APPLYING CO-CONSTRUCTIVE TEACHING IN PROFESSIONAL DEVELOPMENT TO ENHANCE CYBERSPACE CRITICAL RESPONSE COMPETENCE AMONG LECTURERS AT MILITARY ACADEMIES AND OFFICER SCHOOLS

VẬN DỤNG DẠY HỌC ĐỒNG KIẾN TẠO TRONG BỒI DƯỠNG NĂNG LỰC PHẢN BIỆN TRÊN KHÔNG GIAN MẠNG CHO GIẢNG VIÊN Ở CÁC HỌC VIỆN, TRƯỜNG SĨ QUAN QUÂN ĐỘI

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Abstract - Critical response competence in cyberspace is increasingly necessary for lecturers at military academies and officer schools amid the rapid development of digital technologies, social media, and artificial intelligence (AI). Based on literature analysis and synthesis, this article clarifies the foundations and key areas of applying co-constructive teaching to develop this competence. The study identifies four areas: defining critical response issues and tasks; conducting independent inquiry and developing arguments; engaging in discussion, questioning, verification, and joint refinement of critical response content; and evaluating outcomes, receiving feedback, and making revisions. This process aims to develop five competence components: identifying and evaluating critical response content; collecting and processing information; writing critical response news items and articles; using information technology and AI; and reviewing and evaluating critical response outcomes.

Keywords - Co-constructive teaching; cyberspace critical response competence; lecturer professional development; artificial intelligence; military academies and officer schools.

Tóm tắt - Năng lực phản biện trên không gian mạng ngày càng cần thiết đối với giảng viên ở các học viện, trường sĩ quan Quân đội trong điều kiện công nghệ số, mạng xã hội và trí tuệ nhân tạo (AI) phát triển nhanh. Trên cơ sở phân tích, tổng hợp tài liệu, bài viết làm rõ cơ sở và nội dung vận dụng dạy học đồng kiến tạo trong bồi dưỡng năng lực này. Nghiên cứu xác định bốn nội dung: xác lập vấn đề và nhiệm vụ phản biện; nghiên cứu độc lập, hình thành lập luận; trao đổi, chất vấn, kiểm chứng và cùng hoàn thiện nội dung phản biện; đánh giá, tiếp nhận phản hồi và điều chỉnh kết quả. Quá trình này hướng tới bồi dưỡng năm năng lực thành phần: nhận diện, đánh giá nội dung phản biện; thu thập, xử lý thông tin; viết tin, bài phản biện; sử dụng công nghệ thông tin và AI; kiểm tra, đánh giá kết quả phản biện.

Từ khóa - Dạy học đồng kiến tạo; năng lực phản biện trên không gian mạng; bồi dưỡng giảng viên; trí tuệ nhân tạo; học viện, trường sĩ quan Quân đội.

1. Introduction

At present, the development of digital technologies, social media, and AI is transforming the information environment as well as the ways in which people create, receive, and use information. UNESCO notes that generative AI may produce content that is inaccurate, biased, or unreliable. Therefore, the use of AI in education must be accompanied by requirements concerning ethics, data protection, and content verification [1]. UNESCO's AI Competency Framework for Teachers identifies five dimensions: a human-centered mindset, ethics of AI, AI foundations and applications, AI pedagogy, and AI for professional learning [2]. These changes require lecturers not only to exploit technology but also to examine and evaluate information on a well-founded basis and develop appropriate arguments.

In terms of theoretical foundations, Vygotsky emphasized the role of activity and social interaction in the formation and development of cognition [5]. Weinberger and Fischer analyzed knowledge construction through argumentation in computer-supported collaborative learning in terms of participation, epistemic activity, argumentation, and social modes of co-construction [6]. The meta-analysis by Xu, Wang, and Wang shows that collaborative problem solving is positively associated with the development of learners' critical thinking [7]. With regard to teacher learning groups, van Schaik et al. analyzed approaches to the co-construction of knowledge from practice and research, showing that professional knowledge is utilized and developed in the process of working together [8]. These studies provide arguments for examining the relationship among individual activity, interaction, argumentation, and knowledge construction in lecturer professional development.

Several theories of learning and professional knowledge further supplement the foundations for this form of professional development. Kolb's experiential learning theory views learning as a process of constructing knowledge through the transformation of experience, consisting of concrete experience, involving four learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation [9]. According to Knowles, adult learners tend to be self-directed, regard experience as an important resource in the

learning process, and are concerned with knowledge that can be applied to solving practical problems [10]. Shulman, in his research on teacher knowledge, clarified the relationship between content knowledge and pedagogical knowledge in professional practice [11]. These approaches are not identical to co-constructive teaching, but they provide additional arguments for organizing professional development in a way that draws on lecturers' experience, promotes proactivity and reflection, and connects learning activities with professional tasks.

In Vietnam, related studies have approached critical thinking and digital competence from different perspectives. Research on constructing problem situations in teaching argumentative writing addresses the role of analysis, dialogue, and problem solving in critical thinking [12]. Some recent studies have examined the use of AI in writing assessment [13], the development of critical thinking through interactive learning forms [14], and the development of competence in evaluating data, information, and digital content [15]. Although these works differ in terms of subjects and scope, they collectively address related elements such as problem solving, interaction, argumentation, information processing, and technology use. However, the studies reviewed have not directly examined the combination of these elements in co-constructive teaching to develop critical response competence in cyberspace for lecturers has not been directly studied.

At military academies and officer schools, lecturers perform tasks related to teaching, scientific research, political education, ideological orientation, and participation in protecting the Party's ideological foundation, as well as combating wrongful and hostile viewpoints in cyberspace [3]. To perform these tasks, lecturers must identify content requiring critical response, search for and process information, verify information sources, construct arguments, write critical response news items and articles, use information technology and AI, and review and evaluate outcomes. These activities must comply with requirements for information security, safety, and confidentiality [4]. Therefore, professional development activities need to be linked with professional situations, draw on lecturers' knowledge and experience, and create conditions for them to discuss, verify information, and refine arguments through interaction during the learning process.

Within the scope of this article, co-constructive teaching is not considered merely in terms of participation or coordination among members. Each lecturer first conducts self-directed inquiry, mobilizing knowledge and experience to formulate initial judgments and arguments; then brings these results into discussion, questioning, and verification against available information and evidence. On the basis of the feedback received, participants continue to review, supplement, or revise their arguments. This form of organization shares common ground with experiential learning in its use of experience and reflection; with adult education in the proactivity and practicality of learning activities; and with pedagogical content knowledge in the requirement to connect specialized knowledge with lecturers' professional practice. Thus, the point that should be emphasized in co-construction lies in the process by which individual judgments and arguments are examined and revised through evidence-based interaction, rather than merely stopping at joint participation in performing a task.

Published studies have provided important foundations regarding collaborative learning, co-construction of knowledge, experiential learning, adult education, teachers' professional knowledge, and the development of critical thinking. However, within the scope of the literature reviewed, no study has been found that systematically establishes the application of co-constructive teaching to develop critical response competence in cyberspace for lecturers at military academies and officer schools. In particular, the relationship among independent inquiry, the mobilization of professional experience, discussion, information verification, and argument revision still needs to be clarified. From this gap, the article focuses on explaining the foundations, identifying the contents, and determining the requirements for applying co-constructive teaching in developing critical response competence in cyberspace for this group of lecturers.

2. Research results and discussion

2.1. Some concepts and terms

Co-constructive teaching is grounded in the social constructivist perspective on the role of activity and interaction in cognitive development [5], and is also related to the process of knowledge construction through argumentation [6] and the co-construction of knowledge in teacher learning groups [8]. When applied to lecturer professional development, Kolb's experiential learning [9], Knowles's adult education theory [10], and Shulman's concept of pedagogical content knowledge [11] provide further arguments concerning the use of experience, proactivity, reflection, and the connection between knowledge and professional practice.

In this study, co-constructive teaching is understood as a way of organizing teaching and learning activities in which each participant conducts self-directed inquiry, mobilizes knowledge and experience to form initial judgments and arguments, and then shares the results for discussion, questioning, verification, supplementation, and revision. The core point does not lie in many people jointly performing a task, but in the interaction among individual research results and arguments. Through the exchange of information and evidence and the reception of feedback, each participant has a basis for reviewing, retaining, supplementing, or revising his or her judgments and arguments. In lecturer professional development, this form of organization combines independent inquiry with professional exchange, while drawing on the professional knowledge and experience of participants.

Lecturers' critical response competence in cyberspace is understood as the synthesis of knowledge, skills, attitudes, and necessary personal attributes that enable lecturers to effectively carry out critical response activities in cyberspace. This competence is reflected in the ability to identify and evaluate content requiring critical response; collect, process, and verify information; construct arguments

and write critical response news items and articles; use information technology and AI; and review, evaluate, and revise outcomes in accordance with the purpose, target audience, and conditions for task performance. Based on this definition, lecturers' critical response competence in cyberspace consists of five competence components: (1) competence in identifying and evaluating critical response content; (2) competence in collecting and processing information; (3) competence in writing critical response news items and articles; (4) competence in using information technology and AI; and (5) competence in reviewing and evaluating critical response outcomes.

The relationship between co-constructive teaching and the development of critical response competence in cyberspace is reflected in the following process: identifying critical response tasks associated with practical situations → conducting independent inquiry and mobilizing knowledge and experience → discussing, questioning, and verifying information and evidence → receiving feedback, reviewing, and revising judgments and arguments → completing and self-evaluating critical response outcomes. In this process, the competence components are not mobilized separately. Problem identification guides the collection and processing of information; information and evidence serve as the basis for constructing arguments and refining critical response content; information technology and AI support the implementation process; and review and evaluation help lecturers examine and revise their outcomes. This combination provides a basis for organizing professional development activities that connect individual inquiry with discussion, verification, and refinement of critical response outcomes.

2.2. Contents of applying co-constructive teaching in developing lecturers' critical response competence in cyberspace

The application of co-constructive teaching in developing critical response competence in cyberspace needs to be linked with lecturers' responsibilities and tasks as well as the characteristics of activities at military academies and officer schools. The professional development content is organized in a way that combines individual inquiry with professional exchange, using information, evidence, and argumentation as the basis for examining judgments. Based on the competence structure and the identified process, the application focuses on the following four contents.

2.2.1. Identifying critical response issues and tasks in cyberspace

Identifying issues serves as the basis for orienting information search, selecting grounds, and constructing critical response content. In cyberspace, information appears in various forms, such as text, images, audio, and video; data, events, and comments may be interwoven within the same content. Digital technologies and generative AI also make the identification of sources, contexts, and the reliability of information more complex. Therefore, professional development activities need to place lecturers in specific situations so that they can analyze and identify issues requiring critical response and content that needs further verification.

The selected situations should be closely related to lecturers' teaching, scientific research, or critical response tasks in cyberspace. Materials may include articles, arguments, information shared on social media, or content generated by generative AI. The selection must be consistent with lecturers' responsibilities, tasks, and the scope of information permitted for use; state secrets, military secrets, internal documents, or information not authorized for dissemination must not be used.

From the selected materials, lecturers identify the source and the context in which the information appeared; analyze the content, target audience, arguments, and grounds used; and on that basis identify the central issue. Initial judgments are brought into discussion to clarify similarities, differences, and points that still lack sufficient grounds. At this stage, members are not required to reach immediate agreement. Differences need to be explained, thereby forming research questions and identifying information that should continue to be searched for and verified.

2.2.2. Organizing inquiry and forming individual understanding and arguments

Co-construction does not replace independent inquiry. Before participating in discussion, each lecturer needs to independently study the issue, select and process information, determine his or her viewpoint, formulate claims, and prepare grounds for his or her arguments. The results of individual inquiry serve as input for professional exchange and ensure that each participant contributes judgments and evidence that he or she has prepared.

Information collection should prioritize official sources with identifiable origins and sufficient reliability for addressing the research issue. Lecturers examine the time and context of publication; compare sources; and distinguish verifiable data from judgments, comments, or inferences. For content related to politics, ideology, national defense, and security, the grounds used must be consistent with the Party's viewpoints and guidelines, the State's policies and laws, official documents, and scientifically valid arguments. The requirement is not to collect as much information as possible, but to select necessary information and determine its reliability and value for the issue being examined.

Information technology and AI may be used to search for, classify, and synthesize information, suggest approaches, or support content review. However, AI-generated results need to be cross-checked against reliable sources before use. Lecturers are responsible for the information and content they select; state secrets, military secrets, internal documents, or information not authorized for sharing must not be uploaded to public AI platforms. Requirements for information security, safety, and confidentiality must be observed throughout the process of technology use.

At the end of individual inquiry, lecturers formulate judgments, claims, grounds, and a proposed line of argumentation. This result is not yet the final product, but is used as the basis for professional exchange. Differences in information sources, ways of evaluating evidence, and argumentation are also issues that need to be examined at the next stage.

2.2.3. Organizing discussion, critical response, and joint refinement of critical response news items and articles

Discussion is organized on the basis of each lecturer's research results. Each participant presents the judgments, information sources, claims, grounds, and line of argumentation that he or she has prepared. Members examine the reliability of sources, the appropriateness of evidence, the relationship between claims and grounds, and the logic of argumentation. Questions and critical comments focus on points that still lack grounds, have not been demonstrated, or may be interpreted in another way.

When different opinions arise, the grounds and evidence for each judgment need to be clarified. Verifiable information continues to be cross-checked; where grounds are insufficient, additional sources are consulted or the issue is recorded for further study. The number of people who agree should not be taken as a substitute for the grounds of a conclusion. In this way, differences in viewpoints become an opportunity to re-examine information and arguments, rather than a reason to force members to arrive at a common opinion.

After discussion, lecturers revise and refine critical response news items and articles on the basis of the points that have been examined. The product should clearly identify the issue, have consistent claims, appropriate grounds, and coherent argumentation; important information must have identifiable sources and be verified. The presentation must be appropriate to the target audience, purpose, and communication environment, while complying with regulations on speech, information provision, and information use. Therefore, the final product is not a mere combination of separate opinions, but a result that has been selected, verified, and revised through the process of discussion.

2.2.4. Organizing review, evaluation, and revision of critical response outcomes

Review and evaluation are conducted both during task performance and after the product has been completed. The evaluation covers issue identification; information selection, processing, and verification; construction of critical response content; use of information technology and AI; reception of feedback; and revision of outcomes. Along with the quality of the news item or article, it is necessary to examine how lecturers select grounds, construct arguments, and handle issues arising during task performance.

Evaluation may combine three forms: self-assessment, peer assessment, and assessment by the organizer. Lecturers review their information sources, evidence, claims, arguments, and modes of expression. Peer assessment focuses on identifying points that are well-grounded, points that are not yet persuasive, and issues requiring further verification. The organizer examines the outcomes on the basis of task requirements and the identified criteria. Lecturers compare the feedback received with the information and evidence used to determine whether to accept the feedback, explain their reasoning, or revise their work. Before being used or published, the product must be reviewed in terms of content, grounds, form of expression, and requirements for ensuring information security and safety.

Evaluation results are used to improve the product and help lecturers identify areas requiring further development when performing subsequent tasks. To provide a common basis for self-assessment, peer assessment, and assessment by the organizer, this study proposes a rubric for evaluating the performance of critical response tasks in cyberspace, as shown in Table 1.

Table 1. *Rubric for evaluating the performance of critical response tasks in cyberspace*

Criterion	Description of Performance Level	Score
1. Identifying and evaluating content requiring critical response	4: Correctly identifies the central issue; distinguishes between information, judgments, and content requiring verification; evaluates the content based on appropriate grounds. 3: Identifies the central issue and most points requiring verification; the grounds for evaluation are generally appropriate. 2: Identifies the issue but does not clarify the central focus or the points requiring verification; the grounds used remain limited. 1: Does not correctly identify the central focus; judgments lack necessary grounds.	1-4
2. Collecting, processing, and verifying information	4: Selects appropriate and reliable sources; cross-checks, verifies, and processes information in a manner that meets task requirements. 3: The selected sources are generally appropriate; cross-checking and verification have been conducted, but remain incomplete in some respects. 2: The sources used are limited; cross-checking, verification, or information processing is unclear. 1: Sources are inappropriate or their reliability is not established; necessary verification has not been conducted.	1-4
3. Constructing and presenting critical response content	4: Claims are clear; grounds are appropriate; argumentation is coherent; content and presentation are appropriate to the purpose and target audience of the critical response. 3: Claims, grounds, and argumentation are generally appropriate; some points still need supplementation or revision. 2: Claims are unclear or grounds are incomplete; the connection between claims and grounds is insufficiently established. 1: Claims lack clarity; grounds are insufficient; argumentation is not logically coherent.	1-4
4. Using information technology and AI in task performance	4: Selects and uses appropriate tools; verifies technology-supported results; properly follows requirements for information security, safety, and confidentiality. 3: Uses appropriate tools and verifies results; some limitations remain in certain operations or aspects of verification. 2: Uses tools, but their suitability or the verification of results remains limited. 1: Uses tools inappropriately, fails to verify results, or fails to meet requirements for information security, safety, and confidentiality.	1–4
5. Self-reviewing, receiving feedback, and revising outcomes	4: Identifies points requiring revision; examines feedback on the basis of evidence; provides explanations or makes revisions appropriately. 3: Identifies most points requiring revision; receives feedback and makes generally appropriate revisions. 2: Identification of limitations remains incomplete; feedback has been received but the response to it, through explanation or revision, remains limited. 1: Does not recognize major limitations; does not use feedback to explain the reasoning behind the outcomes or revise them.	1-4

Note: Level 4 – good performance; Level 3 – fairly good performance; Level 2 – meets requirements; Level 1 – does not meet requirements. The rubric is proposed to support self-assessment, peer assessment, and assessment by the organizer in professional development activities. The criteria and performance levels need to be further

validated and refined through empirical research before the rubric can be used as a standardized measurement tool.

2.3. Discussion on the application of co-constructive teaching in developing lecturers' critical response competence in cyberspace

The four application contents have different focuses but are interrelated in the process of performing critical response tasks. Issue identification orients inquiry; the results of individual inquiry provide information, evidence, and arguments for discussion; the contents examined through discussion serve as the basis for improving the product; and review and evaluation are carried out at each stage and for the final outcome. The relationship among application contents, lecturers' key activities, and competence components is shown in Table 2.

Table 2. *Relationship between the application of co-constructive teaching and competence components*

Application Content	Lecturers' Key Activities	Primary Competence Components Targeted
Identifying critical response issues and tasks in cyberspace	Analyzing situations; identifying sources, contexts, and central issues; identifying content that requires clarification or further verification.	Competence in identifying and evaluating critical response content.
Organizing inquiry and forming individual understanding and arguments	Searching for, selecting, cross-checking, and processing information; identifying claims and grounds; using information technology and AI to support inquiry and information verification.	Competence in collecting and processing information; competence in using information technology and AI.
Organizing discussion, critical response, and joint refinement of critical response news items and articles	Presenting and defending judgments; examining sources and evidence; questioning and developing counterarguments; revising claims and grounds; and refining news items and articles.	Competence in writing critical response news items and articles, while also engaging competence in identifying and evaluating critical response content and competence in collecting and processing information.
Organizing review, evaluation, and revision of critical response outcomes	Conducting self-review, and peer assessment, and receiving assessment, and receiving assessment from the organizer; reviewing sources, evidence, arguments, and the use of information technology and AI; receiving feedback and revising outcomes.	Competence in reviewing and evaluating critical response outcomes, while also engaging other relevant competence components.

Table 2 shows that the relationship between application contents and competence components is not a one-to-one relationship. Each content involves certain competences more prominently, but the process of performing a task usually requires the coordination of multiple competences. For example, refining news items and articles requires not only the ability to construct and present arguments but also the ability to correctly identify the issue and select and process appropriate information. Information technology and AI may also be used at many stages, from searching for and processing information to verifying information and reviewing products. Therefore, the distinction in Table 2 is intended to identify the focus of each content, not to separate competence components during the professional development process.

In the military pedagogical environment, the organization of co-construction needs to pay attention to take into account differences in lecturers' responsibilities, working positions, experience, and expertise. These differences may affect how they participate in discussion and present viewpoints. Nembhard and Edmondson argue that professional status may be related to the level of participation in group improvement activities, while also pointing out the role of leaders' encouragement of participation [16]. This finding is used only as a suggestion for organizing interaction, not as direct empirical evidence concerning lecturers at military academies and officer schools. In professional development activities, each member's opinion should first be considered on the basis of information, evidence, and argumentation, rather than on the position of the person presenting the opinion.

Differences in judgments also need to be handled according to the same principle. Differences may arise from information sources, ways of evaluating evidence, interpretations, or conclusions about the issue. Information that can be verified should continue to be cross-checked; where there are insufficient grounds for a conclusion, the issue should be recorded for further study. It is not necessary for all opinions to be unified in a single discussion. What is important is to clarify the grounds for each judgment and determine which points should be retained, supplemented, or further examined.

Information technology and AI are used as supporting tools in the process of performing tasks and do not replace lecturers' evaluation of sources, verification of evidence, and construction of arguments. The selection of tools must be appropriate to the requirements of each task; information entered into systems must fall within the scope permitted for use; and technology-generated results must be checked before being used as grounds or incorporated into critical response products. In the military environment, requirements for information security, safety, and confidentiality must be met throughout the entire process of technology use.

In addition, the quality of activity organization is related not only to the form of group work but also directly to the level of individual preparation, the grounds used in discussion, and the way feedback is received and processed. Therefore, applying co-constructive teaching in developing lecturers' critical response competence in cyberspace needs to ensure the connection among independent inquiry, professional exchange, information verification, and outcome evaluation, while also being consistent with lecturers' responsibilities and tasks and the requirements of the military pedagogical environment.

2.4. Limitations of the study and directions for further research

This study was conducted mainly through the analysis, synthesis, and generalization of documents in order to establish theoretical foundations and propose contents for applying co-constructive teaching in developing lecturers' critical response competence in cyberspace. Since no

experiment or intervention study has been conducted, the study does not yet have a basis for determining the extent to which this form of organization affects each competence component, or for assessing changes in lecturers' competence after professional development. The rubric developed in this article is only a proposed framework; its reliability, validity, and usability need to be tested using empirical data.

The study has also not directly investigated the process of organizing co-construction at military academies and officer schools. Therefore, issues related to lecturers' level of participation, differences in interaction, ways of handling differences of opinion, reception of feedback, and revision of arguments have only been considered from a theoretical perspective. Further studies need to pilot the proposed form of organization with specific groups of lecturers; evaluate changes in competence components; validate the rubric; and analyze factors affecting the process of participation and interaction. Empirical results will provide a basis for adjusting the content, mode of organization, and assessment tools so that they are more appropriate for developing lecturers' critical response competence in cyberspace within the military pedagogical environment.

3. Conclusion

The development of digital technologies, social media, and AI is transforming the information environment, while also imposing higher requirements on the critical response competence in cyberspace of lecturers at military academies and officer schools. In this context, professional development aimed at enhancing lecturers' critical response competence in cyberspace should not only focus on each individual's knowledge and skills, but also create conditions for lecturers to apply professional experience, verify information, exchange arguments, and reconsider critical response outcomes on the basis of scientific evidence.

From the above theoretical foundations, this study proposes the application of co-constructive teaching in a way that combines independent inquiry with professional interaction during the performance of critical response tasks. Four contents are identified: identifying critical response issues and tasks; organizing inquiry and forming individual understanding and arguments; organizing discussion, critical response, and joint refinement of news items and articles; and organizing review, evaluation, and revision of outcomes. These contents have their own focuses but are not separate; rather, they jointly aim to mobilize the five competence components in the process of performing critical response tasks in cyberspace. In applying this approach, it is necessary to draw on lecturers' professional practice, attach importance to the grounds of judgments and arguments, use information technology and AI appropriately, and comply with requirements for information security, safety, and confidentiality, especially in the military pedagogical environment.

The contents and rubric proposed in this study provide a reference basis for organizing professional development activities aimed at developing lecturers' critical response competence in cyberspace. Since the study remains at the level of theoretical analysis, the appropriateness of the proposed form of organization and the usability of the rubric need to be further verified through empirical research. The findings of such research will provide a basis for further adjusting the content, mode of organization, and assessment tools to better suit the practice of developing critical response competence in cyberspace for lecturers at military academies and officer schools.

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