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Best Practices

Students teaching other students

I peer: risorsa d'apprendimento

Valentina Pagani

Centro internazionale di Studi sulla Ricerca Educativa (CISRE)
E-mail: valentina.pgn@gmail.com

Abstract. The COVID-19 pandemic situation that overwhelmed us still strongly questions university teaching today. The research reports a classroom's activity based on self-assessment (SA) and peer-feedback (PF)activities. The result is connected to the combination of three key points for effective teaching: 1) an active role of the students involved in the activity, 2) an effective use of technology based on a Student Response System (SRS), and 3) a sustained pedagogical training for teachers suddenly catapulted to new teaching methods. The design used, developed in the Italian university context, can be developed totally online, guaranteeing new skills and new learning, in view of a hypothetical, and not so unexpected, return to distance learning.

Keywords: e-learning, higher education, italian students, Student Response System.

Riassunto. La situazione pandemica da COVID-19 che ci ha sopraffatto mette ancora oggi fortemente in discussione l'insegnamento universitario. La ricerca riporta l'attività di una classe basata su attività di autovalutazione (SA) e feedback tra pari (PF). Il risultato è connesso alla combinazione di tre punti chiave per un insegnamento efficace: 1) un ruolo attivo degli studenti coinvolti nell'attività, 2) un uso efficace della tecnologia basata su uno Student Response System (SRS), e 3) una formazione pedagogica per insegnanti chiamati improvvisamente a mettere in campo nuovi metodi di insegnamento. Il design utilizzato, sviluppato nel contesto universitario italiano, può essere implementato totalmente online, garantendo nuove competenze e nuovo apprendimento, in vista di un ipotetico, e non tanto inaspettato, ritorno alla formazione a distanza.

Parole chiave: e-learning, alta formazione, studenti italiani, Student Response System.

SETTING: Italian university context
TARGET: Teachers and university students
DURATION: One lesson (2-4 hours)
EQUIPMENT: Student Response System with GoSoapBox software
PRODUCTS: Technical, reflective and application knowledge

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INTRODUCTION

The Coronavirus 2019 (COVID-19) pandemic has hit all levels, including the world of education, as much as if it adheres to the age group of those who attend university. Italian higher education was severely affected and, like all educational systems in the world, had to adapt, due to the suspension of the lessons, and a change in the methods of teaching and learning. Teaching has moved to distance education, emphasizing several limitations of our systems in terms of digital learning within the priority of accessing basic information. Teachers had to redesign their teaching and reshape their practices and students had to adapt to new methodologies and to the daily use of technology, previously little exploited. With the resumption of the new school year (2020-2021) the university sector still provides distance education. In the light of this, the questions we must continue to reflect on are: what have we learned from this? How can we use it for the future? It comes naturally to affirm that the importance of pedagogy is more fundamental than ever, in which this necessary forced transmigration to online teaching and education could reflect on every skill is to be considered. E-learning requires specific teaching skills, not always possessed by teachers who, on the other hand, have great face-to-face teaching experience. The same happened to the students. It is essential to give continuity to the educational relationship with students also online, as already happens daily in many universities and international schools. In this passage, at the centre of the process there are two interactions: 1) the connection between teaching, learning and assessment, and 2) the relationship between teacher and student and between students.

If we do not understand how to implement these relationships and think of e-learning only as the provision of materials the commitment of teachers and students could prove to be poorly productive. In order to improve the education system, it is necessary to renew the didactics. Calatayud (2007) pointed out that it is not possible to innovate in the teaching-learning process without a parallel innovation in assessment procedures, since students will not change the way they learn if the assessment system is not adapted to their learning as well. The National Reforms, the Bologna Process and the Europe 2020 Strategy have substantially modified the model of education at university level, projecting the latter towards innovative teaching approaches, mainly focused on the student, learning outcomes and the use of new technologies. There is a broad consensus, both national and international, on the need to improve the training offer by making it accessible, wide, and diversified (Di Palma & Belfiore, 2020; Grion et al. 2017). In the light of this, the traditional assessment procedures that still occupy the Italian university system (Grion et. al 2017) do not meet the requirements demanded by the assessment of new contents and the new role of students in university learning processes. Pérez Pueyo and colleagues (2008) indicated the feedback during the learning process, «which enables an improvement; self-assessment and peer-assessment, together with a serious reflection on the process» (p. 439) as adequate ones. Consequently, the participation of students in the assessment of their learning becomes central, «contributing to promote three requisites for any good assessment process: to be motivating, continuous and formative» (Bretones, 2008, p. 201). According to Nicol and Macfarlane-Dick (2006), students are already assessing their own work and generating their own feedback.

The research reports a classroom activity based on self-assessment (SA) in relation to peer-feedback (PF). However, its development related to technology makes it suitable for a distance learning context, for three reasons. The first one is connected to the connection of SA and PF: although in the literature SA and PF are strongly connected (Nicol & Macfarlane-Dick, 2006), literature also highlights that their implementation in higher education is not easy, remaining at the margins of assessment practices in higher education (Wanner & Palmer, 2018). The second is linked to the Italian context: in Italy, academic practices continue to be based on evaluation methods inspired by a 'traditional' approach (Grion, 2016), in which the use of technology in school contexts, up to now, has not had ever found a total openness for a deep-rooted desire not to deviate too much from the traditional didactics. Specifically, the Italian higher education system revolves around a system in which the assessment of the learning of the students seems to remain, «in general, a practice linked solely to the end-of-course exam, totally managed by the professor and often implemented as a due and traditional 'concluding rite' of the course itself, with characteristics that are refer to a predominantly or exclusively certifying and selective function» (Grion, 2016, p. 289). This would induce the student to be focused especially on a useful preparation for passing the examination, getting in the way of learning in depth (Ricchiardi, 2005) and developing strategies strongly focused only on the acquisition of the qualification (Pastore, 2012). The third reason is related to the use of the technology: there is a growing body of research exploring how technology might be used to support effective and efficient feedback practices, within the development of self-regulation (Nicol,

2009). Furthermore, the historical urgency that we had faced and towards a sector that has, even without warning, seen and lived the importance of the technology is higher.

1. SELF-ASSESSMENT (SA) AND PEER-FEEDBACK (PF)

1.1 Self-assessment

In this research, SA is considered a process of formative assessment where students reflect on and evaluate the quality of their work and their learning, judge the degree to which they reflect explicitly stated goals or criteria, identify strengths and weaknesses in their work, and revise accordingly (Andrade & Du, 2007). What is important to underline in this definition is that students, through self-assessment, enhance their ability to perform, become aware of the quality of their work and the learning output, and bring responsibility for their independence and satisfaction (Dochy et al. 1999). SA should be implemented more for four main reasons: 1) the transition to a more student-centred activity (Boud & Molloy, 2013), 2) the focus on life-long and work-integrated learning (Boud & Falchikov, 2007), 3) the educational and pedagogical changes in higher education (Wanner & Palmer, 2018), 4) the feedback as the main aim of formative assessment (Sadler, 1998).

1.2 Peer-feedback

The role and the quality of feedback is important for effective formative self-assessment. Already in 2014, Nicol and colleagues underlined the need to move away from old feedback models, where the teacher is the feedback transmitter, to more active involvement of the learner in feedback. This indicates the need to help students to develop evaluative and feedback skills and learn how to use the feedback they have received and have provided to other peers for their own learning and improvement of their work (Cartney, 2010; Cho & MacArthur, 2010). Nicol affirmed: «Feedback should be of sufficient quantity; timely; it should focus on learning not marks; it should be related to assessment criteria and be understandable, attended to and actually used by students to make improvements on their work» (2009, p. 337). An opportunity to increase the impact of feedback by enhancing the role of students in this process is to build peer-feedback opportunities (Grion et al. 2017). Peer-feedback is the information that a student provides to a peer (Topping, 1998).

1.3 Common points

Four common points emerged in the previous two paragraphs between self-assessment and peer-feedback. The first is the role of the student. The centrality of the students in both processes stimulates their ability to develop critical judgment, becoming aware and responsible of their own learning through a student-centered learning (Boud & Molloy, 2013). Student-centered instruction is a form of active learning where students are engaged and involved in what they are studying (Brown, 2008). The second is the aim of the processes: to enhance learning. Students with an active role by reviewing and evaluating their peer's work reflect on their work, reinforcing their knowledge of the subject and learning different ways of performing the same task (Nicol, 2010), an important skill to become life-long learner (Boud & Falchikov, 2007). The third is the transversal skill that students can develop: besides having an impact on the learning of the disciplinary contents, students develop one of the most important transversal skills for their personal and professional life: the ability to develop judgments, to use evaluation criteria and to create their own (Grion et al. 2017). To confirm this, already in 2006, Liu and Carless argued that involving students in assessment practices and peer feedback enables students to take an active role in the management of their own learning, helps to enhance students' self-assessment skills, and can improve learning of subject matter. The fourth is their forms: they are still not the norm at universities, remaining at the margins of assessment practices in higher education (Wanner & Palmer, 2018).

1.4 A possible solution

There is a growing body of research exploring how technology might be used to support effective and efficient feedback practices. Nicol (2009) demonstrated how technology can support the development of self-regulation, the organization of assessment tasks and the provision of feedback with a large group of students, where they have reduced formative assessment and feedback opportunities. In fact, while it seems to be relatively easy to promote the adoption of active learning pedagogies in small class environments, the challenge arises when dealing with large cohorts of students, even more now that teaching and learning have moved to distance teaching and learning. The solution could be 'students teaching other students' as everybody is engaged on the learning task, everybody could add new knowledge, and develop core skills (Aricò, 2016).

2. THE RESEARCH

2.1 The learning environment

The practical core of this study took place during Evaluation and Qualitative Research of the master's degree course at the Cà Foscari University of Venice. This course is one of the educational activities associated with the master's degree program in Philosophy, Human and Social Sciences, and Languages, which allows students to acquire the knowledge and understanding of the basic elements of Evaluation and Qualitative Research in educational and social field. Teaching methods are different: ex cathedra lessons and exercises, project work, discussions, and arguments in working groups. Presence at the lessons is not compulsory. Attending students need to present at the classes for at least 75% of the total hours, work on a project work in-group, prepare the main material of study with a chosen book; non-attending students need to present individual project work, prepare the main material of study with two chosen books. Assessment methods are divided into three tests: project work (individual or in-group), online test with multiple-choice questions, and written test with open-ended questions on the texts and materials studied. Final oral examination is only for non-attending students on the second in-depth text. All the materials are loaded on the Moodle platform, accessible to all students, where they can also read the notices and intervene in the various forums.

2.2 Aim and methodology

The research had two aims: 1) give students an active and central role, and 2) promote active learning through peer-feedback processes and assessment. To this extent, self-assessment and peer feedback were the basis of the activity, in which students were endowed with Student Response Systems (SRS). The software used for this activity is GoSoapBox, a powerful and flexible student response system that engages students to conduct formative assessment and gains into their comprehension, through peer feedback. Students were individually connected to the activity through their laptop or mobile phones, using the activity code. Each student connected to the activity was automatically aligned by the software to a unique identification code. Students followed a planned process, divided into 5 precise steps: 1) reflect on the answer, 2) answer individually, 3) verify the distribution of the answer on the shared screen, 4) discuss with peers on the available options, and 5) answer again individually. Once done, the correct answer was highlighted. The sequence was repeated for the 2 questions that compose the problem set: 1) "What do you think self-assessment is?" and 2) "What elements should be considered in the self-assessment process?". For both the questions, students had to choose the correct answer from the possible answers provided. The whole process took almost four hours. 27 total answers were obtained for both questions, both before (step 2) and after (step 5) the peer discussion. From the answers obtained, before and after the peer discussion, the effectiveness of the peer feedback was measured by calculating the "Class Learning-Gain", «the measure of effectiveness of Peer-Instruction: the higher the proportion of students who learnt how to reach the right answer by discussing with their peers, the higher the Learning Gain» (Aricò, 2016, p. 17). To calculate it, it has been computing the difference between the proportion of correct responses obtained between the first (PRE peer discussion) and the second (POST peer discussion) time each question has been asked.

2.3 Subjects

The subjects of this study are the attending students, enrolled in the course of Evaluation and Qualitative Research of the master's degree course at the Cà Foscari University of Venice. The sample was reached through direct contact with the students, thanks to hours of teaching assistance with prof. Tessaro. The subjects were 27 students: 9 enrolled in the Philosophy Degree, 16 in Social Work, 2 in Languages. The number of female subjects was greater. Average age: 31 years. All the students accepted and held the following pre-requisites: 1) voluntariness to participate in the research, 2) acceptance of the possible publication of the data, and 3) level of knowledge of the topic> 3 (Level 3 corresponds to a sufficient level of knowledge)[1].

3. RESULTS

The first question was related to what self-assessment is. The possible answers were: A) process, B) practice, C) objective, D) tool. Table 1 shows the percentages of responses obtained before and after the peer discussion.

[1] All students had previously completed a questionnaire in which they have to express their level of knowledge of the topic (Self-assessment) between 1 (zero level) and 5 (high level). The questionnaire was used in the quantitative data collection in study 3 of my PhD thesis, whose analysis did not affect this study in any way.

Table 1. Percentages of responses obtained before and after the peer discussion, question 1.

Options	Answer PRE	Answer POST
A) Process	54%	70%
B) Practice	4%	13%
C) Objective	7%	0%
D) Tool	35%	17%

Table 2. Percentages of responses obtained before and after the peer discussion, question 2.

Options	Answer PRE	Answer POST
A) Knowledge	12%	5%
B) Objectives	14%	13%
C) Motivation	17%	9%
D) Criteria	45%	62%
E) Feedback	12%	11%

Table 3. Percentages of Learning gain, (%Post-%PRE).

Question	Answer PRE	Answer POST	Learning Gain
1	54%	70%	16%
2	45%	62%	17%

It is possible to see that the answer that got a higher percentage in the first cycle of answers was A. In the second cycle, after the peer discussion, the most frequent answer remained answer A, but the percentage grew and changed for the other answers.

The second question was related to which element is fundamental to self-assess. The possible answers were: A) knowledge, B) objectives, C) motivations, D) criteria, E) feedback. Table 2 shows the percentages of responses obtained before and after the peer discussion.

The answer that got a higher percentage in the first cycle of answers was D. In the second cycle, after the peer discussion, the most frequent answer remained answer D, but the percentage grew and changed about the other answers.

Table 3 shows the learning gain obtained by computing the difference between the proportion of PRE peer discussion and POST peer discussion.

For the first answer, Class Learning-Gain grew by 16%, and in the second answer by 17%. In both cases, the students indicated the right answer, pre and post peer discussion.

DISCUSSION

From the results, it is possible to state that the two aims of the research have been achieved.

Linked to the first purpose, it is possible to confirm that students had a central and active role throughout the whole process in which they had the opportunity to reflect on what they were doing and to critically evaluate their skills concerning the assigned tasks, fundamental steps for the formative assessment outlined by Andrade and Du (2007). In this research, this was possible because the self-assessment process preceded the peer-feedback so that active learning was first linked to individual engagement that each student exercised. Subsequently, during the peer discussion, students were able to reflect on the feedback received, thus strengthening or modifying their knowledge, and activating further ways of learning, an important skill to learn different ways of doing the same task (Nicol, 2010), and become lifelong students (Boud & Falchikov, 2007). As students receive more feedback from peers and faster (Gibbs, 1999), it was important to create the best conditions for peer feedback. Ensuring the anonymity of students throughout the activity has certainly played an important role, motivating students to try, without fear of outside judgment. This aspect should not be underestimated because it could alter students' answers, or even distort them. By receiving peer feedback, students compared their responses with those of others, activating self-reflective processes first, and then communicative processes related to performance and standards. The technology, thanks to the ease of use of the chosen software, made the activity interesting and engaging, in which students were constantly updated and intrigued by their results and achievements. Also, the decision to always display students' answers on the screen, contrary to the use of Mazur's original sequence in 1997, acted as an additional incentive to involve students in the task, as well as providing useful information on where to focus more attention. The tool itself has been useful both to the researcher and to the present teacher because it allowed the downloading of every part of the activity in multiple formats, useful for more in-depth and continuous analysis.

Linked to the second aim of the research, the analysis of the data confirms that the proposed activities based on peer-feedback processes and assessment promoted active learning. The results show that students' learning grew after PF, in both the questions. Learning gains were higher when the initial proportion of correct responses was lower. This happens for both the questions.

CONCLUSIONS

The pandemic situation that has overwhelmed us, without warning, and which is still strongly questioning the reality in schools at all levels, have had to make a huge leap towards didactic experimentation. The most recent literature has defined three key points on which an effective process of educational innovation in the context of formal training should be based: 1) the promotion of student-centred learning, 2) the effective adoption of digital resources, and 3) the pedagogical training of teaching staff (Di Palma & Belfiore, 2020). The work can show that the proposed activities combine these three key points: students have played an active role, technology has supported the whole process in an effective way, and it has been possible to contribute to the pedagogical training of the teacher.

The current precarious situation of the teaching methods is still staggering between the current presence lessons and a possible return to distance learning. Although the research has been structured and carried out in presence it can be fully developed online, guaranteeing an active role to the student, the continuous adoption of digital resources, and further training for the teaching staff, with the main aim of building new skills and new learning.

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