

Factors Influencing the Teaching of Critical Thinking to Primary School Students by Primary School Teachers in the Mountainous Region of Northern Vietnam



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ABSTRACT: This article examines the factors influencing the teaching of critical thinking development for students by primary school teachers in northern mountainous areas of Vietnam. The 21 survey questions were designed via google form and sent to 128 primary school teachers in the mountainous northern region of Viet Nam. The exploratory factor analysis (EFA) method was used to analyze the study results. Research results show that there are six factors that influence primary school teachers' teaching to develop critical thinking for students: 1) Teaching skills develop critical thinking; 2) Teacher attitude; 3) The teacher's understanding of critical thinking; 4) The interest of the student's parents; 5) Influence from colleagues and managers; 6) Critical thinking assessment activities. The total variance extracted by these 6 factors explains 68.477% of the 21 observed variables. The results of this research can help primary school teachers in the mountainous north of Vietnam better understand what is needed to develop students' critical thinking and apply appropriate teaching methods to help students develop these skills.

KEYWORDS: skills, critical thinking, primary, teachers, Vietnam

I. INTRODUCTION

The Association for the Assessment and Teaching of 21st Century Skills (AT21CS) comprises countries such as Australia, Finland, Portugal, Singapore, the United Kingdom and the United States, specializing in training and assessing 21st century skills, knowledge, attitudes, values and ethics into 4 categories: 1) Ways of thinking including creative thinking, innovation, critical thinking, problem solving, decision-making and learning ways; 2) Working methods include communication and teamwork; 3) Working tools include general knowledge and understanding of information and communication technologies; 4) Living in a world that includes citizenship, life and career, personal and social responsibility, including cultural awareness and competence (Saavedra & Opfer, 2012). Critical thinking is one of the important skills belonging to the thinking group and it is indispensable in the life of every person in the world. Critical thinking is the process of evaluating or grading based on a number of previously accepted criteria that requires sustained effort to examine any belief or hypothesis taking into account the evidence that supports it and the further conclusions that are targeted. Different definitions of critical thinking include the ability to evaluate problems in many different dimensions logically and creatively.

Edward Glaser defined critical thinking as: "(1) A willingness to think thoughtfully about issues and topics that arise in one's personal life; (2) An understanding of the method of investigation and rational reasoning; (3) Are some skills in the application of such methods. Critical thinking requires sustained effort to examine any belief or hypothesis considering the evidence that supports it and the further conclusions targeted." (Glaser, 1942). Robert Ennis says, "Critical thinking is reflective, rational thinking that focuses on deciding what to believe or do." (Ennis, 1989). Facione (1990) argues that critical thinking is "the purposeful judgment, self-adjustment of the results of interpretation, analysis, evaluation, and inference, as well as the interpretation of evidence, concepts, methodologies, criteria, or consideration of the contexts upon which to make judgments." (Facione, 1990). Jennifer defines critical thinking as the ability to evaluate problems in many different dimensions logically and creatively (Moon, 2007). Critical thinking also involves evaluating the thought process — the way of reasoning that leads to our conclusions or the factors considered in the decision-making process (Halpern, 2013).

Critical thinking is a metacognitive process, which, through purposeful, reflective judgment, increases the chances of reaching a logical conclusion to an argument or solution to a problem. The development of critical thinking is becoming extremely important as it allows individuals to gain a more complex understanding of the information they encounter and promotes good decision-making and problem-solving in real-world application (BUTLER et al., 2012; Halpern, 2013; K. Y. Ku, 2009).

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Characteristics of critical thinkers will: find contradictory evidence; consider the problem in both advantages and disadvantages; prudence in the choice of actions; verify the reliability of information and its use; (Halpern, 2013).

From the above conceptions, it is shown: Critical thinking is higher-order thinking of cognitive activity. Critical thinking helps people reason in an open direction. Use critical thinking to prove a certain statement is right or wrong, evaluate issues objectively, fairly, thoroughly with your own deep knowledge. Developing critical thinking is an important goal of modern education, as it equips students with the necessary competencies to reason about social issues in the context of revolution 4.0. To develop that competency, students must go beyond acquiring textbook knowledge and learn to build skills related to evaluating information, identifying solid evidence and reasoning. Critical thinking skills are not only important for students to do well in school, but also necessary for future careers because the realities of life require us to make good, careful decisions every day (K. Y. L. Ku, 2009). Critical thinking skills are one of the criteria for assessing the level of academic perfection of students. This skill enables students to evaluate and reflect on the facts and data they find through critical thinking (Sari et al., 2019). The use of critical thinking helps students evaluate the arguments of others and their own, resolve conflicts, and come up with rational solutions to complex problems (Behar-Horenstein & Niu, 2011).

II. MATERIALS AND METHODS

A. Participants

The questionnaire was designed and sent to primary school teachers (survey participants) via zalo, facebook between February 10, 2023, and April 6, 2023. The number of respondents was 236, with 108 invalid responses because they chose only one option. The final data after filtering for inclusion in the analysis was 128 votes.

Table 1. General information about participants (n= 128)

General information	Frequency	Percentage
Gender		
Male	31	24.2
Female	97	75.8
Education		
Bachelor	108	84.4
Master	19	14.8
PhD	1	0.78
Age		
Under 30	25	19.5
30-40	17	13.3
40-50	55	43.0
Over 50	31	24.2
Experience (years)		
Under 5	24	18.7
5-10	13	10.2
10-15	14	10.9
Over 15	77	60.2
Total	128	100

The data in Table I shows the information of the survey participants. There were 31 male teachers accounting for 24.2% of the observed sample, while female teachers accounted for the large number (75.8%). Only 1 teacher with postgraduate degree participated in the survey (0.78%), college-level teachers accounted for 84.4%, the rest were university (14.8%). 19.5% of young teachers are under the age of 30. Between 30 and 40 there were 17 teachers (13.3%). The number of teachers between the ages of 40 and 50 accounted for the largest number of respondents (43.0%). Teachers over the age of 50 accounted for 24.2%. In terms of seniority, 18.7% of teachers have less than 5 years of seniority. 10.2% of teachers have a seniority of 5 to 10 years. 10.9% of teachers have a seniority of 10 to 15 years, and over 15 years of work up to 60.2%.

B. Instrument and measurements

The study used 4 questions to collect information of respondents (gender, age, qualifications, seniority), and also used 21 questions to deeply understand the teaching and development of critical thinking for students of primary teachers in northern mountainous areas of Vietnam. Participants answered survey questions expressing their level of agreement or disagreement with each content using the Likert scale (1 = strongly disagree, 2 = disagree, 3 = wonder, 4 = agree, 5 = strongly agree).

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Table 2. Questions used in the survey

Q1	Teachers know about the role of critical thinking.
Q2	Teachers know about the characteristics of critical thinking.
Q3	Teachers know how to develop critical thinking skills for students.
Q4	The teacher identifies the manifestation of students' critical thinking.
Q5	Teachers identify teaching methods that develop critical thinking in students.
Q6	Teachers design teaching activities that develop critical thinking for students.
Q7	Teachers can organize activities to develop critical thinking for students when teaching.
Q8	Teachers do their own research to know about teaching, develop critical thinking for students.
Q9	Colleagues actively exchange, develop topic plans using critical thinking.
Q10	Administrators encourage the organization of teaching topics to develop critical thinking skills at school.
Q11	Colleagues actively exchanged and developed topic plans using critical thinking skills.
Q12	Teachers actively propose in the professional team the development of lessons to develop critical thinking skills.
Q13	Students always want to have the opportunity to express their ideas and opinions when studying, always have curiosity, ask questions about the information, ideas, arguments that teachers and arguments give.
Q14	The spirit of cooperation of students when participating in learning activities organized by teachers and teachers.
Q15	Teachers feel ready to teach and develop critical thinking in students.
Q16	Teachers feel confident to teach students to develop critical thinking.
Q17	Teachers identify the necessity of developing critical thinking.
Q18	Teachers are interested in using measures to evaluate students' activities and learning products.
Q19	Parents of students support the teacher's use of active teaching methods.
Q20	Parents support facilities for teachers to organize teaching to develop students' capacity.
Q21	Attitude and interest of students' parents to teaching.

C. Data Analysis

In the current study, the exploratory factor analysis (EFA) method was used to analyze the data. EFA is a quantitative method that reduces the number of observations into the main factors influencing a particular event or phenomenon (Hair, 2009). The purpose of this method is to define the basic structure of a set of variables, where each index is assumed to be a linear function of one or more common factors and a single factor in the EFA. Typically, factors in EFA are hidden, unobservable variables that affect more than one metric in a set of indicators. The characteristic feature of EFA is that the occurrence of latent variables is thought to affect only one indicator in the set of indicators, without regard to other correlations that need to be considered. Before conducting EFA, the team used descriptive statistics to assess applicability to 21 survey questions. From the mean and standard deviation of responses on each item in the statistics table, the team eliminated answers close to 1 or 5 to avoid degrading the correlation quality between the remaining items.

III. RESULT AND DISCUSSION

The EFA method was used to analyze a dataset consisting of 21 questions using the Varimax rotation. The results of data processing by SPSS software have made it possible to extract the value specific to each factor. To assess the appropriateness of sampling for analysis, the study used the Kaiser-Meyer-Olkin measurement with an achieved value of 0.786 (refer to table 3). This value is higher than Kaiser's (1974) proposed limit of 0.6 and Kim's (1978) of 0.5 (Kim & Mueller, 1978).

Table 3. KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.786
Bartlett's Test of Sphericity	Approx. Chi-Square	1230.358
	df	210
	Sig.	.000

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Bartlett's test of sphericity results show values $\chi^2(210) = 1230.358$ and $p < 0.000$, indicating a correlation between question items large enough to perform a discovery factor analysis.

A. Exploratory factor analysis

Table 4. Eigenvalue, Total Variance Explained of factors.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.973	28.442	28.442	5.973	28.442	28.442	3.252	15.488	15.488
2	3.435	16.359	44.801	3.435	16.359	44.801	2.894	13.782	29.270
3	1.422	6.772	51.572	1.422	6.772	51.572	2.365	11.260	40.530
4	1.319	6.280	57.852	1.319	6.280	57.852	2.170	10.334	50.864
5	1.155	5.501	63.353	1.155	5.501	63.353	1.852	8.819	59.684
6	1.076	5.124	68.477	1.076	5.124	68.477	1.847	8.794	68.477
7	.965	4.594	73.071						

From the data sheet collected from 21 questions, 6 factors were identified influencing the teaching development of creative thinking of primary teachers, with an initial characteristic value greater than 1. In total, these factors contribute 68.477% to the teaching process of developing creative thinking, while the remaining 31.523% are others. A detailed breakdown of the percentages explained for each factor is as follows: factor 1 (28.442%), factor 2 (16.359%), factor 3 (6.772%), factor 4 (6.280%), factor 5 (5.501%), and factor 6 is 5.124%. From this result, useful information can be drawn about developing creative thinking for students in the teaching process.

Table 5. Rotated Component Matrix

	Component					
	1	2	3	4	5	6
Q05	.808					
Q17	.793					
Q07	.752					
Q06	.679					
Q04	.668					
Q16		.707				
Q15		.691				
Q14		.690				
Q12		.649				
Q13		.644				
Q03			.806			
Q02			.764			
Q01			.716			
Q21				.851		
Q20				.741		
Q11				.603		
Q09					.709	
Q08					.639	
Q10					.515	
Q18						.752
Q19						.752

b. Naming the factors

Table 6. Naming the factors

	Teaching skills develop critical thinking	Loading
Q5	Teachers identify teaching methods that develop critical thinking in students.	.808
Q17	Teachers identify the necessity of developing critical thinking.	.793

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Q7	Teachers can organize activities to develop critical thinking for students when teaching.	.752
Q6	Teachers design teaching activities that develop critical thinking for students.	.679
Q4	The teacher identifies the manifestation of students' critical thinking.	.668
	Attitude of teachers	
Q16	Teachers feel confident to teach students to develop critical thinking.	.707
Q15	Teachers feel ready to teach and develop critical thinking in students.	.691
Q14	The spirit of cooperation of students when participating in learning activities organized by teachers and teachers.	.690
Q12	Teachers actively propose in the professional team the development of lessons to develop critical thinking skills.	.649
Q13	Students always want to have the opportunity to express their ideas and opinions when studying, always have curiosity, ask questions about the information, ideas, arguments that teachers and arguments give.	.644
	Teachers' understanding of critical thinking	
Q3	Teachers know how to develop critical thinking skills for students.	.806
Q2	Teachers know about the characteristics of critical thinking.	.764
Q1	Teachers know about the role of critical thinking.	.716
	The attention of the student's parents	
Q21	Attitude and interest of students' parents to teaching.	.851
Q20	Parents support facilities for teachers to organize teaching to develop students' capacity.	.741
Q11	Colleagues actively exchanged and developed topic plans using critical thinking skills.	.603
	Impact from colleagues and managers	
Q9	Colleagues actively exchange, develop topic plans using critical thinking.	.709
Q8	Teachers do their own research to know about teaching, develop critical thinking for students.	.639
Q10	Administrators encourage the organization of teaching topics to develop critical thinking skills at school.	.515
	Critical thinking assessment activities	
Q18	Teachers are interested in using measures to evaluate students' activities and learning products.	.752
Q19	Parents of students support the teacher's use of active teaching methods.	.752

c. Discussion

Results from the pivot factor matrix table show that factors have been identified. According to Hair (Hair, 2009) when naming factors, preference should be given to variables with the greatest load factor. So, we have named the factors that influence the development of creative thinking for students by primary school teachers as follows: 1) Teaching skills develop critical thinking; 2) Teacher attitude; 3) Teachers' understanding of critical thinking; 4) The interest of the student's parents; 5) Influence from colleagues and managers; 6) Critical thinking assessment activities. (Hair, 2009)

The identification of factors influencing the teaching and development of critical thinking for primary students by primary teachers in the northern mountainous region is important. First of all, primary school teachers need to improve their professional capacity, practice teaching skills to develop critical thinking; Second, the attitude factor also greatly influences the development of critical thinking for students. If teachers have faith, interest and readiness, it will contribute to the development of critical thinking for students; Next, teachers need to be equipped with knowledge and have a certain understanding of critical thinking to identify specific measures that contribute to improving critical thinking for learners. In addition, the attention of students' parents also has the effect of encouraging teachers to constantly learn and innovate to teach effectively. Administrators and colleagues also have a certain role to play in influencing teaching and developing critical thinking of teachers. Finally, the assessment of learners' interest in critical thinking also impacts the teaching of primary school teachers.

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V. CONCLUSION

The study was conducted to find out the factors influencing the teaching and development of critical thinking for students by primary school teachers in northern mountainous areas of Vietnam. 21 questions were suggested based on previous studies and forwarded to survey participants via social networks. Based on evidence from 128 valuable samples collected, the results of the discovery factor analysis show that there are 6 main factors influencing the teaching of critical thinking development to students by primary school teachers in northern mountainous areas of Vietnam: 1) Teaching skills develop critical thinking; 2) Teacher attitude; 3) Teachers' understanding of critical thinking; 4) The interest of the student's parents; 5) Influence from colleagues and managers; 6) Critical thinking assessment activities. These findings can be used as a reference for other research or as a problem for further research by scholars interested in developing critical thinking for students in teaching.

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