

The Process of Fostering Capacity for Integrated Teaching by Topic for Junior High School Teachers in the Northern Mountainous Region

By

Nguyen Thi Ngoc*

Thai Nguyen University of Education, Vietnam

Email: ngocnt.psy@tue.edu.vn

Hoang Trung Thang

Thai Nguyen University of Education, Vietnam

Email: thanght@tue.edu.vn

Dang Thi Phuong Thao

Thai Nguyen University of Education, Vietnam

Email: thaodtp@tue.edu.vn

Corresponding author's institutional address Email: ngocnt.psy@tue.edu.vn

Abstract

The 2018 general education program clearly defines the requirements for deep integration in the lower grades and gradual differentiation in the upper grades, therefore, the lower secondary school program is designed with integrated teaching contents associated with relevant topics. related fields of science. Specifically in the program of implementing two subjects History and Geography and the natural science are integrated subjects to take. Faced with the requirements of integrated teaching, teachers need to be fostered with competencies to effectively implement this teaching activity. To foster teachers, it is necessary to build a process suitable for the stages to ensure logic, clarity, and science. The process of organizing the training of integrated teaching capacity for teachers is built on the basis of guiding documents on fostering activities of the Vietnam Ministry of Education and Training, Department of Education and Training. The process consists of five steps: Assess the current capacity of teachers and identify training needs; Determine training goals; Selection of training content; Determine the conditions for organizing the training and conducting the training; Check and evaluate the results after training. From the above circumstances, it is clear that responsibilities and actual actions are required for the development and cultivation of educational human resources at the lower secondary level.

Keywords: Process, Fostering, Capacity, Integrated teaching, Teacher

Introduction

Integrated teaching is a teaching orientation that helps students develop the ability to synthesize knowledge and skills in many different fields to effectively solve problems in learning and life (Hew & Brush, 2007). Meeting the requirements of the teaching orientation to develop students' competencies in the general education program in 2018, thematic integrated teaching has become a mandatory requirement in the organization of teaching activities in the lower secondary schools, especially from the school year 2021-2022.

In fact, at secondary schools in the Northern mountainous area, the implementation of integrated teaching activities by topic has been organized with a pre-emptive nature before the new program for grade 6 is officially launched and implemented in the school year 2021-2022,

Published/ publié in *Res Militaris* (resmilitaris.net), vol.13, n°1, Winter-Spring 2023

from the practice of preparing for the implementation of the new program, it was revealed that the teacher's ability to teach integrated subject-based learning has not yet met the requirements (Ellaway et al., 2009). The teacher appeared confused when building integrated topics or designing lesson plans for integrated teaching topics (Rianawaty et al., 2021). Therefore, the work of fostering integrated teaching capacity for teachers has been concerned by local secondary schools (Duggan, 2001).

In order to effectively implement training activities, it is necessary to define a process with steps that are implemented synchronously and closely (Rianawaty et al., 2021). Different from the nature of the fostering activities of the previous period, the capacity building of integrated teaching by topic must achieve the goal that teachers must "practice" after being fostered and fostering current abilities (Lasky, 2005), to implement a satisfactory new program. Therefore, the training process must be designed strictly from the stage of identifying the existing capacity and needs of the teachers, determining the training objectives, determining the content of the training, the preparation for the training and the preparation for the training. conducting training, retraining activities must also be checked and evaluated the effectiveness of training to adjust if necessary (Hew & Brush, 2007).

Methodology

This study mainly uses methods belonging to the group of theoretical research methods in educational science, including methods of analysis, synthesis, comparison and generalization from documents on integrated teaching and learning. integrated teaching capacity and the problem of fostering teaching capacity for teachers to complete the process. At the same time, the study used the method of interviewing educational managers in the localities, teachers and some program development experts from the university of pedagogy to confirm the science of the training process of integrated teaching capacity for secondary school teachers. In addition, the combined study Quantitative Research: Surveying 250 teachers working in the Northern Secondary School area. Collected data is processed by SPSS and the following methods are used for data analysis: scale reliability analysis (Cronbach's Alpha), exploratory factor analysis (EFA). The focus group discussion method allows members to freely express their views and counter previous opinions. These opinions are made in writing and agreed upon by a majority. The results of this discussion are the basis to confirm the correctness of the model and build official scales to serve the survey. The focus group consists of 5 members (02 lecturers and 03 experts). The purpose of the preliminary study is to explore the components affecting the satisfaction of lecturers when participating in fostering and training, along with the observed variables measuring these components which are expressed in the following research steps:

1. Step 1: Select members to invite to the discussion, based on the research model and the prepared scale.
2. Step 2: Discuss the content of the scale of factors affecting satisfaction to adjust the words to suit the research context and Vietnamese culture. Survey the correct understanding of the meaning of each observed variable in the interview form and adjust accordingly.

Hair, et al., (2010) suggested that the sample size should be equal to or greater than 100 and the smallest sample should have the desired ratio of 5 observations for each variable. $N > 100$ samples and $n = 5k$ (k is the number of variables). The questionnaire on this topic has 20 variables. Therefore, the minimum sample size is $N = 5 \times 20 = 100$. Tabachnick and Fidell (2013) suggest that the sample size for regression analysis is determined: $n \geq 50 + 8m$.

Therefore, for this study, the minimum sample size should be $50 + 8 \times 5 = 90$ observations, Tabachnick and Fidell (2013) the minimum sample size is 90. To ensure a sample size of 100 increase 40% of the minimum sample size because during data collection will have to remove unsatisfactory questionnaires. The minimum number of questionnaires sent to the survey is $100 \times (100 + 40) \% = 140$ observations.

Research result and discussion

Based on the development of the process of fostering capacity for integrated teaching by topic for junior high school teachers in the Northern mountainous area. Fostering teaching capacity in general and integrated teaching capacity by topic for teachers in particular is a professional and expert development activity for teachers in schools (Lasky, 2005). Therefore, this activity both needs to fully comply with the regulations of the state management agency on education in the organization and implementation, at the same time, it must ensure the scientific and effective (Dar & Resh, 2003). Therefore, in the process of developing the training process, it is also necessary to pay attention to the following bases.

First, in consider of the legal basis, there are a number of guiding documents on professional work and teacher training activities of the Ministry of Education and Training. For example, Circular 19/2019 on regulations on regular training for administrators and teachers at educational institutions at all levels. These documents clearly stipulate issues such as: Purpose, principles of organizing training; training materials, training organizations, lecturers taking part in training Circular regular training regulations (2019). On the other hand, the training needs to comply with the professional guidance documents of teachers to ensure the correct orientation of capacity building is determined to meet the requirements of teachers such as Circular 17/2019 on regular training for teachers of general education institutions; Official Dispatch 5555/2014 on renewal of professional activities. Official Dispatch 5512/2020 stipulates how to compile teaching plans to apply in developing teaching capacity building content for teachers to ensure updating (Hew & Brush, 2007). In addition to the guiding documents of the Ministry of Education and Training, the training activities are also based on the documents regulating the fostering activities issued by the local Department of Education and Training, based on the directives and the tasks of the local school year to organize for the students appropriately, ensuring a harmonious combination between the training plans of the Ministry, Department, Department and the school as well as self-improvement activities of teachers (English, 2001).

Secondly, in consider of the scientific basis, fostering integrated teaching capacity by topic is an activity associated with the needs of the teacher, ensuring that teachers are equipped to complete the missing competencies and weaknesses (Cook & Bush, 2018). To achieve high effectiveness, fostering activities need to comply with the theoretical implementation process of the teaching process: it is a process that ensures all structural components such as objectives, content, methods, and forms, organize teaching, test activities and evaluate results (Duggan, 2001). However, this process has its own characteristics compared to the student's teaching process, which is that the individual is involved in the role of the subject of the fostering activity: being able to select the content to be fostered based on the needs of the student; being able to practice learning tasks under the guidance of the rapporteur in order to acquire knowledge by themselves, thereby developing their own teaching capacity. Different from the normal cognitive process, the integrated teaching capacity building activities of teachers are often deployed in the following direction: the Lecturer designs the training content into learning tasks, guides the teachers to participate in the learning process. participate in training by the method of "knowledge transfer"; teachers practice testing, presenting products to listen to comments, suggestions and experience about the products made from lecturers and

colleagues participating in the training (English, 2001).

Survey results and data processing on SPSS. The table below shows the structure of the survey sample by gender, age, income, and occupation of the surveyed subjects and gives comments and demographic statistics.

Table 1. *The general information of the respondents*

	Demographic	Quantity	(%)
Gender	Male	150	60
	Female	100	40
	Other	0	0
Age	From 25 to 30 years old	50	20
	From 30 to 35 years old	50	20
	From 35 to 40 years old	50	20
	Above 40 years old	100	40
Income	Under 7 million dong	50	20
	From 7 to under 10 million dong	150	60
	From 10 to under 15 million dong	30	12
	Over 15 million dong	20	8
	Total	250	100

In terms of gender are mostly male with 150 surveys, accounting for 60%. In terms of age: Among 250 surveys, the survey with the age group from 25 to 30 years old accounted for 50 surveys (with 20%); next is the survey group from 30 to 35 years old with 50 surveys accounting for 20%; Next is the survey group with the age from 35 to 40 years old (also 20% with 50 surveys), and the largest proportion with 100 surveys, above 32 years old (with 40%).

In terms of income, the survey group with income under 7 million/month accounted for the 50 surveys (20%); Next is the survey group with income from 7 million to under 10 million/month with 150 surveys, accounting for 60%; Next is the survey group with income from 10 to under 15 million/month with 30 surveys, accounting for 12%. The last is the group with income over 15 million/month with 20 surveys (8%). (Table 1).

Based on the result of Reliability Analysis (Cronbach's Alpha), the research finds that the scale has high reliability because the Cronbach's alpha coefficient of all independent variables is greater than 0.6, the smallest Corrected item-total correlation of the variables is greater than 0.4. Therefore, the research concludes that the scales have good reliability and are consistent with the coefficient.

Table 2. *Cronbach's Alpha reliability test results and KMO*

Factor	Number of variables observe	Cronbach's Alpha	Coefficient minimum total variable correlation	Cronbach's Alpha if the variable type is smallest value	Conclusion
Facilities	4	0.883	0.687	0.783	Qualified
Education program	4	0.812	0.864	0.912	Qualified
Environment	4	0.856	0.792	0.856	Qualified
Location	4	0.829	0.756	0.819	Qualified
Perceived value	4	0.767	0.951	0.967	Qualified
Satisfaction	4	0.829	0.746	0.829	Qualified

If the Cronbach coefficient is from 0.7 to 0.8, the scale is good. In addition, the smallest corrected item-total correlation of the variables is greater than 0.4, and the Cronbach's Alpha, if the item is deleted, is greater than 0.6, which means that the reliability of all variables is high

(Table 2).

Table 3. *Factor loading of independent variables*

	Component				
	1	2	3	4	5
FC1	0.834				
FC2	0.814				
FC3	0.804				
FC4	0.898				
ED1		0.808			
ED2		0.803			
ED3		0.799			
ED4		0.763			
EV1			0.792		
EV2			0.787		
EV3			0.785		
EV4			0.758		
LC1				0.739	
LC2				0.779	
LC3				0.764	
LC4				0.763	
PR1					0.781
PR2					0.708
PR3					0.790
PR4					0.781

The factor rotation matrix table shows that the factor loading coefficients of the observed variables all have values > 0.7 . From the above analysis, the scale has high reliability and is used for regression analysis to measure the impact of independent factors on satisfaction. The scale of factors affecting the extracted factors are both reliable and valid. The scales are qualified for confirmatory factor analysis (Table 3). This represents the results of the parsing rate being a good fit and the variables corresponding to each other in the population and single factor quoting a perfect fit.

Table 4. *synthesis analysis ANOVA*

Variables	Levene statistics (sig)	Anova (sig)	Conclusion
Gender	0.516	0.692	There is no difference
Age	0.562	0.061	There is no difference
Income	0.524	0.066	There is no difference

The above data shows that survey groups with different gender, ages, education, income, and occupation when analyzing ANOVA and Levene Statistics. Through ANOVA, the Levene Statistics Sig coefficient of all factors is higher than 0.05, the choices of the factors above are not different. The Anova Sig of gender, age, income is also greater than 0.05. It shows that there is no statistically significant difference in the level of satisfaction of respondents from different age groups, gender, income, and occupations. The Synthesis analysis ANOVA table illustrates the reasoning that there is no difference in the factors affecting the survey groups with gender, age, and occupation differences when analyzing ANOVA (Table 4).

Recommendation

The process of fostering capacity for integrated teaching by topic for junior high school teachers in the Northern mountainous region

Stage 1: Assessing the current status of thematic integrated teaching capacity of

teachers at secondary schools in the Northern mountainous area and determining the need for fostering the capacity for integrated teaching by topic (Lasky, 2005).

Secondary schools in the northern mountainous provinces are currently implementing teaching activities according to the 2018 general education program. In fact, the teachers of the schools have had a preparation process to implement the thematic integrated curriculum for grade 6 in the school year 2021-2022. With the specific characteristics of the work area, secondary school teachers are facing a number of difficulties, which are the reasons that hinder the effective implementation of the 2018 program in general, including the problem of integrated teaching in particular (Cook & Bush, 2018). One of the difficulties is the capacity of teachers. In order to develop capacity, fostering activities are inevitable, capacity identification and training needs is the first step that needs attention in the process of capacity building for local teachers (Hew & Brush, 2007).

Assessment of the current status of teachers' subject-based integrated teaching capacity is an activity of conducting surveys and interviews to measure the current capacity of teachers to meet teaching requirements in the general education program. 2018. The correct assessment of teachers' competence is the basis for determining the goals and contents of the training for teachers to ensure that they are consistent with the ability to organize integrated teaching by topic at the time before conducting. fostering. This is also the basis for building a set of criteria to evaluate the development of teachers' capacity after being trained. Determining the need for teachers to foster the capacity for integrated teaching by topic is an activity to identify teachers' training needs on issues such as: the content of thematic integrated teaching competencies; time; form of training organization.

The survey of integrated teaching capacity and identification of teachers' training needs in secondary schools in the Northern mountainous area is carried out in many different ways. In fact, the training force can combine many methods to collect information about the current capacity of teachers and their training needs (Dar & Resh, 2003). Firstly, survey through a set of questionnaires about the manifestations of integrated teaching competence according to the topic and the teachers' wishes about fostering activities. Second, directly interview teachers with questions about integrated teaching, integrated teaching capacity and what teachers want to be involved in in the training process. Third, study the professional profiles of the teachers' integrated topics of History and Geography, and natural sciences. Fourth, attend the integrated teaching class on the subject of History and Geography, the natural science subject of the teachers in the middle school. Fifth, through observing the organization of experiential teaching activities such as STEM education by teachers in schools. Sixth, through the registration form for the content and training program; The self-assessment form of integrated teaching competence according to the subject of the individual teacher. Each method has its own advantages when organizing a survey to identify information about the current situation, however, surveying the capacity of teachers and determining the need for capacity building needs to follow the principle: objective; Ensuring publicity and transparency; Ensure the scientificity; Comprehensiveness Guarantee

- Stage 2: Determining the goal of fostering integrated teaching capacity by topic for teachers The goal of fostering integrated teaching competencies for teachers focuses on developing and perfecting thematic integrated teaching competencies for teachers. Specifically, it is the process of completing the capabilities:

1. + Ability to identify integrated teaching topics in related subjects
2. + Ability to identify integrated teaching goals by topic

3. + Ability to design integrated teaching plans by topic
4. + Ability to organize integrated lessons by topic
5. + Ability to test and evaluate integrated teaching results by topic

Determining the goals of the subject-based integrated teaching capacity building activity for teachers must be done according to the cognitive-action logic (Keeling, 2006), that is, the goal of the fostering activities towards the following issues: (1) Fostering to equip teachers with theoretical knowledge about thematically integrated teaching, helping teachers to understand clearly the concept, nature and role of each component capacity and requirements of each component. component capacity when implementing integrated teaching activities on topics of related subjects. (2) Fostering also aims to form for teachers skills to perform specific operations and actions such as: skills to identify teaching topics integrated in the subject, skills to develop integrated teaching objectives, skills to organize integrated lessons, skills to organize integrated teaching activities according to plans, skills to test and evaluate students' learning outcomes after the topic... can be conducted through mock teaching activities at the training class to help teachers practice each skill with the help of the Lecturer. (3) Fostering helps teachers actively coordinate skills, develop capacity to carry out teaching activities that integrate subjects in the 2018 general education program at junior high schools (Hew & Brush, 2007).

Stage 3: Developing integrated teaching capacity building content for teachers

Training content is the most important factor determining the quality of training activities. The content of thematic integrated teaching competencies designed to suit the needs of teachers and the training conditions of schools and localities is the basis for ensuring the feasibility and effectiveness of training (Dar & Resh, 2003). Therefore, the development of training content is usually done after the results of the survey on the actual capacity and needs of teachers of secondary schools in the Northern mountainous area are available.

Determining the content of capacity building for integrated teaching by topic for secondary school teachers is the way in which topics or modules are fostered. Topics/modules are independent pieces of knowledge corresponding to the competencies that need to be fostered for teachers. The construction of the refresher topic includes specific actions such as: (1) Determining the topic/module name: how to express the topic/module name starting with the verb: Develop; Construct; Use; Implement (2) Determining the training duration of the topic/module: The content of each topic/module is considered with a flexible amount of time (conventional by the number of periods) in line with the practical capacity of teachers and the training conditions of the unit organizing training activities for teachers. (3) Determining the objective of the training topic/module: that is determining the products to be achieved after completing the training course, the objectives of the topics must contribute to the accomplishment of the objectives of the training program. thematic capacity building program for teachers (Rianawaty et al., 2021). Examples of content of some topics/modules in fostering integrated teaching capacity for secondary school teachers in the Northern mountainous area are as follows:

Theme/module 1: Building integrated topics in teaching towards capacity development of secondary school students

Theme/module 2: Designing an integrated teaching plan by topic to develop the capacity of secondary school students

The number of topics designed depends on the teacher's training needs and the actual conditions for organizing the training. On the other hand, between training topics/modules,

there must be a close connection, a combination of providing theoretical knowledge with forging skills in organizing and teaching integrated teaching by topic for teachers, ensuring the completion of the process of fostering the capacity of teachers to be developed and perfected.

- Stage 4: Prepare necessary conditions and organize capacity building activities on integrated teaching by topic for secondary school teachers in the Northern mountainous area

i) Preparation before organizing the training: In order to organize activities for building capacities of integrated teaching by topic for secondary school teachers in the Northern mountainous area successfully, it is recommended to go through the process of preparing necessary conditions in terms of human resources and material facilities. This is an activity with the mobilization and participation of many coordination forces both inside and outside the school, forces related to education in the locality. The larger the organizational unit, the more forces are mobilized, so the complexity increases, the preparation work also needs to be more careful and thoughtful. In fact, the training organization can be the Department of Education and Training; Department of Education and Training, secondary schools in the northern mountainous provinces.

Preparation for training activities at the Department/Department or school level usually focuses on a number of specific tasks such as: Preparing training materials; Inviting lecturers to foster capacity for teachers; Determining the training time; Selecting training locations, printing and distributing training materials.

- 1) Prepare training materials: Materials used in capacity building for integrated teaching with topics for teachers are collected documents with contents directly related to the competencies that need to be fostered for teachers (Sung et al., 2016). However, in order to have the most suitable documents for the training needs and capacity status, the training materials can be ordered written by experts from the University or by experienced teachers under the management of the university. Local Department of Education and Training.
- 2) Employing lecturers to participate in training: This is an activity to select instructors for teachers on the issue of integrated teaching capacity, lecturers can order from sources: experts in universities or teachers with experience or strength in local subject-integrated teaching (Ellaway et al., 2009).
- 3) Determining the time of fostering: The determination of the time of the refresher course is usually chosen during the summer break to avoid interrupting the work of teachers participating in the training. However, regular training activities can be carried out in a variety of ways: thematic activities of specialized groups, thematic group activities, etc.
- 4) Determining the training location: Depending on the level of the training organization, the appropriate training locations can be selected such as: the community room of the professional group, the school hall, Meeting rooms, training rooms of the Department of Education or rental locations at local businesses.
- 5) Printing and distributing materials before training teachers: Before conducting the training course, the materials must be delivered to the participating teachers so that they have time to study the content of the materials (Sung et al., 2016). Depending on the scope of training, printing and distribution of documents can be carried out in many ways: sending electronic documents for teachers to take the initiative in printing or organizing training to print and issue documents according to the registration list, etc.

However, the specificity of each subject organizing different training activities will have its own characteristics in preparing for capacity building for teachers (Dar & Resh, 2003).

Specifically:

1. + Regarding BD documents: The Department/Department of Education and Training can order writing specifically for the locality; The school uses available materials or mobilizes experienced teachers in integrated teaching to prepare lesson plans to guide colleagues.
2. + About the training location: The Department/Department of Education and Training often chooses a large location, so it is possible to use rental locations; The school mainly uses the group's professional activities room or the school's hall/meeting room (Ellaway et al., 2009).
3. + About the Lecturer: The Department/Department of Education and Training often invites the Lecturer who is an expert from the university; The school uses on-site resources that are experienced teachers in thematically integrated teaching.
 - ii) Organizing integrated teaching capacity building for middle school teachers according to the plan

The organization of integrated teaching capacity building activities for middle school teachers is carried out after the preparation work is completed, the unit organizes to implement training activities according to specific plans:

Firstly, inform the stakeholders involved in the training about the contents: time, place, requirements and products to be completed after the training course. Especially for teachers participating in the training, it is necessary to help them understand correctly the information about the training course and the specific requirements that the teachers need to fulfill so that the teachers can prepare the best mentality and conditions for the training for the self-development training course (Keeling, 2006).

Second, conducting training at the selected location and time, assigning lecturers, mobilize forces for training activities, ensuring that the training process goes smoothly and adhere to the plan.

Stage 5: Evaluation of the results of capacity building in integrated teaching by topic for secondary school teachers in the Northern mountainous area

Evaluation of training results is the process of re-checking the change in the teacher's integrated teaching capacity before and after participating in the training (Sung et al., 2016). On the other hand, the evaluation of the results of the training activities also makes sense to review the steps and stages in the organizing process to ensure compliance with regulations and effectively achieve the defined goals. The evaluation of the results of fostering integrated teaching capacity for teachers is carried out with the following specific tasks.

First is to determine the purpose of the assessment. The purpose of that assessment is to measure the level of development of thematically integrated teaching competencies of the teachers of the secondary schools in the Northern mountainous area after being trained in the field (Duggan, 2001). The assessment does not go into the assessment of the teacher's capacity, but evaluating the level of development of the competencies to draw lessons for the next training activities, and at the same time, being the basis for building training programs. follow-up care for local teachers.

Second is to determine the assessment content including the component competencies of the specific integrated teaching capacity; the ability to build integrated teaching topics;

ability to identify lesson objectives integrated by topic; capacity to develop lesson plans; capacity to organize lessons; ability to test and evaluate students' learning outcomes according to integrated topics. The assessment content is reflected in the teacher's knowledge and ability to practice the skills of implementing subject-integrated teaching for students at school (Keeling, 2006).

Third, determining the assessment methods and develop tools to assess the capacity development of teachers after the training course. (1) The assessment method on the capacity development of secondary school teachers after participating in the training includes: Learning attitude and product quality of teachers in the process of performing the assigned tasks given by lecturers at the training class (Sung et al., 2016); Implement integrated teaching activities according to topics that are assessed as Pass or above by the expert group. (2) The assessment tool used to assess the development of integrated teaching capacity of secondary school teachers can be designed in two categories with two assessment methods. The first type, assessment at the training class can use tools: Observation sheet; Post-course assessment essay; Survey; checklist; Quiz The second type, the actual assessment of integrated teaching at schools can use the following tools: integrated teaching records; attendance record

Fourth, synthesizing the results of the assessment of integrated teaching capacity of secondary school teachers in the Northern mountainous area after the training course and provide feedback on the results to stakeholders. The evaluation of training results, after being aggregated, must be sent to teachers to help them understand the current state of their own capacity and issues to pay attention to in order to actively train themselves to overcome any remaining problems (Corlu et al., 2015). In addition, the training information is also sent to the training coordination forces, superior management agencies to evaluate the effectiveness of the training and draw lessons for the process of organizing training activities of locals and schools (Hew & Brush, 2007). To develop the process well, we need to pay attention to the factors affecting the satisfaction of lecturers when participating in the training to serve as a foundation for the development of the process to be more professional (Keeling, 2006). Regarding facilities for training, it must be ensured that the physical and administrative elements of the training course are well-coordinated and managed, without causing any stress or anxiety to the participants. learn. Even small things like the cleanliness and orderliness of the classroom, the preparation or pre-installation of technical aids, the preparation of small rooms for group work, and the reduction of noise and movement in the room. These are all important factors that teachers must cover to ensure that learners are not disturbed or have to worry about these problems during the learning process (Rianawaty et al., 2021).

Conclusion

In fact, integrated teaching activities in secondary schools in the North have many difficulties in terms of organizational conditions and learners' capacity, thus creating great pressure for teachers when implementing. Fostering the capacity of integrated teaching by subject for secondary school teachers in the Northern mountainous provinces is an urgent requirement to ensure that teachers overcome remaining problems in order to fulfill the requirements of the general education program in 2018 from the school. The activity of fostering integrated teaching capacity for teachers is an activity that must be carried out according to the process to ensure that the steps have a close and logical relationship with each other to ensure effectiveness and feasibility. The process is designed with 5 stages from determining the capacity and needs of teachers before being trained, and from there, determining the objectives and content of the training program; organizing capacity building

for teachers, examining and evaluating the results of capacity building for teachers. Based on this process, schools, Departments of Education and Training/Department of Education and Training can plan and organize the implementation of training activities to ensure suitability with practical conditions of their units and localities.

Conflict of interests

None

Acknowledgement

This research is funded by Thai Nguyen University of Education - Thai Nguyen University through the Grassroots Science and Technology Project, code TNUE-2022-14

References

- Duggan, S. (2001). Educational reform in Viet Nam: A process of change or continuity. *Comparative Education*, 37(2), 193-212. <https://doi.org/10.1080/03050060120043411>
- Dar, Y., & Resh, N. (2003). Social disadvantage and students' perceived injustice in socially integrated schools in Israel. *Social Justice Research*, 16(2), 109-133. <https://doi.org/10.1023/A:1024248003808>
- Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational technology research and development*, 55(3), 223-252. <https://doi.org/10.1007/s11423-006-9022-5>
- Rianawaty, I., Dwiningrum, S. I. A., & Yanto, B. E. (2021). Model of Holistic Education-Based Boarding School: A Case Study at Senior High School. *European Journal of Educational Research*, 10(2), 567-580. <https://doi.org/10.12973/eu-jer.10.2.567>
- Keeling, R. (2006). The Bologna Process and the Lisbon Research Agenda: the European Commission's expanding role in higher education discourse. *European journal of education*, 41(2), 203-223. <https://doi.org/10.1111/j.1465-3435.2006.00256.x>
- English, L. M. (2001). Reclaiming our roots: Spirituality as an integral part of adult learning. *Adult Learning*, 12(3), 2-3.
- Lasky, S. (2005). A sociocultural approach to understanding teacher identity, agency and professional vulnerability in a context of secondary school reform. *Teaching and teacher education*, 21(8), 899-916.
- Sung, Y. T., Chang, K. E., & Liu, T. C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, 94, 252-275. <https://doi.org/10.1016/j.compedu.2015.11.008>
- Cook, K. L., & Bush, S. B. (2018). Design thinking in integrated STEAM learning: Surveying the landscape and exploring exemplars in elementary grades. *School Science and Mathematics*, 118(3-4), 93-103. <https://doi.org/10.1111/ssm.12268>
- Corlu, M. S., Capraro, R. M., & Çorlu, A. M. (2015). Investigating the mental readiness of pre-service teachers for integrated teaching. *International Online Journal of Educational Sciences*, 7(1), 17-28. <http://dx.doi.org/10.15345/ijoes.2015.01.002>
- Ellaway, R. H., Kneebone, R., Lachapelle, K., & Topps, D. (2009). Practica continua: connecting and combining simulation modalities for integrated teaching, learning and assessment. *Medical Teacher*, 31(8), 725-731.

<https://doi.org/10.1080/01421590903124716>

About Author:

Nguyen Thi Ngoc and Hoang Trung Thang wrote the paper while Dang Thi Phuong Thao searched the sources of related documents. Then, Hoang Trung Thang designed the tables by using SPSS software, he also analyzed the numbers and contributed his ideas. Nguyen Thi Ngoc also gave the ideas and revised the sentences to match with the title of the paper and checked the whole paper providing that there are no mistakes left as well as there is no conflict in the research.