brazilian educator and researcher, wrote ‘critical teaching […] involves a dynamic and dialectic movement amongst action and thought’ […] and ‘it is therefore during teacher in-service continuing education that reflective thinking must take place’.

It has been in that direction that Mackenzie Presbyterian University has promoted a continued in-service peer teacher continuing education in the last four years, aiming to perfect the act of teaching and increase the rates of learning. To learn to be a teacher, to reflect on and structure new practices because ‘teaching does not exist without learning and vice-versa. Through teaching, women and men discovered the possibility, the necessity, of theorizing ways and methods for teaching’ (Freire 1996:16).

During one week each semester, teachers at Mackenzie are summoned to participate in the Pedagogical Preparation Week with mini-courses, workshops, and communications, ministered by colleagues from the university. At these moments, they share and discuss their daily experiences and their innovations related to teaching strategies, understanding students, assessment planning and strategies, among many other subjects. During the week, they also participate in communications, debates promoted by professionals form other universities, and, finally, at the end of the week they participate in a general conference with a highly experienced educator in a manner that they might feel stimulate the start a semester of new challenges.

The first semester we had a many teachers complaining that they did not need such training and that it was a waste of time. This year, participation has grown as well as the subjects offered by the teachers who propose communications, courses, and workshops to peers. During the semester, other voluntary opportunities are offered in which they discuss teaching and learning situations and problems in small groups.
4. Findings

In 2014, after the third year of organizing the Pedagogical Preparation Week, we conducted a survey amongst the teachers, using an on-line questionnaire, through which they could detail their progress and impressions without identifying themselves.

The following graphic (Fig. 1) reveals the proportion of participants who took part: 65.1% of the teachers participated in all six Pedagogical Preparation Weeks. Because we began in the second semester of 2011, by the time of the survey we had offered six Pedagogical Preparation Weeks. Each one enrolled teachers who volunteered to communicate their practices or were invited to share their knowledge and experience with their peers. More than 60% of the teachers participated in all six weeks. This fact gave us clarity about the influence of these events on daily classroom practices.

![Participation in each Pedagogical Preparation Week](image)

Fig. 1. Proportion of teachers that participated in all six weeks
The participation must change teacher practice in order to prove teacher effectiveness. Therefore, we asked them to point out to us how frequently they used new information acquired during the Pedagogical Preparation Week in their practice. The results reveal the adoption of new practices, of new conceptions and the declaration of changes in classrooms, as demonstrated in the following graphic (Fig. 2). A total 57% point out that they have adopted new information to their daily practices in classroom, which also reveals to us that peer instruction promotes change in teachers’ pedagogical actions, in a reflective and cooperative manner. A 7% of teachers declare to make no use of what they have learned during the week. However, if we consider the proportion of teachers that have participated in all week (Fig.1) with the proportion that declare to adopt new information, we may conclude that this modality of in-service teacher education is effective.
Most importantly, they declared the areas in which they felt more changes occurred. As seen in the following figure (Fig. 3), 79.9% declared they felt changes took place in their relationship with students, 89.3% declared they changed planning methods, 94.7% proposed new didactics, 85.6% learned how to work with students’ difficulties, 89.8% declared making changes in the manners of assessment, and 89.9% declared they incorporated new teaching technologies.

These areas represent the daily pedagogical areas that compose a teacher’s professional performance, namely the teacher-student relationship, didactics, assessment, lesson planning, working with students that present difficulties, and new technologies.

![Areas in which change was reported](image)

Fig. 3. Types of changes pointed out by teachers

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**References**


