The CinQASE Model: Design to Practice Individual & Collaborative Critical Thinking Skill in Learning

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ABSTRACT

This study is a preliminary study in the process of developing the Collaborative in Questioning, Analyzing, Synthesizing and Evaluating (CinQASE) learning model in improving individual critical thinking skills (InCT) and collaborative critical thinking skills (CCT). Research methods in developing this model include needs analysis, literature review, and field survey in the form of descriptive analysis. The results show that this innovation can survive as a theoretical basis for developing the CinQASE learning model. This is the basis for continuous research related to the development of learning models for learning physics in schools. The syntax of the CINQASE learning model includes (1) Orientation problem, (2) Individual Work, (3) Collaborative Thinking Teamwork, (4) Discussion Class, (5) Evaluation and Feedback. The implications of the CinQASE learning model make it one of the learning models that can improve individual critical thinking skills (InCT) and collaborative critical thinking skills (CCT).

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1.   INTRODUCTION

Science students at LPTKs must have professional competence within technological Pedagogical Content Knowledge (TPACK), a slice of technological knowledge, content knowledge, and pedagogical knowledge (Koh., Chai ., & Lee, 2015). Mastery of the professional competence of prospective educators cannot be done alone by lecturers or students of future teachers. The ability of professional competence should go through two processes, namely personal construction and social construction (interpersonal), together with various stakeholders, colleagues, a community of subject teacher practitioners, and global forums. Based on the results of PISA 2015 and 2019 21st century skills, a vital learning framework for students, one of which is critical thinking as the key in preparing the curriculum (OECD, 2014). The continued research by PISA 2006, 2009, 2012, and 2015 shows that Indonesia's science learning outcomes have not been satisfactory. Based on the results of the PISA study, in 2009, the average scientific literacy

score of Indonesian students was in 66 out of 74 countries with a score of 383. It shows the low ability of Indonesian students to develop competence in understanding natural knowledge scientifically and the low skills of the investigation process, including the development of critical thinking skills.

In addition, the 2018 PISA results report shows that Indonesia's position has decreased compared to the 2015 PISA survey, where Indonesia is ranked 7th from the bottom (73 countries) for the mathematics category with an average score of 373, and 9th from the bottom (71 countries). For the science performance category (score 387). The decline in the PISA score is arguably concerning. When compared to the international average, Indonesia's distance is quite far. Reading, Mathematics, and Science in international averages are 487, 489, and 489. Indonesia did not even manage to break above 400 scores for all three (OECD, 2019). Of course, this is very worrying. Indonesia's position can only surpass the Philippines and several countries in ASEAN. Therefore, this matter needs more attention to support all forming students' thinking patterns. One of the important things is to apply critical thinking skills during the learning process, especially problem-solving. This is based on Indonesian students' thinking ability, which is still very low. The most important element in thinking skills is analyzing each problem and making it a new experience. Several studies have applied various learning models to improve critical thinking skills. However, the development of critical thinking skills so far still emphasizes the individual level. The preliminary study results conducted by researchers to determine students' InCT and CCT abilities were carried out by giving InCT and CCT skill tests with eight questions each with indicators referring to InCT test indicators and CCT knowledge. The results show that the average InCT ability is 53.26 which is low. The CCT indicators that were observed were: (1) Questioning (Q), (2) Analyzing (A), (3) Synthesizing (S), (4) Evaluating (E) (Ghodrati, 2015). The results show that the average CCT ability of students is 43.5, which is low (Hunaidah & Wasis, 2016).

In fact, collaborative critical thinking skills should be possessed by every student to prepare themselves to face life's problems. Roger & Johnson (1994) stated that there is persuasive evidence that collaborative teams achieve higher levels of critical thinking and retain information longer than students who work quietly as individuals. Collaborative teams serve as mediating tools to develop individual critical thinking skills (Smith & MacGregor, 1992). Thus students' critical thinking skills can be created with the help of others so that someone can optimally process information through discussion, giving arguments, analyzing, evaluating, and solving problems in making decisions. Grichanik (2014) argues that collaborative critical thinking is a pure brain activity or mentality process that aims to solve problems, make decisions, invite or be persuasive, analyze assumptions, and conduct scientific research. Collaborative critical thinking skills are skills needed to understand the learning process in teams or groups that explore critical thinking within a team framework (Freeman & Hess, 2003; Olivares, 2005). Collaborative critical thinking skills are needed for every student to build conceptual understanding, research skills and understand the values of social interaction, when negotiating arguments. Argument negotiation is an indicator of collaborative critical thinking skills (Ghodrati, 2015). Students can explore information from observations, experiences, reflections through the learning process in teams or groups that involve collaborative critical thinking skills (Freeman & Hess, 2003; Olivares, 2005). Therefore, with this in assisting students in constructing understanding and knowledge as well as assisting in the development of collaboration skills, especially in problem solving in thinking.

The application of an established team-based learning model has not been fully developed to develop CCT skills, which can explicitly impact InCT skills. Cooperative Learning (CL) learning model is a structured, systematic, instructional technique in which small groups work together to achieve common goals (Slavin, 2019). Lavasani & Khandan (2011) show that the CL learning model can improve students' social skills development. Other findings are: (1) increasing collaboration among students, but individual responsibility is required in carrying out their assignments before entering class so that study groups will be more effective; (2) strengthening listening skills, but optimal conditions are needed in sharing experiences with friends. Another team-based learning model is Team-Based Learning (TBL). The TBL learning model is based on small group interaction and is usually used in post-secondary education (Michaelsen & Sweet, 2008). The results of the study through the application of the TBL

learning model showed that it did not explicitly mention being able to improve critical thinking even though collaboration and critical thinking were two interrelated skills for lifelong learning (Waite & Davis, 2006). Meanwhile, implementing the TBL learning model is faced with many obstacles; among them, further research is needed to adapt the TBL learning model which must prepare a lot of time to take a more active role as effectively and efficiently as possible (Elmore., Skelley., & Woolley, 2014). One of the weaknesses of the TBL learning model is that the time required in the learning process becomes longer and less practical because all phases (syntax) cannot be completed in one meeting due to out-of-class and in-class activities (Michaelsen et al., 2004, 2014; Michaelsen & Sweet, 2008).

Based on the problems that have been described, it is necessary to develop InCT and CCT skills in science learning in LPTKs. One of the efforts made in developing the Collaborative in Questioning, Analyzing, Synthesizing, and Evaluating (CinQASE) learning model is used to improve the InCT and CCT skills of science students in LPTKs . The learning model developed through theoretical and empirical studies is expected to provide several benefits and objectives that can be obtained: (1) As an innovative learning model that not only trains individual critical thinking skills but trains collaboration skills, (2) As an alternative learning model that can be used to train individual critical thinking skills and collaboration, (3) Availability of learning models that can bridge individual critical thinking skills and collaboration needed in 21st Century learning, (4) Reference materials in the development of other learning models.

2.   METHODS

2.1. Types of research

This research is a qualitative descriptive research study sourced from the results of a literature study. Literature studies are carried out by collecting data or sources related to a topic obtained from various sources such as journals, books, the internet, and other literature.

2.2. Research design

2.2.1. Inclusion criteria

The inclusion criteria in the literature review include: (a) studies related to the development of learning models, (b) Assessment of aspects of empirical research with comparative design learning models developed compared to existing and existing learning models. has been carried out in each lesson, (c) This research provides information about the development of the Individual and Collaborative Critical Thinking learning model, (d) the development of the Individual and Collaborative Critical Thinking model which aims to create a new learning model that is used as an alternative reference in the learning implementation process. (e) The learning model developed was reviewed from several journals that saw the negative phase of several learning models.

2.2.2. Database search

The sources of the study come from books and journals, both international journals and national journals, which are obtained through up-to-date sources such as Proquest, ERIC, Google Scholar, and Scopus, which are limited to the 2000-2019 range. Researchers searched databases based on titles and abstracts with keywords, learning models, cooperative learning, collaborative learning, individual critical thinking, collaborative critical thinking, individual indicators, and collaborative critical thinking. This study is the initial study of a dissertation research. The target of this study is to examine articles related to the topics developed. This study is packaged in the form of a journal review on a national or international scale. The review studies are related to the weaknesses of several learning models, which aim to serve as the basis for developing learning models. The journals reviewed are journals that focus on cooperative learning models and team based learnign models in accordance with the studies that will be developed in the dissertation project. Apart from journals, some of the objects of review are books related to the two models. The results of the review are then filtered to obtain the core and weaknesses of each learning model.

2.2.3. Selection process

The selection stage begins with the collection of journals and books. We have collected 350 initial reference studies. After a thorough review and screening study, 267 were excluded because the titles did not match the inclusion criteria. The remaining 83 complete study texts remain. Furthermore, in the final stage of the study, analysing 83 texts and declared eligible for review. After reviewing the 34 published titles, it does not include the required scope. The final stage leaves 49 titles consisting of the full text of research that is comprehensive and fulfils the existing data on the inclusion indicators. For more details, it is presented in Figure 1.
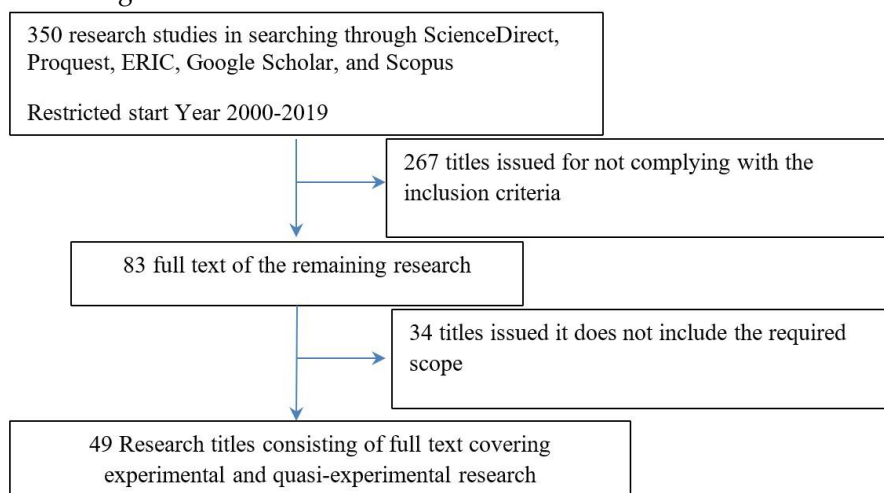

Figure 1. Flow chart of the search, selection & determination process.

3.   FINDINGS AND DISCUSSION

3.1. CinQASE Model Development Goals

The CinQASE learning model was developed to improve the skills of Individual Critical Thinking and Collaborative Critical Thinking, which was developed, based on the arguments of researchers, theoretical studies, and empirical studies presented in Figure 2. The rationality of each phase sequence in the developed learning model is studied based on the arguments of researchers, theoretical studies, and empirical studies in Figure 2 which are explained as follows:

Phase 1: Orientation problem. This phase aims to facilitate students to gain knowledge and concepts from course material by presenting real-world problems to solve as a context for learning about collaborative critical thinking. Before the problem is given, the lecturer prepares the students to learn by motivating and conveying the learning objectives and guiding the learning process. Based on the theory developed by (Barrows, 2000; Liu, 2005), the characteristics of problem-based learning must be student-centered, namely learning that focuses on students as learning people so that they can develop their knowledge. The problems presented to students are authentic (authentic problems form the organizing focus for learning) to easily understand these problems and apply them in their professional lives. Students can actively construct their knowledge through personal experiences with other people and the environment (Moreno, 2010). Top-Down process: students start with complex problems to solve and then find solutions (with the teacher's help); students need basic interaction skills needed (Slavin, 2019). ARCS theory (Attention, Relevance, Confidence, and Satisfaction) to arouse curiosity and interest in learning, students must pay attention (Keller, 2016).
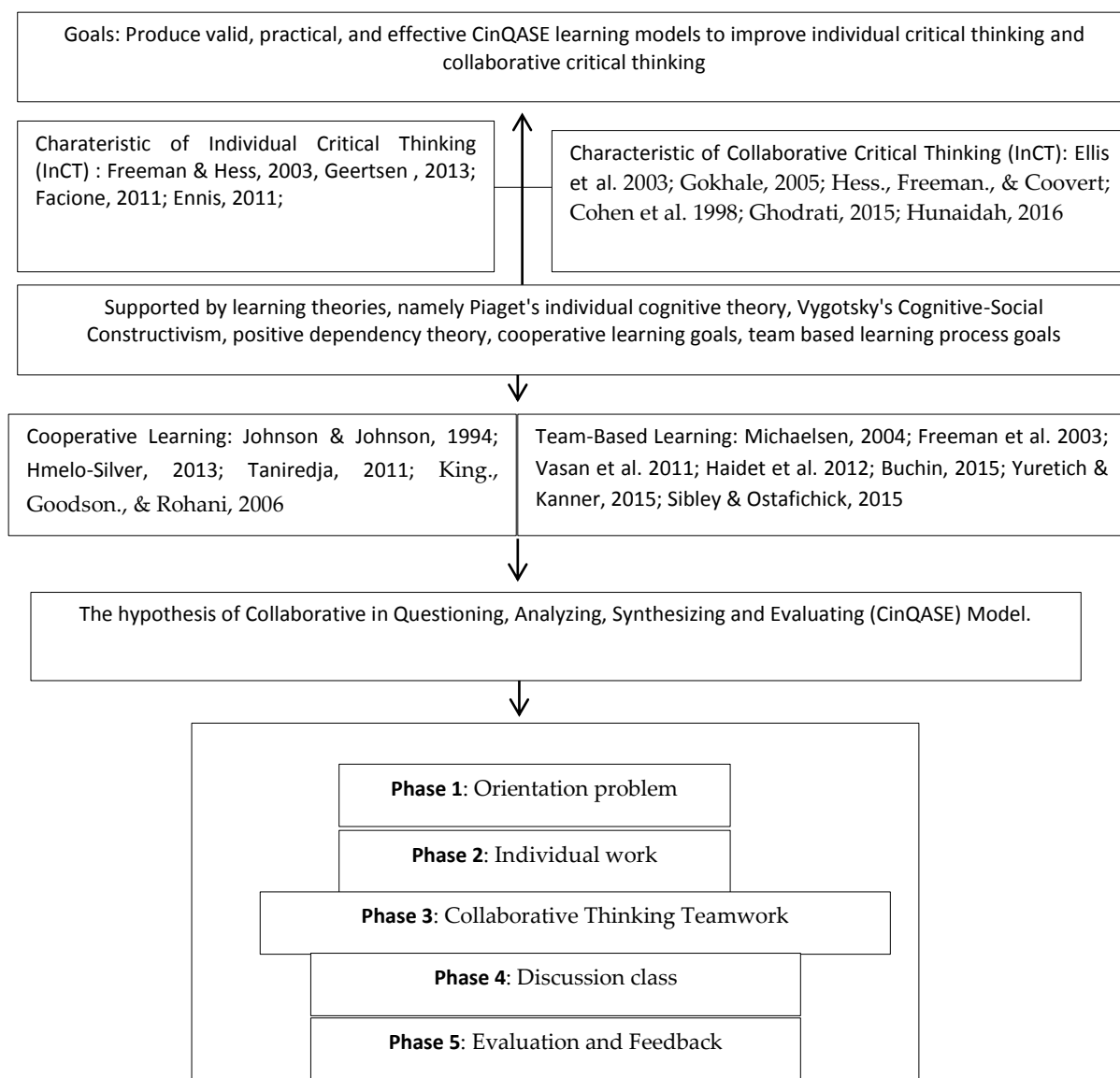

Goals: Produce valid, practical, and effective CinQASE learning models to improve individual critical thinking and collaborative critical thinking

Charateristic of Individual Critical Thinking (InCT) : Freeman & Hess, 2003, Geertsen , 2013; Facione, 2011; Ennis, 2011;

Characteristic of Collaborative Critical Thinking (InCT): Ellis et al. 2003; Gokhale, 2005; Hess., Freeman., & Coovert; Cohen et al. 1998; Ghodrati, 2015; Hunaidah, 2016

Supported by learning theories, namely Piaget's individual cognitive theory, Vygotsky's Cognitive-Social Constructivism, positive dependency theory, cooperative learning goals, team based learning process goals

Cooperative Learning: Johnson & Johnson, 1994; Hmelo-Silver, 2013; Taniredja, 2011; King., Goodson., & Rohani, 2006

Team-Based Learning: Michaelsen, 2004; Freeman et al. 2003; Vasan et al. 2011; Haidet et al. 2012; Buchin, 2015; Yuretich & Kanner, 2015; Sibley & Ostafichick, 2015

The hypothesis of Collaborative in Questioning, Analyzing, Synthesizing and Evaluating (CinQASE) Model.

Phase 1: Orientation problem

Phase 2: Individual work

Phase 3: Collaborative Thinking Teamwork

Phase 4: Discussion class

Phase 5: Evaluation and Feedback

Figure 2. Rational development of the CinQASE (Collaborative in Questioning, Analyzing, Synthesizing, and Evaluating) model

Problem-solving learning occurs when involved in acknowledging the existence of a problem, identifying the nature of the problem, developing hypotheses for problem-solving, testing different hypotheses, and selecting several appropriate alternative hypotheses (Moreno, 2010). Celik., Onder., & Silay (2011) on 44 prospective teachers, found that presenting problems in problem-based learning that works in teams can educate individuals in conducting investigations and building correlations between everyday life and science subjects. The results of Sadlo (2014) found that explicit problem preparation helped develop students' theoretical understanding, critical thinking skills, team professional reasoning, collaboration skills, and values. Starting learning by asking students questions will generate full participation, interest, situations that lead to behavior formation and higher-order thinking (Schmidt., Rotgans., & Yew, 2011). Based on the critical thinking skills component of collaborative asking, students are expected to share personal experiences, share relevant statements from observations or opinions, write messages that require discussion but are still relevant, seek approval from one or more participants, ask and answer questions; questions to clarify a statement and raise one of the relevant issues for discussion.

Phase 2: Individual Work. In the second phase, students must study independently, without cooperation with others. This is expected to build student self-confidence, become independent in carrying out learning, and not depend on others. Individual teaching is an effort to provide opportunities for students to learn according to their needs, abilities, speed, and own way. The teacher plays a major role in encouraging individual student success, emphasizing the interaction between students and the object being studied. In this phase, it is also possible for each student to learn according to their potential abilities; it also allows each student to fully master all the subject matter. "Mastery learning" or complete learning. The second phase aims to train individual skills in the form of basic skills (potential abilities) so that students can recognize their own emotions, manage emotions, motivate themselves, recognize other people's emotions, and build relationships. Emotional skills can lead to individual success in terms of initiative, fighting spirit, adaptability, team leadership ability, self-confidence, and the ability to develop others (Shapiro et al., 2005). In the individual work phase, it is hoped that students can assimilate their abilities and reflect on the results they have achieved in collaborative teamwork during the teaching and learning process in the classroom.

Phase 3. Collaborative Critical Thinking Teamwork. There will be a shift in learning patterns (from individual work to collaborative teamwork). MacGregor (1990) states that the change of roles from individual work to collaborative teamwork are: (1) from the listener, observer, and note-taker to active problem solver; give input and likes discussion; (2) from a private or individual presence with few risks or problems to a public presence with many risks and problems; (3) from personal choice to choose in accordance with group expectations; (4) from peer-to-peer competition to peer-to-peer collaboration; (5) from responsibility and independent learning to group responsibility and learning to interdependence; (6) from seeing teachers and texts as the main sources that have authority and knowledge sources, now teachers and texts are not the only sources of learning, but can extract other learning resources from the group community. In collaborative teamwork, group members consist of students who have varying proficiency levels, working together in small groups that lead to a common goal (Gokhale, 1995).

Phase 4. Class Discussion the class discussion phase describes the procedures used by the lecturer to encourage students to exchange opinions verbally in class. The specific objectives of this phase are: (1) to improve students' thinking and help them build their understanding of the material. Discussing a topic will help students strengthen and expand their knowledge of the issues discussed and improve students' thinking skills about the subject; (2) foster student involvement and participation in being responsible for their learning and not only relying on lecturers. Likewise, class discussions provide open opportunities for students to speak and express their ideas and encourage motivation to engage in conversations in class. Research results in Adi., Phang., & Yusof (2012) on chemical engineering students, applying Cooperative Problem Based Learning (CPBL) found that open discussion in class really helps create a better understanding and errors can be corrected

Phase 5. Evaluation and Feedback. This phase aims to collect data or information carried out at the end of each learning implementation for presentation material regarding one basic competency with the intention of lecturers and students obtaining a comprehensive and unanimous picture of the implementation of learning that have been carried out for achieving mastery of basic competencies. According to (Kulhavy & Stock, 2013), the principles that must be adhered to by lecturers when providing Feedback to students are: (1) provide Feedback as soon as possible: (2) Feedback should be given as soon as possible so that if students have to improve performance, it can also be done as soon as possible before Student errors/errors are protracted and inherent.

Likewise, if students have shown good performance, then they will understand that he must maintain his performance and he know that he has studied properly; (2) provide specific Feedback: The Feedback given must be specific so that students understand what the lecturer means; (3) provide Feedback according to the child's developmental level: some teachers/lecturers often provide Feedback that is not in accordance with the child's developmental level. For example, too much Feedback is given at the same time, so the students have difficulty handling it; (4) provide rewards with positive Feedback: lecturers should give positive Feedback on a good performance, give it at the same time with

rewards; (5) help students to stay focused on the process, not on the results: the lecturer asks students to correct their performance through Feedback, so keep them focused on the process that they need to correct, not wanting to rush to the result convincing them to really understand and perform the steps correctly. In this process, students must also organize and assess themselves and others. This view is by self-evaluation, judging if the outcome of one's actions or strategies is acceptable or unacceptable (Moreno, 2010) and metacognition theory, an individual's cognition about his/her cognition or "knowing about knowing" (Moreno, 2010). Feedback is information given to students about their performance, for example about the knowledge they gain from learning (Arends, 2012). Feedback is information about the results of student learning efforts (Slavin, 2005). The results of (Ghodrati, 2015) show that building Collaborative Critical Thinking (CCT) both actively and secretly requires dialogue, self-reflection by involving Feedback, critical ideas both individually and explicit interaction with others.

1. Syntax: The CinQASE learning model has a syntax with five phases, namely (1) problem presentation, (2) individual work, (3) collaborative critical thinking teamwork, (4) class discussion, (5) evaluation & Feedback.
2. Social System: Based on the CinQASE syntax that has been written above, the social systems that are expected to appear when implementing the model are: (a) Students participate and are responsible both individually and in collaboration in their respective groups in designing strategies in completing tasks or problems to be solved; (b) Lecturers take on roles as facilitators, mediators, administrators, moderators in the lecture process to increase student activities in collaborative critical thinking.
3. Principles of Reaction: The reaction principle relates to how the lecturer pays attention to and treats students, including responding to student questions and answers.
4. Support System: A support system is a tool and material that supports the lecture process. The support system needed in developing the CinQASE model is a lecture device that contains a syllabus, a lecture program unit (SAP), a Student Activity Sheet (LKM), an evaluation instrument in the form of an instrument for implementing the learning process, and an instrument for students' collaborative critical thinking skills.
5. Instructional Effect: An effective learning model will have an instructional impact in the form of learning outcomes and skills achieved in accordance with the main objectives of model development. Thus, the instructional effect to be achieved on developing the CinQASE learning model is that students can improve students' InCT and CCT skills on the concept of electromagnetism. The impact of the accompaniment in this model is that students are expected to increase their self-confidence, communication skills, and ability to argue.

The physics learning model that will be developed to improve Individual critical thinking and collaboration critical thinking refers to the flow of the problem-solving process from Piaget's Theory and Vygotsky's Cognitive-Social Constructivist Theory. According to individual constructivism experts who focus on how individuals construct knowledge in their minds (Moreno, 2010), this learning perspective has a natural tendency to seek understanding when they interact with the environment. According to Palinscar in Moreno, social interaction is not emphasized and is considered one of the mechanisms facilitating cognitive growth (Moreno, 2010). Student discussions with teachers or peers can create cognitive conflict, motivating students to try to restore the imbalance by how the individual reconstructs the structures of his knowledge. Learners who interact with other people and the environment will construct knowledge by organizing, assimilating, and accommodating the new information in their cognitive structures.

Based on the weaknesses of the CL and TBL learning models (Table 1), theoretically and empirically, overcoming these shortcomings in the developed CinQASE learning model. Theoretically, it is argued that someone who is used to working in groups continuously will negatively impact if he is required to work individually. Furthermore, empirically, it was found that in the CL learning model, the boundaries of the situation when students work individually, competitively, and cooperatively are not

yet clear. Similarly, in another study found that CL can increase cooperation in students, but it takes individual responsibility in carrying out their duties so that group learning will be more effective. Furthermore, in the TBL learning model, there is an individual work stage in the preparation phase. But it is only limited to evaluating students' initial knowledge individually before working in teams but does not involve individual students in building their own knowledge. In overcoming this problem, the model developed by the researcher tries to design the Individual Work phase, namely in the second phase. In the individual phase, it is expected that science students at LPTKs will work individually in collaborative groups to collect and explore all information related to the problems given to become material to be discussed in collaborative groups

The development of the CinQASE learning model as an innovation from the CL and TBL learning models. Collaborative learning enhances the development of critical thinking through discussion, clarification of ideas, and evaluation of other people's ideas. However, both methods were found to be equally effective in increasing factual knowledge. For collaborative learning to be more effective, teachers must supervise the learning process to develop and develop students' learning abilities. The teacher's role is to provide information and be an actor as a facilitator in learning. This allows students to create and organize learning experiences that are more meaningful and stimulate students' thinking through real problems. Collaborative learning refers to a learning method in which students with various abilities work together in small groups to achieve a common goal. Students are responsible for the learning of other students then successful students will help other students to be successful as well. Collaboration shows an active change to ideas in a small group, increasing interest among students and teaching critical thinking (Gokhale, 1995).

Table 1. Strengths and Weaknesses of Cooperative Learning (CL) and Team-Based Learning (TBL) to Improve InCT and CCT Skills

Learning	Strengthness	Weaknesses
Cooperative Learning (CL)	1. Can improve students' ability to develop social skills, face-to-face interactions, the emergence of cooperative skills, heterogeneous grouping group processes, and equal opportunities for success (Slavin, 2019) 2. Cultivate positive interdependence in every student activity to develop individual critical thinking skills. 3. The Cl model can increase students' knowledge and learning outcomes, develop leadership attitudes, positive attitudes of students, self-respect, develop a sense of belonging, and develop skills for children's lives as adults (Hill & Hill, 1990). 4. In CL learning that positive interdependence situations will have an impact on increasing student motivation and learning outcomes compared to negative interdependence (Johnson et al., 2014)	1. (Corona & Ibáñez, 2015) research found that in the application of Cooperative Learning (CL), the boundaries of the situation when students work individually, competitively, and cooperatively are not yet clear. 2. The results of (Lavasani & Khandan, 2011), on a sample of 74 students by applying CL found that CL can: (1) increase students' cooperation, but it takes individual responsibility in carrying out their tasks before entering class, so that group learning will be more effective, (2) strengthening abilities listening, but optimal conditions are needed in sharing experiences with friends, (3) the CL model has not fully explicitly shown being able to improve Collaborative Critical Thinking (CCT) skills. 3. Students who are accustomed to working in groups continuously will have a negative impact if they are required to work individually (Arends, 2012).
Team-Based Learning (TBL)	1. The results of the study have shown that the Team-Based Learning (TBL) model can improve collaboration	1. It does not explicitly mention being able to improve critical thinking even though collaboration (group work) critical thinking

Learning	Strengthness	Weaknesses
	between students, reasoning, problem-solving, critical thinking skills, encouraging scientific thinking skills (Haidet et al., 2012; McInerney & Fink, 2003)	are two interrelated skills for lifelong learning (Waite & Davis, 2006), and according to Moon (2007), collaboration involves critical thinking (Freeman & Hess, 2003)
		2. The results of (Buchin, 2015) found that TBL will improve collaborative critical thinking skills if the components of argument analysis and decision-making in teams are emphasized explicitly.
		3. Emphasis on several components explicitly in TBL will significantly increase critical thinking skills (Marin & Halpern, 2011).
		4. TBL in the non-health sector has not shown superior performance as in the health sector, because TBL is designed for the health sector (Yuretich & Kanner, 2015)
		5. The TBL model eliminates standard lecture patterns (Yuretich & Kanner, 2015), and this is contrary to the applicable curriculum in Indonesia because research in the field of science is about what is contained and what will be taught from the science curriculum itself (Taber, 2017)

The main challenge in the personal constructivist perspective on learning is to balance two main features of learning, namely: (1) learning is a process of potential behavior change with repeated interactions between the individual's internal mental models and experiential interpretations; and (2) in new learning that is contingent on current knowledge and understanding, the nature of the iterative process without assistance from more expert parties will lead to misconceptions (Taber, 2017).
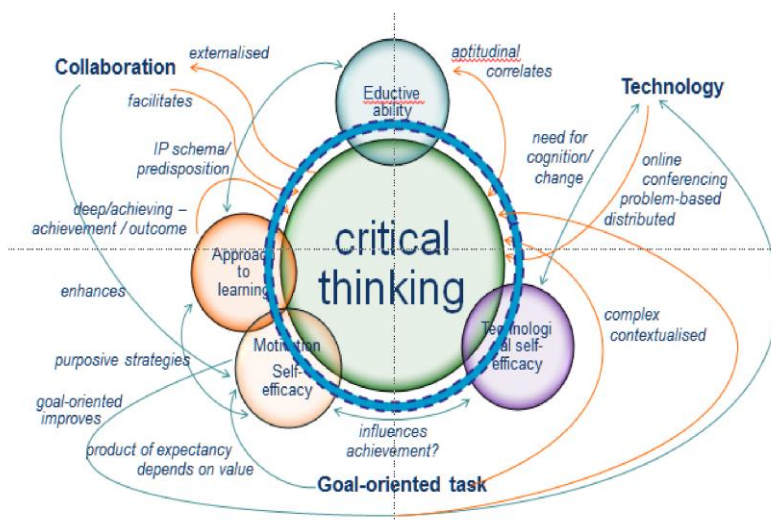

Figure 3. The interrelationship of the constructs of Individual & Collaborative Critical Thinking

Learning objectives in the constructivism paradigm basically do not provide 'direct' or 'minimal' instruction but focus on optimum levels of education. Constructivist pedagogy involves alternating between the period the teacher presents and explains (exposes) and the period when students engage with other students through interaction both between individuals and in certain groups while being

supervised and supported by the teacher. CCT is a method that allows students to work together in conducting analysis, inference, evaluation, and reasoning by deduction and induction (Gokhale, 1995; Khoshneshin, 2011). CCT is part of collaborative learning. Collaborative learning expects students to be professional and more skilled (Godat, 2012). Basically, critical thinking, collaborative learning, information technology support, and student skills (educative ability, learning approaches, and technological self-efficacy) are interrelated with each other. The interrelationships between each construct are depicted as blue rings in Figure 2. The arrows connecting each circle (theoretical constructs) describe the type or nature of the relationship between basic student skills, collaboration, technology, task-oriented goals, and critical thinking (Godat, 2012). The model illustrates that students who work in a team or group will have an impact on individual critical thinking performance which is supported by supportive learning tools.

4.   CONCLUSION

Researchers have succeeded in designing a learning model based on theoretical and empirical studies called the CinQASE learning model with the following syntax: (1) problem presentation, (2) individual work, (3). teamwork critical thinking collaboration, (4) class discussion, (5) evaluation & Feedback. In this model, students are required to be proactive in scientific activities to train individual critical thinking and collaboration skills so that the physics learning model developed is called the model of Collaborative in Questioning, Analyzing, Synthesizing, and Evaluating (CinQASE). The CinQASE model is designed for practicing individual critical thinking skills and collaborative critical thinking. Each phase of this learning model is expected to train individual critical thinking skills and students' critical thinking skills.

Limitations this study is still in the development stage of a hypothetical CinQASE model. Further research is needed to prove that the hypothetical CinQASE learning model is feasible to use by meeting the aspects of validity, practicality, and effectiveness in improving individual critical thinking skills and collaborative critical thinking.

Conflicts of Interest: Declare conflicts of interest or state "The authors declare no conflict of interest."

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