

REFLECTION OVER THE TEACHING PRACTICES OF STUDENTS TEACHERS WHEN FACING THE SCIENCE CLASSES AND LEVELS OF CONSCIOUSNESS

MAURICIO PITROCOLA

Abstract

Recent works have shown how important is to study the passage of novice teacher to the school. In this work we have studied a fifty preservice physics teacher during a practical activity in which they performance an innovative activity in a physics classes. The analyzes was focused on the student's level of conscience attained. The findings show the importance to offer ways to be aware about the decisions made during the action willing to attain deep levels of conscience. This results could help develop curriculum more adapted to prepare new teachers to the professional duties and challenges they will face.

Introduction

In an already old article about teacher education, entitled "Are the effects of teacher education 'washed out' by school experience?", Zeichner e Tabachnick [1] stress that future teachers regress to more traditional models as they assume their professional duties. From there, the difficult relationship between theory and practice in classes has been a recurring theme in area. Cole and Knowles [2] interpret this fact as consequence of an idealized picture of student teachers that is shattered when facing the reality of schools. It seems that the social demands of the school end up creating a very stressful environment in which novice teachers struggle to maintain their methods of education consistent with more progressive and innovative pedagogical models [3]. The fundamental question to be answered is how to develop pedagogical practices that allow deep reflection about the challenges, the incertitude, the struggles related with commitments, duties, and constraints of the classroom?

Research design

In this work, during the first semester of 2017, we have follow 50 student teachers of physics from a pre-service course during their practical activities developed in a secondary school. The pre-service course was a semester long with 4 hours per week. It was a theoretical and practical course based on pedagogical content knowledge of Physics. In pairs, students were supposed to prepare and implement activities in science classroom in high education level at three publics school in the central area of the city of São Paulo, Brazil. Each pair has selected a theoretical approach to prepare a class intervention, choosing between strategies of active learning using problems, historical perspectives and mathematics to modelling. During two classes of 3 hours each, each pair has designed the lesson, shared it with the colleagues and the supervisor, re-designed to be ready to go to the school. The pairs co-teach in the class in a collaborative way that was recorded by two cameras (front and back into the room). Four weeks later, each student has watched the video tape of the class he was involved and answer 12 question in a Moodle-based platform which focu follow below: 1) achievement of the lesson plan; 2) characterization of the pedagogical strategies used; 3) Time used in class; 4) Unforeseen and re-designing; 5) Co-teaching; 6) Content Mastery; 7) teaching repertoire; 8) Student discipline; 9) Flow of lesson; 10) Student Participation; 11) Students Engagement; 12) Emotional climate.

The data analyzes was product using the answers from a group of 10 student teachers. The analyses were conducted by a team of three master degree students in science education using a set of 8 rubrics (see table 1). The rubrics was developed using theoretical aspects of the research in teacher professional development and empirical insights from a preliminary analysis of the answers.

Table 1 - Rubrics of answers' analyses

A. Style:	1 (more bureaucratic) to 5 (more real)
B. Content:	1 (more descriptive to 5 (more interpretative
C. Elements presents in the answers:	

i. Didactic resources (equipment, books, program, etc.)	v. Learning (of the students and of the student teachers)
ii. Scientific contents (concepts, scientific laws, principles etc.)	vi. Inter-personal relationship (high education student and/or student teachers), Intra-personal relationship (social rules, attitudes, emotional and affective responses)
iii. Didactic action (pedagogical strategies, development of activities, explanations, lessons etc.)	vii. Other
iv. Contextual demands (classes delays, infra-structure's problems of the school etc.)	

The qualitative based methodology, inspired in Tobin, K., & Ritchie, S. [4] supposed a first round of a free evaluation followed by a collective round where the analysis of the answers was submitted to consensus. The senior research, that was also the supervisor of the course, mediate this second collective round of analysis. The mains goals were: a) to evaluated the quality of the set of rubrics in terms of clarity and comprehensiveness; b) consistency and coherence. Using rubric A and rubric B, we have discarded the answer completely bureaucratic (RA=1) or completely descriptive (RB=1). These answers were supposed to not to express a real reflection process made by student teachers.

Analyses and Results

Rubric A and B made possible to produce an overview over the set of 120 analyzed answers: around 90% of the answer were not completely bureaucratic and not indicate that students were engaged in analyzing their performance in the lesson more then just answer the activity to the course. Around 75% of the answer was not completely descriptive. It indicates that the student teachers have reflected over the lessons they have made and try to make sense of them in terms of personal analyses. Around 80% of the content of the answer were not completely bureaucratic and neither completely descriptive and analyzed in terms of the aspects pre-defined in rubric C.

Conclusions

Watch the videotape was an opportunity to student teachers to revival the experience in a less emotional ambiance and become aware of important aspects of the practical action they have performance in the class. Giddens [5] highlights the importance of understanding the human consciousness of its own actions in social life. Strategies using questionnaire willing to stimulated awareness was defined as *heuristics* [6]. In our case, we have found that the 12 questions combined with the videotape analysis could stimulate a process of reflection and awareness at the student teachers. In contrast, the simple discussion just after the class was not able to instigate deep reflection over obstacles presents in the teaching activity at school and the strategies the student teachers have used to overcome them. Our conclusion is that the students' consciousness operates in a discursive level that are different from the practical consciousness they have during the lessons. It is because for one hand, the student teachers must adjust themselves to established standards of conduct to deal with the complexity of the classroom. For the other hand, they must adapt new pedagogical strategies taken from education courses to the conditions of the schools where they will act. Acquiring pedagogical knowledge in educational courses does not ensure in itself a proper transposition to a school environment. It takes preparation to establish a day-to-day school routine in a reflexive way. In this sense, the pre-services courses must design activities able to offer opportunities to reflection and awareness. In our case, the use a set of questions functioning as heurist and video tape analysis was a successful strategy.

REFERENCES

- [1] Zeichner, K. M., & Tabachnick, B. R. (1981). Are the Effects of University Teacher Education "Washed Out" by School Experience? *Journal of Teacher Education*, 32(3)(1981), 7–11.
- [2] Cole, A. L., & Knowles, J. G. Shattered images: Understanding expectations and realities of field experiences. *Teaching and Teacher Education*, 9 (1983), 457–471.
- [3] Brouwer, N., & Korthagen, F. Can Teacher Education Make a Difference? *American Educational Research B*, 42(2005), 153-224.
- [4] Tobin, K., & Ritchie, S. Multi-Method, Multi-Theoretical, Multi-Level Research in the Learning Sciences. *The Asia-Pacific Education Researcher*, 21(1) (2012), 117–129.
- [5] Giddens, A. (1984). *The Constitution of Society-introduction*. Cambridge: Polity Press. (Kindle version)
- [6] Powietrzynska, M., & Tobin, K.. *Mindfulness and Science Education* (pp. 1–7). Dordrecht: Springer Netherlands 2014.