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CANTIK Economic Learning Model as a Stimulator of Students' Reactive Behavior

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ABSTRACT

The background to this research is the low level of active student participation in classroom learning. As a result, learning interaction is low and learning outcomes are suboptimal. This study aims to develop the CANTIK economics learning model to support the improvement of students' reactive behavior. Data collection methods used observation, interviews, and documentation and literature studies. The research instrument used interview guidelines and checklist observation sheets. Data analysis used comparison tests, multivariate T-tests, and N-Gain tests. Model development began with a preliminary study to identify learning needs and problems. Before being implemented, the CANTIK model design went through a validator test stage by model validators, material validators, and expert practitioner validators. The results of the validator test showed that the CANTIK model was declared very valid for use in the next stage. Next, the CANTIK model was subjected to limited trials, field trials, and dissemination. The test results showed that there was a significant increase in students' reactive behavior after receiving treatment using the CANTIK model. The reactive behavior of the very high category of the control group and the experimental group has a significant difference of 0.000 <0.005 or 34.4%. The reactive behavior of the high category of the control group and the experimental group has a significant difference of 0.000 <0.005 or 10.8%. Hasil Uji N-Gain menunjukkan bahwa N-Gain score is 0.89>0.7, meaning that the effectiveness of the CANTIK model. While the mean value of the N-Gain percent is 89%>76, meaning that the CANTIK model effectively improves the reactive behavior students.

Keywords: Learning Model, Reactive Behavior, Cantik Model

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INTRODUCTION

Education is interpreted as a process of changing the behavior of learners into individuals who are able to adapt to changes and what happens so that they are able to show an independent and mature attitude. In the context of science, education is carried out through a process of interaction between elements that support each other in an educational atmosphere which is often referred to as learning (Nurman et al., 2022). Learning is the process of transferring knowledge from teacher to learner so that they can become parties who can adapt to the environment and find solutions to problems in their lives (Cronje, 2020), (Mintii, 2025). The learning process is an activity that involves interaction between learning elements that contain reciprocal benefits for learners. The success of a learning process is determined by the existence of interaction activities between the elements involved (Attard & Holmes, 2022). There are at least three elements in the learning process, namely educators, teachers, and learning resources (Hamied & Musthafa, 2019). Perfect interaction between these learning elements will support the achievement of learning outcomes to be more optimal. The multi-directional

communication process or known as interaction has been proven to provide a real contribution to the learning process (Mas'ud et al., 2019). Interaction is not only limited to communication between teachers and learners, more than that, interaction must be realized in meaningful situations and involve a series of behaviors that instill attitudes, values, and knowledge for learners (Martha et al., 2021). The effectiveness of the learning process, one of the determining indicators is the quality of interaction. Interaction is not only limited to communication between teachers and learners, more than that, interaction must be realized in meaningful situations and involve a series of behaviors that instill attitudes, values, and knowledge for learners (Kustandi et al., 2020). The effectiveness of the learning process, one of the determining indicators is the quality of interaction. Educational interaction is a process of consciously conveying educational values aimed at educating and guiding towards maturity (Asanov et al., 2021). As explained above, interaction allows for the exchange of ideas, knowledge and perceptions, thereby further enriching the knowledge acquired by learners (Kintu et al., 2017).

The process of developing interactions in learning requires active participation from both teachers and learners (Kuhail et al., 2023). Teachers play a role in stimulating learners to be reactive to the entire learning process in the learning environment through effective strategies. Learners must show a response to the stimulants provided by the teacher. The learner's response depends on the quality of the stimulant (Kim et al., 2022). The problem is that learners often do not show the expected response. The causes are generally dominated by the inability to find ideas, concepts, or the low ability to understand the context of the material being studied (Bozkurt et al., 2021). Low self-esteem is also a dominant factor causing passivity in learning. Other causes such as shame, worry, and anxiety to convey a response. The condition of the learner, interest, attention, motivation, and boredom are also causes of passivity in learning (Sharples, 2023). This passive behavior can be interpreted as an emotional action that chooses not to give any response that should be done. Passive attitude results in the lack of courage to express opinions for learners. Communication skills cannot develop optimally and knowledge gained from learning cannot be perfectly accepted (Seo et al., 2021). Some of these impacts lead to suboptimal learning outcomes obtained, thus having a broad impact on the overall quality of learning (Tlili et al., 2023). The development of interactions that are manifested in the active activities of students needs to be initiated by raising their learning motivation. One way to develop motivation is to implement an interesting and innovative learning model. In addition, learners need to be given special roles or tasks to encourage them to interact with their learning environment (Essel et al., 2022).

The low level of reactive student behavior is characterized by several behaviors that can be observed during the learning process, namely being passive, indifferent, low self-confidence, not daring to express opinions, not being able to solve problems, and stuttering communication (Suhartini et al., 2019). Passive student behavior will certainly have an impact on learning outcomes. Learning outcomes are not optimal because students do not have a strong desire to understand each concept of the topic being studied (Bond et al., 2020). An attitude of indifference reduces motivation because there is no concern and concrete understanding of what benefits will be obtained if they master it. Another impact is that negative attitudes arise more because they are reluctant to ask questions even though they do not understand, no longer care about learning goals and lose hope (Tokan & Imakulata, 2019). Low reactive behavior in lecture activities is predominantly caused by a learning climate that is not in accordance with student desires (Li & Xue, 2023). The hope of a pleasant lecture is not felt so that negative attitudes arise, one of which is passive behavior. Most of them were disappointed with their learning process which was indicated by verbal behavior such as daydreaming, lack of enthusiasm, lack of spirit, and other passive actions (Shen & Yuan, 2021). They looked calm but did not focus their attention and concentration on the lecturer's explanation (Yin Albert et al., 2022). As a result, the learning process aimed at instilling values and knowledge did not provide optimal results. Passive student behavior is the impact of a monotonous learning process that is unable to drive learning motivation (Al Khreshe, 2022). The researcher conducted an initial observation study by filling out questionnaires and interviews with a random sample of 30 students. The instrument used to collect initial data on the causes of

passive student behavior was a questionnaire. The questionnaire contained six common causes of passive student behavior that could and could not be identified. The five causes include (1) Learning innovation, (2) learning facilities and infrastructure, (3) lecturer quality, (4) learning materials, (5) learning objectives, (6) other causes that were not identified.

It is known that passive behavior is mostly caused by low learning innovation at 57%, followed by lecturer quality at 13%, infrastructure and learning objectives at 10% each, learning materials at 6.67% and other unidentified causes at 3.33%. Respondents said that learning strategies are the main cause of behavioral responses shown by students in learning activities. Learning innovation includes strategies, media selection, models, and methods applied in learning activities. Effective learning methods will help students develop their ability to acquire, store, retain, remember, modify, and reuse the knowledge they have (Wut et al., 2022). The results of observations related to the causes of passive behavior in learning are interpreted that students need a learning model that is able to stimulate brain and physical performance through the development of creativity, communication, cooperation, and self-confidence. The CANTIK economic learning model is considered able to meet the learning needs above. The syntax of the CANTIK model is very relevant because it is able to construct students' needs to train and develop several indicators of reactive behavior, namely courage, self-confidence, spontaneity, calmness, stage mastery, and communication skills to support the development of reactive behavior.

Lecturers as learning leaders need innovation in models or strategies that can encourage reactive learner behavior. The concept of learning is basically an activity of controlling all elements of learning to participate actively through various forms of behavior (Jdaitawi, 2019). Some strategies that are often used to develop this behavior start with a psychological approach (Biwer et al., 2020). The CANTIK learning model is expected to encourage reactive behavior of learners so that they have the ability and courage to express their opinions. Activities in the CANTIK model support the development of the ability and courage to express opinions through activities of finding inspiration, imitation (imitating), investigation (finding), and negotiating with peers regarding the ideas they find. Active participation of students in lectures is needed to ensure that they enjoy the learning process so that mental and emotional conditions can synergize to stimulate thinking and problem-solving abilities (Chen et al., 2021). Therefore, students need to be encouraged to develop participatory skills in learning activities. Active roles in lectures show positive energy that will stimulate the brain to work harder. In addition, active behavior will provide an impressive, creative, and enjoyable learning experience because memory will always remember what it does (Hayat et al., 2020). The impressions that have been stored in memory help students to continue to remember, reminisce, and comprehensively understand the learning objectives they have followed.

Much research into the development of learning models has been conducted to improve reactive behavior such as that carried out by (J. Meyer et al., 2020) and (Castañeda-Babarro et al., 2020) which researches media to increase participatory physical activity. Other research by (Xiang et al., 2020), (López-Bueno et al., 2020), and (Nienhuis & Lesser, 2020). More research has focused on reactive behavior during the COVID-19 pandemic. Although numerous studies have been conducted to foster active participation, very little has focused on developing learning models. This research gap arises because the development of learning models to support active student participation in learning is scarce.

The syntax of the CANTIK economic learning model accommodates and facilitates students' creative thinking and opinions. The assumption is because the ability to think creatively is determined by how far students master the lecture material (Dignath & Veenman, 2021). Activities carried out in the CANTIK model support the development of thinking activities, creativity, and having confidence in expressing opinions. The syntax of the CANTIK model is developed based on the needs of the aspects to be developed which are contained in the indicators of student reactive behavior supported by empirical theory described in the following table 1.

Table 1. Support for Syntax Development Theory

No	Syntax	Theory Support
1	Phase 1 – Ceramah (Explain)	Learning by explaining will support the development of conceptual and theoretical understanding to help students internalize positive values, one of which is self-confidence (Kardoyo et al., 2020).
2	Phase 2 – Aspirasi dan Investigasi (Aspiration and investigation)	The main element of the investigation method is the existence of group work activities, thus requiring learning interactions through argumentation (O. A. Meyer et al., 2019).
3	Phase 3 – Negosiasi (Negotiation)	Negotiation can be understood as the act of presenting arguments to others with the aim of finding an agreement (Murcia et al., 2024). The ability to reach agreement with others requires active behavior through speaking and convincing others of their opinions.
4	Phase 4 – Tim (Team work)	The activity of working together in a team motivates students to convey ideas and thoughts that arise in their minds, thereby training them to have the courage to express their opinions (McHugh et al., 2020).
5	Phase 5 – Invensi (Invention)	The discovery method effectively changes students' behavior to be more active and energetic in learning compared to the lecture method (Setiadi & Elmawati, Diah, 2019).
6	Phase 6 – Kesimpulan (Conclusion)	Students' skills in drawing or compiling conclusions can be improved if they play an active role in the learning process (Rahmawaty et al., 2020).

The theoretical support in the table above is the basis for designing the initial product of the CANTIK economic learning model which is sequentially described in several phases as follows; (a) Lecture, The lecture method is a conventional way to deliver and explain lecture material to students. However, lectures are still considered relevant to the needs of current learning strategies. Lectures are very practical to use because they do not require other tools (Wolff et al., 2021). In face-to-face learning, the lecture method is still relevant and is predominantly used by teachers. In the CANTIK learning model, lectures are conducted at the beginning of the session to convey the outline of the material, the models used, and technical information. (b) Aspiration and investigation, the second stage in the CANTIK learning model is Aspiration and Investigation. Aspiration is the delivery of opinions, ideas, or ideas that arise from the minds of students (El-Sabagh, 2021). Investigation is the process of observing, finding, and digging deeper into cases that must be solved. Investigation adheres to the constructivist paradigm with the aim of providing an impressive learning experience for learners. In investigative activities, students will try to find specific things that can be used to defend their perceptions (Ng et al., 2023). Next, students will investigate, clarify, discuss and analyze the results of their investigations. The findings in the investigation process become the basis for forming aspirations that will be conveyed. (c) Negotiation, at this stage students will convey ideas while carrying out activities to convince other colleagues to agree with their ideas. In the process of negotiating, students will convince their colleagues with various reasons that can be scientifically justified to defend their ideas. This stage is very important because they must demonstrate communication skills both verbally and nonverbally (Kaffenberger, 2021). Negotiation skills will support basic communication skills that can be accepted by other parties (Criollo-C et al., 2021). The final result of this negotiation is the formation of a working group that will work together in the next stage. (d) Team, is a working group that will work together in formulating a final conclusion. The formation of the team is the result of the negotiation process in the previous stage. In the negotiation stage, each party will invite colleagues to join a solid team. The activity in the team is to unite several opinions brought by each member to be made into one conclusion or discovery with a strong scientific basis (Rizun & Strzelecki, 2020). Activities that occur in the team such as argumentation, discussion, and decision making. (e)

Invention is the stage of discovery or decision that has been agreed upon together in the group. The discovery of this idea will then be conveyed during the presentation of each group's conclusion with guidance from the teacher. (f) Conclusion, each group compiles the discovery of the idea into a large conclusion supported by a logical and scientific basis or reason to be accounted for in the group presentation.

The aim of this research is to develop and test the level of effectiveness of the CANTIK economics learning model to improve students' reactive behavior so that it has an impact on improving the quality of learning. The purpose of this study is to construct students' reactive behavior through the implementation of the CANTIK economic learning model.

METHOD

Type of Research

This research is a type of R&D (Research and Development), namely product research and development. R&D research seeks to produce and develop certain products that have benefits or uses for the general public (Sugiyono, 2022). R&D research using the Borg and Gall model to develop the CANTIK economic learning model as a driver of student reactive behavior. The research framework is as follows figure 1.

Figure 1. Research Design

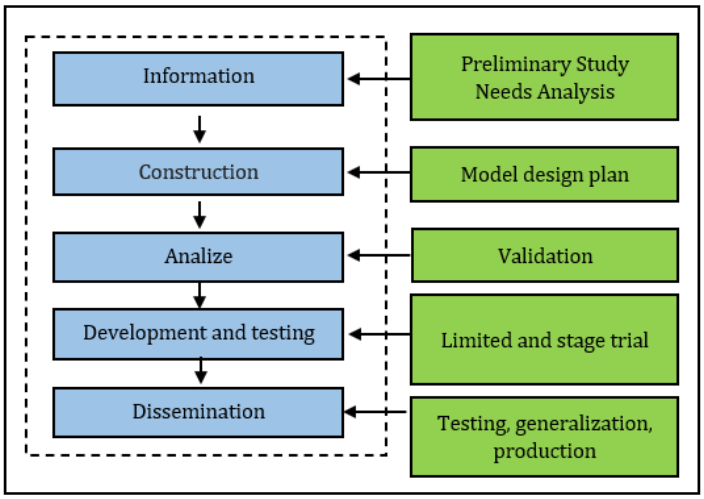


Figure 1 show the development of the CANTIK economic learning model uses the approach model developed by Borg and Gall. The Borg and Gall approach can be simplified into five steps, information, construction, analize and validation, development and testing, and dissemination.

1. **Information**

   The initial stage focuses on research and data collection on students' participatory tendencies in lectures through continuous observation. This stage also includes a literature review to support the research problem. The initial stage also establishes a research paradigm, including the strategies and objectives to be achieved at each stage.

2. **Construction**

   Activities in the development stage include developing the initial product framework, including the syntax of the CANTIK economics learning model, a guidebook, user guidelines, and preparing components and other materials needed for the next stage.

3. **Analize and Validation**

   The validation stage is an internal testing stage conducted by experts with expertise in education and learning strategies. The results of the testing include suggestions, input, criticism, media and material validation, design revisions, and product development. Design revisions are based on the assessments, opinions, and comments from the experts, which serve as the basis for refining the product design.

4. **Development and Testing**

The field trial stage consists of three stages: initial trial, field trial, and operational trial. (1) Initial trial is conducted on a limited scale with students, (2) Field trial is conducted on students who serve as research samples, (3) Operational trial is the stage of validating the product that has been tested in the previous stage. Each trial stage will involve revisions or refinements to the product. (1) The initial revision stage is expected to produce a product framework that will be used in broader trials, (2) The operational revision stage is expected to produce a product design that is ready for validation and use, (3) The final revision stage is the refinement stage to produce a final product that is ready for general use.

5. **Dissemination**

The stage of using, reproducing, or disseminating the product that has been produced or developed.

Subject Research

The population of the study was 80 students of the Economic Education Study Program. The sample selection technique used saturated sampling so that all populations were used as respondents.

Data Collection Techniques and Instruments

Data collection techniques used observation, interviews, and documentation studies. Observations were used to observe student behavior during learning. Interviews were used to identify weaknesses in learning conducted by teachers and students. Documentation studies were used to obtain information about documents containing learning strategies. The research instrument used a interview guide and checklist sheet containing five alternative answers: very high, high, medium, low, and very low. Indicators of student reactive behavior consist of courage, self-confidence, spontaneity, calmness, stage mastery, and communication.

Data Analysis

Product testing is carried out in three main stages, namely the preparation stage, limited trial stage, field trial stage, and testing and dissemination stage. To find out whether the CANTIK economic learning model has a significant impact on reactive behavior in both groups, it will be analyzed using a univariate t-test. Decision making if Sig. (2-tailed) ≤ 0.05, then there are differences in the reactive behavior before and after applying CANTIK model.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

The effectiveness measurement uses the N-Gain Test formula which aims to determine whether the application of the CANTIK learning model is effective in improving students' reactive behavior.

$$\text{N-Gain} = \frac{\text{Posttest Score-Pretest Score}}{\text{Ideal Score-Pretest Score}}$$

The results of the N-Gain test are consulted with the effectiveness determination table for decision-making based on table 2 of the N-Gain Score division categories.

Table 2. Interpretation of N-Gain Score

N-Gain Score	Category
g > 0.7	High
0.3 ≤ g ≤ 0.7	Average
g < 0.3	Low

RESULT AND DISCUSSION

Result

The development of the CANTIK learning model uses the Borg and Gall approach, simplified into four stages. These four stages are described as follows.

1. **Information and Construction**

The information phase aims to obtain initial data on the needs of students, teachers, and learning in general. The information phase was conducted using interviews and documentation studies. Interviews were conducted with a sample of students and two teachers. The interviews revealed that students were not sufficiently involved in decision-making during learning. Furthermore, teachers did not provide optimal opportunities for collaboration in solving learning problems. As a result, students became passive and were not trained to explore their thinking skills. Documentation studies were conducted to obtain information on the learning documents used. The results showed that teachers only used reference materials from textbooks and limited practice questions. The learning documents also contained only lecture-based learning strategies, thus not supporting students' reactive behavior.

This stage is part of the initial design of the CANTIK model. The syntax of the CANTIK model is compiled based on information obtained from initial observations. Activities in each syntax can be seen in the table 3.

Table 3. Syntax and Learning Activities

No	Stages	Teacher and Student Activities
1	Public Speech	The teacher provides an outline of the lecture material and conveys the lecture strategies that will be used, while the students listen.
2	Inspiration-Investigation	The teacher shows an inspirational learning video related to Economic Development and Growth. Students are tasked with observing and conducting in-depth analysis, then identifying factors that influence economic development.
3	Negotiation	After watching the video, the teacher will divide students into small groups. Each group member will be assigned to share their ideas related to the problem in the material and video they observed.
4	Teamwork	Each student must present at least three ideas for solving the problem to their group members. Students will then discuss each group member's ideas to generate a central idea.
5	Invention	Students find the best solutions to problems within the learning material. The best solutions must be accompanied by logical and scientific explanations.
6	Conclusion	Groups will present their best ideas to the class. Other groups must critique and offer suggestions. The teacher will select the best idea from each group to form the main conclusion.

2. **Analize and Validation**

Product validation is carried out to as-sess the product's feasibility and validity. The validators selected consist of three elements: model expert validators, material expert validators, and expert practitioner validators. Model validation aims to obtain suggestions or criticisms of the syntax of the model developed (Fleary, 2022). The validation process involves six validators who meet the criteria (1) Academic criteria lecturer, S3 (doctoral) education, minimum functional position as senior lecturer, have relevant expertise in their field (2) Practitioner criteria senior teacher (minimum rank III.d), have economic expertise, minimum five years of economics teaching experience. The scoring technique provided by

the validator uses a linkert scale 4 = very high, 3 = high, 2 = average, 1 = low . Model validation consists of three types, namely material expert validation, model expert validation, and expert practitioner validation. Material expert validation aims to obtain input, suggestions or improvements related to the suitability of the material with core competencies, basic competencies, and relevance to the development of critical thinking. Aspects assessed by material experts include content, feasibility, and relevance of the material. Model expert validation aims to obtain suggestions or input regarding effectiveness, ease of implementation in learning. Material validation is useful for obtaining an overview of material that is ready for use in the field. Validation by expert practitioners aimed to obtain suggestions or improvements from the perspective of model users, based on practical conditions in the field. The validation results indicated that the developed learning model was highly valid and ready for use with minor improvements. The validation results can be seen in the table 4.

Tabel 4. Validation Results from Validators

Validator	Percentage	Criteria	Conclusion
Materials Expert	87	Very Valid	Valid for use with corrections
Media Expert	92	Very Valid	Valid for use with corrections
Expert Practitioner	90	Very Valid	Valid for use with corrections
Average	90	Very Valid	Valid for use with corrections

The validation results from the three validators showed an average score of 90%, indicating that the media was deemed highly valid for use in the next stage. However, the validators provided revisions to improve the CANTIK model. These revisions are summarized in the table 5.

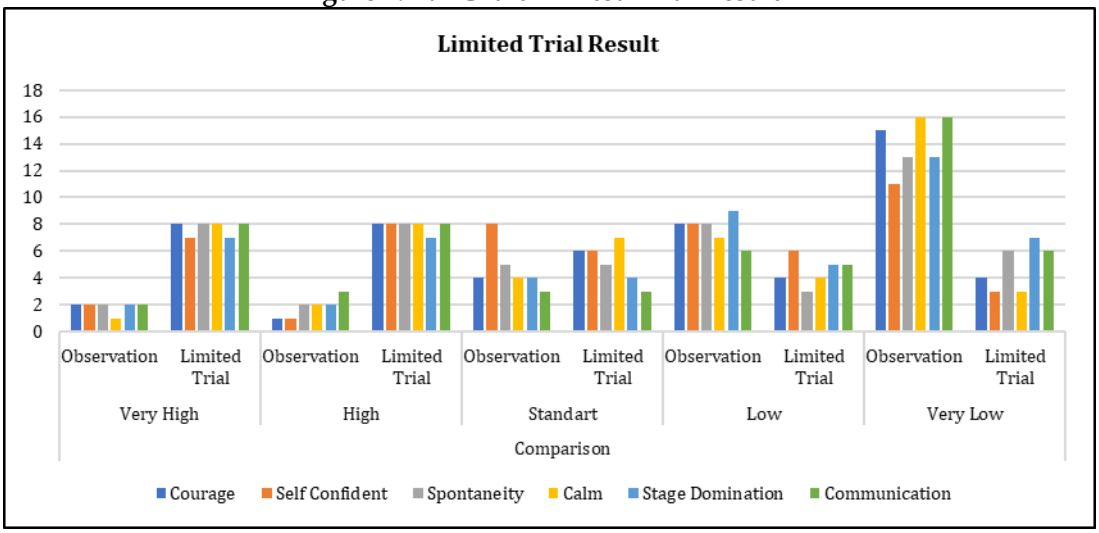
Tabel 5. Summary of Expert Suggestions and Revisions from FGD

Aspect Reviewed	Expert Comments	Follow-up Revisions
Syntax Model	The model syntax is made more directed towards the ability to analyze a case.	In the fourth syntax, students are required to provide logical reasons accompanied by scientific thinking concepts.
Syntax Model	Students are given the freedom to collect relevant learning resources.	Students are given the opportunity to use information search tools and write down sources in references.
Teaching Material	The problems studied should be updated and correlated with social life.	The latest problems and sparking students' interest in learning are correlated with local wisdom.

3. Development and Testing

The development of the CANTIK learning model began with a limited trial stage conducted on 30 students from three different classes. Each class will randomly select 10 students and then put them together in a new class. The teaching materials used in the limited trial stage are related to "Development Factors and Economic Growth" in the Development Economics course. The limited trial was carried out in September 2024. The results of the implementation of the CANTIK economic learning model related to student reactive behavior at the limited trial stage are summarized in diagram figure 2.

Figure 2. Bar Chart Limited Trial Result



Based on the diagram above, it can be interpreted that there is an increase in students' reactive behavior in lectures after receiving treatment using the CANTIK learning model. The increase covers all indicators of reactive behavior in five categories. The very high category increased by 17.5%, the high category increased by 18%, the medium category increased by 1.5%, the low category and very low decreased by 9.5% and 28.5%, meaning that fewer students are in that condition. To find out whether there is a significant difference in the results of observations with the results of the limited trial using the CANTIK model, a quantitative analysis was carried out using SPSS. The data to be analyzed is limited to the very high and high categories. The results of the analysis can be seen in table 6.

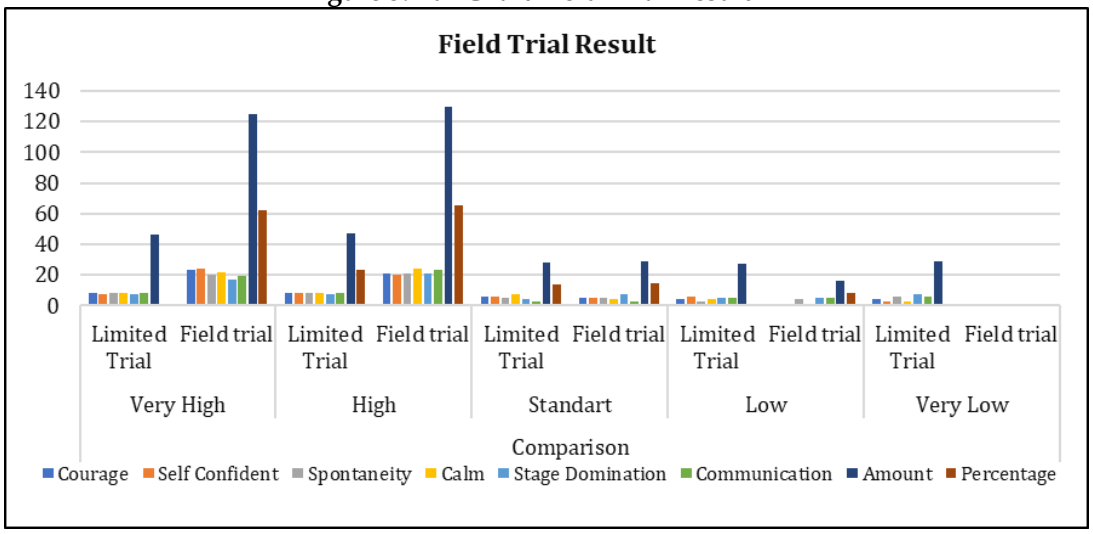
Table 6. Limited Trial Results

No	Category	Average (%)		Mean	Std Deviation	t	df	Sig
		Observation	Limited Trial					
1	Very high	5.5	23.0	-5.8	.75277	-18.981	5	.000
2	High	5.5	23.5	-6.0	.89443	16.432	5	.000

The results of data analysis using SPSS assistance above show that there is a significant increase in students' reactive behavior after receiving learning treatment using the CANTIK economic learning model. Reactive behavior in the very high category increased by 17.5% and a significance of 0.000<0.05. While reactive behavior in the high category increased by 18% and a significance of 0.000<0.05.

The next stage of testing is a field trial with 50 students randomly selected from three different classes as respondents. The lecture material in the field trial is the Prerequisites for Economic Development. Before the field trial was conducted, improvements were made to the CANTIK economic learning model by considering and considering the evaluation results at the limited trial stage. The field trial was conducted in October 2024. Improvements to several aspects of weaknesses in the previous stage evaluation played a positive impact on the effectiveness of the implementation of the CANTIK learning model at the field trial stage with a sample size of 50 students. The results of the field trial will be compared with the limited trial at the previous stage to compare the increase in the effectiveness of using the CANTIK learning model in figure 3 below.

Figure 3. Bar Chart Field Trial Result



Based on the diagram above, it can be interpreted that there is an increase in students' reactive behavior in lectures after receiving treatment using the CANTIK learning model at the field trial stage compared to the limited trial. The increase includes all indicators of reactive behavior in five categories. Very high category 62.5% or an increase of 39.5%, high category 65.0% or an increase of 41.5%, medium category 14.5% or an increase of 0.5%, low category 8% or a decrease of 5.5% and very low decreased by 14.5% meaning that fewer students are in that condition. To find out whether there is a significant increase in the results of the limited trial and field trial using the CANTIK model, a quantitative analysis was carried out using SPSS. The data to be analyzed is limited to the very high and high categories. The results of the SPSS analysis are seen in table 7.

Table 7. Field Trial Results

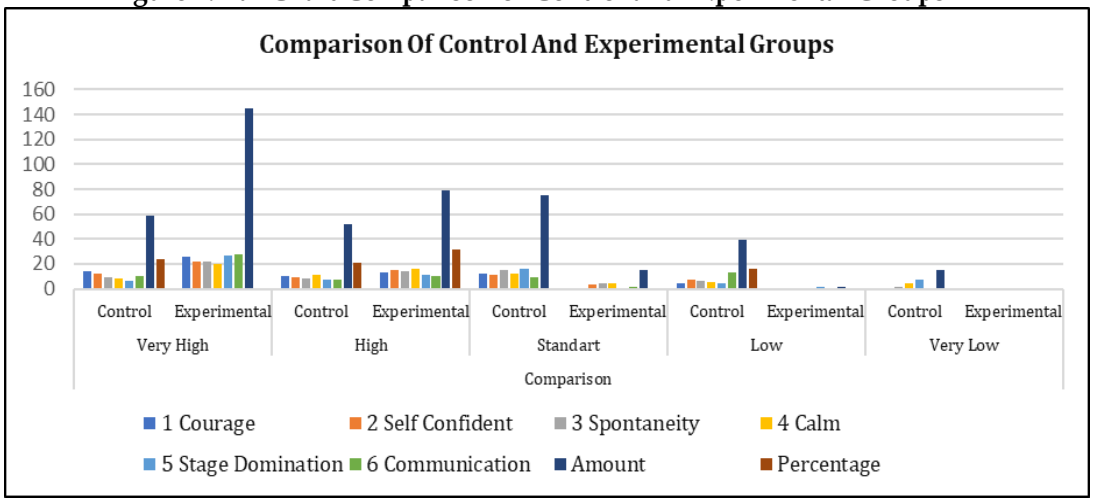
No	Category	Average (%)		Mean	Std Deviation	t	df	Sig
		Limited trial	Trial stage					
1	Very high	23.0	62,5	-13.1	2.63944	-12.219	5	.000
2	High	23,5	65,0	-13.8	1.47196	-23.020	5	.000

The results of data analysis using SPSS assistance above show that there is a significant increase in students' reactive behavior after receiving learning treatment using the CANTIK economic learning model at the Field Trial stage. Reactive behavior in the very high category increased by 39.5% and a significance of 0.000. While reactive behavior in the high category increased by 41.5% and a significance of 0.000. Next, product testing and dissemination will be carried out.

4. Dissemination

The product testing stage will be carried out with a randomized static group comparison design. At this stage, a comparison will be made before and after treatment using the CANTIK economic learning model between the control and experimental groups. The control group is part of the sample that did not receive the CANTIK learning model treatment. While the experimental group is part of the sample that received the model treatment. The stage of dividing the control and experimental groups was carried out by dividing the entire sample into two parts randomly with 40 students in each part. The next step is to determine the learning material that will be taught to students, namely Poverty and Income Equality. The lecturer teaches the material using a conventional lecture learning model to the control group for two meetings. Furthermore, the material is taught to the experimental group using the CANTIK economic learning model for two meetings. The measurement of both groups uses a checklist sheet instrument with indicators that have been validated by experts. The following is a comparison of the results in the control and experimental groups figure 4.

Figure 4. Bar Chart Comparison of Control and Experimental Groups



The results of the product test in the table above illustrate that there is a significant difference in the reactive behavior of students in the control group and the experimental group. In the very high category the control group obtained a percentage of 23.6% while the experimental group obtained a percentage of 58.0%. Furthermore, the high category the control group obtained a percentage of 20.8% while the experimental group obtained a percentage of 31.6%. The medium category the control group obtained a percentage of 30.0% while the experimental group obtained a smaller percentage of 6.0% because most of them had experienced an increase in reactive behavior to high or very high, as well as in the low and very low categories. To determine the level of effectiveness and significance of the influence of the CANTIK economic learning model, a Univariate T-test data analysis will be carried out using SPSS limited to the Very High and High categories.

Table 8. Comparison of Control and Experimental Groups

No	Category	Average (%)		Mean	Std Deviation	t	df	Sig
		Control Group	Experimental Group					
1	Very high	23,6	58.0	-14.33333	4.22690	-8.306	5	.000
2	High	20,8	31,6	-4.50000	1.37840	-7.997	5	.000

The results of the data analysis of the testing stage using SPSS assistance above show that there is a significant difference between the control group and the experimental group related to the reactive behavior of students after receiving learning treatment using the CANTIK economic learning model. The reactive behavior of the very high category of the control group and the experimental group has a significant difference of 0.000 <0.005 or 34.4%. The reactive behavior of the high category of the control group and the experimental group has a significant difference of 0.000 <0.005 or 10.8%. The N-Gain test aims to determine whether the application of CANTIK model effectively improves the reactive behavior. The following are the results of the N-Gain test us-ing SPSS 20. The SPSS output results of the N-Gain test show that the mean value of the N-Gain score is 0.89>0.7, meaning that the effectiveness of the CANTIK model. While the mean value of the N-Gain percent is 89%>76, meaning that the CANTIK model effectively improves the reactive behavior students.

DISCUSSION

The design of the CANTIK economic learning model is able to facilitate the development of all indicators of students' reactive behavior. At the product testing and dissemination stage, it was found that there was a very significant difference between the control group and the experimental group. These results confirm that the CANTIK learning model can meet the learning needs of the importance of developing students' reactive behavior in lectures. Reactive behavior can instill collaborative skills and attitudes to support personal

and peer development (Hartikainen et al., 2019). The novelty of the CANTIK economic learning model is the existence of aspiration, inspiration, imitation, investigation, negotiation, and invention activities, all of which require students to work hard using all their efforts and thinking skills and creativity to communicate with others. Aspiration provides an opportunity for all parties to express their perceptions to others. Inspiration is an action or effort to provide examples to others so as to create an inspiring attitude. Negotiation activities increasingly support the development of communication skills to convince others using logical and scientifically accountable reasons based on the results of the investigation. Invention is the stage of finding the main conclusion based on input from ideas or ideas from various parties involved in learning.

The syntax of the CANTIK model is similar to Bruner's multisensory learning theory, which emphasizes learning through discovery. Bruner explains that learning has three fundamental stages: the manipulation of real objects (enactive), the use of unique things (iconic), and the use of abstract things (symbolic) (Altakhayneh, 2021). Bruner's theory recommends that students be actively involved through learning activities from concrete understanding to developing abstract ones according to their individual cognitive development (Massimelli et al., 2025). The activity of presenting work results in the CANTIK syntax also supports the integration of Gardner's theory. Gardner believes that assessment of work results should not only be based on written exams but also on presentations and projects, so learning must provide space for the exploration of all abilities and creativity (Luisa et al., 2022). Much research has been conducted on the effectiveness of the aspiration and investigation method in improving the quality of learning. Aspiration and investigation are the main syntactic stages in the CANTIK model. Research on aspiration and investigation strategies in learning is often conducted as classroom action research, as was done by (Merintika. L et al., 2021) and (Qiu et al., 2020). Meanwhile, research that discusses negotiation techniques in learning can be carried out in formulating ideas into main conclusions (Schulze-horn et al., 2020). Other research was conducted on the implementation of discovery techniques as a learning outcome that is effective in increasing creative thinking (Gonz et al., 2020).

The implementation of the CANTIK economic learning model in the experimental group began with the lecture method. Through the lecture, the lecturer delivered material on poverty and income equality. The lecture was given in a relatively short duration and only conveyed the outline of the material on poverty and income equality. Furthermore, the lecturer gave students the opportunity to express their opinions related to the understanding of the material they had mastered. Inspiration was given by playing videos that had theoretical values and were able to encourage students' motivation to work harder. Motivation has an important role in influencing hard work behavior, including in learning activities, so it needs to be built as an initial foundation in learning (Deslauriers et al., 2019). Motivation is also able to develop creative thinking skills and find problems that must be faced (Ndiung et al., 2024). Integration of inspirational behavior in students has an impact on the emergence of imitative behavior to imitate, emulate, and emulate the successful experiences of others as a basis for forming external motivation that can support learning activities (Kurniawan et al., 2024). The formation of work teams supports the development of personal and interpersonal communication skills. Working and learning in groups requires students to collaborate and communicate actively in order to convey their respective ideas, thoughts, and perceptions (Ramadhani, 2024). Each member will be required to convey each idea logically and scientifically and try to defend it through the negotiation process. At this stage the problem solving process will be carried out in a healthy learning situation, complementing, supporting, and perfecting each other (Fareza et al., 2024). The final stage is to find a main idea that has been agreed upon by the work team through various considerations, theoretical support, and scientific perceptions of each member.

The implementation of the CANTIK economics learning model requires a paradigm shift in learning from being oriented towards delivering lecture material to student-centered learning. Lecturers are expected to act as facilitators who encourage critical, collaborative, and reflective thinking, and to possess adequate pedagogical and digital readiness. As for the curriculum implications, the developed learning model contributes to the development of a

curriculum that is more adaptive and relevant to student needs and current developments. The curriculum needs to accommodate innovative learning strategies and authentic assessment systems that support the achievement of 21st-century competencies. The results of this study can be used as a basis for formulating policies to improve the quality of learning in higher education. These policies can include providing regulatory support, increasing lecturer capacity, and strengthening learning infrastructure to ensure the sustainability of the model's widespread and effective implementation.

This research implies that the CANTIK learning model reinforces constructivist learning theory due to the active participation of students in constructing knowledge through their own experiences. Therefore, the CANTIK model can be an alternative model that can be implemented in the classroom to develop active and engaging learning activities for students. The research results show that the CANTIK model is scientifically proven to be effective in improving students' reactive behavior. However, this model still has limitations, especially in its implementation. The effectiveness of the CANTIK model on a subject can still be influenced by the context of school culture, facilities, and learning environment. The limitations of this study will form the basis for developing the concept of subsequent research by testing this model on a larger scale, refining evaluation instruments, and involving more teacher and student participation to measure its effectiveness and long-term impact.

CONCLUSION

The results of limited trials, field trials, and extensive trials showed a significant increase in students' active behavior in learning activities. Multivariate T-test analysis showed a significant difference between the control group and the experimental group after the action using the CANTIK model. All analyses that have been carried out concluded that the CANTIK economic learning model is very effective in supporting the development of students' active behavior. The reactive behavior of the very high category of the control group and the experimental group has a significant difference of 0.000 <0.005 or 34.4%. The reactive behavior of the high category of the control group and the experimental group has a significant difference of 0.000 <0.005 or 10.8%. Meanwhile, the results of the N-Gain test showed that the N-Gain score is 0.89>0.7, meaning that the effectiveness of the CANTIK model. While the mean value of the N-Gain percent is 89%>76, meaning that the CANTIK model effectively improves the reactive behavior of students. Suggestions for educators to create a meaningful learning climate need to be made to develop active behavior through the application of collaborative and participatory learning models.

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