



THE DEVELOPMENT OF CURRICULAR AND TRAINING PROGRAMS IN VIETNAM

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Abstract

The training program is the focus of all pedagogical activities in particular and educational activities in general, so the development of training programs and activities related to the development of training programs have become an important issue and are of interest to many educational scientists. The literature review method is used in this study to collect and extract the data from the national database system to show an overview of training program research and training program development that have been conducted in Vietnam. The findings indicate that the training programs have been changed from content training to training to form learners' competence. Furthermore, the programs are developed using a variety of modern perspectives and theories, such as output standards, educational innovation needs, liberal educational philosophy, competency-based performance, and so on. However, many more studies should be carried out to not only point out the limitations of the system of studies on training programs but also provide scientific evidence for new directions of training program development that should be developed and applied by the education system.

Keywords: training program, program development, program design, literature review, Vietnam education

Introduction

Research on training programs is very diverse and rich, with recently updated studies showing results in two main areas, including education and health. On adult education, education, and training (McNamara et al., 2010), restructuring of university faculty training programs (Gegenfurtner, 2019), teacher training for special education (Nash & Norwich, 2010), human resources in education (Marin, 2014), education, and training (Csorba, 2013), the role of stakeholders in business education and training (Galvão et al., 2020), teacher training (Niculae, 2014). These studies mainly refer to training programs with the meaning of training and improving professional capacity in each specific discipline, in which research is conducted at all levels from preschool to university and in special education, in addition, to studies conducted in other sectors related to training and education. In the fields of medicine (L. Lee et al., 2008), (Cristancho et al., 2011), interactive education for parents (J.-J. Lee et al., 2020),

training programs for Parkinson's patients (Morris et al., 2017), nurse training (Drayton-Brooks et al., 2017), LGBT professions (McCann & Brown, 2018), nutrition research and monitoring (Mocciaro et al., 2017), anti-doping in sports (Sagoe et al., 2016). Research on training programs in the field of medicine is also quite diverse, not only in professional training programs (for doctors, nurses, and support staff) but also in other fields of preventive or supportive medicine and recovery for patients after active treatment.

There are many different conceptions of a training program in the documents, and the term "training program" has many different interpretations. In a broad sense, a school's curriculum is all the courses offered. In developed countries, a training program is defined as a set of modules that a school offers, depending on the area of specialization that students want to pursue. Some developing countries view a curriculum as a set of subjects or subjects prescribed for a course that learners must take to achieve that level of education. In Vietnamese universities (Le. T.V, 2017), a training program is understood as a set of modules designed for a training discipline to ensure the provision of knowledge and skills to students, which are necessary for future careers. More importantly, the development of training programs is critical to quality assurance. Developing training programs to suit societal needs is an essential development trend across the world, particularly in Vietnam, where many graduates have difficulties finding a job. It is unavoidable to construct training programs in general, and teacher training programs in particular, with the goal of creating the required competencies that society wants learners to have in order to work and develop their own personalities later on (Nguyen, 2016.)

In a broader sense, the training program is also understood to include subjects not provided in schools where learners are required to accumulate sufficient knowledge and skills (for example, foreign language certificates, information technology, etc.). The structure of a training program must include four basic elements: 1) Training objectives; 2) Training content; 3) Training methods and procedures; 4) How to evaluate training results. Developing university training programs in the context of the 4.0 revolution is an urgent issue, requiring comprehensive studies on theoretical and practical foundations. Training program development must be considered a regular and continuous task, an indispensable condition for evaluating the development of universities.

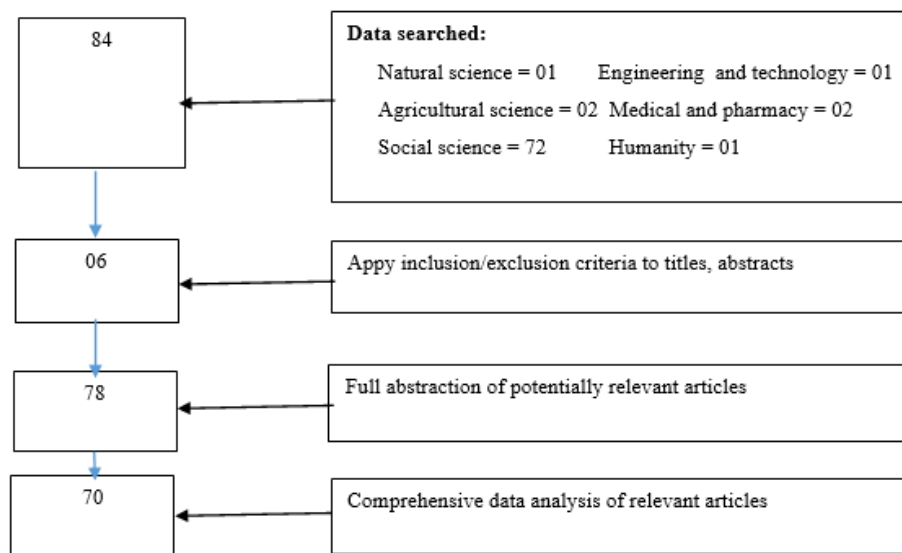
A training program is influenced by several factors; the complexity of each training program reflects the difficulty of that form of training, but it is also mirrored in each construction approach. Creating training programs presents its own set of challenges. This is also reflected in the techniques, situations, human resources, and so on that impact of the training program when it is implemented. These are the reasons for the research, which was designed to provide an overall picture of how the training program was investigated, using the following core questions:

- How many research studies on training programs have been conducted in education?
- How many publications have been published in educational sectors?
- What are the main characteristics of the publications in training programs?

Research Methodology

To gather research on training programs that have been done and published in Vietnam, the research team utilized the keyword "training program" to search for the findings of academic research on training programs. The studies were discovered independently of the field, research object, research organization, or individual who did and published training program research study. The following stage was to categorize non-related articles by title and abstract, and then select documents with complete citations from the studies that were most relevant to the training program. Finally, the most comprehensive research studies were reviewed, and these assertions were analyzed.

Figure 1
Database Search Algorithm and Review Criteria Using for Systematic Literature Review of Training Programs



The term "training program" is used in this study to collect information from scientific publications stored in the Ministry of Science and Technology of Vietnam's data system. All gathered data are scientific publications, scientific research findings, and expert views published in national scientific journals and collected in the Ministry of Science and Technology's data system. There are 84 papers identified in total, with natural science = 01, engineering and technology = 01, agricultural science = 02, medicine and pharmacy = 02, social sciences = 72, and humanities = 01. After identifying them using the title and summary, removed 06 documents depending on the standard. Following the complete abstraction of possibly relevant articles, the remaining 70 documents are reviewed. A detailed statistical analysis of publications is given.

Assess Quality and Data Analysis

As a result of the sheer volume of data accessible under the phrase "training program," (1) classification by field; (2) publishing selection based on scientific form; (3) complete article structure, including title, abstract, keywords, methods, findings, comments, conclusions, and references; (4) humanities and social sciences materials; (5) research and analysis of publications on training programs; (6) categorization of theories presented and implemented; (8) quantity of publications in a variety of non-educational sectors; (9) Data summary with illustrations: author/year of publication, topic/discipline, study design, data collecting, and key results. These documents represent the findings of research efforts at various levels that have been published in specialist scientific journals.

Research Results

In line with the trend of globalization and interactional economic integration, university education in Vietnam is a necessary step toward integration. Higher education must be engaged and assessed based on the norms of the interactional education organizations, especially some important components of quality assurance. Apart from quality assurance based on Ministry of Education and Training standards, university training units review their programs using

standards by applying common theories to developing training curricular, including AUN-QA (Asian University Network – Quality Assurance), CDIO (CDIO - Conceive Design Implement Operate) and POHE (Profession-Oriented Higher Education), liberation education, competency-based training.

1. AUN-QA (Asian University Network – Quality Assurance)

One of the main advantages are quality issues and quality management, which have become indispensable parts of educational reform policies in the late 20th and early 21st centuries. Vietnamese public universities are in the process of renovating their curriculum. The training program follows the output standard approach in order to train high-quality human resources, contributing to aligning educational goals with local and national socio-economic development goals (Tran, 2020). AUN-QA has been more common to apply to developing training curricular than ever in higher education of Vietnam because, currently, quality assurance of a training program or a training unit is critical (Đong, 2014). For example, the University of Social Sciences and Humanities is one of the prestigious public universities under the Ho Chi Minh City National University system that has achieved AUN-QA accreditation at the program level with 9 training majors. In the academic year 2019-2020, the Faculty of Japanese Studies is one of the faculties that has participated in the evaluation outside the training program level and the quality assurance standards according to the AUN-QA Standards output at the Faculty of Japanese Studies since the establishment of the Faculty (Tran, 2020).

2. CDIO

There are several reasons why this method has been researched and used to develop training curricular. Firstly, it helps to develop training programs with actual learning and real doing, focused on knowledge and skills training, that are created based on being open and result standards, and are the university's commitments toward the societal requirements for enhanced human resources (Duong, 2018). Secondly, by applying it students can build up the required competencies that society demands in order to get a job and create self-learning capacity after graduation. Thirdly, by providing necessary competencies, CDIO approach is the way to fulfill corporate and societal needs (Nguyen, 2016), (Pham, 2016) and is the way to increase training quality (Pham, 2016).

Many sectors have used this method, including the technical teacher training programs at the university level by using concepts and examining the theoretical and practical basis (Nguyen, 2012), (Nguyen & Nguyen, 2013). Noticeably, it is even an urgent and external necessity in education reform at university and college (Pham, 2016), the tourism program of Khanh Hoa University (Pham et al, 2021), the IT engineer training programs (Vo et al, 2016), economic majors in practice (Bui, 2019), training programs in Physics Pedagogy, Vinh University (Nguyen, 2016). It can be said that using CDIO technique to design training programs is a trend in Vietnam's university reform and educational program creation procedures. It approaches the integration of knowledge and skills, theory, and practice. The curriculum is designed on four criteria: i) knowledge and specialty, ii) personal, professional skills and characteristics, iii) communication and teamwork abilities, and iv) the development of developing and running the system in an entrepreneurial, social, and environmental context.

3. POHE

The POHE (Profession-Oriented Higher Education) was used to develop training programs by its effective features, that is the way to develop training programs continuously to improve quality (Ha, 2017a), to play an essential role in assuring the quality of human resource training to satisfy the criteria of economic-social development (Ha, 2017b).

Several specific training fields have used this theory as a teacher training curriculum (Ha, 2017a), and this is a new step in increasing the graduates' capacity of Sports Faculty at Thai Nguyen University (Ha, 2017b), teacher training curricula at educational institutions. This trend of training programs is also represented in building training bachelor programs in literature and linguistics because teacher education based on practical career orientation is a strategy to developing competency-oriented programs in order to educate students with the capacity to adapt in the context of constantly changing labor recruiting demands (Le, 2021). More importantly, international lessons learned is another way of making training programs effective, that is, to create career-oriented training programs is a prevalent trend in university education in developed education countries. It was introduced to a new labor-market perspective to Vietnamese university education (the Netherlands Government-funded Profession Oriented Higher Education initiative, and the method for establishing training curricular with profession-oriented higher education in the Netherlands, as well as its implementation circumstances such as lecturers, infrastructure, and the link to the world of work (Nguyen, 2019).

Some solutions that should be taken suggested by researchers for the theoretical description of the training program development by POHE and also for the training program development to educational institutions (Ha, 2017a) also, on the ways to create career skill at Thai Nguyen University of Education, and the reflection of employers and aims to provide a proposal in reinventing the training curriculums of education universities (Ha, 2018). Thought it is done out in accordance with a predefined procedure, with extensive stakeholder engagement in the implementation phase. The reality of developing training bachelor programs in literature and linguistics teacher education with an applied professional orientation at Thai Nguyen University of Education - Thai Nguyen University has yielded some promising outcomes, but there is still some work to be done (Le, 2021).

4. Liberal education

Liberal education is a popular educational strategy across the world the key characteristics of which include flexible training, fostering transdisciplinary studies, and boosting work options for graduates (Đang, 2020) and it has been used in developing training programs in Vietnam education system. Additionally, this ideology in the development of higher education programs covers the importance of liberal education and gives definitions and features of liberal education. This kind of theory is acceptable for developing nations and examines the challenges that liberal education faces (Nguyen et al, 2014), and is a good approach to build training program processes (Nguyen, 2020).

5. Competence based training

Vietnam is implementing a drastic and thorough overhaul of its education and training system, with the goal of transitioning learners from content-based training to competency-based training (CBT) and professional competences. CBT program creation is a great educational trend in the world and its influence on training program developments of Vietnam (Nguyen, 2006). There are some examples of training programs that researchers mentioned in the studies such as English training programs should consequently focus on the development of learners' competency, which includes knowledge, skills, and attitude, as well as the link between theoretical and practical sessions (Le, 2021), teacher training (Nguyen, 2006), teacher quality (Nguyen & Nguyen, 2014). These requirements should be the same for nursery, primary, and secondary teachers (Đang & Nguyen, 2018), information literacy training program (Do et al, 2018), and the development of pedagogical capacity training programs based on the process of developing a presentation of task analysis, job analysis, job description, and so on, so it is necessary to develop teachers' professional standards in general and standards of professional skills pedagogy as a basis (Nguyen, 2009).

Conclusions reached by the researches are that CBT is essential in university growth goals, it should adopt the 'competence-approach' of industrialized countries, pedagogical universities must first refresh their existing training programs for selecting educational breakthroughs (Nguyen, 2006), pedagogical teachers must actively accomplish work in order to fulfill their teaching function (Le & Le, 2017), teachers need excellent practical foundations for training development (Ha, 2018), teacher education programs must shift toward a focus on competency (Ha, 2016), or professional knowledge, professional abilities and lesson planning are all highly rated competencies (Duong, 2017).

6. In the pedagogical sector

In preschool and primary education, the development of curriculum in preschool and primary teacher training institutes is an essential task, while the present need is to remodel preschool and primary education. This was an example of the existing state of preschool and primary curriculum at Tay Bac University before providing a number of options for developing curriculum to fulfill the needs of early childhood education and primary education innovation (Bui et al, 2021). It is notable that various alternatives for developing a kindergarten teacher training program based on liberal education because the key characteristics of this strategy include flexible training, fostering transdisciplinary studies, and boosting work options for graduates and liberal education is a popular educational strategy (Đang, 2020). Moreover, curriculum development for nursery, primary, and secondary instructors is not a new issue in pedagogical schools. However, several issues remain in the teacher training system, including post-training professional competence, program organization orientation, and competency-focused training activities (Đang & Nguyen, 2018).

In the higher education, training programs are a crucial demand of education in Vietnam. From the philosophy of science education, a program aimed primarily at access to knowledge to an educational philosophy oriented capacity development, focusing on nature and multifaceted synthesis of capacities including knowledge, skills, and attitudes, focusing on the relationship between theory and practice, between school and practice, between literacy and teach people... the orientation of education is moving closer to an advanced education in the world (Đao, 2016). Remarkably, teacher training programs have transitioned from input-oriented to output-oriented education that focuses on capacity, and so developing teacher training programs toward a capacity approach is an incredibly essential work for pedagogical institutions in the contemporary age. As a result, teacher education programs must shift toward a focus on competency (Ha, 2016).

The other side is the shortcomings in the development of training programs in universities in Vietnam these days, the theory of developing modern training programs, analyzes of world trends in improving the quality of higher education to meet the needs of the knowledge economy, approaches formulating and developing training programs, and there are implications for improving the quality of bachelor's degree training at Vietnamese universities (Pham, 2013). Another aspect of training programs is that many educators and society are concerned about developing ways to improve the quality of present Bachelor of Arts and Bachelor of Sciences training. Making these training programs under a new strategy plays a critical part in structuring the training programs based on an assessment of the current state of undergraduate and postgraduate's training at Thai Nguyen University, as well as changes in Ministry of Education and Training' regulations and societal requirements. That is why the orientation of principle and method for designing and developing a postgraduate program, including curriculum, standard output, and detailed subject outline will help to improve the quality of graduate education institutions (Tran et al, 2008).

7. *Technical pedagogical and vocational training*

In recent years, the reality of an obsolete curriculum that has not been constantly updated and improved has had a significant impact on the vocational school's training quality. To address this issue, improving the curriculum is an urgent necessity in order to assist learners in obtaining a job or continuing their studies to a higher level in accordance with the aims of technical and vocational education and training. There are other ways to curriculum development, but the competency-based training approach has many exceptional characteristics that make it suited for vocational schools. Creating a method for developing training programs at vocational schools toward a competency-based training approach will serve as a reference source to help vocational schools through the implementation process, hence boosting training quality (Pham, 2022). There has also been a shift in Technical and Vocational Education (TVE) training institutes towards modulated and competency-based training, which involves the integration of theoretical and practical material.

Based on the clarification of concepts on vocational curriculum design and development, characteristics of training curriculum design in vocational colleges, and the importance of curriculum design meeting labor market needs, the importance of curriculum design meeting labor market needs, and measures for designing and developing vocational college curriculum in the current time are proposed (Đinh, 2010). Also, developing vocational training programs in the direction of meeting social needs is considered by vocational education institutions as the core foundation to orient other activities in training activities at vocational education institutions. However, the reality shows that many vocational education institutions have not invested enough in this job. (Nguyen, 2020). The principles, developments, and restrictions in establishing training programs at the professional secondary level in particular, as well as vocational training in general, the critical need for curriculum modernization need to be demonstrated (Nguyen, 2012). The solutions for developing vocational training programs towards standardization, modernization, and international integration, including 1) raising awareness of forces involved in vocational training about access to vocational training. 2) it is necessary to develop vocational training programs in the direction of standardization, modernization, and international integration; 3) renewal of vocational training programs must be consistent with common, unified, and regulated standards; 4) well implement the development of the school's vocational training program development plan; 5) closely follow the vocational training needs of workers and the needs of society to build appropriate vocational training programs, contributing to improving the effectiveness of vocational training in our country today; 6) organize the program compilation closely and seriously (Phan, 2013). The backdrop and trends in higher education growth in contemporary society, as well as the culture and cultural values of Vietnam, on which numerous ways to promote traditional Vietnamese cultural values in the process of Vietnamese higher education renovation are proposed (Nguyen, 2007).

The training program seems to be the most important issue of technical and vocational training, that is the need of a strategy for building programs for technical teacher training at the university level using concepts and examining the theoretical and practical basis of developing higher education programs directed by the CDIO integrated approach and to ensure the efficacy of this procedure in training institutes (Nguyen, 2012). And CDIO integrated approach is a strategy and means for developing a curriculum for technology teacher training at the university level in Vietnam (Nguyen & Nguyen, 2013). Historically, the first technical teacher training program in our country was established more than 50 years ago at the University of Technical Education in Ho Chi Minh City. Because the society was more volatile during the socioeconomic growth process, the objectives of the technical teacher training program varied over time, and it even ceased expanding at times. Technical teachers, on the other hand, are constantly related with the human growth process. As a result, the technical teacher model has been researched and consistently refined in order to satisfy the necessity of educating competent

teachers (Vo, 2012). While pedagogical theory and practice are still taught separately at Universities of Technology Education (UTEs), they are not focused toward the development of integrated teaching competences (ITC) for students. As a result, there should be some form of innovation (Ngo, 2017) in the understanding of the theory of training program development and conducting investigations, surveys, and analyzes of the current situation of training program development, thereby proposing the process of developing training programs at vocational education institutions in Hau Giang province in the coming time (Nguyen, 2020).

8. *Other sectors*

There are varied areas that need to have training programs, that are undergraduate Program for *Foreign Trade* (Bui, 2019), *marine industry* (Nguyen & Dinh, 2019), *the digital library* (Nguyen, 2008), the accounting and auditing professions (Nguyen et al., 2021), *office administration* (Nguyen, 2018), *the doctor of pharmacy degree* (Nguyen et al., 2013), *the tourism program* (Pham et al, 2021), establishing the IT engineer training program (Vo et al., 2016). Taking the *marine industry*, for example, in accordance with the amendments to the Convention STCW 78/10 in Manila in 2010 plays a critical role in ensuring the quality of training of marine human resources to meet the requirements of the development of the social economy in general and the marine economy in particular in Vietnam (Nguyen & Dinh, 2019). Regarding *the digital library*, the development of digital library training programs at the University of North Carolina and Virginia Tech University in the US which refers to the programs with modules according to specific topics, the author also states that the regular training institutions for librarians in Vietnam still do not have a training program or framework to meet the requirements. Digital library: human resources application (Nguyen, 2008).

Having the same requirements in the accounting and auditing professions, based on the roadmap for applying international financial reporting standards (IFRS) by the Ministry of Finance, from now to 2024 will be an important period for universities and colleges to have training in accounting and auditing in Vietnam. Vietnam urgently prepares the necessary conditions to put IFRS into teaching, meeting the requirements of the Ministry of Finance's roadmap and the society's demand for human resources in the accounting and auditing professions in the new context. The difficulties, challenges, and directions of training program development on the basis of applying IFRS in updating and developing training programs for the accounting and auditing professions, as well as teaching IFRS at Quy Nhon University are a typical way of training program development (Nguyen et al., 2021).

The general theories of program development; reflecting the actual construction and development of an administrative program in the field of *office administration* at Hanoi University of Home Affairs, with the desire to improve the efficiency of human resources training at Hanoi University of Home Affairs and improve the brand of the School, the Faculty of Office Management (Nguyen, 2018), and *the doctor of pharmacy degree* in the United States with basic medical sciences and clinical sciences is a significant improvement that will help enhance pharmacist ability to engage in patient care and improve treatment result (Nguyen et al., 2013), in *the tourism program* (Pham et al, 2021), establishing the IT engineer training program (Vo et al, 2016).

How to manage the development of training programs it was researched by some scientists, such as the training management process is the ongoing process of improving the training program. This procedure at the undergraduate level is critical in ensuring that the labor force quality satisfies the criteria of socioeconomic development. However, in fact, few schools make the necessary investments in this subject. Example, the idea of upgrading undergraduate education programs for the Public Relations and Communications major at Van Lang University (Le, 2017). From the standpoint of "quality is suitability," the modalities and tools for developing high-quality training programs that are suitable for rapid changes in

labor and employer requirements, recruitment, technological evolution changing the learning environment, and supporting the ever-changing digital evolution, and it is necessary to get over the challenges of establishing digital competency-oriented training programs are also utilized to highlight the practicality of such programs (Lê, 2021).

The creation of training programs should be managed by strong planning, organization, leadership, and inspection (My, 2016a), and the planning, organization, leadership, testing, and evaluation phases of this process should be closely overseen by the university president (My, 2016b). Additionally, state management of foreign training programs is one of the important solutions to improve the quality of higher education (Nguyen, 2007), especially in training program development, and quality assurance of a training program or training unit is critical as university training units assess their programs based on globalization and international standards (Đong, 2014). To prepare teachers for the demanding renovation of general education, pedagogical schools must update the objectives (program learning outcomes), program content, teaching, testing, and assessing methodologies, among other things thereby contributing to the quality enhancement of human resource training and allowing for the meeting of basic innovation requirements, comprehensive general education, and social needs (Trinh, 2021).

8.1. Domestic and output criteria and international integration

Many universities today face challenges such as developing credit-based training programs to help students gain necessary knowledge, skills, and attitudes; creating learning environments that allow students to gain practical experience; and developing assessment methods to obtain fundamental feedback in order to identify and improve the quality of the learning process. These issues necessitate the development of a solution system to improve the quality of teaching and learning, curriculum development, and course design in order to satisfy standardized output. Therefore, variety of curriculum design models that are congruent with the intended results, as well as how to put these models into reality (Bui, 2014). Outcome-Based Education (OBE) is one of the most successful strategies for creating a study program. This method is characterized by four important concepts and principles: a focus on skills or learning outcomes, backward training program design, constructive alignment, and the creation of learning opportunities for learners. Nong Lam University - Ho Chi Minh City has the opportunity to assess and reinforce its internal quality framework with practical solutions for strategic planning by using this method to the study program creation process. (Mai et al., 2021). Training program development is a never-ending process. Higher education training program creation is critical to guaranteeing the quality of training human resources to satisfy the needs of the economy and society. In reality, many universities are unconcerned about this. The philosophy of higher education curriculum creation before proposing a process and recommendations for curriculum development in Vietnamese universities (Nguyen, 2015).

The examination of the bachelor's program based on the accreditation requirements of the Ministry of Education and Training yielded significant and relevant results. Some recommendations were issued based on the evaluation results of the training program at the higher education level, including ensuring the principle of constructive alignment in designing and developing programs; designing basic processes to improve the quality of the programs; and designing a mechanism for gathering and using stakeholders' feedback in the process (Vo & Nguyen, 2021).

There are some solutions for developing training programs towards standardization, modernization, and international integration, including 1) raising awareness of forces involved in vocational training about access to vocational training. 1) it is necessary to develop vocational training programs in the direction of standardization, modernization, and international integration; 2) renewal of vocational training programs must be consistent with common, unified, and regulated standards; 3) well implement the development of the school's vocational

training program development plan; 4) closely follow the vocational training needs of workers and the needs of society to build appropriate vocational training programs, contributing to improving the effectiveness of vocational training in our country today; 5) organize the program compilation strictly, seriously (Phan, 2013).

8.2. Social requirements

Many studies relevant to training programs can be classified into social needs, such as training programs at universities in order to produce workers of high quality and competence who satisfy social standards (My, 2016a), to ensure the quality of human resource training to meet the needs of the economy and society (Tran, 2019), to satisfy the demands of socioeconomic development and students' learning needs (Nguyen, 2020), to assure educational excellence (Pham, 2014), *education innovation's training requirements* (Đâu, 2020) and *labor market requirements* (Duong, 2018), a new labor-market orientation to Vietnamese university education (Ha, 2018), to fulfill international market criteria (Le & Le, 2020), to *prepare future generations of citizens* (Tran, 2015), and the program should be carefully prepared by a framework, the group of competencies related to professional and professional competence; and the general competence groups expressed through the related subjects with forms of teaching organization, teaching method, a form of examination, and evaluation. Besides, there is the method of organizing the training process (process, organizational form, teaching method) (Tran, 2015). University training programs should be developed based on the employer feedback and career competency (Ha, 2018). These aspects were proved by an example of the current management situation in developing training programs at Saigon University - a multi-disciplinary university (My, 2016b) and measures were proposed to effectively manage the development of training programs at universities in similar conditions, and to increase training quality in order to fulfill corporate and societal needs (Pham, 2016). Additionally, training programs is a prevalent trend in university education in industrialized nations and its lessons should be referred by developing countries when a new labor-market orientation to Vietnamese university education is rapidly being developed (Ha, 2018). It goes on to competency development of the general training program renewal criteria, Tay Bac University's language studies department must establish a training program geared toward learner competency, with particular solutions the program framework must be restructured. Second, to minimize times of significant particular knowledge and specialized knowledge; third, to expand periods of pedagogical knowledge and professional internship (Pham, 2016).

The Industrial Revolution 4.0 can be seen as the other factor of social requirements that has not only transformed the production platform and created new areas and vocations, but it has also required the workers to learn new capabilities, knowledge, and skills (Tran, 2019). With curricular in general education, the fourth industrial revolution has obviously impacted schooling and after 2020 the education area is conducting initiatives to build new programs and textbooks. These are two reasons why designing a teacher training program in the contemporary setting is critical and that is one of the conclusions of a teacher training program, conducted by Thai Nguyen University of Education, aimed at addressing the reform of general education in the 4.0 revolution and related with general education in the midland and northern mountainous regions (Nguyen & Tran, 2019). Universities in Vietnam should be aware of the challenges of the new industrial revolution and implement strategies to renew their curricula, change teaching methods, and invest in facilities in order to provide high-quality human resources during this period of digital transformation (Tran, 2019). And it has a significant influence on worldwide schooling, colleges and universities must seize possibilities and become aware of problems in order to keep up with the era's development trend. One of the most difficult challenges that universities and colleges must face is determining how curriculum development may satisfy the requirements of the development trend toward reality in advance. This endeavor needs the

participation of not only educational professionals and managers, but also lecturers themselves with some fundamental skills and understanding of curriculum development in order for them to achieve their missions (Le & Nguyen, 2018).

The other point of social requirement is *credit-based training* in developing training programs, which is one of the trends in higher education growth in modern society, as well as the culture and cultural values of Vietnam because, it provides numerous suggestions for developing traditional Vietnamese cultural values in the process of Vietnamese higher education renovation (Nguyen, 2007).

Table 1
Characteristics of Articles and Key Findings

Author/Year	Topic/ Discipline	Study design	Aim	Data collection	Main findings
(Đong, 2014)	AUN-QA /Higher education/ accreditation	Conceptual	Apply AUN-QA to develop training programs	Qualitative	must participate in and perform assessment of the international standards
(Duong, 2018)	CDIO /Higher education/ Labor market requirements	Empirical	Apply CDIO to develop training programs	The quantitative and qualitative	Can meet the social demands
(Nguyen, 2016)	CDIO /Higher education/ pedagogy	Conceptual	Apply CDIO to develop training programs	Theoretical	Very applicable to improve the learners' competencies
(Nguyen, 2012)	CDIO /Higher education/ Technical pedagogical	Conceptual	Apply CDIO to develop training programs	Theoretical	Effective to both institutions and students
(Pham, 2016)	CDIO/Higher education/social requirements	Conceptual	Apply CDIO to develop training programs of technical disciplines	Theoretical	Can meet the social demands
(Pham et al, 2021)	CDIO /Higher education/travel	Conceptual	Apply CDIO to develop training programs of tourism disciplines	Theoretical	Teaching staff, facilities and time and finance need to be ultimately used
(Vo et al, 2016)	CDIO/Higher education/IT engineer	Opinions	Program development based on CDIO is in IT engineer	Theoretical	Suitable school conditions, have the same effectiveness as other approaches

Author/Year	Topic/ Discipline	Study design	Aim	Data collection	Main findings
(Ha, 2017a)	POHE/higher education/ career-oriented teacher training	Theoretical	Program development based on POHE in sport	Theoretical and review	A good way of developing training programs to meet the societal needs
(Ha, 2017b)	POHE /higher education/ career-oriented teacher training	Review	To develop a teacher training programs	Theoretical and review	To develop competent teachers
(Nguyen, 2007)	Credit-based training	Review	The change in credit-based training programs	Theoretical and review	Can make the training activities more effective
(Bui et al, 2021)	Preschool-primary education	Description	The effectiveness of training programs	Theoretical	Meet the requirements of educational reform
(Đang, 2020)	Preschool-primary education/liberal education	opinions	The effectiveness of liberal education	Theoretical	Can enhance the training quality.
(Ha, 2018)	Higher education/ historical pedagogical/	Empirical	career-oriented training programs to labor market	Description	Professional competency development of teacher student
(Đang & Nguyen, 2018)	nursery, primary and secondary teacher-student training	qualitative	Competence-based training	Description	To develop competencies and skills of teacher students
(Đao, 2016)	Higher education/ literature teacher	qualitative	critical requirement of education in Viet Nam	Description	Reconstruct the subjects, contents and methods
(Ha, 2016)	<i>Teacher training/ competence-based training</i>	review	Different approaches to develop training programs	qualitative	helps training programs, lessons and assessment
(Pham, 2016)	Higher education/ literature	documentary	How to develop training programs	qualitative	Combine the regulated and the fact to develop the need programs
(Pham, 2013)	Higher education	Opinion	Find a suitable method	qualitative	programs should be developed based on the fact
(Tran et al, 2008)	Higher education	Opinion	finding solutions	qualitative	to improve the quality of current master training

Author/Year	Topic/ Discipline	Study design	Aim	Data collection	Main findings
(Tran, 2020)	Higher education/ Japanese studies	Opinion	Find the solutions	qualitative	Combine AUN_QA, CDIO approaches
(Trinh, 2021)	Higher education / Geographical pedagogy	Empirical	meet the demanding renovation	quantitative	fundamental solutions for the developing Teacher Education curricular
(Nguyen & Nguyen, 2013)	Higher education/ Technical pedagogical	Conceptual	Competency development	quantitative	Improve the lecturers and learners' competencies
(Vo, 2012)	Higher education/ Technical pedagogical	description	To describe the training process	quantitative	Can meet the needs of the objectives of training program
(Đinh, 2010)	Vocational training	Conceptual	the importance of the curriculum design	quantitative	measures are proposed
(Nguyen, 2020)	<i>Vocational training/</i> Social requirements	Conceptual	shows the importance of the design	quantitative	Process of vocational college's curricula
(Nguyen, 2012)	<i>Vocational training</i>	Conceptual	Vocational training's curricular	quantitative	The process of developing a training program
(Phan.H.D, 2013)	Vocational training	Conceptual	to develop modernized vocational programs	qualitative	Solutions proposed
(Nguyen, 2007)	Vocational training	Conceptual	analyses the context and trends in higher education	Qualitative	solutions to develop traditional values higher education renovation
(Bui, 2019)	Higher education, foreign trade, Output criteria	Conceptual	highlights the CDIO teaching principles	Qualitative	build up specific models for teaching and methods of assessing CDIO
(Đam, 2016)	Vocational training/ air-defense and air force academy	Conceptual	management method for training quantity of the college	Qualitative	To be more invested into training programs

Author/Year	Topic/ Discipline	Study design	Aim	Data collection	Main findings
(Nguyen & Đinh, 2019)	Marine/higher education	Conceptual	marine industry based on the Convention STCW 78/10 in Manila in 2010	Qualitative	a process of curriculum development of Vietnam marine industry
(Nguyen, 2008)	Higher education/ Digital library	Review	To find experience in developing digital library programs	Qualitative	Should be developed in modules
(Nguyen et al, 2021)	Higher education/ Auditing	Conceptual	IFRS (International Financial Reporting Standards) and training programs	Qualitative	Application of IFRS to teaching of auditing, accounting
(Nguyen, 2018)	Office governance	Conceptual	the general theories of development program	Qualitative	suggestions to improve the quality of training and meet the demand of high quality
(Nguyen et al, 2013)	Higher education/ USA pharmacist	Empirical	the most advanced pharmacy education program	Description	to develop capacity for pharmacists to improve treatment outcomes
(Le, 2017)	Higher education/ Public relations and Communications	Conceptual	Training management process	Qualitative	the development of training programs for the public relations and Communications
(Lê, 2021)	Management	Conceptual	The foundation of curriculum development in a digital age	Qualitative	difficulties in implementing digital competency-oriented training programs
(My, 2016a)	Higher education/ Management/ Social requirements	Conceptual	Develop training programs to meet social requirements	Qualitative	management functions in developing training programs
(My, 2016b)	Management/ Social requirements	Conceptual	management situation in developing training program	Qualitative	good planning, organization, leadership and inspection
(Nguyen, 2007)	Higher education, Management	Conceptual	State management of foreign training institutions	Qualitative	Some lessons learned

Author/Year	Topic/ Discipline	Study design	Aim	Data collection	Main findings
(Le & Nguyen, 2018)	Skills in developing training programs	Empirical	theory to developing curriculum and equipping university lectures	Quantitative	Skills should be mastered by lecturers
(Le & Le, 2017)	<i>Design</i>	Empirical	Competencies of training programs	Quantitative	Pedagogical teachers need actively fulfill the instructional roles
(Le, 2021)	Competence-based approach	Conceptual	discusses some issues of the development of modern English training programs	Qualitative	the link between theoretical and practice sessions so that learners
(Nguyen, 2020)	<i>A process of designing a training program</i>	Conceptual	the theory of designing training program process based on liberal educational approach.	Qualitative	a continuous process in order to complete training programs
(Bui, 2014)	Higher education/ Outcome criteria	Conceptual	discuss and apply models of curriculum designs	Qualitative	require a systematic solution
(Mai et al, 2021)	<i>Outcome-based education</i>	Empirical	to share the experience in program development process	Quantitative	four key concepts and principles focus on competencies
(Nguyen, 2015)	<i>Outcome criteria/ Higher education</i>	Conceptual	the theory of curriculum development and process at universities	Qualitative	plays an important role in ensuring the quality of training human resources
(Phan, 2013)	<i>International standards/vocational training</i>	Conceptual	Solution to develop vocational training programs	Qualitative	Improve the knowledge, curriculum, plan implementation, the needs, organization
(Vo & Nguyen, 2021)	Higher education/ MOET's standards	Empirical	program assessment based on the accreditation criteria	Quantitative	recommendations to continuously improve the quality of the university's training programs

Author/Year	Topic/ Discipline	Study design	Aim	Data collection	Main findings
(Đang, 2020)	<i>Liberal education/ training quality</i>	Conceptual	solutions to develop the kindergarten teacher training program	Qualitative	The main features of liberal education
(Nguyen et al, 2014)	<i>Liberal education/ higher education</i>	Conceptual	proposes solutions to liberal education in the training program	Qualitative	Lessons learned
(Do et al, 2018)	<i>Competence based training</i>	Empirical	analyzes the content of information literacy and digital literacy	Quantitative	a core framework for the training program
(Nguyen, 2006)	<i>Competence based training</i>	Conceptual	discussing these concepts	Qualitative	there have been disagreements
(Pham, 2022)	<i>Competence based training/vocational training</i>	Conceptual	Competency-based curriculum development	Qualitative	Building a process of developing curriculum
(Ngo, 2017)	<i>Performance-based competence/ technical vocational education</i>	Conceptual	concepts related to integrated teaching with modules	Qualitative	competencies, characteristics of development the teacher training curricular
(Nguyen, 2009)	<i>Performance-based competence</i>	Conceptual	training program development by task, duty analysis	Qualitative	Need to develop teacher's professional standards and pedagogy
(Nguyen & Nguyen, 2014)	<i>Professional standards</i>	conceptual	comments on current teacher training programs	Qualitative	changes to be made to improve the quality of teachers
(Đầu, 2020)	<i>Education innovation's training requirements</i>	Conceptual	basic issues about teachers' training program development	Qualitative	the process and content of developing teacher training programs
(Pham, 2014)	<i>Quality insurance</i>	Conceptual	ensure education quality		the orientation and process of development of high school teacher's training program
(Duong, 2017)	<i>Information competence of students</i>	Empirical	The factual competencies of lecturers	Quantitative	the groups of teaching competence and pedagogical skills

Author/Year	Topic/ Discipline	Study design	Aim	Data collection	Main findings
(Le & Le, 2020)	Labor market requirements	Conceptual	discusses the training programs	Qualitative	should be considered an important content in the human resources training
(Tran, 2019)	fourth industrial revolution/ universities	Conceptual	addresses the innovation in the management of curriculum development	Qualitative	the challenges and implement appropriate strategies
(Le, 2021)	career-oriented teacher training program	Conceptual	Develop the training bachelor programs	Qualitative	to adapt in the labor recruitment needs
(Nguyen, 2019)	Social requirements	Conceptual	recapitulates main results in curriculum development	qualitative	continue applying and spreading to other applied universities
(Nguyen & Tran, 2019)	Social requirements/ secondary teacher	Conceptual	the development of the general teacher training programs	Qualitative	developing a teacher training program

Figure 2
Number of Published Articles from 2006 to 2022

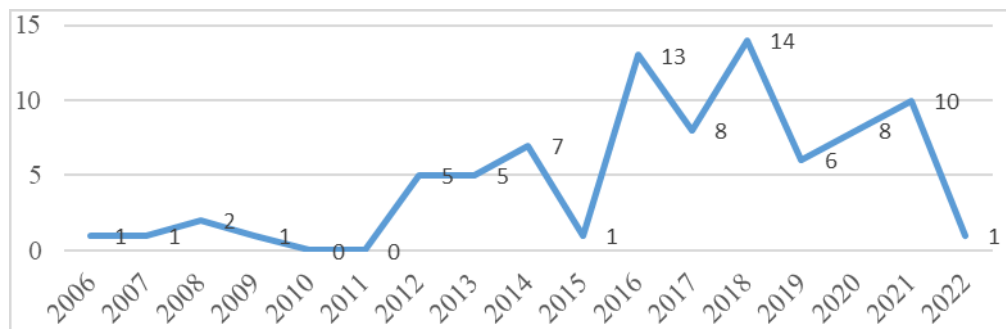


Figure 2 shows the number of published scientific works on training programs in the period from 2006 to 2022. In general, the publication trend can be said to be unstable, and the number of publications in the first years can be said to be unstable, not many, and the number of documents published mainly at the end of this entire time period. Specifically, in the first half of the decade, the period between 2006 and 2010, there were only 1 or 2 publications, and even in some years, there were no scientific publications on training programs. During the next 5 years, the number increased to 5 or 7 works, but by 2015, there was only one published research result. Notably, from 2015 until now, although the trend has not been stable, the number has increased the most, but the highest number is in 2018 with 14 publications, and in 2022, only 1 publication has been listed in the data system. In summary, training programs are increasingly researched and published, partly reflecting the development of education and training in terms

of professional development and partly reflecting the diversity of many components, levels, and types of participation in the issues of the training program.

Figure 3
Publication Based on Levels of Education

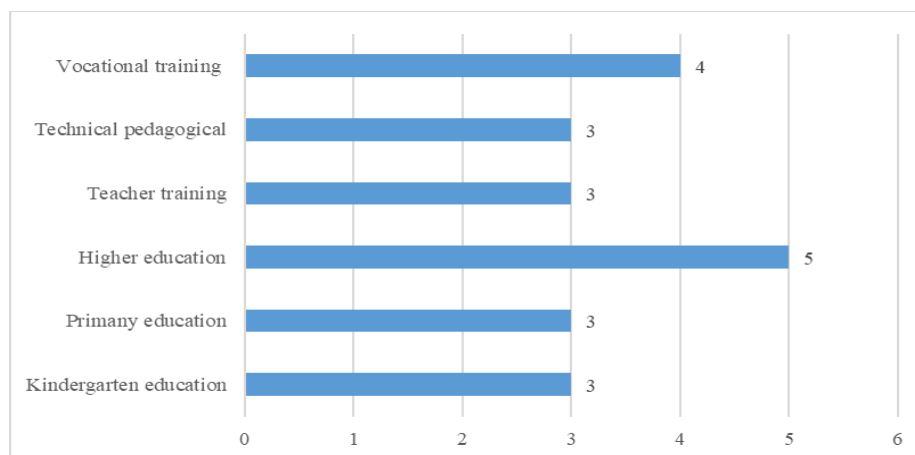


Figure 3 illustrates how many publications of training programs relevant to educational sectors, from kindergarten to higher education, technical pedagogical and vocational education, have been researched during the last decade and a half. Generally, the total number of research studies are 21 documents, the studies of the higher education are highest with 5 articles, the next is vocational training with 4 publications and all the rest of other areas are the same with 3 documents. It can be said that these documents, though they are not all the publications in the nation, are quite few in terms of how important the training programs should be in the context of educational radical and comprehensive reform of Vietnam. It prompts the need of researching into training programs in educational fields of the education system should be much more concentrated and studied.

Discussion

Curriculum development is a never-ending process. The development of education programs plays a vital role in tertiary education institution training. Creating a training program is a key subject and task in organizing the college's training operation. To have a consistent training program, the direction and administration of each step of the development programs must follow rules and criteria. Take that expertise and use it to construct a management strategy for boosting management efficiency and program development, ultimately increasing the college's training volume (Đam, 2016). Overall, the training program data demonstrates key aspects such as: 1) general theoretical issues concerning the training program; 2) training program issues that occur in practice; 3) studies of training programs in the form of training in the education system; 4) in the vocational training system; and 5) management training program development.

In terms of theories applied to developing training programs, the four main theories mentioned in the research studies are AUN-QA, CDIO, POHE, and credit-based training. It can be said that an AUN-QA based approach has been more popular than ever in the training program development of universities in Vietnam, it is because the university governance has been radically changed in the orientations of international integration and globalization that

Vietnam higher education's targets can meet the regional standards before researching to international norms, it also is because higher education in Vietnam is facing huge competition coming from international universities whose headquarters are located in Vietnam and these universities have provided better education quality services.

CDIO and POHE have the similarities when entrepreneurs require graduates to be very good at their own professional areas and pragmatically because businesses other societies are rapidly changing in the era of digital time and the life cycle of a product is very short. These challenges make training programs developers have to take the advantages of CDIO and POHE to develop the best training programs that one side can help students to become more professional and the other side is to demonstrate their practical skills during the process in the learning settings. There are several educational frameworks in the globe, but the one that was released in 2007 is teaching under CDIO. Initially, this technique was applied to technical majors. As a result, there are still several issues to be addressed. From 2005 to 2015, these are the actions of eight Vietnamese universities in developing their training programs for the profession-oriented higher education initiative (POHE) and are still being utilized and expanded to other applied into universities and implementing curriculum development to improve practice activities at businesses so that the curriculum can fulfill the critical demands of the workplace (Nguyen, 2019).

There are several issues with the training program in practice, such as the transition from the year to the credit, which changes the entire educational activities of the school, as well as the entire training program. Traditionally created courses have to be restructured toward credits with diverse options and better suited to learners' needs. Besides, the competitiveness of the labor market is not only increasing according to the increasing supply but also increasing requirements for the skilled nature of workers, especially highly skilled workers. Notably, the competition is also international when the movement of human and labor resources from ASEAN countries and other countries to Vietnam is increasingly convenient and easy.

In addition, the profound effects of the Industrial Revolution 4.0 make all training programs shape up according to new needs as occupations are replaced by electronics and artificial intelligence, and new occupations need new content, skills, and knowledge in the new training program. Colleges and universities must seize possibilities and become aware of problems in order to keep up with the era's development trend. One of the most difficulties that universities and colleges must face is determining how curriculum development may satisfy the requirements of the development trend toward reality in advance. This endeavor needs the participation of not only educational professionals and managers, but also lecturers themselves. The theory, point of view, and approach to producing training programs, as well as to provide university lecturers with some fundamental skills and understanding of curriculum development in order for them to achieve their missions (Le & Nguyen, 2018).

Since 2006, competence-based education has been referenced, however, there have been conflicts over the definition of competency, training programs, and training program creation in the competency-based approach. In terms of teacher training programs that have transitioned from input-oriented to output-oriented education that focuses on capacity, and so developing teacher training programs toward a capacity approach is an incredibly essential work for pedagogical institutions in the contemporary age. To that purpose, pedagogical colleges must first revamp their current training programs for selecting educational breakthroughs. Training program development is essential in university development plans. To fulfill their instructional role, pedagogical teachers must consistently fulfill the tasks.

Vietnam education renovation is on its ways and creating teacher training programs is one of the most essential ways to innovate and enhance education in the present setting. To prepare teachers to fulfill the demands of high school education innovation, pedagogical institutions must undergo extensive renovations in terms of objectives, program content, instructional

techniques, examinations, tests, and evaluations... some fundamental things concerning the establishment of teacher training programs.

As the literature points to studies that address the challenges and suggest solutions not only in the field of vocational training but also a lot in the pedagogical system, the curricular or training program becomes the concern of every educational institution in the education system. This is reflected in the current training programs that will prepare pedagogical forces at all levels of the education and training system. Although higher education is still the most affected, many universities are now preoccupied with the establishment of training programs (TP). To complete training programs, training program creation is a constant activity. The creation of training programs in universities is critical to ensuring the quality of human resources to satisfy the demands of socio-economic development and students' learning needs.

Conclusions and Implications

The training program in Vietnam exhibits many different characteristics, but this study can only point out some of the most basic, notable, and general features from the data that have been announced recently. First of all, the training programs: as studies have shown, most of the training programs are influenced by or apply a certain theory, typically the CDIO (Conceive, Design, Implement, and Operate), the Profession-Oriented Higher Education (POHE), credit-based training, liberal education, or a competency-based training program. These theoretical approaches show that, on the one hand, Vietnam's training program has applied modern theories to the process of building training programs in particular and the education system in general, and on the other hand, they demonstrate the progressive level of education and training in Vietnam. Secondly, the research results also show that the pedagogical training system has received the most attention in the research and development of training programs, including preschool and primary school teacher training programs with common goals, specific goals, and output standards for the discipline, and each module of training content, assessment methods, and duration for the discipline, each term. Thirdly, besides the pedagogical training system, training programs in other fields of study are also studied, such as the maritime, digital library, auditing, office administration, and the pharmacy training program in Vietnam. United States, tourism, information, etc. Fourth, it is worth noting that training programs are also influenced by other factors, such as accreditation, output criteria, educational innovation, insurance, etc. quality assurance, labor market requirements, industrial revolution 4.0, career-oriented training, etc. It can be said that training programs in Vietnam are built according to requirements. The education policy of the state must, at the same time, comply with the requirements of practice and meet the requirements of education practice.

Regarding scientific characteristics, there are some issues to be identified: 1) Most of the collected documents mainly focus on the method of theoretical research, that is, refer to a theoretical problem or theory on program development, from which recommendations for application and policy recommendations should be made; 2) There are few imperial or experimental studies and empirical surveys; imperial studies are mainly studies that describe the status quo in a simple way and are not completely comprehensive deeply expressed by statistical or test methods; 3) Some studies are presented in English, while the rest are limited to international standards and criteria, such as presentation, methods, citations, etc. Because social science journals in Vietnam have not yet developed in the direction of international standards, the authors present research results according to the guidelines of domestic journals.

The research results also show that international educational institutions carrying out educational activities in Vietnam can base their implementation on the current characteristics of curriculum development in education in Vietnam and follow the following directions: 1) provide a completely new training and education program that no other educational institution

in Vietnam has yet implemented; 2) coordinate the development of training and education programs with educational institutions of the same field and development orientation; 3) coordinate the implementation of the approved education and training program and have the same implementation capacity; 4) develop educational and training programs that are localized but with international requirements.

Comprehensive studies on many different aspects of the training program under the Vietnamese education system in particular, as well as other fields in Vietnam in general, are required. Such studies can be carried out in specialized areas such as pedagogical system training programs or in a more specific field such as general teacher training or postgraduate training. Another research direction that can be prioritized is studying multidisciplinary or interdisciplinary training programs in the education system. In addition, due to the national integration of Vietnamese education, there should be studies on international training programs or training programs with training content and issues. Clearly, more research is needed on both the breadth and depth of the training program, which will provide evidence and research results that contribute to deepening and comprehensively painting the picture of training programs in Vietnam today.

This study does not represent all the scientific publications as well as the research-related works on training programs in Vietnam, but only gathers the most research works on training programs in Vietnam generated in the nation's largest data set. This also leads to a limited extent of methods and theories, as well as summarizing practical experiences that have been applied in the Vietnamese education system.

Declaration of Interest

The authors declare no competing interest.

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Received: December 06, 2022 Revised: January 10, 2023 Accepted: February 01, 2023

Cite as: Hoang, N. H., Nguyen, T. T. H., Pham, T. P. H., Ngo, T. P., & Nguyen, T. T. (2023). The development of curricular and training programs in Vietnam. *Problems of Education in the 21st Century*, 81(1), 90-116. <https://doi.org/10.33225/pec/23.81.90>

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