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Research Article

An initial teacher-education model integrating content knowledge and pedagogical professional knowledge for universities of education in Vietnam

Nguyen Duan*

Hue University, nguyenduan@hueuni.edu.vn

Dinh Thi Hong Van

University of Education, Hue University, dthvan@hueuni.edu.vn

Le Thi Thu Hang

Hanoi Metropolitan University, ltthang@daihocthudo.edu.vn

Nguyen Tat Thang

Vietnam National University Agricuture, nguyentatthang@vnua.edu.vn

*Corresponding Author email: nguyenduan@hueuni.edu.vn

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ABSTRACT

Teachers play an important role in improving the quality of education, ensuring the success of educational reform. In order to have teachers meet the innovation requirements, universities of education need to train pedagogical students to both develop content knowledge and pedagogical professional knowledge, which are the focus of this suggested model for initial teacher education in Vietnam. The model specifies integrated goals, integrated content, integration methods, and integration process.

Keywords: *Educational Reform; Content Knowledge; Initial Teacher Education; Pedagogical Professional Knowledge; Universities of Education*

1. INTRODUCTION

Currently, under the fierce pressure of globalization and the knowledge economy, any country endures the need of improving the quality of initial teacher education, i.e., developing the next generation of teachers who are more advanced to meet the development requirements of modern society in the twenty-first century. Also, to meet the requirements of industrialization and modernization in a socialist-oriented market economy in the context of international integration, the 8th Conference of the XI Central Committee passed Resolution No. 29-NQ/TW of November 04, 2013, on “fundamental and comprehensive innovation in education, serving industrialization and modernization in a socialist-oriented market economy during international integration. Specifically, for the task of improving the quality of educators and administrative officers to meet the

requirements for innovation in Vietnam's education, the resolution states the following missions: "Formulate plans for training educators and administrative officers in association with socio-economic development and international integration. Standardize educators by level. Every teacher in primary schools, junior high schools, every teacher and lecturer in institutions of vocational education must hold at least a bachelor's degree and has pedagogical skills. Every lecturer in colleges and universities must hold at least a master's degree and is trained in pedagogical skills." (Central Committee of the Party, 2013)

The quality of initial teacher education is measured by content knowledge and pedagogical content knowledge (Shulman, 1987). At any time, these two factors are considered as "two legs" of each teacher (Pham, 2011). Shulman (1986) also states that in order to have a successful lesson, the teacher needs three core knowledge elements: (1) content knowledge (CK) – knowledge of and skills in the scientific field that the teacher teaches; (2) pedagogical psychological knowledge (PPK) – knowledge of and skills in teaching methodology and education in general; and (3) pedagogical content knowledge (PCK) – knowledge of and skills in teaching a specific subject.

Pedagogical psychological knowledge (PPK) is defined as essential knowledge to create and optimize the teaching-learning context, including (1) knowledge on classroom management strategies; (2) knowledge on teaching methods; (3) knowledge of testing and assessment; and (4) knowledge on behavior, working with a heterogeneous group of students who are different in family situations, experiences, personalities and cognitive levels (Park & Oliver, 2008; Voss, Kunter & Baumert, 2011; Voss, Kunina-Habenicht & Kunter, 2015).

Pedagogical content knowledge (PCK) is a special type of knowledge for teachers, it is based on the way in which teachers link their pedagogical knowledge (general teaching and learning knowledge and skills) with their knowledge of the subject they teach. In other words, the integration or combination of pedagogical psychological knowledge (PPK) and content knowledge (CK) creates the so-called pedagogical content knowledge (PCK) (Cochron & Demers, 1997). This is often known as teaching methods and methodology for a specific subject. Shulman (1986) also proposed three core components of pedagogical content knowledge (PCK):

1. Knowledge of specific topics and contents in the field of science or subject that the teacher teaches.
2. Knowledge of forms of presentation, communication and organization for learners to comprehend and acquire that specific scientific topic and content.
3. Knowledge of learners' understanding and acquisition of that specific scientific topic or content.

Like other teacher training models in the world, in Vietnam, pedagogical students need to learn content knowledge and pedagogical professional knowledge (pedagogical psychological knowledge and pedagogical content knowledge). However, recent studies have emphasized that teaching is a very specific discipline, in which pedagogical professional knowledge is considered more important than content knowledge. The

reason is that in high school there is probably no shortage of teachers with good expertise but poor teaching methods who cannot effectively organize knowledge acquisition for learners (Depaepe, Verschaffel & Kelchtermans, 2013; Krauss, Baumert & Blum, 2008). In their action study What makes great teaching? Coe, Aloisi, Higgins and Major (2014) pointed out six factors that contribute to the designed qualities of teachers and the learning achievements of learners: (1) the subject teaching methodology, (2) the quality of instructions (questioning, scaffolding, etc.), (3) classroom atmosphere, (4) classroom management, (5) teachers' beliefs, and (6) pedagogical communication (or professional behaviors).

With this same point of view, in the most recent study, Siez, Voss and Kunter (2015) also emphasized that professional knowledge alone is not enough. Besides content knowledge, pedagogical professional knowledge is very important in designing as well as conducting learning tasks. These competencies are important indicators of cognitive activation and academic achievement (Baumert et al., 2010; Hill, Rowan & Ball, 2005). Psychological pedagogical knowledge which includes classroom management strategies, teaching methods, examination and assessment is crucial in handling heterogeneous groups of students from different backgrounds. Factors like family backgrounds, cognitive levels, experiences, interests, etc. all affect students' performance and, thus, their academic achievements.

Currently, according to the traditional concept, initial teacher education institutions (i.e., universities of education) still separate the training of content knowledge and that of pedagogical professional knowledge. This concept holds that only psychology, education and teaching methodology are in the field of pedagogy and that only those who teach these subjects are responsible for teaching pedagogical professional knowledge for pedagogical students. In other words, there are no signs of the dual relationship between content knowledge and pedagogical professional knowledge in the initial-science-teacher education’s program nor in the lecturer’s organization of teaching activities. This lack of focus on such dual relation has limited the combination, exchange and research in finding the continuum of knowledge - skills (competencies) that can be developed in related subjects or cross-subjects, limiting the promotion of the lecturers’ roles in teaching content knowledge in combination with pedagogical professional knowledge. This has wasted time on content and on potentials in initial teacher education, attributing to limiting the quality of initial teacher education - a problem of the society’s deep concern today.

In order to overcome the above situation, i.e., to improve the quality of initial teacher education, universities of education need to master in their awareness and teaching activities the integrated view of subject knowledge and pedagogical skills for lecturers. One solution is to build a training model that integrates content knowledge and pedagogical professional knowledge in initial teacher education at universities of education. Such a training model will be presented below.

2. AN INITIAL TEACHER-EDUCATION MODEL THAT INTEGRATES CONTENT KNOWLEDGE AND PEDAGOGICAL PROFESSIONAL KNOWLEDGE AT UNIVERSITIES OF EDUCATION

2.1. THE GOALS OF BUILDING AN INITIAL TEACHER-EDUCATION MODEL THAT INTEGRATES CONTENT KNOWLEDGE AND PEDAGOGICAL PROFESSIONAL KNOWLEDGE AT UNIVERSITIES OF EDUCATION

Integration of content knowledge and pedagogical professional knowledge has the nature of "double" impact: (1) Through teaching content knowledge modules, students' pedagogical skills can be formed and developed; (2) through training in pedagogical professional knowledge, scientific and technical content knowledge is consolidated more firmly. However, within the limited scope of this study, we only aim at the first goal, namely, building this model to train and develop pedagogical professional knowledge for basic-science pedagogical students through teaching content knowledge in initial teacher education. The entire content and integration methods presented below are intended to accomplish this integrated goal.

2.2. PEDAGOGICAL PROFESSIONAL KNOWLEDGE INTEGRATED IN TEACHING CONTENT KNOWLEDGE MODULES IN INITIAL TEACHER EDUCATION

The pedagogical professional knowledge is integrated in content knowledge courses following the guidelines in the system of professional standards of teachers of general (Ministry of Education and Training, 2018a) and preschool education institutions (Ministry of Education and Training, 2018b). Specifically, we would like to propose the following elements:

2.2.1. For elementary, secondary and high school teachers

- Developing teaching and educational plans in the direction of developing students' qualities and competences
- Using teaching and educational methods oriented to developing students' qualities and competences
- Testing and evaluatingon the basis of developing students' quality andcompetences
- Student counseling and support
- Building school culture
- Exercising democratic rights in schools
- Implementing and building safe schools; preventing school violence
- Building a collaborative relationship with the student's parents or guardians and other stakeholders
- Coordination among schools, families and society to carry out teaching activities for students
- Coordination among schools, families, and society to implement educating valuable lifestyle for students

- Application of information technology, exploitation and use of technological equipment in teaching and education

2.2.2. For preschool teachers

It is necessary to focus on the following pedagogical competencies:

- Developing a plan for nurturing, caring and educating children towards their comprehensive development
- Nurturing and taking care of children's health
- Educating children's comprehensive development
- Observing and evaluating children's development
- Building a safe, healthy and friendly educational environment
- Exercising democratic rights in schools
- Collaborating with parents or guardians of children and the community to improve the quality of child rearing, care and education
- Collaborating with parents or guardians of children and the community to protect children's rights
- Application of information technology
- Showing artistic ability in child rearing, care and education activities

The integrated content only serves as general guidance. Depending on the nature of the science and technology content knowledge in each lesson as well as the time in class, the lecturer will choose the appropriate pedagogical professional knowledge to integrate. Another note for lecturers is that this process of integrating content knowledge and pedagogical professional knowledge aims to contribute to the development of pedagogical skills for students (in the condition that the number of credits for pedagogical-skill courses is still small at the current universities of education). Therefore, when choosing integrated content, lecturers also need to base on the characteristics of the group of students whom they are teaching, consider which aspects of pedagogical professional knowledge the students lack, thereby prioritizing the development of this pedagogical professional knowledge in the content knowledge classroom.

2.3. INTEGRATION METHODS OF EMBEDDING PEDAGOGICAL PROFESSIONAL KNOWLEDGE IN TEACHING CONTENT KNOWLEDGE

The integration of pedagogical professional knowledge development and content knowledge teaching can be recognized in the following ways:

2.3.1. Integrating pedagogical professional knowledge (e.g., board writing and drawing, teaching methods and techniques, handling situations) into teaching hours

During the content knowledge lessons, the lecturer can integrate the pedagogical professional knowledge in accordance with the pedagogical method that the lecturer uses. For example, during class time, if the lecturer uses teaching equipment, the lecturer can also explain to students how to use this teaching equipment effectively.

2.3.2. Adjusting teaching activities in accordance with the reality of high schools

In order to integrate two types of knowledge in this way, the lecturer needs to update her/himself with innovations in high schools, especially the pedagogical competencies required of teachers in the current context of educational reform. On that basis, the lecturer adjusts his/her teaching activities in accordance with the reality of the high school, through which, the pedagogical students (1) have certain understandings about the reality of the high school in general as well as the requirement of teachers' pedagogical professional knowledge at high schools and (2) have opportunities to access and practice their understandings.

2.3.3. Introducing and familiarizing pedagogical students with the types of exercises used at high schools

Examining and evaluating learners, designing lessons, preparing lesson plans are the schoolteacher's indispensable competencies. The technique of introducing and familiarizing pedagogical students with the types of exercises used at high schools plays an important role in helping pedagogical students develop this capacity. Using this technique, lecturers first need to learn the types of exercises used at high schools; then in the process of teaching content knowledge, lecturers can integrate and introduce these types of exercises to pedagogical students.

2.3.4. Organizing practical activities for pedagogical students to practice pedagogical skills

This aims at providing students with opportunities to practice and develop pedagogical skills. Before organizing practicing activities, lecturers need to introduce students to how to conduct pedagogical skills, because this is the basis for students to practice these skills.

2.3.5. Using methods of teaching, education, professional development, etc. in a scientific and methodical way so that pedagogical students can learn these methods during science content lessons

This is referred to as the modeling method. It requires that the lecturers who teach content knowledge must master flexible pedagogical skills. In each lesson, teachers use methods of teaching, education, professional development, etc. in a methodical and scientific way, through which students will learn how to conduct that method.

2.4. THE PROCESS OF INTEGRATING PEDAGOGICAL PROFESSIONAL KNOWLEDGE IN TEACHING CONTENT KNOWLEDGE MODULES

2.4.1. Step 1: Defining integration objectives

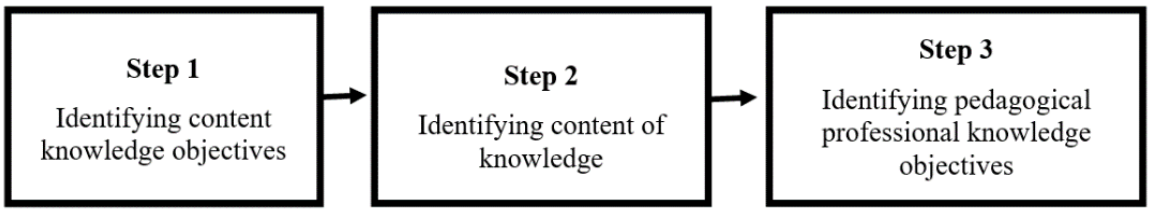
2.4.1.1. Aims

The identification of integrated objectives will guide lecturers the entire integration process of teaching content knowledge and pedagogical professional knowledge.

2.4.1.2. Procedures

To determine the objective, the lecturer needs to study the content knowledge curriculum, consider the objectives of the content lesson in the lesson, and learn about the program

and objectives of pedagogical professional knowledge for pedagogical students. Basing on the nature of the content of each content knowledge, the lecturer will determine the target of pedagogical professional knowledge. Thus, the integrated goals here include two objectives: (1) the objective of content knowledge and (2) the objective of pedagogical professional knowledge. It is possible to generalize the identification of integrated goals following the steps below:



2.4.2. Step 2: Determining integration methods

2.4.2.1. Aims

To determine how to integrate pedagogical professional knowledge in content knowledge courses

2.4.2.2. Some built-in methods

Lecturers can choose one of the integration methods presented in section 2.3. Each integration method will have different steps and requirements, and lecturers need to thoroughly understand this issue. Depending on factors like the nature of the subject, the time of class, the level of the learners, the lecturer decides on the appropriate method and use it flexibly during the integration process.

2.4.3. Step 3: Making a lesson plan

2.4.3.1. Aims

To plan the tasks to be implemented, to ensure that the integration of content knowledge and pedagogical professional knowledge takes place effectively (i.e., achieving the set goals)

2.4.3.2. Procedures

The integrated teaching plan of content knowledge and pedagogical practice can be divided into three columns as below:

Content knowledge objectives	**The teacher's and Students' activities**	**Pedagogical professional knowledge objectives**

The objectives of content knowledge and pedagogical professional knowledge will depend on the teaching and learning activities implemented. The column "*The teacher's and learners' activities*" will clearly show the teacher's teaching method which is the integration method in this case.

2.4.4. Step 4: Organizing and controlling teaching activities that integrate content knowledge and pedagogical professional knowledge in the classroom

2.4.4.1. Aims

The purpose of this step is to realize the tasks identified in the lesson planning step. This is the most important step, on which the effectiveness of the integration of content knowledge and pedagogical professional knowledge depends.

2.4.4.2. Notices when organizing and controlling teaching activities

Teaching plans are only initial projections. In practice, the situation may change, so some of our initial plans will not be appropriate. Therefore, we need to be flexible to handle the unexpected quickly and promptly. On the other hand, to make students more active in the learning process and consciously practice pedagogical skills during class hours, lecturers need to introduce pedagogical goals to students.

2.4.5. Step 5: Evaluating integration results

2.4.5.1. Aims

Basing on the set goals, the lecturer evaluates the process of organizing and controlling teaching activities, integrating content knowledge and pedagogical professional knowledge to make control and adjustment decisions to improve the efficiency of this process.

2.4.5.2. Procedures

- Identifying the evaluating criteria:

The evaluation criteria are the initial integrated goals.

- Assessment techniques:

+ Classroom observation using observation paper: During the teaching process, lecturers can conduct observation (with observation paper) to assess the objectives of content knowledge and pedagogical professional knowledge.

+ Testing: Conducting a written or oral test to assess the content knowledge and pedagogical professional knowledge objectives

+ Survey by questionnaire: Questionnaires can be used to assess the content knowledge and pedagogical professional knowledge objectives

+ Interviewing students about the formed competencies

- Basing on such assessment, the lecture proposes measures to control and adjust the process of integrating content knowledge and pedagogical professional knowledge.

2.5. The relationship between factors in the training model integrating content knowledge and pedagogical professional knowledge in initial teacher education

The elements in the integrated training model of science and technology are closely related to each other. Each factor is part of the whole picture which aims at achieving the set goal of developing pedagogical professional knowledge through teaching content knowledge. The element “integration target” acts as guide lines for the entire integration process. The element "integrated content and integration methods" plays the role of guiding teachers to choose appropriate content and methods of integration. The element "integration process" refers to specific instructions to conduct integrated development of pedagogical professional knowledge through teaching content knowledge.

These elements are closely related and organically attached as well as interact with, complement, and support one another. The training model integrating content knowledge and pedagogical professional knowledge is only successful when these elements are conducted in the correct sequence. If any step is omitted, it is difficult to effectively integrate content knowledge and pedagogical professional knowledge in initial teacher education.

3. CONCLUSION

Teachers are an important team to ensure the quality of education and ensure the success of educational innovation. To have a team of teachers to meet the requirements of educational reform, universities of educations must have appropriate training methods, specifically for pedagogical students of initial teacher education to develop both content knowledge and pedagogical professional knowledge. Content knowledge and pedagogical professional knowledge are not separate, instead, integrated, intertwined, and blended together to create the teacher’s teaching and educational competence. The training model that integrates content knowledge and pedagogical professional knowledge in initial teacher education presented in this study is a training direction to help universities of education achieve their goals of both content knowledge and pedagogical professional knowledge development for their pedagogical students. However, this model needs to be piloted in practice to prove its effectiveness. Future studies may shed more light on this issue.

Reference:

Baumert, J., Kunter, M., Blum, W., Brunner, M., Voss, T., Jordan, A., Klusmann, U. (2010). Teachers’ mathematical knowledge, cognitive activation in the classroom, and student progress. *American Education Research Journal, 47*(1), 133-180

Central Executive Committee (2013). *Resolution No. 29-NQ/TW of November 04, 2013*, on “fundamental and comprehensive innovation in education, serving industrialization and modernization in a socialist-oriented market economy during international integration.” https://vanbanphapluat.co/resolution-no-29-nq-tw-fundamental-and-comprehensive-innovation-in-education

Coe, R., Aloisi, C., Higgins, S., & Elliot Major, L. (2014). *What makes great teaching? Review of the underpinning research*. London: Sutton Trust. http://www.suttontrust.com/wp-content/uploads/2014/10/What-Makes-Great-Teaching-REPORT.pdf

Depaepe, F., Verschaffel, L., & Kelchtermans, G. (2013). Pedagogical content knowledge: A systematic review of the way in which the concept has pervaded mathematics educational research. *Teaching and Teacher Education*, *34*, 12–25.

Hill, H.C., Rowan, B., & Ball, D.L. (2005). Effects of teachers' mathematical knowledge for teaching on student achievement. *American Educational Research Journal*, *42*(2), 371-406

Krauss, S., Baumert, J., & Blum, W. (2008). Secondary mathematics teachers' pedagogical content knowledge and content knowledge: Validation of the COACTIV constructs. ZDM—*The International Journal on Mathematics Education*, *40*(5), 873–892.

Ministry of Education and Training (2018a). Circular 20/2018/TT-BGDDT promulgating regulations on professional standards for teachers of general education institutions.

Ministry of Education and Training (2018b). Circular 26/2018/TT-BGDDT promulgating regulations on professional standards for preschool teachers.

Park, S., & Oliver, J. S. (2008). Revisiting the conceptualisation of pedagogical content knowledge (PCK): PCK as a conceptual tool to understand teachers as professionals. *Research in Science Education, 38*, 261–284. 10.1007/s11165-007-9049-6

Pham, T. K. A. (2011). Innovation in pedagogical training: Solutions to improve the quality of initial teacher education. *Educational Journal*, 269, p.17-19.269.

Siez, J., Voss, T., Kunter, M. (2015). When knowing is not enough – the relevance of teachers's cognitive and emotional resources for classroom management. *Frontline Learning Research*, 3(1), 55-77.

Shulman L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.

Shulman, L. (1987). Knowledge and Teaching: Foundations of the New Reform. *Harvard Educational Review,* 57(1), 1–23. https://doi.org/10.17763/haer.57.1.j463w79r56455411

Voss, T., Kunter, M., & Baumert, J. (2011). Assessing teacher candidates' general pedagogical / psychological knowledge: Test construction and validation. *Journal of Educational Psychology,* 103(4), 952–969. 10.1037/a0025125

Voss, T., Kunina-Habenicht, O., & Kunter, M. (2015). Stichwort Pädagogisches Wissen von Lehrkräften: Empirische Zugänge und Befunde [Teachers' pedagogical knowledge: Empirical approaches and findings]. *Zeitschrift für Erziehungswissenschaft*. 10.1007/s11618-015-0626-6.