

# Chapter 3

## Preparing Knowledge and Skills for Pedagogical Students to Teach Interdisciplinary Subjects: A Case Study of Vietnam

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### **ABSTRACT**

*The book chapter presents the role of integrated teaching in Vietnam's general education program with the goal of developing learners' competencies. The study uses the TPACK model to analyze the knowledge and skills requirements of pedagogical students in integrated teaching, focusing on analyzing the requirements for mathematics pedagogical students. As a result, the authors of the book chapter propose some solutions to prepare knowledge and skills for mathematics pedagogical students so that they can teach interdisciplinary subjects in schools. These solutions also help innovate teacher education programs in Vietnam, contributing to training teachers who are capable of developing programs, teaching integrated subjects, and implementing the new general education program.*

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## INTRODUCTION

The characteristic of 21<sup>st</sup> century schools is that they focus on developing action capabilities; testing and evaluation integrated with teaching; students cooperate to solve problems; skills learned in the context of real-life problems; students are the center, teachers guide learning activities; students learn how to think, especially higher-order thinking (problem solving competence, creative competence and metacognition). Therefore, teachers need to be able to develop programs (subjects) and design integrated teaching topics to develop students' abilities (Do et al., 2015; Tran et al., 2016). Instead of the past, teaching was mainly concerned with content knowledge with the question "*What content should be taught to students?*" Nowadays, teaching is concerned with competence development by starting from the questions "*What competencies do learners need to form at the output standards?*" - that is, starting from the results and "*How to form and develop those competencies?*". In other words, teaching will be based on output standards, not on content knowledge (Le & Nguyen, 2019; Pham, 2021). Therefore, teachers need to focus more on helping students apply the knowledge they have learned to solve practical problems rather than simply imparting knowledge to them.

Vietnam's general education program aims to develop learners' qualities and competencies through educational content with basic, practical knowledge and skills; harmonize virtue, intellect, body, and beauty; focus on practicing and applying learned knowledge and skills to solve problems in study and life; highly integrated in lower classes, gradually differentiated in upper classes; through methods and forms of educational organization that promote the initiative and potential of each student, assessment methods consistent with educational goals and educational methods to achieve those goals (MOET, 2018a). The general education program has concretized the goal of general education, helping students master general knowledge, effectively apply the knowledge and skills they have learned in life, and self-study for a lifetime, in a purposeful manner to choose a suitable career, know how to build and develop harmonious social relationships, have personality, character and a rich spiritual life, thereby having a meaningful life and making positive contributions to the development of the country (MOET, 2018a). Thus, one of the important directions of this program is to strengthen integrated teaching to develop students' competencies.

Integrated teaching is the act of organically and systematically linking research and learning objects of several different subject areas into unified content, based on theoretical relationships. Theory and practice are mentioned in those subjects to form necessary competencies in students. In integrated teaching, students, under the direction of the teacher, continuously convert information from the language of one subject to the language of another subject, students learn to use knowledge, skills

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