TEACHER GROWTH
THROUGH COMPUTER-BASED COLLABORATIVE WORK
By Graciela Clelia Moyano, Viviana Myslicki and María Isabel Santa

Abstract
Recent advances in communications and information technologies offer multiple opportunities for collaborative interaction and professional development. We have undertaken two computer-based activities for individual growth, co-operative feedback, and teaching improvement: Collaborative Testing in Phonology, a test designed by different teachers for different groups in different institutions which can also serve for self-evaluation and Distance Learning, teachers as virtual learners exploit technology and become active members of an online community, deriving experience for their students.

Introduction
Teachers judge the value of their professional growth by its effect on their students. Educators are clear about the responsibility of continuous learning and it is student learning that drives their interest towards professional development. Improving the quality of teaching means a lifetime of study and schools should support the task as an integral part of this never ending job. At present, teachers in higher education in Argentina are faced with adjusting to demanding content standards, assessing student performance, keeping abreast of the latest advances in their profession and assessing their own practice. Working towards these goals must become a top priority. But if this work is carried out individually the task becomes harsh and solitary. On the
other hand, on a co-operative basis, not only does the task become more enjoyable but it also enhances the chances of success.

Ask teachers what they need in order to do a better job, and their first reply is always “more time”. Teachers need time to prepare and equip themselves with the knowledge and skills necessary to improve their teaching abilities and maximise student learning. Professional development for teachers must become a seamless part of their lifelong job. Therefore teachers should accommodate to the present demands by optimising their use of time. One of the ways in which this can be accomplished is through engaging in collaborative work.

Every profession has a system through which its members can improve practice, and keep abreast of changes in knowledge and technology. Doctors, lawyers, architects, accountants and engineers regularly participate in congresses, seek advanced degrees or certification, and serve as or work with advisors. Professionals in most fields network with fellow practitioners, carry out and review research and talk to experts and colleagues about new trends, critical issues and plans for improvement. These opportunities for professional growth and renewal often take place within the workplace and are integrated into the daily life of the practitioner. Opportunities to develop professionally not only benefit the individual in performing his or her craft but also help ensure that best practice is everyday practice and that the most effective approaches are used. Unfortunately, most Argentine schools of higher education fail to provide adequate professional development for teachers. Yet, teachers will not leave this gap unfilled. They will still strive to become expert in student growth and development, will introduce changes, will persevere in incorporating new material, will continue permanent reassessment.
To allow for this task, teachers need partners who can help them improve their knowledge and skills. Teachers can gain new expertise and overcome isolation from each other through peer assistance. They should form long-term, genuinely collaborative relationships. Such co-operation will support high-quality professional development.

The goal of professional development must aim at increased student learning and improved results. Because all our students are expected to master new information technologies for their own careers and acquire flexibility and teamwork skills, their communications and information technologies (C&IT) skills become indispensable in all aspects of their work. New technologies, despite the general belief, have become an asset in our teaching and development tasks. Teachers’ attitudes towards C&IT vary and most teachers have mixed feelings about them. While a vast majority would like to develop their C&IT skills and knowledge, non-computing teachers feel overwhelmed by technological changes and worry about the pace of developments; they feel they cannot cope with the jargon associated with computers, and generally worry about their lack of skills and knowledge compared to that of their own pupils. But higher education’s central mission –to discover and to educate– engages the teachers in working not only in their specific fields of learning but in all fields of learning.

It seems evident that the lack of meaningful integration of C&IT derives from lack of awareness or lack of confidence, while successful integration depends on teachers being convinced of the relevance of new technologies not only as a means of providing access to a wider range of resources but also to a new style of work: collaborativeness. In an attempt to combine peer work, external assessment and scarcity of time, we undertook a series of computer-based activities with a three-fold purpose: 1) to achieve individual growth, 2) to share approaches and feedback co-operatively, and 3) to learn how to use new
technologies in order to improve the quality of our teaching and optimise results.

In order to exchange our experiences and gain expertise in the use of technology, we designed a mid-term exam to assess the work done during the first semester of the current academic year in the chairs of Phonology I at two state Teacher Training Colleges: Instituto Superior del Profesorado Joaquín V. González (J.V. González College) and Escuela Normal Superior en Lenguas Vivas John F. Kennedy (J.F. Kennedy College); and a Translators’ Course at a private university: Universidad de Belgrano.

Collaborative Testing in Phonology

The mid-term exam was entirely designed on an asynchronous basis, via email. This was basically due to the fact that we work in different institutions and do not normally meet. In any case, at no point in the design did we feel it was necessary for us to meet because technology gave us the tool to network. The steps we followed to devise the test were: conceiving the test, sharing drafts, agreeing upon the final version, implementing the test, comparing results and evaluating the experience.

Personal and contextual differences

Initially, the project did not seem to be feasible due to personal and contextual differences. Despite the initial scepticism as regards the success of our project, owing to our different personalities, ages, professional backgrounds and teaching styles, we found that it was precisely this diversity which contributed to achieving positive results.
Contextual differences were also our concern. The courses where the experience was carried out belong to institutions which combine different characteristics as to their historical background, administrative profile and rules and regulations.

The J.V. González College is a state-run traditional college of education, dedicated to teacher training for almost a century. The decision to give mid-term exams and the moment to do so lies entirely in the hands of the teachers. This assessment does not average with the final exam.

The J.F. Kennedy College, also a state-run school, is a younger institution with a teacher training course oriented to the training of teachers for the primary school or EGB (*Educación General Básica*). Regulations stipulate that mid-term exams should be given at the end of each term. The mark obtained is part of the final mark for the course, averaged with that of the final exam.

The University of Belgrano is a private university in which the Translators' Course has only one year of phonological studies; there are two compulsory term tests whose dates are fixed by the authorities and whose marks do not average with the final exams.

Designing the test

*Subject matter.* The first step was to list the items that we had covered during one whole term. As none of the three of us had laid the same emphasis on the same topics we made a selection of the ones that could be assessed. The choice was limited to basic aspects that every student should know by the middle of the year if they were to carry on with the subject.
**Types of exercises.** In order to break with the traditional way of testing, which appeals to memorisation and repetition of information, we made a point of including exercises that would require the use of different abilities and strategies to solve them. This would include problem-solving activities not always familiar to them. Although we are aware that Phonology I is a subject that requires storing a great number of facts and technicalities, we permanently try to make our teaching–learning experience a space for students to think, to reason out facts, to draw conclusions. This is precisely the way in which the exercises in this test would have to be solved.

**Selection of exercises.** The mid-term test started to take shape once some of the exercises were selected and others discarded on the basis of appropriateness, validity, length and timing. Care was taken to choose exercises that would lead to an objective evaluation on the part of the teachers.

**Marking.** It was agreed on that the marking scheme should highlight students’ accomplishments in what we called “positive marking”. The score of each exercise and the final mark had to show what was right rather than what was wrong. This new way of evaluating performance instils in the students more self-confidence and a positive outlook on their progress.

**Format.** The test format was given due attention because we wanted to ensure smooth implementation and reduce correction time: clear instructions so that there was no need for further clarification once the papers were given out, minimum writing production on the part of the students, resorting to circling, ticking off, underlining, completing, re-writing or correcting. These tasks were effective enough to foster thinking, associating and integrating processes in our students.
Results. The results of the test were highly rewarding both for teachers and students. The students managed to solve the activities, they showed knowledge of the main aspects of the items selected and they felt satisfied with their performance.

<table>
<thead>
<tr>
<th></th>
<th>STUDENTS</th>
<th>%</th>
<th>MARK: 4 OR ABOVE</th>
<th>%</th>
<th>FAILED</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISPJVG</td>
<td>COURSE 1</td>
<td>32</td>
<td>100%</td>
<td>26</td>
<td>81%</td>
<td>6</td>
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<tr>
<td></td>
<td>COURSE 2</td>
<td>20</td>
<td>100%</td>
<td>18</td>
<td>90%</td>
<td>2</td>
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<tr>
<td>ENSLV</td>
<td>JFK COURSE 3</td>
<td>12</td>
<td>100%</td>
<td>10</td>
<td>83%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>COURSE 4</td>
<td>12</td>
<td>100%</td>
<td>8</td>
<td>67%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>COURSE 5</td>
<td>25</td>
<td>100%</td>
<td>24</td>
<td>96%</td>
<td>1</td>
</tr>
<tr>
<td>UB</td>
<td>COURSE 6</td>
<td>22</td>
<td>100%</td>
<td>21</td>
<td>95%</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>123</td>
<td>100%</td>
<td>107</td>
<td>87%</td>
<td>16</td>
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</table>

Of a total of 123 students tested, 107 (87%) passed the test scoring 4 out of 10 or above. The passing mark (4) implied that 60% of the test was correctly done.

We believe this test helped us to fulfil one of the main aims of higher education, namely, the cultivation of thought because, apart from fostering the acquisition of knowledge, we, as educators, should teach our students to think and exercise reasoned judgement. Our students summed it up in one short phrase, "It made us think".
Moreover, the impact of this type of work can be seen in a more extended context. Three teachers were able to design collaboratively, with the help of new technologies, an instrument for the evaluation of a subject across institutions. Through this experience, which combines a number of attributes that link individual, collaborative and inter-institutional work, we have been able to put into practice some form of external evaluation, considered by the National Educational Authorities as the panacea of educational standards but which has not yet been regularly implemented in institutions of higher education.

**Distance Learning**

We believe that learning is a *constructive process*, by which we permanently re-construct *cognitive adaptations* our implicit theories, by adding new experiences through our *interaction* with other people *the social world*. As teachers, we have to re-construct our personal knowledge through constant interaction with our students in our practice. In doing so, we may find that some of our implicit ideas are, at times, changed in the process, and we may also find it worth reflecting upon this individually or with others.

Aware of the importance of continuing education, and prompted by individual needs as well as by the standards set by the Federal Law of Higher Education, we have been working, for the last two years, towards a university degree in education on a virtual basis. Nowadays the Internet has made it possible for the learning community to study together without physically being in the same location. In our society, access to information and the ability to exercise judgement about it, is, like schooling, an increasing necessity. A Virtual University, by allowing students to study at their own homes, at roughly their own pace and cooperatively, seems to provide an effective environment for teaching and learning – a new context, a new medium, which requires a
new way of thinking. In this kind of learning scenario, where learners are isolated from the other members of the virtual classroom, and students can easily get frustrated and discouraged, we have found that cooperative work, sharing, and mutual encouragement play a decisive role.

Computer-supported cooperative work (CSCW) is one of the fastest growing application areas in human-computer interaction. Undoubtedly, this area responds to the necessity of rapid and effective communication and collaboration. As teacher trainers we should make sure that we train future educators to effectively use the latest technology and that we provide them with an opportunity to have collaborative interaction with both their peers and teachers. Consequently, computer literacy is essential these days.

Synchronous or asynchronous interpersonal communication to exchange comments, discuss issues, solve doubts, build map-charts is only part of it. The underlying issue of how we -as virtual learners- have developed the skills to exploit new technologies and have become active members of an online community has helped us to view our students' problems in developing their own learning strategies and learning styles from a different perspective.

We have experienced once again that working in groups not only leads to the acquisition of concepts and skills of a subject, but it is also a way of learning about groups, both as a means of enhancing academic learning and developing abilities in cooperative work for later life. We would agree with Jacques in that “Cooperation doesn't just happen. We learn to cooperate through practice and this requires a clear and coordinated strategy for learning about working together and improving skills in cooperation”.

Students as well as teachers should be trained in the development of team skills. One of the key issues within a learning group is the cultivation of mutual trust, respect and openness. Each member of the group must take
responsibility for the task assigned to him or her and is subject to peer assessment and positive criticism; therefore, they should show a high degree of commitment to the group and be ready to appreciate the wisdom of each other’s comments and respond to them.

Comments

As conscious practitioners, we permanently reflect upon the teaching-learning process, we do it for a purpose: to find better ways of communicating with our students, to motivate them more, to find explanations for things we liked or disliked, to improve our own intervention in the class and to improve as persons in the teaching profession.

Many times, while having a coffee or a meeting with our peers, we share our experiences and views of the problems we sometimes have and try to find ways of improvement. Now, despite the little time available for meetings we try to fill the gap by using new technology. On the one hand, it is very rewarding to receive whole-hearted support; on the other, we have to open our minds to critical judgement.

Once the decision is made to review one’s personal interventions now with the help of an outsider, we have to be aware of all the implications of such a decision. We have to subject our own thoughts, beliefs and practice to “public enquiry, continual criticism and restructuring of organisational principles and values” (Schön, quoted in Richards 1995). One way to do this at present is through networking, which has led us on a journey of self-exploration where we profited from a critical analysis of our own practice as well as from the practice of others. On this journey we have found different ways of solving problems in the class, we have given ourselves the chance to improve our
weaknesses and enhance our strengths, to develop our command of new technologies, and to promote collaborative work through peer feedback.

We have permanently tried to foster change:

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
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<tbody>
<tr>
<td>Isolated individual learning</td>
<td>Learning both individually and in the context of groups, such as school faculty and teacher networks interested in particular subjects</td>
</tr>
<tr>
<td>Fragmented work</td>
<td>Coherent cooperative work</td>
</tr>
<tr>
<td>Generalising programs and tests</td>
<td>Programs and tests based on students’ needs</td>
</tr>
<tr>
<td>Dull and monotonous work</td>
<td>Challenging and creative production</td>
</tr>
<tr>
<td>Routine teaching practice</td>
<td>Analysing one’s own practice</td>
</tr>
<tr>
<td>Frustration</td>
<td>Conflict solving strategies. Motivation</td>
</tr>
</tbody>
</table>

**Conclusion**

Our experience shows that technology is a very powerful and useful tool to engage in collaborative work with our peers and our students, and that being electronically networked can in turn result in both personal and professional growth: teacher quality enhanced by sharing is essential for student empowerment and success.

We are convinced that this big step in our professional growth will greatly improve our teaching, our students’ learning and ourselves. In short, it will help us to become the “best teachers we can be”.

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