COLLABORATIVE PEER FEEDBACK FOR CONTINUOUS PRODUCT IMPROVEMENT IN A HIGHER EDUCATION COURSE

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Abstract

This contribution focuses on the peer-feedback activities carried out in a blended university course inspired by the Triological Approach to Learning. The course lasted 10 weeks divided into 3 modules; 109 students participated in the activities (M: 27 - F: 82), working in 11 groups of about 10 members. During the course students build knowledge products and are asked to improve them through mutual feedback. In order to track the evolution of students’ critical skills, we analyzed a pre-post questionnaire for the self-assessment of critical skills (N=100) and the peer-feedback forms written by the groups (N=44). Results of the questionnaire show statistically significant differences with p<.01 in all the items investigated; results from the analysis of the peer—feedback forms show a significant improvement in the quality of the comments given from the first to the second feedback activity. The articulation of the course activities seems therefore to support a good development of students’ critical skills.

Keywords: Higher Education, Blended Learning, Peer Feedback, Triological Learning Approach.

1 INTRODUCTION

Nowadays, we live in a context in which knowledge takes on a fundamental centrality in all life processes. The expression “learning society” appears to be very effective in defining our society, precisely because it highlights the pervasive aspect of knowledge and skills in every dimension of our life.

In other words, it is a society that creates new knowledge and stimulates its members to be able to learn and rework new information and new knowledge. In this context, schools and universities must put as their main goal ensuring students to acquire skills which are useful for their studies, but also for their future career and daily life. These skills can be defined as knowledge work competences and can be grouped into 3 categories [1]: individual, social and epistemic.

Undoubtedly, the possibility to take on social and knowledge work skills depends on the actual educational practices. One cannot learn to collaborate if he/she does not cooperate, one cannot learn to manage and evaluate information knowledge is received merely through lecture classes. Educational practices need therefore be innovated, ensuring a real change in teaching, placing students at the center of the process, as the protagonists of their own learning.

Paavola, Engestrom and Hakkarainen [2] developed a specific approach to learning, defined as a Triological Approach to Learning. This approach integrates “monological” (cognitive) and dialogical (situated cognition) approaches to learning, with a third element: the intentional processes involved in collaboratively producing shared knowledge artifacts which are useful for the community. The object to be created, built and improved over time, connects the activity of the individual and that of the community, finalizing the educational path to the creation of knowledge artifacts. To create such artifacts fundamental is the use of a technology allowing students’ ideas to be transformed into digital entities on which it is possible to iteratively work on.

The triological approach to learning can lead to an innovation of teaching when its six design principles are followed. Indeed, they are indications or guidelines, which support the teachers’ planning of pedagogical scenarios, i.e. an accurate planning of a didactic activity. Here we want to focus on the fourth design principle, stating the importance of fostering long-term processes of knowledge advancement. Besides, assuring the continuous product improvement promotes the development of critical skills: to improve their products, in fact, students are asked to observe and evaluate each other’s artifacts, and to produce constructive feedback, able to allow their classmates to improve them and further build knowledge [3], [4]. Moreover, recent studies show how providing feedback is more effective than receiving them [5] since, in producing feedback for their peers, students experience cognitive
processes of analysis, revision and re-elaboration of knowledge, also externalizing and making them explicit in the written comments addressed to their classmates.

In summary, peer-feedback activities can enhance student’s ability to evaluate one’s product, that is one of the most important learning outcomes for nowadays citizens’ continuous training.

This contribution aims to describe the peer-feedback activities carried out in a blended university course inspired by the Trialogical Approach to Learning, focusing on the evolution of students’ critical skills, supported by specific peer-feedback activities during the course.

2 METHODOLOGY

2.1 Setting

The course here described is about the Experimental Pedagogy (Bachelor’s Degree in Psychology and Health, Sapienza University of Rome) and it lasted 10 weeks divided into three modules; 109 students participated to the activities (M: 27 - F: 82), working in 11 groups of about 10 members. In each of the three modules students had to: work in groups to deepen the course contents and collaboratively build new knowledge; build and continuously improve their products through iterative cycles of feedback; use different technological tools depending on the specific activities to be carried out.

In this contribution we focus on the peer-feedback activities taking place in the first and third module of the course, respectively dedicated to: 1) produce a definition of the “Good Teacher” - on which each group had to discuss and finally create a conceptual map, 2) construct the course final object requested from the teacher: a pedagogical scenario describing a technology-enhanced learning activity supporting active and collaborative learning.

In each of the two activities, the working-groups had to evaluate the products of two other peer groups, and to improve their own products starting from the comments received by two other groups. The two peer-feedback activities were both collaborative and face-to-face performed; moreover, in both the cases, students had to use specific evaluation criteria accompanied by improvement comments. Differences between the peer-feedback activities were related just to the criteria: in the concept-maps peer-feedback, indeed, students were asked to identify three to five criteria they themselves, starting from one example provided from the teacher; the scenario peer-feedback, instead, was based on a set of criteria mainly established from the teacher and only partially built from the students.

Students applied the established assessment criteria by assigning a score for each criterion, then integrating it with a textual comment aimed at suggesting concrete and specific improvements for their colleagues’ products.

2.2 Aims

The study here presented focus on the evolution of students’ critical skills, by answering to the following research questions:

1. Do students change their perception about their own critical competences after having performed the peer-feedback activities?

2. Do students improve the ability of providing effective feedback to their colleagues?

2.3 Method

To answer to the first research question, we administered a critical skills self-assessment pre-post questionnaire. The questionnaire consists of eight items (Likert scale 1-5) aiming to detect students’ perception of their ability to assess and to self-evaluate, to offer constructive comments and to learn from comparing their own outcomes with others’ ones. 100 students (91,74% of all participants) answered the pre-post questionnaire; the answers were statistically treated through a univariate Anova.

To answer to the second research question, we analysed the peer-feedback forms produced by the working groups in module 1 and 3 (N = 44). The textual comments were evaluated by two independent researchers, based on a specific protocol consisting on two criteria (clarity and utility, score 1-5). The t-test was used to verify any detected difference in the comments of the two modules.
3 RESULTS

Results of the questionnaire show statistically significant differences (Anova Univariate) with $p<.01$ in all the investigated items (Fig. 1).

Students think to have well improved their competences, in particular: the ability to evaluate the products of their classmates (3.8 to 4.37) and their own products (3.56 to 4.16), to provide constructive comments (3.9 to 4.4), to recognize their own learning outcomes (3.96 to 4.49), and to identify the improvement areas of their and others’ products (3.76 to 4.27).

Regarding the second research question, results of the analysis of the textual comments composing the peer–feedback form (Fig. 2) show a significant improvement in their quality from the first to the third module ($t=3.075$ (10) $p=.012$).

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**Figure 1:** Critical skills self-assessment Questionnaire: differences between pre- and post-test

**Figure 2:** Clarity and utility of the peer-feedback textual comments. Differences between module 1 and 3
Students improved their ability to give clear, specific and useful comments able to help their mates to enrich their products. At the end of the course activities, students gained a good competence in offering precise and constructive feedback. Moreover, from the analysis of the provided comments, the teacher could also draw indications about an adequate appropriation of the skills and knowledge concerning the covered learning topics. To evaluate their groupmates’ products and to offer constructive comments, in fact, students needed to appropriately master the relating knowledge.

4 CONCLUSIONS

Overall, the articulation of the peer-feedback activities seems to support the development of students’ critical skills aimed at improving collaborative knowledge products. At the end of the course, students perceive to be more skilled in evaluating and self-evaluating; moreover, the quality of their textual feedback improve in terms of clarity and effectiveness.

On the one hand, therefore, this research confirms previous research on the use of peer-feedback to enhance critical skills [7]; on the other, it opens the way to new insights that can investigate, for example, the relationship between the quality of feedback and the improvement of the evaluated products.

REFERENCES


