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OPPORTUNITIES AND CHALLENGES OF THE FOURTH INDUSTRIAL REVOLUTION

Edited by
Trung Tran, Cuong Huu Nguyen
and Loc Thi My Nguyen

Educational Innovation in Vietnam

This edited collection, one of the first to be written chiefly by Vietnamese scholars, explores innovation in Vietnamese education under the impact of the Fourth Industrial Revolution. Vietnam is considered a booming country with its continued economic rise, and the contributors explore one of Vietnam's strategies to achieve further economic growth, which is the innovation – and modernization – of its education system.

The content is split into two parts, the first focusing on innovations in educational policy and management and the second looking at innovation in teaching theories and methods. It shows the vitality and innovation coming from developing countries like Vietnam, where necessity breeds fast adoption of education technology and development.

This insightful edited volume will help researchers in comparative education, educational development, and Asian studies understand the achievements and challenges of Vietnamese general education and higher education in the Fourth Industrial Revolution.

Trung Tran is Professor of Mathematics Education in the University of Education, Vietnam National University, Hanoi (VNU-UEd), Director of the Vietnam Academy for Ethnic Minorities, Hanoi, Vietnam. Professor Trung Tran's main research areas are ethnic education, educational management, public policy, and teaching methods.

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Educational Innovation in Vietnam

Opportunities and Challenges of the Fourth Industrial Revolution

Edited by Trung Tran, Cuong Huu Nguyen and Loc Thi My Nguyen

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Policy and Practice Towards Education 4.0 in Vietnam

Trung Tran, Cuong Huu Nguyen, and Loc Thi My Nguyen

Introduction

The Industrial Revolution 4.0 has created changes in almost every area and nation across the world. It has also provided a variety of opportunities to incorporate biological, physical, and digital worlds. For example, the integration of AI, IoTs, and blockchain could potentially transform industries and eventually the economy, because such combination allows machine transactions – or the exchange a variety of assets – from money to real estate. The education sector is not an outsider of this revolution (Javaid et al., 2021; Sandner et al., 2020; Schweizer et al., 2020). In fact, Education 4.0 was developed as a response to the Industry 4.0. In other words, the Industrial Revolution 4.0 has also had impact on teaching, learning and assessment methods, undertaking research, as well as choosing majors for undergraduate and postgraduate studies at the higher education level (Penprase, 2018; QS, 2019).

As one of the most dynamic nations in the Asia-Pacific Region, Vietnam has gained a lot of benefits as well as challenges from the Industry 4.0. In the field of education alone, the Fourth Industrial Revolution has pushed Vietnamese school management teams to take initiative. Schools must improve their teacher quality, update teacher knowledge, and propose various solutions for school renovations in order to keep up with the requirements of Industry 4.0 (Ministry of Science and Technology, 2021; Vietnam News, 2020). Furthermore, the rapid development and impact of Industry 4.0 are gradually changing the methods of teaching and learning at higher education levels in Vietnam. Teachers integrating educational technology effectively in the classroom help increase student interest and motivation in learning.

In spite of the fact that there have been several research projects undertaken to investigate change and reform in Vietnamese education, it seems to appear that one of them focused on innovation in education as the result of the Industry 4.0. In other words, innovation in Vietnam, an emerging country, in terms of educational policy and leadership, management, teaching and learning, and research is worth being explored and documented.

This book focused on investigating the innovation of the Vietnamese education under the impact of the Fourth Industrial Revolution. Although Vietnam is a

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developing country and in the list among low middle income countries, the application of technology in all sectors has grown very fast. At the national level, the Vietnamese government has had policy that supports the implementation of technology in education. At the institutional level, educational managers and administrators encourage teachers to apply scientific technology in teaching. At the personal level, educational technology in the Industry 4.0 helps transcend teacher development beyond the classroom wall as teachers now can access training courses online, learn at their own pace, and still receive qualified certificates.

Overview of the Chapters

This book is divided into two parts. The first part focuses the innovation in higher education specializing in educational policy, leadership, and management in Vietnam during the last 20 years. Chapters in this part discuss and analyze barriers to the development of Vietnamese education, impact of the Industry 4.0 technology on education, quality assurance of online and blended education, professional development for educational managers and teachers in the Industry 4.0, the application of lesson study models for the training of teachers in Vietnam, and partnership between higher education and industry.

The book begins with Chapter 1 titled barriers to the development of Vietnamese higher education by L. T. M. Nguyen et al. (2022). In order to achieve the fundamental and comprehensive renovation goals of Vietnamese higher education, it is necessary to identify which barriers are and will hinder. This chapter presents barriers to the development of Vietnamese education in three issues for higher education: The first section is about perceptions. Research on educational science is not basic; many guidelines and policies on education are mainly based on experiences, dealing with the situation, not based on solid theoretical foundation, so it does not guarantee the best consistency and uniformity in proposing and implementing undertakings and solutions on education. The second section is about making practices, lack of consistency, synchronization, patchwork. Broadly speaking, there is a lack of coherence in dealing with educational issues with other socio-economic issues; lack of uniformity of economic, administrative, and judicial reforms with education reform. The third section is about human resources, focusing on the unprofessional status of the majority of educational managers at management levels as well as inadequacies in the number, quality, and structure of staff of teachers/lecturers. The renovation process has not mobilized, gathered, and promoted the wisdom of a large number of intellectuals in the country as well as outside of Vietnam. The structure of the chapter is presented as follows: The first is a description of the current situation of Vietnamese education in general and higher education in particular with three tasks: Improving people's knowledge, training human resources, fostering talents. The second part points out the causes of inadequacies and weaknesses in the field of education and the requirements imposed on education. It then identifies the

contradictions and the basic barriers to higher education in Vietnam and proposes solutions to overcome the barriers.

The second chapter is by Tran et al. (2022). This chapter discusses the impacts of the Fourth Industrial Revolution on human resource development in Vietnam. Specifically, it describes the groundwork of Human Resource Development (HRD) including its definition, components, a systems model of performance improvement, and a set of principles that HRD heavily relies on. From these points, the eclectic theoretical foundations of HRD, comprised of economic, systemic, and psychological theories, along with its specific theories, are presented. The integration of the three core components of HRD and their interaction with ethical concerns are then highlighted to maintain the balance of development and ethics in the workplace. The chapter then introduces technology trends in the Fourth Industrial Revolution, such as hyperautomation, multiexperience, and democratization, before discussing both the positive impacts and challenges of the Revolution on the development of HRD in the context of Vietnam. Despite various problems that Vietnam is encountering to keep up with the fast-changing development of Industrial 4.0, suggestions are offered to mitigate them and develop skilled employees in Vietnam.

The book continues with Chapter 3 discussing quality assurance of online and blended learning in Vietnam by C. H. Nguyen et al. (2022). Thanks to the 4th Industrial Revolution, online and blended learning have been massively implemented in many countries across the world. As a transition economy in the Asia-Pacific region, Vietnam has considered online and blended learning important modes of teaching and learning in its national education system. However, controlling and ensuring the quality of these two training modes in Vietnamese higher education have been quite challenging. This chapter, therefore, discusses and analyses aspects regarding quality control and quality assurance of online and blending learning in Vietnam. To begin with, the study provides an overview of Vietnamese national education system, with a focus on higher education. It then reviews the government policies on online and learning education. The chapter continues to discuss how online and blended learning have been implemented in Vietnamese universities. Additionally, the third section outlines the quality assurance and accreditation of higher education institutions and programs in Vietnam. Next, the fourth section discusses the policies and tools from the government to control and ensure the quality of online and blended learning in Vietnam and how they have been implemented in Vietnamese higher education institutions. Furthermore, the chapter presents challenges and difficulties in the quality assurance of online and blended education in Vietnamese higher education. The final section of this chapter proposes recommendations for the government (at the macro level), accreditation agencies (at the meso level), and higher education institutions (at the micro level) on how to implement the quality assurance of online and blended learning effectively in Vietnam.

Chapter 4 by Pham et al. (2022) outlines professional development for higher education lecturers in education science based on competency framework. In

the era of industrialization and modernization, especially given the Industrial Revolution 4.0, the roles and responsibilities of higher education lecturers (hereafter referred to as lecturers) with their three main tasks of teaching, scientific research, and serving to community are becoming more and more crucial. The professional development of lecturers in the field of education science, especially the development of their research capacity, is currently very limited, reflected through the small number of studies published in ISI/SCOPUS indexed journals in the field of education science compared to other sciences. This chapter will focus on study and development of a professional competency framework and propose solutions for professional development for lecturers in the field of education science based on such competency framework, with three main parts: Part 1 – Contents of professional development for lecturers in the field of education science: roles, perception, and professional development paths of lecturers; Part 2 – Development of a professional competency framework for lecturers in the field of education science in line with their job positions and requirements of the higher education reform in Vietnam: The capacity framework is built on mission of the school with standards, criteria at levels corresponding to the professional titles of lecturers; Part 3 – Solutions for professional development for lecturers in the field of education science based on competency framework: solutions to the planning, recruitment, use, training, retraining of, and remuneration for lecturers, which contribute to forming a contingent of lecturers with adaptive capacity, especially scientific research capacity responsive to changes brought about by the education reform and international integration.

In Chapter 5, Nghiem et al. (2022) highlight capacity building for managerial staff of functional departments in Vietnamese universities. In recent years, higher education in Vietnam has been making a drastic change in its "crucial and comprehensive" reform. One of the solutions which is considered a "breakthrough" in the reform is the determination of job positions in universities. Since 2012 this has been a mandatory task for all public universities in Vietnam. Therefore, capacity building for holders of each job position is also considered a mandatory, essential, and urgent task. Management staff of functional departments are in fact holders of management positions in universities. Their task is to provide advice and consultancy to the rector, which is important to the formation of development policies and strategies of a university. However, in reality, their capacity is still limited to meet the requirements of their job positions. This chapter focuses on proposing solutions suitable for the specific functions and tasks of management staff of functional departments in Vietnamese public universities to build their capacity responsive to the new requirements of their existing job positions. To achieve this research objective, the chapter includes 3 parts: Part 1: Determination of job positions and competency framework for management staff of functional departments in public universities to meet requirements of the crucial and comprehensive reform of Vietnamese higher education; Part 2: Situation of capacity building for management staff of functional departments in Vietnamese public universities (reflected through

findings of a survey of 7 public universities across the country, involving 500 respondents from 5 groups); and Part 3: Proposed solutions to build capacity for management staff of functional departments in Vietnamese public universities to meet requirements of job positions (solutions relating to planning, selection, attraction, appointment, use, evaluation, training, remuneration, and working environment for management staff of functional departments) so that they can promote their capacity to best meet the requirements of middle management positions in universities).

Chapter 6 written by N. D. Nguyen and Q. H. Pham (2022) focuses on teacher education curriculum in Vietnam: obstacles and new challenges. Fundamental and comprehensive renovation of education and training sets out urgent requirements in reforming general education and training programs at the universities. One of the requirements is to improve the quality of human resources in order to meet the constantly changing demand of knowledge and skills in the new labor market. This chapter poses a great mission for training teachers to satisfy the needs of general education, obstacles, and challenges. Because of the trend of globalization and international integration, universities of education need to train teachers to have the ability to develop learners' competence. In other words, teacher training – the key personnel of education, plays a very important role in the context of educational reforms to meet the requirements of human resources for international integration and the knowledge economy. This chapter also focuses on the international experience of teacher training, which focuses on the experience of some countries in Europe, America, East Asia, and Vietnam. The experience of teacher training is considered in many aspects: philosophy and training objectives, training model, curriculum development process, teaching methods, outcome learning assessments, and policies for teachers. As a result, this chapter proposes some new challenges and solutions for developing the teacher training curriculum that meet the demand of the new labor market.

Chapter 7 by T. T. T. Le et al. (2022) presents the development of process assessment capacity for pedagogical students. In 2018, the Ministry of Education and Training of Vietnam issued a new comprehensive general education program, stating:

> The Ministry of Education and Training will study step by step the application of the achievements of measurement science and technology, evaluation in education and international experience in improving the quality of evaluation of educational results, classifying students in educational institutions and using the evaluation results in a wide range as a quality control tool for evaluation at educational institutions, supporting the objective of developing learners' qualities and competencies of the new general education program.

The development of career competencies for pedagogical students has been of interest to universities, especially in developing teaching capacity. However,

in developing teaching capacity in universities, students only focus on practicing writing skills, planning, lecture presentation, handling pedagogical situations . . . and few pay attention to developing process evaluation capacity in teaching. Therefore, in the process of training students about assessment methods, lecturers only focus mainly on the method of designing assessment tools but do not really pay enough attention to the method of observing learning behavior. Episode, methods of timely learning behavior adjustment impact students' progress; method of commenting on student's learning results. Meanwhile, the method of observing and assessing learning behaviors is the method used to collect the most common information during the evaluation process, while the adjustment of teaching methods immediately impacts students' progress. This is very important in the teaching process. We recommend measures to develop process assessment capacity for students in teaching, through the following main forms: Provide knowledge of assessing the process in teaching and initially training guest skills process costs in teaching through the analysis of short teaching videos; organize for students to practice the skills of process assessment in teaching on presumptive elementary school students; train students to discover and correct students' mistakes in learning through optional elective study or teaching method module; organization for students to experience the assessment of teaching process through the process of training and pedagogical practice in high school.

In Chapter 8, N. T. Nguyen et al. (2022) review the application of lesson study models for the training of teachers in Vietnam. In Vietnam, the professional training is an annual mandatory task for every teacher to constantly improve the quality of education. Through the process of fostering their own professional competence, teachers continually improve the way to teach and support students in order to improve the quality of their learning. Professional development of teachers will achieve the best possible sustainability and ideals when it is done in a supportive learning community; It is necessary to make the professional development of the teachers associated with the learning of students and renovating the curriculum, it must be closely integrated into the daily life of the schools. Lessons study derived from Japan that is an approach to professional learning which emphasizes teachers designing the lesson plans together, contemplating, analyzing, and sharing the reality of the student's learning. In fact, lessons study has a focus on studying students' learning through specific topics, lessons, subjects, and classes. The specific and core activities of teachers during lesson study include: designing and conducting lessons with order observing, pondering, and sharing about the reality of students' learning in those lessons to find out how students learn. What do teachers need to do to make students learn really and effectively? As such, the lesson study model mentioned both teacher and student learning through student learning so that the teachers are learning and developing their own expertise. This chapter will cover the application of a lesson study model in teacher training in Vietnam. The first part of the chapter will introduce an overview of the lesson study model in Vietnam, including an overview of

lesson research – lesson model research, which applied in high schools in Vietnam. The second part will focus on describing the current situation of professional training of teachers through the lesson study model in Vietnam. Descriptive results are based on case studies of teachers in Nghe An, Thanh Hoa, and Ha Tinh provinces. The final section of the chapter will propose solutions on how to use the lesson study model to improve professional competencies for teachers in Vietnam.

Chapter 9 written by L. T. M. Nguyen et al. (2022) discusses a partnership between higher education institutions and industry in Vietnam. The chapter presents the results of evaluating the current situation of cooperation between higher education institutions and industry in Vietnam and analyses the factors affecting the establishment of the relationship and the level of cooperation between the institutions and industry. Evaluation results show that this level of cooperation has an impact on the quality of trained human resources of universities, in which the products of many higher education institutions do not meet the requirements of the market labor. As a result, the chapter also presents opportunities to expand forms of cooperation in a new context, improving university work strategies to work more closely with industry. The study also proposes policies to promote university-business cooperation, focusing on motivation, building a culture of cooperation, building trust about cooperation, and improving institutions' mechanisms, policies, and strategies for sustainable development of this partnership. Finally, the chapter presents some challenges for Vietnam's higher education in the context of the Industrial Revolution 4.0 and the university's training product standards to meet the requirements of the labor market.

The second part of the book focuses on the innovation in general education. Chapters in this part highlight the use of ICT in mathematics teaching in general education, M-learning, B-learning, realistic mathematics education (RME), realistic assessment in general education, and the development of the general education and human resource development for ethnic minority groups. All the above issues have been analyzed as the impact of the Industry 4.0.

Beginning in this part, Chapter 10 by C. M. Le et al. (2022) outlines the application of information technology in mathematics teaching in high schools in Vietnam. In the context of the strong development of educational science and technology, with the need to innovate general education, the application of new technologies in education in general and in teaching in particular is an indispensable thing. However, this application depends on many factors, including institutional readiness. This chapter examines the use of information technology by teachers in teaching high school mathematics. We will first analyze the evolution of a number of institutional policies to encourage and guide the use of information technology in the past ten years. The analysis is also intended to identify the technological means recommended by the institution. Next we focus on studying the training programs of a number of teacher training universities to clarify the knowledge of methods and technologies provided to math students in relation to the analysis of high school program and textbook. Finally,

we analyze the application of some of the technologies used by teachers to clarify how these technologies are used in high school math teaching.

In Chapter 11, Trinh et al. (2022) present self-study activities of Vietnamese high school students via mobile devices. Mobile device is a popular classroom tool in the era of the Industrial Revolution 4.0. The availability of smartphones at normal prices leads to increasing use of applications for various aspects of life such as communication, tourism, entertainment, productivity, and study. Thanks to the support of mobile devices with access to the Internet, a mobile learning method has been established: M-learning. Over the past decades, many studies about exploitation of the potentials of mobile phones for educational purposes in a variety of contexts have been implemented. The findings of recent studies on the use of mobile devices in different learning environments show the improvement in the students' study performance. The chapter presents M-learning application in organization of self-study activities of students in Vietnam. The chapter consists of two main parts: The first part presents an overview of M-learning and studies on M-learning application in education in Vietnam. On this basis, the implementation context and M-learning systems in Vietnam shall be analyzed and clarified, and differences in Vietnam's M-learning implementation studies identified as a case study at a developing country shall be determined. The second part of the chapter presents the M-learning system model in the Vietnamese context to support self-study students based in three perspectives: Ensuring feasibility in Vietnam's practical conditions, promoting positive elements of the M-learning model and pedagogy. In addition, some study findings and experiments on harnessing mobile phone applications aimed at improving the efficiency of self-studying Mathematics for 12th-grade high school students in Vietnam shall be presented. The findings show that the M-learning model is designed in a flexible and useful manner. Electronic learning materials has applied theoretical viewpoints on self-study and strengths of M-learning into supporting mathematics self-study activities, satisfying the self-study requirements, and contributing to improving the Mathematics self-study quality for 12th-grade high school students in Vietnam.

Chapter 12 written by H. T. T. Le (2022) presents the application of blended learning in teaching and learning at high schools in Vietnam. In the context of the Industrial Revolution 4.0, science and technology in Vietnam are remarkably developing; the application of information technology and modern means to teaching is a necessary issue and a requirement for each teacher in high schools. Previously, face-to-face teaching and learning were a traditional form of teaching in Vietnam and today, when information technology is on the way of development, online teaching and learning are drawing great attention. However, each form of learning has its own advantages and disadvantages and the advantages of one form are the disadvantages of the other. Therefore, blended learning can be used in the teaching and learning activities. Blended learning originates in developed countries after the exploitation of E-learning did not show much in its success. Technology is convenient, fast, and cost-effective, but it makes it easier for learners to lose their motivation in learning and direct communication

opportunities like in traditional classes. Thus traditional lessons still retain many values that cannot be compensated by self-study with computers. On the contrary, with the explosion of information technology and the advent of online applications, pure communication cannot provide learners with loads of knowledge and updated information. With this learning form, teachers and learners will have more access to the subject in a more comprehensive way. This chapter presents the application of blended learning in teaching in high schools in Vietnam. The chapter is presented with three main parts: Part 1 gives an overview of blended learning in Vietnam; analyzes merits and demerits of blended learning; and proposes a model for applying blended learning in teaching and learning in high schools in Vietnam. Part 2 presents the real situation of teaching and learning under the blended learning model in Vietnam through the case study results in Thua Thien Hue province by data analysis based on the questionnaires of 450 students and 50 teachers who are teaching and learning in Hue City. Part 3 introduces the blended learning model through teaching and learning physics at high schools and the experiment results with a sample of 200 students taking the course in Hue City, Thua Thien Hue Province.

Chapter 13 by T-T. Nguyen et al. (2022) reviews Realistic Mathematics Education (RME) in Vietnam. In the last 20 years, RME has proved itself as an effective approach in mathematics teaching being applied internationally and nationally at the first steps. This chapter aims to investigate the recent trends of RME in Vietnam from 2000 to 2020 (20 years of curriculum innovation). First, it reviews the extant literature related to the subject from other countries, especially from the Netherlands, the US, and Indonesia to establish a framework representing key components of RME in terms of policies and practices. Second, the RME framework introduced in the first section would be used to illustrate (i) to what extent RME is regulated in recent policies in Vietnam and (ii) to what extent RME is implemented in actual practice in Vietnam. Document analysis and participant observation were undertaken by the authors to address the second purpose of this study. Several implications, derived from the lessons from other countries, would be proposed as sustainable and suitable guidelines for further practical and efficient application of RME in Vietnam. Having a young population and a large proportion of citizens currently at the school age, Vietnam's new target on developing mathematics provides a fertile ground for RME in terms of practices and research. Given the circumstance, this research aims to contribute a foundation for further study on RME in Vietnam. Further research should undertake more empirical research focusing on crucial problems related to the implementation of RME in Vietnam such as developing Vietnam's adaptation to assess mathematics outcomes based on the theoretical basis of RME and ways to encourage teachers to apply fully RME into their practice.

In Chapter 14, H. T. T. Nguyen et al. (2022) discusses authentic assessment in teaching at high schools in Vietnam. The chapter focuses on introducing and exploiting a set of authentic assessment tools used in the teaching process to enhance the learning outcomes of high school students in Vietnam. The first part analyses the situation on the use of forms of evaluation of student

performance; this section will help clarify the difficulties encountered during the student's assessment of student achievement; from that point, it is recommended to select the evaluation method to enhance the learning results to meet the renovation requirements of the educational program for high school students in Vietnam. In the second part, the author will briefly outline authentic assessment concept of student learning outcomes; this is one of the assessments used in the teaching process with the goal of evaluating the ability of students to complete tasks in real-life contexts. The third part presents the principles, the process of developing an authentic assessment toolkit in the teaching process according to three types of standards: content standards, standard process, and standard value. The fourth part introduces a set of authentic assessment tools for teaching some specific subjects in high school education programs. In this section, the author will introduce an example of an authentic assessment toolkit in teaching physics in grades 10, 11, and 12 in Vietnam. The next section will present the results of the exploitation process using a set of authentic assessment tools in the teaching process for students at some high schools in Vietnam. Finally, the proposals after the teaching experiment process help students achieve higher academic results and meet the renovation requirements of the educational program for high school students in Vietnam.

Chapter 15 written by La et al. (2022) focuses on teaching reading informational texts for secondary students in Vietnam. Teaching informational reading to secondary students in several countries in the world is not new, but in Vietnam, this is a new point in the General Education Curriculum in Philology, issued in 2018. Philology teacher of Vietnam has long taught students to read for comprehension in literature texts, so there is no method and skill to teach informational text to students. This chapter researches and proposes a number of solutions to teach reading comprehension in informational text for secondary students in Vietnam to achieve high efficiency, in order to meet the requirements of the new General Education Curriculum in Philology. The research is conducted through the analysis of literacy teaching comprehension of informational text in the current Philology curriculum in Vietnam and analyzing, as compared with literacy teaching comprehension of informational text in programs and textbooks of several countries in the world. Since then, the search has proposed a number of teaching solutions to reading comprehension for information text for secondary students in Vietnam, including immediate and long-term solutions to change teachers' awareness about the importance and significance of literacy teaching comprehension informational text for secondary students, adjusting the training programs of the pedagogical schools in the direction of supplementing the modules on this content, and giving specific guidance on the methods and techniques for teaching reading comprehension for informational text in schools. The chapter also shows that this is an important mission to be implemented in the context of educational reform in Vietnam to meet the goals of general education.

The final chapter, Chapter 16 by Hoang et al. (2022), highlights challenges for the implementation of the 2030 agenda educational goals for ethnic minority

groups in Vietnam. Over the past few years, the development of education in ethnic minority areas in Vietnam has been especially concerning to the government. In 2017, Vietnam enacted a national plan for the implementation of the sustainable development goal by 2030, in which the overall goal of education is: "By 2030, Vietnam will have strived to ensure a high quality, fair, comprehensive education system and to promote lifelong learning opportunities for everyone." However, Vietnam is a country with low average income, and many areas of ethnic minority groups still face major challenges. Residence, high mountainous living areas, natural disasters, high poverty rate, gaps in the quality of education, awareness on the role of education, and inferiority complex are the causes leading to the lack of schooling and drop-out of some pupils in ethnic minority areas. These are barriers to the implementation of the educational goals in the 2030 Agenda. This chapter conducts research and provides results on the difficulties and barriers to improve the quality of education in ethnic minority areas in Vietnam through data collected from survey questionnaires and research reports. From there, policy recommendations on raising awareness and promoting internal resources of ethnic minorities themselves will be proposed. In particular, aiming to create human resources, getting local teachers who are ethnic minorities to participate in management and teaching is one of the core national education goals.

Concluding Remarks

This book explores the innovation in Vietnamese education under the impact of the Fourth Industrial Revolution. Vietnam is considered a booming country with its continued economic rise. One of Vietnam's strategies to achieve further economic growth is the innovation and modernization of its education system. With about 24 million students among the population of nearly 100 million people, Vietnam has invested lots of its resources on education. Modern technologies have applied in teaching, learning, research, and management. It is worth investigating how a developing country like Vietnam implemented Education 4.0 in the classroom. With two main parts and 16 chapters, the book will help readers understand the achievements and challenges of Vietnamese general education and higher education in the era of the Industry 4.0. Specifically, Part I focuses on the innovation in higher education specializing in educational policy and management in Vietnam. Chapters in this part discuss the technology barriers to the education system, quality assurance of new teaching and learning modes (online, blended), professional development for teaching and managerial staff, and partnership between higher education and business. Part II focuses on innovation in innovations in general education. Chapters in this part mainly discuss the use of scientific technologies in teaching, learning, and assessment. Implementing M-learning (mobile learning), B-learning (blended learning), authentic assessment and RME (realistic mathematics education) in Vietnam, and education and training for ethnic minority groups is discussed and analyzed. Overall, this book will provide readers with information of how the Industry 4.0 has had impact on Vietnamese education.

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