

On the study of high-quality human resources of voice education in the context of industrial revolution 4.0 in Vietnam today: a modern analysis

Nguyen Xuan Toan,

Duc College of Technology, Ho Chi Minh City, Vietnam, Vietnamxuantoantdc@gmail.com

Tran Mai Uoc

Banking University of Ho Chi Minh City, Vietnam maiuoctran@gmail.com,
<https://orcid.org/0000-0002-4659-7661>

Nguyen Thi Thanh Binh

Banking University of Ho Chi Minh City, Vietnam, binhntt@buh.edu.vn

Received date: 12.11.2024; Accepted date: 15.03.2025;
Publication date: 29.04.2025, doi: 10.56334/sei/8.3.19

Abstract

Vocational education development is identified as one of the important tasks in the strategic breakthrough of high-quality human resources. In that context, the issue of developing high-quality human resources in vocational education in the context of the 4.0 industrial revolution in Vietnam today is a matter of theoretical and practical significance. From the philosophical and social philosophical approach, the article analyzes and clarifies practical and theoretical issues related to high-quality human resources in vocational education in the context of the industrial revolution. 4.0

¹ **CC BY 4.0.** © The Author(s). Publisher: IMCRA. Authors expressly acknowledge the authorship rights of their works and grant the journal the first publication right under the terms of the Creative Commons Attribution License International CC-BY, which allows the published work to be freely distributed to others, provided that the original authors are cited and the work is published in this journal.

Citation. Nguyen Xuan T., Tran Mai U., Nguyen Thi Thanh B. (2025). On the study of high-quality human resources of voice education in the context of industrial revolution 4.0 in Vietnam today: a modern analysis. *Science, Education and Innovations in the Context of Modern Problems*, 8(3), 338-349. doi: 10.56352/sei/8.3.19. <https://imcra-az.org/archive/358-science-education-and-innovations-in-the-context-of-modern-problems-issue-3-volviii-2025.html>



In Vietnam today. The article is structured with four contents related to: high quality human resources in vocational education and basic roles; posed problems and causes of the situation in developing quality human resources.

Keywords: voice education, Human resources research; high-quality human resources; educational research; Business education; industrial revolution 4.0, Vietnamese education

1. Introduction

Human history has recorded 3 industrial revolutions that changed the entire production and socioeconomic conditions of the world. The first industrial revolution was marked by the introduction of the steam engine. The second revolution is the emergence of electricity and the third revolution is the explosion of information technology and automation. The 4th Industrial Revolution is the trend of automation and data exchange in manufacturing technology. The Industrial Revolution 4.0 (Industrial Revolution 4.0) is a concept that was first introduced at the Hannover Technology Fair in the Federal Republic of Germany in 2011. The concept of the fourth industrial revolution (FIR) was first introduced mentioned in the "High-tech Strategic Action Plan" approved by the German Government in 2012. It is a support program of the German Federal Government in cooperation with academia and public associations. Germany's leading enterprise to improve management and production processes in the manufacturing industries through "computation". Since then, the term "Industry 4.0" has been widely used around the world to describe the fourth industrial revolution. The essence of Industry 4.0 is based on digital technology platform and integrates all smart technologies to optimize production processes and methods [13,147]. Industrial revolution 4.0 is still taking place every day, every hour and will certainly affect vocational education in general, including the issue of high- quality human resources in vocational education in particular in Vietnam today. With the current trend of globalization and strong international integration, the impact of the industrial revolution 4.0 (Industrial Revolution 4.0) and the COVID-19 pandemic are posing urgent requirements for skills improvement labor. In the context of the COVID-19 pandemic, of 4.0 industrial, the quality of human resources and workers' skills is the top concern of countries, managers and businesses.

Research question

Question 1: What is the basic role of high-quality human resources in vocational education?

Question 2: What are the problems in developing high-quality human resources for vocational education in the context of the industrial revolution 4.0?

Question 3: What is the solution to develop high-quality human resources in vocational education today in Vietnam in the context of the industrial revolution 4.0?

Research purposes

The purpose of the article is to analyze and clarify the basic issues related to high-quality human resources in vocational education in the context of the industrial revolution 4.0 in Vietnam today.

Research Methods

In the article, the author uses a qualitative method on the basis of researching other related studies, analyzing, synthesizing, evaluating as well as a system of documents and documents related to quality human resources in vocational education in the context of the industrial revolution 4.0 in Vietnam today. At the same time, to point out the basic role of high-quality human resources in vocational education, the problems posed in developing high-quality human resources for vocational education in the context of the industrial revolution 4.0 develop solutions to develop high-quality human resources in current vocational education in Vietnam in the context of the industrial revolution 4.0, specific research methods such as: deductive and inductive, logic and history. History, comparison, literature studies, and contrasting theory with practice were also used in this study.

2. Research results and discussion

Vocational education (GDNN) is understood as a level of education in the national education system aimed at training elementary, intermediate, college and other vocational training programs for employees. , meeting the demand for direct human resources in production, business and services, is carried out in two forms: formal training and continuing training. We can understand the concept of human resources briefly as human resources. That also means that the concept of concentrated human resources reflects the following three issues: First, consider human resources from the perspective of human resources - the determining factor in the development of society; Second, human resources include quantity and quality, in which quality is reflected in intelligence, personality, moral qualities, lifestyle and a combination of those factors; Third, research on human resources and human resource development is necessarily associated with the time and space in which it exists [11]. Highquality human resource is a concept that refers to a person, a specific worker with a skill level (professional and technical) corresponding to a specific profession according to the criteria of classification of specialized labor. certain subjects and techniques; have good labor skills and be able to quickly adapt to rapid changes in production technology; have good health and quality, have the ability to creatively apply their trained knowledge and skills to the production process in order to bring about high productivity, quality and efficiency [18]. In order to

have high-quality human resources, capable of meeting the increasing requirements of the financial banking industry, adapting to the development of the 4.0 industrial revolution, high-quality human resources in vocational education The industry needs to ensure the following basic requirements: (i) employees must be improved in their intellectual level; (ii), employees must have high creativity; (iii), employees must be adaptable and highly flexible [12,38.8]. In addition, the context of the 4.0 industrial revolution also requires workers to have necessary competencies such as: having self-discipline, knowing how to save materials and time, having a sense of responsibility, have the spirit of cooperation and industrial working style, professional conscience.

All workers, whether physical labor or intellectual labor, need to have good physical strength to maintain and develop intellectually, to transfer knowledge into practical activities. We believe that high-quality human resources in vocational education are human resources that must meet the requirements of the labor market, meet the requirements of domestic and foreign enterprises, that is: yes expertise; have skills, techniques, find and create self-employment, work safely, work cooperatively; Have a good attitude, working style, responsibility for work. Thus, high-quality human resources in vocational education must be people who are both mentally and physically developed, both in terms of working ability, in morality, and in pure emotion. When gradually transitioning to a knowledge-based economy and in the trend of globalization and international economic integration, human resources, especially high-quality human resources, increasingly play a decisive role. Recent growth theories indicate that an economy that wants to grow rapidly and at a high rate must be based on at least three basic pillars: the adoption of new technologies, the development of modern infrastructure, and the upgrading of infrastructure. high quality human resources.

Table 1. Human resource requirements in different development stages of the economy

Resource-based economy	Requirements: General education; Institutions; the infrastructure; macro stability
The economy is based on efficiency	Requirements: Higher education; the efficiency of the market (labour, finance...); production technology level; the size of the markets
Knowledge economy	Requirements: Creativity; level and technology of production - business

Source: According to the Global Competitiveness Report, 2010, WB

Over the years, Vietnam has achieved many achievements in the development of the vocational education system, having unified state management with a total of 1,914 vocational education institutions, including 399 colleges, 462 intermediate schools and 1,053 vocational education centers [7]. Vocational education plays an important role in training human resources directly for production, business and services, contributing to improving the competitiveness of the Vietnamese economy in the context of innovation and integration. Before the impact of the 4.0 industrial revolution: The impact of the 4.0 industrial revolution, the Vietnamese labor market suffered many impacts related to changes in employment trends, labor restructuring as well as labor requirements. Demand for the skill level of workers. The economy is strongly transforming from a resource based model, low-cost labor to a knowledge economy, the replacement of labor power with machines, robots, and artificial intelligence. Thus, like it or not, the 4.0 industrial revolution, with its characteristics derived from technology, is really happening with both opportunities and challenges for vocational education. Specifically, priority must be given to training and developing human resources with high qualifications and necessary capabilities, especially in the fields of technology and engineering. The knowledge and skills that workers in the 4.0 industry must have are information technology, data analysis, organizational and process statistics, modern interface interoperability, skills of self-time management, adapting to change, teamwork, social communication. In the context of the 4.0 industrial revolution, which has created fundamental and comprehensive changes in all aspects of socio-economic life, high-quality human resources have always played a decisive role in the development of vocational education. That decisive role is clearly demonstrated through a number of basic points as follows:

Firstly, high-quality human resources are the main resource that determines the growth and development of vocational education. Human resources, labor resources are decisive factors for the exploitation, use, protection and regeneration of other resources. There is a cause-and-effect relationship between human resources, capital, natural resources, material and technical facilities, science and technology, etc., but in which human resources are considered as the endogenous capacity that governs the process Development of vocational education. Compared with other resources, human resources with the leading factor being intelligence and gray matter have a prominent advantage in that it is not exhausted if it is nurtured, exploited and used properly, while other resources are not exhausted. However, it is only a limited factor and can only be effective when combined with human resources effectively. Therefore, human being as a human resource, as a creative subject, as an element of the production process itself, as the center of internal resources, as the main resource that determines the development of education.

Careers in the Industrial revolution.

Second, high-quality human resources is one of the decisive factors for success related to the implementation of Decision No. 2239/QĐ-TTg approving the Vocational Education Development Strategy for the 2021-2030 period, vision to 2045. Accordingly, the goal is to rapidly develop vocational education to meet the diverse needs of the labor market, the people and the increasing requirements in terms of quantity, structure, the quality of skilled human resources for the country's development in each period. By 2025, strive to ensure the scale and structure of training industries and occupations for the country's socio- economic recovery and development; the training quality of some schools approaches the level of ASEAN-4 countries, of which a number of occupations approach the level of developed countries in the region and the world; contributing to increase the percentage of trained workers with degrees and certificates to 30%. By 2030, the goal is to focus on improving the quality and effectiveness of vocational education in order to meet the demand for skilled human resources for a developing country with modern industry; actively participate in the international human resource training market; some schools approach the level of ASEAN-4 countries, of which some occupations approach the level of developed countries in the G20 group; contributing to increase the rate of trained workers with degrees and certificates to 35-40%. The rate of workers with information technology skills reaches 90%.

Third, high-quality human resources are a condition for vocational education to focus on innovation and increase training of high-tech human resources; increasing the ability to apply information technology, building a team of qualified and ethical bank staff to meet the requirements of banking management and business, contributing to improving competitiveness, shortening the gap level difference compared to the region and the world.

The current 4.0 industrial revolution, with its influence on a global scale, has had many impacts on vocational education. In that context, it is also urgent to be more fully aware of the problems posed in developing high-quality human resources for vocational education in the context of the current industrial revolution 4.0. The specific issues raised are: The implementation of high-quality training (key vocational development, high-quality vocational schools and pilot training at international and ASEAN levels under the transfer program from abroad...) is still slow in progress level against the plan.

Some professions are selected as key occupations of the high-quality school but are very difficult to recruit, such as: Topographic survey, Marine environmental protection, Fishery refrigeration and electrical engineering, Road and bridge construction.

The training quality and effectiveness of some vocational education institutions, although improved, still cannot meet the requirements of training high-quality human resources. The

management and quality control of vocational education in general and high-quality human resource training in particular still have certain limitations.

The association with enterprises in training and mobilizing investment resources for vocational education has not met development requirements. The work of ordering and assigning tasks in the field of vocational education is still not synchronized.

The above problem comes from many basic, objective and subjective reasons. That is because there is no planning and forecasting of human resources, including high-quality human resources close to the labor market. The conditions for ensuring the quality of vocational education are still inadequate; Investment resources for vocational education in general and for high-quality human resource training in particular are still low. Specific mechanisms and policies to promote enterprises to participate in high-quality human resource training are still incomplete. Towards meeting the needs of society and adapting to the 4.0 industrial revolution, the training and development of high-quality human resources in vocational education should focus on two related core contents: (i), in terms of training programs and objectives according to market needs, accessing new technologies and techniques and taking advantage of the results of the revolution, the program must be close to market requirements, not training in the style of what does it teach; (ii), high-quality human resources of vocational education depend on which direction the economic development strategy and social trends will move. In fact, the 4.0 industrial revolution poses a number of problems in training human resources, including brain workers, which must be directed at that to be able to be used; If they do not adhere to the requirements, the training will be rampant, causing great waste to the society. In addition, when the EVFTA comes into effect, we must calculate what we will do when we integrate, where we stand in the global value chain, thereby orienting training and developing high-quality human resources for vocational education more suitable to existing conditions. Although the state budget investment in vocational education in recent years has increased, it has not yet met the requirements of high-quality training; The annual target program budget is allocated little, not meeting the funding needs according to the annual plan.

In the face of the requirement of fast and sustainable development in the context of world integration and development, there are many opportunities but also many challenges. This requires vocational education to have a strategy on human resource development, especially high-quality human resources in the coming period to serve Vietnam's socio-economic development. Solutions to develop high-quality human resources in vocational education in the context of the industrial revolution 4.0 will be:

Firstly, improve the quality of vocational and technical training and strengthen cooperation and linkage between schools and enterprises.

Support synchronous investment in factors to ensure quality of vocational training according to key occupations planned by colleges and intermediate schools in key economic regions of the country and to form high-quality vocational schools. in order to meet the human resource needs of supporting industries, priority areas for development and technical human resources directly in production, business and services to serve the socio-economic development of the countries local [16]. In addition, strengthening cooperation and links between vocational colleges and businesses. The connection between businesses and schools will optimize the internship program, linking the output of the internship process with the specific job. To strengthen cooperation between schools and businesses, it is possible to pilot a training institution in the construction industry and organize "training fairs". This will be a bridge for businesses to meet directly with the school, aiming at the training program that society needs, not what the schools have. In addition, universities also need to: have a break- through mechanism to attract and utilize talents, vigorously apply science and technology, especially the achievements of the Fourth Industrial Revolution, promote innovation, creating new driving force for the country's rapid and sustainable development [3,110].

Secondly, it is necessary to realize the importance of building and developing high-quality human resources in the process of developing the knowledge economy and integrating into the current regional and world economy. Focusing on improving the quality of teachers and educational administrators in vocational education, developing a contingent of lecturers and managers of vocational education and training to meet the requirements of educational innovation and training. vocational training and creation. There is a plan to train lecturers and teachers for each level, major, and level in sufficient quantity, reasonable in structure, and improve in quality to adapt to the industrial revolution 4.0.

Third, continue to innovate management of vocational education, apply information technology in management; planning to develop high-quality schools and key occupations to meet the industrial revolution 4.0; Focus on investment in building quality assurance standards; promote scientific and technological activities in vocational education; strengthen international cooperation in the field of vocational education; Promoting the spirit of entrepreneurship among students and students in vocational education institutions.

Fourth, focus on perfecting and improving the quality of institutions, renovating mechanisms and policies for vocational education development; Implement Directive No. 24/CT-TTg dated May 28, 2020 of the Prime Minister on promoting the development of skilled human resources, contributing to improving labor productivity and increasing international competitiveness. in the new situation. Accelerate the progress of formulating and submitting for approval the Vocational

Education Development Strategy for the period of 2021-2030, the master plan on the network of vocational education institutions for the period of 2021-2030, with a vision to 2045.

Fifth, promote career guidance, stream division, and inter-training in order to develop training scale. Continuing to implement strong breakthrough solutions, develop and innovate vocational education; the focus is on modernizing, implementing digital transformation and innovating training methods, improving the quality of vocational education, standardizing the contingent of teachers, lecturers and managers at all levels; focus on improving output quality. Enhancing education of morality, lifestyle and skills for pupils and students. Strengthen the cooperation between vocational education institutions and businesses, linking training with the needs of the labor market.

3. Conclusion

Faced with the increasing requirements for direct human resources for production, business and service activities of the labor market in the context of the strong development of the digital economy and digital society, under the influence of the industrial revolution. Industry 4.0, new-generation trade agreements, the COVID-19 epidemic and the trend of human mobility in the international labor market. In that context, the issue of developing high-quality human resources in vocational education in the context of the industrial revolution 4.0 in Vietnam today is a matter of profound and urgent theoretical and practical significance. Vocational education in general and the training and development of skilled human resources in particular play an important role in improving the quality of human resources, contributing to increasing labor productivity and promoting economic growth Economy, increasing national competitiveness. In the past time, the Communist Party of Vietnam and the Government of Vietnam have had many correct guidelines and policies to promote vocational education and develop high-quality human resources in vocational education in the face of Industry 4.0, responding to Vietnam's renovation and integration process. Although important results have been achieved, compared to the requirements set forth, the development of high-quality human resources in vocational education in Vietnam over the past time still has limitations. The proportion of untrained workers is still large, the quality of training is not high, the industry structure is not reasonable, there is a shortage of qualified, capable and skilled workers, and an excess of manual workers; there is a shortage of good leaders, managers, corporate administrators and a team of experts in economic, technical and skilled workers. From the above facts, the 13th National Congress of the Communist Party of Vietnam has determined to make a strategic breakthrough in human resource development, especially high-quality human resources. This is a very right policy, demonstrating the new thinking and vision of the Communist

Party of Vietnam and the Government of Vietnam on human resource development, especially high-quality human resources to meet development requirements National sustainability in the new era.

This study was conducted to analyze and clarify practical and theoretical issues related to high-quality human resources in vocational education in the context of the industrial revolution 4.0 in Vietnam today [17]. The results show that high-quality human resources in vocational education are human resources that must meet the requirements of the labor market and the requirements of domestic and foreign enterprises in the context of innovation. and integration of Vietnam today. In the context of the industrial revolution 4.0, which has created fundamental and comprehensive changes in all aspects of socio-economic life, high-quality human resources have always played a decisive role in the development of vocational education Karma. Before the impacts and influences of the industrial revolution 4.0, the development of high-quality human resources for vocational education has also raised many problems related to: the implementation of high-quality training ; Enrollment in a number of professions in vocational education; training quality and effectiveness of a number of vocational education institutions; associate with enterprises in training and mobilize investment resources for vocational education. The study offers five solutions towards developing high-quality human resources in vocational education in the context of the industrial revolution 4.0. The limitation of this study is that it has not analyzed the characteristics and factors affecting the development of high-quality human resources in vocational education in the context of the industrial revolution 4.0 in Vietnam today.

References

- ADB-ILO, ASEAN Community (2015), Managing integration for better jobs and shared prosperity, Bangkok, Thailand, 2014
- Vietnam Vocational Education Report 2019, retrieved from <http://nvtv.org.vn/2951-2/Communist>
- Party of Vietnam, Documents of the 13th National Congress of Deputies, volume 1, National Political Publishing House, Hanoi, 2021, page 110
- General Statistics Office of Vietnam GSO (2018). The socio-economic situation of 2017. Retrieved on 08.04.2018 from URL: <https://www.gso.gov.vn/default.aspx?tabid=621&ItemID=18668>.
- General Statistics Office of Vietnam (2016), Employment Survey Report, Statistical publisher, Hanoi.
- General Statistics Office of Vietnam (2015), Statistical publications, Statistical publisher, Hanoi.

- Vocational education in Vietnam before the impact of the industrial revolution 4.0, retrieved from <https://cuocsongantoan.vn/Giao-duc-nghe-nghiep-o-viet-nam-truoc-tac-dong-cua-courtesy-reveals-manage-construction-engagement-40-63548.html>
- Harbison, F., Myers, C. A. (1964). Education, Manpower and Economic Growth: Strategies of Human Resources Development. New York: McGraw-Hill.
- Kunio, Y. (1999). The Nation and Economic Growth - Korea and Thailand. Kyoto: Kyoto University Press.
- Nguyen Chi Tan, Tran Mai Uoc, Nguyen Van Phuc (2011), Human resource of high quality with the cause of industrialization and modernization, Journal of human resources development, No. 3 (24)
- Tran Mai Uoc (2019), High-quality human resources in the finance banking industry in the industrial revolution 4.0 - Some basic content, National Scientific Conference "Development of high-quality human resources in the financial industry" banking in the industrial revolution 4.0", Hong Duc Publishing House, ISBN 978-604-89-0571-2, page 147
- Tran Mai Uoc (2010), Developing high-quality human resources, Sai Gon Giai Phong Newspaper - Financial Investment, No. 37, page 07
- Tran Mai Uoc (2010), Developing high-quality human resources for agricultural and rural economic development in the Mekong Delta, Proceedings of the Scientific Cooperation "Synchronously deploying solutions to promote economic development agriculture and rural areas", the State Bank of Vietnam, the Ministry of Industry and Trade, the Ministry of Agriculture and Rural Development, the Steering Committee for the Southwest region, the City Party Committee People's Committee of Can Tho City and the Saigon Newspaper. Liberation, page 38.8.
- World Economic Forum (WEF). The Global Competitiveness Report 2017-2018. Retrieved on 08.04.2018 from URL: <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>.
- Thanh Quang Ngo, Phuc Ngoc Doan, Loc Tien Vo, Hai Thi Thanh Tran & Danh Ngoc Nguyen | David McMillan (Reviewing editor) (2021) The influence of green finance on economic growth: A COVID-19 pandemic effects on Vietnam Economy, Cogent Business & Management, 8:1, DOI: 10.1080/23311975.2021.2003008
- Phuong Nguyen-Hoang, Trang M. T. Phung, Nhut H. Nguyen, Kien D. Cao & Tho H. Nguyen (2021) Aspirations for Careers in State-Owned Enterprises: Evidence from a Low Middle-Income Country, International Journal of Public Administration, DOI: 10.1080/01900692.2021.1998108

Irma Ilomäki, Elinita Mäki & Anne-Maria Laukkanen (2005) Vocal symptoms among teachers with and without voice education, *Logopedics Phoniatrics Vocology*, 30:3-4, 171-174, DOI: 10.1080/14015430500294106

Pamela Prather (2001) Book Review *bodymind & voice: foundations of voice education* Leon Thurman, Ed.D. and Graham Welch Ph.D., co-editors, *Voice and Speech Review*, 2:1, 316, DOI: 10.1080/23268263.2001.10761486

IMCRA - International Meetings and Journals Research Association

www.imcra-az.org; E-mail (Submission & Contact): editor@imcra-az.org

“Science, Education and Innovations in the context of modern problems” Journal

ISSN (p-e): 2790-0169 / 2790-0177



DOI prefix

10.56334/sei/8.3.19



© 2025 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license

Share— copy and redistribute the material in any medium or format. Adapt— remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — you must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.