

Peer Group Mentoring for Teacher Development at a Brazilian Vocational Education Institute

Julio Page de Castro

Professor, MSc
Department of Instrumental Analysis,
Federal Institute of Education,
Science and Technology of Rio de Janeiro
(IFRJ), Brazil
julio.castro@ifrj.edu.br

Seija Mahlamäki-Kultanen

Adjunct Professor (UniTampere), Dr.
Dean of Professional Teacher Education Unit
Häme University of Applied Sciences (HAMK),
Finland
seija.mahlamaki-kultanen@hamk.fi

Adney Luis Anjos da Silva

Professor, Dr.
Department of Instrumental Analysis,
Federal Institute of Education,
Science and Technology of Rio de Janeiro
(IFRJ), Brazil
adney.silva@ifrj.edu.br

Rafael Maia de Almeida Bento

Professor, Dr.
Department of Instrumental Analysis,
Federal Institute of Education,
Science and Technology of Rio de Janeiro
(IFRJ), Brazil
rafael.bento@ifrj.edu.br

Michelle Costa da Silva

Professor, MSc.
Department of Instrumental Analysis,
Federal Institute of Education,
Science and Technology of Rio de Janeiro
(IFRJ), Brazil
michelle.silva@ifrj.edu.br

Ademário Íris da Silva Júnior

Professor, Dr.
Department of Instrumental Analysis,
Federal Institute of Education,
Science and Technology of Rio de Janeiro
(IFRJ), Brazil
ademario.junior@ifrj.edu.br



Abstract

This research aimed at piloting Peer Group Mentoring (PGM) in a Brazilian vocational education institute. The participants were both newcoming and experienced instrumental analysis (INAN) teachers in a large and networked public Brazilian Vocational Education and Training (VET) institute. Since the public vocational education system in Brazil has an expansion program underway, this pilot introduces a new method for teacher initiation and even broader institution level development. Research questions dealt with experiences and contributions from the PGM pilot. A group of ten teachers from three different campuses carried out 11 experimental workshops on five different techniques of INAN that cover the skills needed for future chemistry technicians. After each experiment, the group made a report discussing the protocol of analysis, the competences that students need to develop as well as pedagogical, logistic and toxicity issues with the help of the facilitator, the first author. This kind of common construction of INAN experimental workshop protocols was entirely

new in the institute and peer-group mentoring needed to take into account the subject-specific needs and interests regarding the context. The participants' experiences from peer-group mentoring were collected with a qualitative survey. The experiences were positive, and the participants on both sides recognized the usefulness of mixing new-coming and experienced teachers. This PGM process of teachers also contributed to improving protocols for practical classes with students and building learning environments such as chemical laboratories at one of the campuses. Based on the PGM pilot, we conclude that mixing newcomers and more experienced teachers in PGM is beneficial for both sides and can contribute to institute-level development in a Brazilian vocational institute. The PGM pilot took form and contributed to knowledge-sharing and construction, the development of curricula and teaching facilities.

Keywords: *Peer group mentoring, new-coming teachers, vocational education institutes, instrumental analysis, experimental workshops, Brazil*

Introduction

The need to support new teachers seems to be a common challenge in many countries (European Commission, 2010). Newcoming teachers might lack the necessary practical skills, institutional knowledge and networks, and suffer from isolation, lack of motivation and even leave the profession. The methods used to support new-coming teachers include mentoring, orientation, workshops, written materials, classroom

observation, internships, reduced workload and time given for reflection and collaboration with peers. The most common component of the induction programs is to assign a suitable personal mentor for the new teacher (Howe, 2006; Nasser-Abu Alhija & Fresko, 2010; Wong, 2004). Most of the induction phase support has been developed for basic education teachers. In the USA, there is considerable interest in mentorship and internship. The number of states implementing reforms for teacher induction has risen; and in some states, all teachers must complete a program of induction. In Germany, a two-step model into the profession

has been developed, including mentoring and other support from more experienced colleagues, reduced teaching workload, formal learning opportunities with theoretical seminars, and informal learning through a gradual introduction to teaching with explicit feedback (Bickmore & Bickmore, 2010; Howe, 2006). In the UK, the induction year includes a 10 per cent reduction in teaching load, regular meetings with a named induction tutor, and an individualized program of support and monitoring, half-term observations of teaching, a term assessment meeting; and a job description in which demands must be reasonable (Willians, 2003). According to Heikkinen and colleagues (2012), all teachers must have the right to participate in the induction phase training, and the mentoring must develop as the central method. Our study will contribute to induction of teachers in vocational education.

Peer-group mentoring ('PGM') is a new model designed to support the professional development of teachers. Geeraerts et al. (2015) pointed out that Finnish educational system management agrees that the mentoring for new teachers should involve a process of collaborative self-development. This constructivist-oriented mentoring follows the idea that teaching knowledge is elicited from collaborative relationships between novice and more experienced teachers (Kemmis, Aspors, & Edwards-groves, 2014; Richter et al., 2013).

This research applied PGM in a rapidly expanding vocational education institute system where new teachers are recruited and new teaching facilities are built at the same time. The participants of the research were mainly new-coming teachers entering the specific Vocational Education

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and Training (VET) institute, not necessarily novices to the teacher profession as such. New-coming teachers have to manage their tasks with support from more experienced peers; otherwise, the difficulties and challenges in the induction phase may not be resolved. It is arguable whether the mentor and mentee can ever be equal peers; however, a peer serves as a target metaphor for their relationships in this pilot study.

According to Finnish researchers, the induction phase of entirely novice teachers includes several unfamiliar activities for the new educator because teacher education does not adequately address a variety of areas related to students, curriculum, school community and administration (Heikkinen, Jokinen, & Tynjälä, 2012). Thus, each specific school needs to organize the initiation to their practices, curriculum, school community and administration. In the Brazilian context, in many cases new-coming teachers do not even have a pedagogical qualification. Mentoring models for new-coming teachers in contexts like Brazil are very few (Rolando, Salvador, Silva Souza, & Luz, 2014). This is why, in this study, a Brazilian VET institute wanted to share its novel experience within the Finnish context, where PGM has an older and richer background, and several years long and country wide pilots have been organised e.g. VERME and VERME2 (Heikkinen, Huttunen,

& Hardy, 2018) in which the second author's organisation has taken part as a partner. These experiences also contribute to the study at hand.

According to reviews on mentoring, definitions of mentoring vary a lot (Pinho Castanheira, 2016; Pleschová & McAlpine, 2015). Correspondingly the models to organise mentoring may vary. However, extensive research reviews have not included a single study made in Brazil. In the Nordic countries, the classical one-to-one mentoring model seems to be the most common practice and definition of mentoring (Fransson & Gustafsson, 2008). The web-based strategies, such as e-mentoring and social media, have lately become popular tools used in mentoring to support teachers in their careers (Moore & Berry, 2010). They also facilitate the development of more networked mentoring models. Hakkarainen, Palonen, Paavola and Lehtinen (2004) consider that networked expertise in appropriate environments results in higher levels of competence that arise from sustained collaborative efforts to solve problems and to build knowledge together. Networked expertise is relational in nature and emerges from the fine-tuning of individual competencies to the specific requirements of collaborative activity and originates from a joint or shared competence of communities and organized groups of experts and professionals. This is why peer group mentoring was chosen to be the method to pilot in the case institute and in the context of very subject specific teaching of chemistry.

Professional development of teachers is a life-long and continuing process and initial mentoring could start this learning process of individual teachers and teacher networks. The basic idea is to provide the

opportunity to share – in groups of teachers with different lengths of experience – not only competences but also problems encountered at work. In the virtual University of Applied Sciences in Finland, teachers from several independent units enjoyed virtual peer group mentoring because it helped them develop their practical teaching with new e-learning methods (Leppisaari, Mahlamäki-Kultanen, & Vainio, 2008).

In this pilot study, we define peer group mentoring as a networked learning activity among new-coming and more experienced teachers, facilitated by a peer. Peer group mentoring is organised in this research around common instrumental analysis workshops to develop chemistry teaching. Our pre-understanding was that PGM could be useful for both parties, new-comers and experienced teachers as well as the wider institutional context and not only serve the new-comers' initiation.

Teachers need to be continuous learners, and each participant of a PGM needs to be able to use his or her peer as a source, regardless of teaching experience or subject (Ryymin, Kunnari, Joyce, & Laurikainen, 2016). Thus, collaboration and networking must act as tools for sustainable pedagogical development. In this pilot, we are also interested in the potential of spreading pedagogical innovations from this pilot to other teachers to have an effect not only on chemistry but also on other diverse subjects. In this research, networking of teachers may even support the construction of a new, growing and networked institute.

Research Context

The Brazilian vocational education system underwent enormous expansion in

the last decade. After the creation of the VET federal institutes, the system of this type of school was decentralized, and expanded from 140 campuses in 2002 to 644 in 2016, with one million students in 561 municipalities (Brazilian Government, 2008). The previous system, although smaller than the current one, provided historically recognized good vocational qualification (Santos, 2015). The VET institute system descends from the previous network of Federal Technical schools, one of the oldest vocational systems in Brazil that developed outside of universities. Thus, there is a challenge to ensure teaching quality at the new campuses in order to keep the standards for trained professionals who must also be aware of pedagogical changes in the 21st century. Opening new units has created exponential job opportunities for newly qualified teachers as well as teachers from other institutions. Nevertheless, it brings some questions whether the teachers are prepared to work in alignment with the goals of VET institutes. Besides degrees and backgrounds in specific fields, teachers need to be truly part of the system and be able to create the necessary new learning environments.

One solution could be teacher education and mentoring. In this study, one of the Brazilian authors represented his vocational institute and took part in a teacher education programme in Finland like many other relatively new VET institution teachers. The program was 9 months long, and part of it was a development project – a pilot study at the home institute. This teacher education program was part of an agreement signed by the Brazilian Ministry of Education and universities of applied sciences in Finland. Along with his participation in Finland, this Brazilian author had a mission from his institute to

develop peer group mentoring that was already taking the first steps at his home institution. His participation in the Finnish programme elicited discussions and improvements to the original idea. The vocational and professional teaching culture in his Brazilian institute was strongly subject-based and specialized, unlike the competency-based Finnish teacher education programme in which he took part. Thus, the original idea developed towards an action plan and the current work evolved to a proposal of an action-research pilot study in Brazil.

The aim of this qualitative study was to analyse the process of PGM in a highly specified content area by mixing newcomers and experienced educators to develop the curriculum, the establishment of new laboratories, and teaching protocols in instrumental analysis on a concrete level. The participants were teachers of instrumental analysis. In this context, based on a cultural understanding, the focus on content knowledge must be an important part of a PGM.

The research questions are the following:

1. How did the newcoming teachers and experienced teachers experience participating in the PGM pilot?
2. How did PGM contribute to the teaching of instrumental analysis at the VET institute?

Methodology

In this pilot, we used an insider-outsider approach, where Brazilian peers from a VET institute worked together, conducted the study in their own practice as co-researchers facilitated by the first Brazilian author cooperating with an out-

The research process included constructing tools for laboratory workshops.

sider, a Finnish author (Bartunek & Louis, 1996). The Finnish author took part in the analysis and interpretation of the data and in the writing of the article. In this way, this work represents the perspective of insiders and make sense of it. The outsider brought a more general understanding and perspective to the setting.

The research process included constructing tools for laboratory workshops, conducting them, making reflective reporting and analysis and based on that, developing the laboratory protocols. According to Pinho Castanheira (2016), the fact that mentoring groups often need to develop all the rules and tools for mentoring can affect the quality and benefits of mentoring. That was the case in this pilot study, and the previous organizational structures did not yet facilitate the success of mentoring. The participants of PGM had to develop the protocols and processes of PGM themselves. The participants also shared specific subject knowledge, and everybody could deepen his or her understanding of each other's knowledge, approach and laboratory practices. Cultural differences can also have an effect on the success of mentoring (Pinho Castanheira, 2016). In this study, all the participants were from Brazil where in general people tend to appreciate more experienced colleagues. However, in this pilot study, it is interesting that the initiator of the PGM and the facilitator of it was a relatively young faculty member bringing the idea

of PGM from abroad (Finland) to apply it into an ordinary work with his Brazilian peers.

A group of 3 experienced and 7 new-coming teachers (6 male and 4 female participants, from 27 to 54 years old) specialized in INAN, from three different campuses, carried out 11 practical workshops in the five different chemistry analytical techniques. Each experiment followed a Standard Operating Procedure (SOP) as laid out at the time of the training and lasting 2.5 hours. One campus is the site of the first chemistry technician course in Brazil in 1943 and the first to have instrumental analysis classes for technical courses in Latin America in 1982. The other two campuses are about 10 years old.

Self-Developed Tool to Facilitate PGM Workshops

Students of vocational chemistry must undergo Instrumental Analysis (INAN) I and II in two semesters at the VET institute. These disciplines aim at developing competences in 5 different analytical techniques, such as potentiometry, UV-Vis molecular spectrophotometry, flame atomic absorption spectroscopy, high resolution gas chromatography and liquid chromatography (classic and high performance liquid chromatography – HPLC), which are essential for them to tackle real-life challenges posed in different fields involving chemistry.

The Brazilian participants developed a set of questions to help analyse the experimental data, organize it and discuss the practical arrangements in laboratories and their pedagogical implications. Thus, each individual report included both experimental subject-specific data from the original experimental classes and a ques-

tionnaire with pedagogical discussions. The Brazilian main author conducted these discussions.

Vocational chemistry students should perform laboratory workshops (experiments) such as those applied in this PGM pilot study, since these practices cover most of the competencies that the alumni must develop to work with INAN. Results, calculations, graphs, and further information from each workshop enriched the discussion and filled the reports that followed these comprehensive guide questions:

- a) What are the theoretical principles of this experiment?
- b) What is the relation between the experiment and the curriculum?
- c) What does the experiment address?
- d) What logistic and human resources are required?
- e) How costly and laborious is the equipment maintenance for this practical demonstration?
- f) What are the toxicity and safety conditions?
- g) Is the duration of the experiment suitable for the class time?

Both experienced and newcoming teachers participated in equal conditions in all stages of the practical workshops – procedures, discussions and the preparation of the 11 reports – during each meeting. Each member of the group filled each report in electronic form after discussion, and the final report for each experiment was a synthesis of all individual reports. All final reports totalled at 88 pages of text analysed in this study.

In the ongoing research process, teachers also filled out feedback questionnaires to collect more data after each meeting. The feedback data concerning opinions about the pilot study was collected with an open-

end qualitative survey. It dealt with the following questions:

What is the meaning of the pilot (peer group mentoring in the mixed group of newcomers and experienced teachers) in developing...

- The interaction between professionals, teams and campuses
- The perception of the newcomer of the objectives of education in the institute
- The teaching career
- The discussion of the experimental and pedagogical activities of the discipline
- The new protocols and the implementation of new practical classes as well as the improvement of protocols in use
- The implementation of new learning environments in the teaching units

The participants answered the questions in slightly different ways. Some of them answered each question, one after another, while others gave one holistic answer. The qualitative feedback data is altogether ten pages long. The data was dense, factual and precise, and it was inductively analysed for its content describing participants' experiences and the contributions of the PGM process (Patton, 1990). The second author coded the feedback data with NVivo11 qualitative data analysis software, and the first author, who also conducted the pilot in Brazil, asked for the participants' feedback and verification of the figures developed from the coding. The inductively constructed codes are organised as conceptual maps in figures 1, 2 and 3. All the participants agreed upon the figures developed from the data and verified that they describe their experiences from the PGM pilot.

Results

How did the newcoming teachers and experienced teachers experience participating in the PGM pilot?

In short, the PGM of INAN at the VET institute provided positive experiences to both parties, new-comers and experienced teachers.

At the beginning of the study, the group was more comfortable sharing subject-specific experiences when they could use their science-specific language and reports prepared with the content of analytical techniques. Later, the group reframed its focus, and their workshops and reports evolved. Thus, they had more of a pedagogical approach. The participants experienced the guided learning in PGM as deliberate knowledge building with joint re-

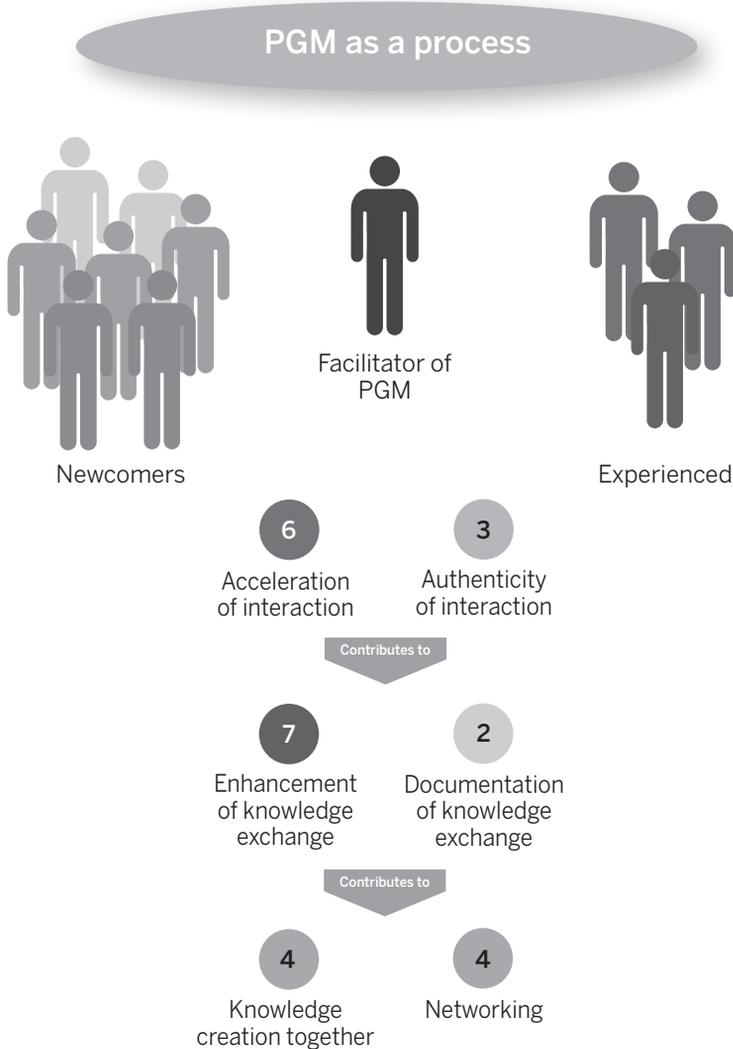


Figure 1. Peer group mentoring PGM as a process, n=10, seven new-comers, three experienced teachers. Numbers in the figure refer to the number of citations.

flections and dialogue in the training to make it meaningful and helpful in the creation and/or implementation of practical workshops. However, the subject specific and practical benefits seem crucial for the success of peer group mentoring in this context.

For both (experienced and newcomers) peer group mentoring in a form of an experimental workshop gives an authentic site and natural possibility to compare different experiences and opinions. This in turn makes sometimes hidden knowledge visible; helps in documenting own practices and contributes to constructing new knowledge. The process of peer group mentoring is illustrated in Figure 1.

The process of peer group mentoring was a setting to accelerate interaction and an authentic possibility for interaction. That in turn contributes to enhancement of knowledge exchange and documentation of knowledge from the experienced teachers and from the PGM meetings. In INAN precise documentation is critical. This process in turn contributes to common knowledge creation and networking.

New teachers in a new environment will always have the implementation of new practical classes as their initial task. However, their contact with this kind of heterogeneous group can accelerate the implementation of experimental lab practices in new campuses. Additionally, the improvement of protocols is consistent with the concept of "continuous improvement" and it is a natural result from group meetings with discussion of procedures, results, reporting etc., in a horizontal, collaborative and constructive way. (Newcoming teacher, male, 28 years old)

The training (meaning PGM) involving newcomers and experienced teachers makes more natural an interaction that would take much longer to happen without it. Discussions that occur during training also lead to a deeper understanding of what are the objectives of vocational training at federal institutes. (Experienced teacher, male, 51 years old)

Although the implementation of practical classes seems something natural at first, many aspects are accelerated through inter-campus interaction. This interaction also favours a more concerned and detailed analyses on what are the bare necessities on equipment that allow the execution of practical workshops. Once the practical classes are chosen, the constant and collaborative discussion on pre-tested protocols perfects them within good pedagogical and didactic procedures. (Experienced teacher, male, 53 years old)

The study revealed the usefulness of heterogeneous mentoring groups. Figure 2, on page 34 illustrates the experiences for both parties, new-coming (7) and experienced teachers (3) from different campuses.

According to the participants, the experiences of mixing newcoming and experienced teachers was feasible and relevant for both career phases. It is important to acknowledge the meaning of PGM to the more experienced mentors, too, not only to the new-comers. From the experienced teachers' viewpoint, the eye-opening effect of newcomers was often mentioned. From the newcomers' viewpoint, experienced teachers provided them with inside knowledge and rapid induction to the technical protocols of the institution.

The diverse background of the experienced teachers, together with the renewal brought by the newcomers, promotes an extremely collaborative and integrated discussion in the constant construction of didactic, experimental and educational aspects. (Newcoming teacher, female, 38 years old)

PGM helped develop a common pedagogical approach and allowed the revision of

methodologies in place, which are essential elements to foster sustainable teaching development in their own context.

The diversity of the previous experiences and the lifelong learning itself create a natural heterogeneity within teams and between teachers. Thus, this approach and this dialogue can be very beneficial in the enrichment and improvement of experimental activities that are in line

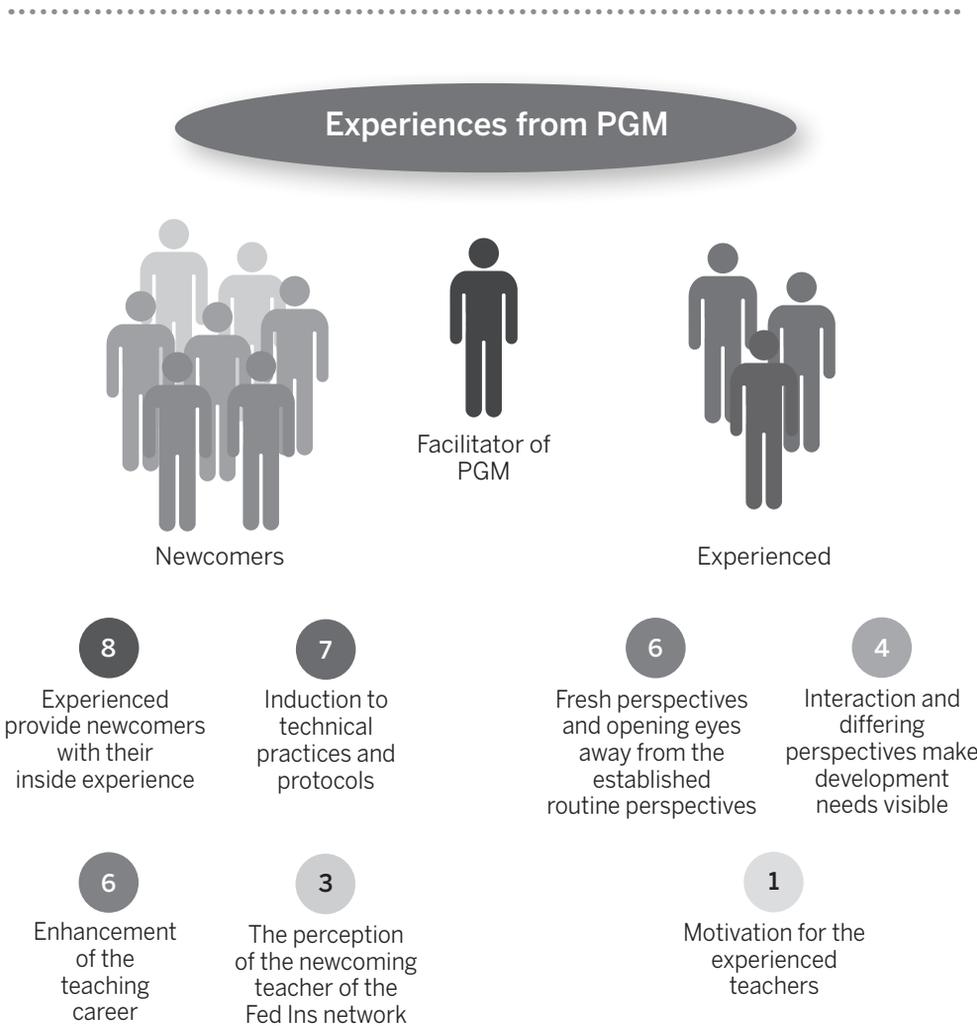


Figure 2. Experiences from peer group mentoring, 'PGM'. Numbers in the figure refer to the number of citations.

with the skills that future professionals should develop throughout their student life. (Newcoming teacher, female, 36 years old)

The teachers pointed out the experiences in the initial phase of their career which are described in the following excerpts:

When a teacher enters an institution such as a VET institute via public exam, he/she is qualified to start his/her career... After entering the institution, the professional needs to carry out training, which should take place on the spot...

This project in INAN by PGM is a great tool and as far as I am concerned, such programs should be discussed, improved, expanded and most of all institutionalized. (Newcoming teacher, male, 35 years old)

The training helps the teaching career in the application and improvement of pedagogical methods. (Newcoming teacher, female, 29 years old)

The teachers come from different universities. Thus, they represent different backgrounds, and it is necessary that new teachers know more closely the history of the institution at which they will work, its structure, its particularities, its objectives, among other important aspects. (Experienced teacher, male, 48 years old)

How did PGM contribute to the teaching of instrumental analysis at the VET institute?

The PGM pilot also attended to the institutional interests in developing practical teaching and answering questions regarding learning environments and curriculum and practical protocols for laboratory classes. Discussions with the newcomers in the

peer group mentoring pilot were regarded as a possibility to keep teaching updated and relevant for the world of work. The contributions highlighted are illustrated in figure 3, on page 36.

The practical contribution was the tool developed together in the PGM meetings, which the teachers can use further to teach their students. The 11 workshops in five analytical techniques covered most of the skills required for chemistry technicians in INAN and covered the needs for curriculum development at each campus.

The arrival of new teachers from different chemistry fields can help identify which competences are lacking in the real work life at that time. Thus, PGM may help improve the perception of the real demands on teacher formation and the necessary changes and updates that should happen in the curriculum. (Newcoming teacher, male, 42 years old)

In addition to the analytical methods, the participants have learned to know the administrative processes and each other to conduct joined investments and acquisitions which are typical processes in chemistry teaching.

The discussion on the logistics necessary for practical classes prepares the ground for the proper and suitable acquisition of equipment and infrastructure. Purchasing the best devices in a short time in the public environment is not easy, and it is almost insurmountable for a novice teacher. The network that forms between newcomers and experienced educators improves and increases the possibility of good acquisitions and opens the possibility of joint projects that cover acquisitions for two or more campuses. (Experienced teacher, male, 51 years old)

The group promoted a deeper review of experimental protocols and optimized the implementation of an INAN lab at one of the newer Campus. In this regard, the revision of teaching and methodologies for the laboratory as workshops contributed even to a new laboratory as a practical result.

The participants of this PGM also saw that other campuses could benefit through PGM in their own judgement on what to add to the curriculum of vocational courses in the field of chemistry.

A multicampus structure should have communication between different units. Such communication may develop from the collaborative construction that helps improve the curriculum, the institutional identity, the school infrastructure and the development of the teacher and administrative staff. (Newcoming teacher, male, 28 years old)

Furthermore, the teachers saw how the network and collaboration play a role in the building and flourishing of new learning environments during and after the

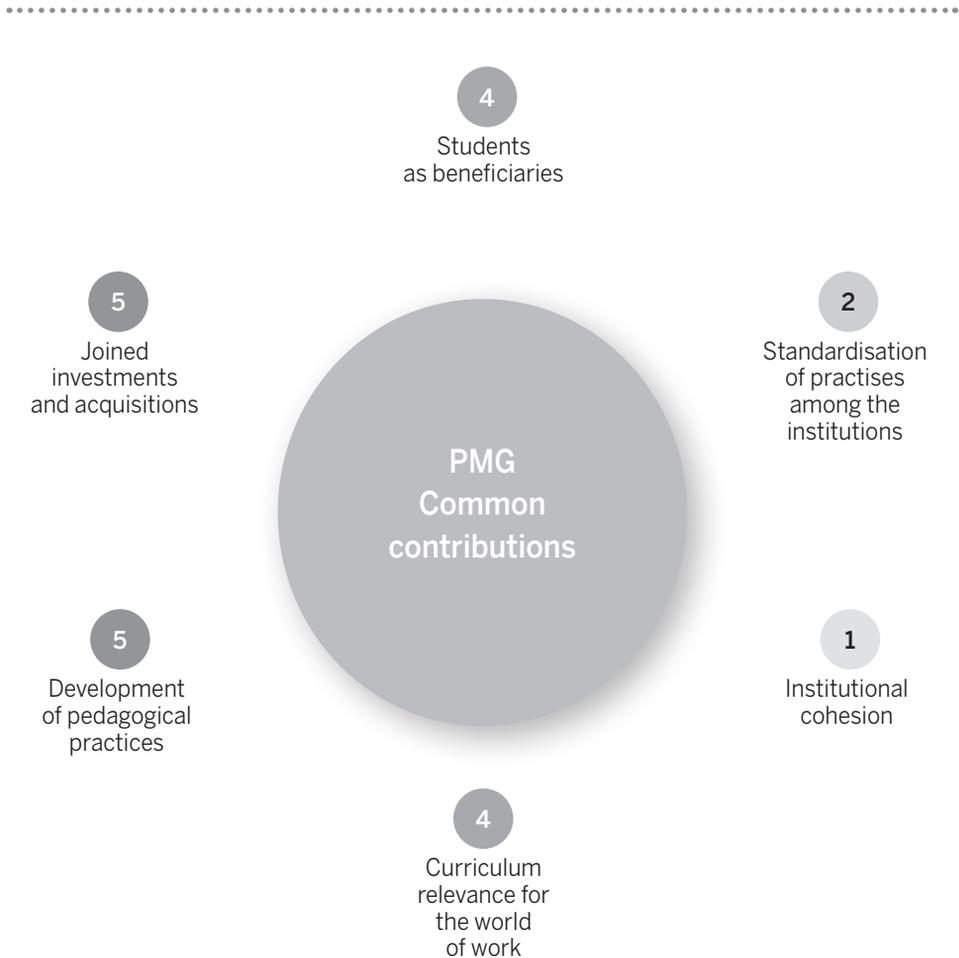


Figure 3. Contributions of peer group mentoring to the teaching of instrumental analysis at the VET institute. Numbers in the figure refer to the number of citations.

training. The new laboratory went from zero to 11 practical classes in a year and a half during this pilot study. Building a learning environment in such a short time is a very significant accomplishment for the setting of systems in expansion at a fast pace, such as the federal system of vocational and technological education schools in Brazil.

A feasible option to achieve a minimum level of excellence in a learning environment of a newly created campus is to use the successful experience of a campus already implemented within the same institution. Thus, this network among teachers is essential for the rapid and effective building of learning environments such as chemistry laboratories. A successful example in this regard is the implementation of the INAN laboratory at Campus A, jumping from zero to 11 practical classes in a year and a half, showing the fast building of a legacy within the institution, which would take much longer without this collaborative PGM process.

(Newcoming teacher, male, 28 years old).

It also benefitted teaching facilities (laboratories and laboratory protocols for practical workshops) by mixing newcoming and experienced teachers during the execution of practical workshops, and all the participants gave only positive feedback from the pilot.

Discussion

This positive experience of mixing teachers with different experiences in a PGM group to share knowledge is in line with Geeraerts et al. (2015). They point out that mentoring as a collaborative self-development produces teach-

ers who consider themselves to be responsible professionals and are able to draw on their own expertise and from the expertise of their peers. They rapidly gain more skills to face and overcome the challenges of their professional life from the beginning of their careers.

Our study fills in the missing empirical research on PGM in vocational education globally and specially in Brazil. The context is quite unique.

In a broad analysis of the teaching career, Tynjälä and Heikkinen (2011) mentioned that the transition from education to work life for new teachers may include different sources of friction, such as inadequate knowledge and skills, early attrition, and the role and position of a newcomer in a work community, among other issues. Moreover, the learning and professional development of teachers should be seen as a continuing process throughout the career, from initial training to retirement. Although the expanding Brazilian VET institute challenges newcoming and experienced teachers differently from the Finnish context, PGM in this pilot study served as a promising method in these two phases of the teaching career. The newcomers gained useful technical knowledge and PGM was seen as a tool for enhancing their career and not only for surviving from the initial phase.

Ryymin et al. (2016) suggested that well-prepared teachers might transform the learning methods and environments from a teacher-centred to a student-centred model of education, building knowledge communities and boosting networks. This kind of teacher networking by PGM is not only useful for newcomers, but also for the continuous updating of professional skills for experienced teachers. The par-

Networked expertise plays a crucial role in future professional development and in the process of pedagogical change.

ticipants of PGM also reflected on what kind of competencies they would need in the dissemination of new pedagogical and experimental activities in their vocational educational context. Ryymin et al. (2016) pointed out that sustainable professional development and contextualized pedagogical change require management change and a transformation of educational organizations as well. A novice teacher must have a satisfactory induction phase to be able to develop profound changes. Based on our pilot study, we argue that the mix of the fresh ideas from newcomers combined with the administrative experience of veteran ones can be the optimum and a potential process for educational development. Ryymin et al. (2016) reported a study with 15 Brazilian teachers from the VET institute system who had studied in Finland in a program similar to the one in this study. Their study shows that networked expertise plays a crucial role in their future professional development and in the process of pedagogical change. The teachers considered the building of learning communities within a networked mindset extremely important for the professional growth. They not only started to see themselves as networkers and collaborators, but also became eager to build collegial chains. Moreover, according to Ryymin et al. (2016), about 70

percent of vocational education teachers reported learning skills at work or somewhere outside the formal educational system.

The processes necessary to understand and learn for the actual teaching practice in science are essential for the development of teaching in subjects like analytical chemistry. The task of assembling learning environments such as an Instrumental Analysis Laboratory involves purchasing equipment, contacting suppliers, supervising the construction itself, specifying electrical requirements, training and so on. Furthermore, it deals with administrative and even legal issues. If newcomers become isolated in this process, they can easily feel unprepared and in dismay. Shernoff et al. (2011) pointed out that when new teachers experience early setbacks, they invest less effort in teaching, are more critical of students, and resist trying new strategies. Thus, the PGM implementation at VET institutes is a potential roadmap to help novice teachers thriving in a challenging workplace where they often need to start from the very beginning in establishing a learning environment. According to Pinho Castanheira (2016), there are many benefits in mentoring, specially those concerning teacher development. However, in this research, mentoring contributed to the building of learning environment as well. In the study of Rolando et al. (2014), the participants' initial purpose in taking part in a virtual mentoring programme for biology teachers was also studying and learning the subject (biology), preparing classes and teaching.

Based on the pilot, we suggest that other VET institutes in Brazil should offer PGM to support newcomers, even if it requires dealing with confron-

tational opinions and ideologies that can create resistance and emotional challenges (Uitto, Kaunisto, Kelchtermans, & Estola, 2016). Thus, it is important to discuss PGM with institutional principals and get them engaged in this process as well.

Conclusions

In conclusion, according to the presented PGM pilot study, there is evidence to indicate that peer group mentoring can support not only newcomers, but also more experienced, teachers to develop curricula and teaching facilities as well as support growth in Brazilian VET institutes. According to this study, it is necessary to construct the processes used in PGM groups in close association with subject-related needs and language. This pilot study can serve as a successful example of peer group mentoring in mixed groups (newcomers and experienced teachers) and a reference for other campuses and institutions in the implementation of initial training systems for teachers needing rapid development. As another step and advancement for this project, we will pursue the expansion of PGM to other fields of knowledge and to other VET institute campuses. We believe that the dissemination of collaborative strategies throughout the VET institute system should become a continuous policy to promote sustainable institutional development as well as having teachers who are proactive, engaged and well-prepared.

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