

Review of the doctoral dissertation submitted by

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Physics Teachers Learning Communities - From the Perspective of Teachers

prepared under the supervision of

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This research study is about The Paris Community as a Model for Regional Physics Teachers Learning Communities. In the dissertation, the author addresses important and always up-to-date issues related to the professional development of science teachers in the context of learning communities on the example of Israel.

The results obtained in the dissertation are extremely inspiring not only for science teachers, but also for teachers of other subjects. They show the way in which many professional competencies can be increased and how the methodological workshop not only of the teacher, but also the knowledge and interests of the student, can be created. This is possible if the teacher receives social, educational, expert, and scientific support in a group of other teachers.

The research undertaken in the dissertation is of universal value. The results obtained can be used in the planning and implementing of the professional development of each teacher, regardless of job seniority and the type of teaching tasks carried out at schools around the world. I must admit that such experiments, on a mass scale, would also be useful in the

milieu of Polish teachers. This is a rare example of effective cooperation between methodologists, practitioners, and researchers, which translates into the success of the teacher and the student.

The dissertation of 295 pages consists, classically, of 3 formally and substantively separated parts, i.e. the theoretical and methodological parts, and the results of the author's own research. At the end, there is a bibliography and templates of the research tools, transcripts of interviews, and other necessary documents created in the course of the research.

The theoretical part consists of 5 subsections. In Subsection One, under the title *Teaching and Learning Physics Today in High School*, the author emphasizes the importance of teaching science in high school for the development of society and technology in Israel. In this regard, it becomes important to raise the level of physics teaching by creating a dynamic, innovative, and inspiring learning environment by changing the paradigm of physics teaching. This issue is well presented in the subsection. It is the student who becomes the centre of interest and the teacher, as a leader, uses innovative and activating teaching methods. Professional learning communities have been created to provide teachers with the necessary support and tools to deal with these challenges. The subsection contains synthetically presented content, however, it lacks a discussion of science education programmes, including physics, the philosophy and theory of their creation, possibly the evolution of their content and methods, and data on the results achieved in Israel over the years, and in comparison with other countries. Such considerations would be of great interest to the reader.

Subsection Two deals with the professional development of teachers and also briefly presents the content of the requirements related to the education of science teachers, for whom student achievements should be a determinant of their further professional development.

Subsection Three, under the title *Learning Communities of Teachers*, points to the importance and advantages of a professional teaching community as a group with common goals, which focuses on professional issues and encourages learning, being active, and working in teams. The author points out the relationship between the quality of teaching and student learning, and that if teachers want to improve their teaching, it is recommended that they learn in a professional community. The author cites research which shows that teacher learning communities can improve teacher practice in the context of teaching and the achievements of their students, and even the choice of specialization by students. It identifies the main elements that are necessary to create a strong and effective community of teachers. This is a very good, convincing, and substantively rich subsection of the dissertation.

Subsection Four is entitled *Learning Communities of Physics Teachers*. It details how the Ministry of Education and the National Centre for Physics Teachers run a unique programme of "Regional Educational Communities" in which teachers develop professionally, what is the schedule of meetings like, how the content is prepared, the structure of the participants, and the methods used, including the interesting main method - the so-called FAN method/approach.

Subsection Five describes the Paris Community as a model for regional physics teacher learning communities. These are well and synthetically presented issues needed to understand the context and sense of the research and the selection of this particular case for the study.

Comparing all three parts of the work, the theoretical assumptions of the research are scarcer in terms of their quantity and substance than the others. When making a possible decision regarding the publication of the dissertation, it is worth considering whether the theoretical part should be extended to include the content indicated above.

The second part of the dissertation comprises the methodological assumptions of the author's own research. The aim of the research was to identify the interrelationships between the nature of learning that the interaction in the learning community of teachers develops and the way changes in classroom teaching are expressed. In the course of her research, the doctoral student performed two functions, i.e. as a community instructor and as a researcher. In the course of her classes and research, she sought answers to the following research questions:

1. What are the perceptions of physics teachers and what is their attitude towards their participation in professional learning communities?
2. What is the contribution of the professional community to the changes in the content and ways of teaching that occur among physics teachers?
3. What, in the teachers' opinion, are the causes of effectiveness of the professional physics community?
4. Did the change that had occurred in a teacher following his or her participation in the community create a change in the students' learning?

She conducted her research in the qualitative paradigm, using numerous methods, techniques, and research tools. Data were collected in the natural environment of the

community by means observation and documentation, interviews and personal talks, protocols, questionnaires, final tasks, and meeting results. The author carefully prepared the part of the dissertation devoted to the description of her own research programme. She chose the relevant method (case study), and research techniques and tools. I also appreciate it that the doctoral student showed the ethical aspects of the research and the limitations which she is well aware of. This is rarely seen in doctoral dissertations.

The author did a good job with the research material. It has a solid research workshop. Analysing the empirical part and the conclusions of the dissertation, it can be concluded that the author managed to achieve the research goals. In the subsequent parts of the dissertation, she consistently presents answers to the research questions posed. The obtained data were subjected to a comprehensive and thorough interpretation. The author also referred to other research on the subject and to the literature on the subject. The doctoral student presented extremely interesting and rich research material. I appreciate the use of drawings with her own elaboration of the studied phenomena. The obtained results and conclusions were used by the doctoral student to present recommendations and conclusions for further research. These are well-thought-out analyses. The last part contains a bibliography, templates of the research tools, and attachments with documents and photos showing the functioning of the teachers' community.

To sum up: **I evaluate the dissertation positively**, both in the context of the theoretical as well as methodological and empirical assumptions presented in it. The dissertation constitutes an adequate presentation of the theories and theoretical constructs analysed and adopted in the research. The dissertation has not only cognitive but also practical values. The effects of the doctoral student's academic work can be used for practical purposes and in further in-depth research in pedeutology.

Conclusion: taking into account all the aspects of the reviewed dissertation, I state that the doctoral dissertation prepared by Ms. Daphne Cohen-Brennen, MA, presented to me for review, fully meets the requirements for doctoral dissertations.

I also state that the dissertation fully meets the criteria for the award of a doctoral degree in the field of social sciences in the discipline of education. It fully meets the requirements for doctoral dissertations in accordance with the Act of March 14, 20003 on academic degrees and titles and on the degrees and titles in the field of arts (Journal of Laws of 2017, item 1789, as amended) and, therefore, I hereby motion for the admission of Ms. Daphne Cohen-Brennen, MA, to the further stages of the doctoral procedure.

Beata Praylorouska