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Annex No. 11 to the MU Directive on Habilitation Procedures and Professor Appointment Procedures

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University	
Faculty	Faculty of Education
Procedure field	Pedagogy
Applicant	RNDr. Eva TRNOVÁ, PhD.
Applicant's home unit, institution	Department of Education, Faculty of Education, Masaryk University
Habilitation thesis	Selected Aspects of Science Teachers´ Continuing Professional Development Focused on Inquiry-Based Science Education
Reviewer	doc. dr Leszek RYK
Reviewer's home unit, institution	Teacher Education Center, University of Wroclaw

Review text

Formal structure of the thesis

The habilitant submitted a habilitation thesis in the extent of 351 pages, which is structured in two parts. The first part is a commentary on a collection of ten selected published works (pp. 4-60), which are presented in the second part (61-351). The collection consists of eight articles and selected chapters from two monographs. All articles are written in English, only selected chapters from the monographs are in Czech. The habilitant is the only author of two works and she has participated in other seven works as a co-author with a high share (50% in six works and 33% in one work). Since the monograph is a work of several authors (ten), the habilitant presents only the chapters she greatly contributed to, as she demonstrates in the commentary on this monograph. According to the quoted citations, the presented works have been well received by the professional community abroad and in the Czech Republic, which shows that the habilitant submits a mature collection of works.

The presented published works are interconnected through the topic of science teachers´ continuing professional development.Given that this is a multifactorial issue, it was appropriate that the habilitant focused only on aspects that are currently at the forefront and play an important role in science education. Also her point of view - inquiry-based science education - corresponds to current trends in science education. The title of the thesis "Selected Aspects of Science Teachers´ Continuing Professional Development Focused on Inquiry-Based Science Education" describes the presented content.

Topicality of the theme

The topic of the habilitation thesis is a highly up-to-date issue, in both theory and practice. From this point of view, the habilitant has succeeded in meeting the goal of linking theory and practice. The topics addressed in the habilitation thesis are very up-to-date, as evidenced by the worldwide interest in teacher education, not only by teachers, parents, but also politicians. Documents are being developed within the European Union to support teacher training, both undergraduate and postgraduate, and to increase the education of the population. This topic is also very up-to-date in Poland and some of the findings presented in the habilitation thesis are used for teachers´ continuing professional development. Students use the English articles from the collection of works during their studies at the University of Wroclaw. Her findings about connectivism and creativity of participants are also applied in CPD courses.

The habilitation thesis brings many ideas for innovating science teachers' continuing professional development. The focus on teacher development in the field of inquiry-based science education fully meets the EU requirements how to prepare pupils for both their daily lives and integration into the work process. This innovative approach promotes the conversion of teacher-centered teaching to learner-centered teaching. Taking into account the connectivism factor reflects new opportunities in implementing quality science teachers' CPD offered by current information and communication technologies. The issue of respecting teacher creativity also provides an unconventional insight into the requirements of quality CPD. Developing creativity is also one of the priorities of European education policy.

Approach to solving and setting the issue into a professional (including international) context

I consider the habilitant's approach to elaborating the habilitation thesis adequate. Given that this is a collection of works, some of these aspects cannot be solved comprehensively. The commentary, however, justifies her choice appropriately and demonstrates its importance through expert opinions, which should be appreciated. The habilitant solves the issue mainly in the international context, which does not limit the use of presented knowledge only to the Czech Republic. This is very important for continuing professional development that takes different forms in the world.

Methodology

The presented texts use a quantitative, qualitative and mixed approach. Design-based research (DBR) is mentioned as the main research strategy in most works. Therefore, a whole chapter in the commentary is devoted to this methodological approach. The habilitant demonstrates the legitimacy of the applied DBR in the published works through the research results of DBR experts. The preference of DBR is based on the nature of her research that is strongly linked to practice.
As already indicated, the habilitant worked in international and Czech research teams. She participated in the design of joint research to a different extent, which is described in more or less detail in individual texts.
I consider DBR to be very beneficial for science didactics, and it is also beginning to assert in Poland.

Quality, accuracy and originality of results

The quality of the achieved results is proved by their application for the development of the discipline and practice, which is described in the following text.
The results were achieved by methodologically correct procedures. Their accuracy was discussed responsibly by the researcher(s). Since these results are part of reviewed works, the originality of the presented research results is obvious.

Applicability of results for the field development and further research, applicability of results in practice

The presented research papers of the habilitant and her co-authors enrich the scientific knowledge of teachers' continuing professional development and inquiry-based science education.
It is evidenced in:

- seeking and identifying important aspects of science teachers' continuing professional development

- seeking and identifying effective practices for science teachers´ continuing professional development
- developing a model of science teachers´ continuing professional development
- creating a model for skill acquisition of Czech science teachers needed for IBSE implementation in instruction
- elaboration of IBSE methodology
- linking the curriculum and science teachers´ continuing professional development
- developing knowledge of connectivism in the field of science teachers´ continuing professional development.

Applicability of results in practice

The habilitation thesis is strongly practice-oriented. All the research is focused on practice-oriented problem solving. A large part of the texts can be beneficially applied not only in postgraduate education of science teachers, but also in their undergraduate preparation. In particular, effective CPD methods and CPD models can help in developing quality CDP courses. Czech texts will find their use in professional self-development of teachers. Based on the above mentioned facts, I judge that the benefit of the applicant's work is a major contribution to the quality continuing professional development of science teachers.

Format and language of the work

The thesis is formally processed very carefully. The layout of the pages is very good. Given that this is a collection of published works that underwent peer review and proofreading, my evaluation is focused on the commentary. Linguistically it is a high-level commentary with precise terms and understandable, fluent and readable text - from the point of view of a "non-specialist on the English language".

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

Question 1
The title of the habilitation thesis indicates the focus on inquiry-based science education. Several scientific publications presented in the collection of works mention experiments (especially publication D). In this context, I would like to hear habilitant´s opinion on the didactic contribution of experiments to IBSE and the influence of experiments on CPD in this field of science education.

Question 2
The habilitant presents CPD models she helped to create and verify. Has there been any progress in this area since the publication of the presented outputs? If so, I would like to know what kind of progress or change.

Conclusion

The habilitant submitted a thesis that presents selected aspects of science teachers´ continuing professional development focused on IBSE. She presented these aspects in selected works and linked them into a functional unit through her commentary. She pointed out newly emerging aspects that are often not respected in the CPD, which leads to its inefficiency.

The habilitation thesis entitled "Selected Aspects of Science Teachers´ Continuing Professional Development Focused on Inquiry-Based Science Education" by Eva TRNOVÁ**fulfils** requirements expected of a habilitation thesis in the field of Pedagogy.

Wrocław date: 30.01.2020 Signature: