



Developing Caring Economics-Based Teaching Materials for Microeconomics: A Design-Based Research Study on Altruism and Social Responsibility in Higher Education

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Abstract: The economic rationality and low level of social concern among university students indicates that economic learning in higher education does not adequately integrate altruistic values. Learning materials are predominantly influenced by a neoliberal paradigm, which tends to shape students' perspectives toward individual rationality as homoiconic. This condition highlights the need for innovative learning approaches that balance economic rationality with social responsibility. Therefore, this study aims to develop a caring economics-based learning model in higher education to internalize altruistic values in students' economic activities. The study employed a design-based research (DBR) approach involving problem identification, design development, implementation, and revision. The developed Caring Economics-based microeconomic learning design and teaching materials were implemented in classroom practice and evaluated using pretest-posttest and situational judgment test to examine its practicality and effectiveness in fostering students' altruistic economic attitudes and perspectives. This study develops Caring Economics-based teaching materials for a microeconomic theory course using a design-based research (DBR) approach. The materials demonstrated high feasibility, with validation scores ranging from 86.67 to 100.00 across organizations, case selection, language clarity, visual presentation, and integration of Caring Economics. Classroom implementation improved lecturer activity (66%–88%) and student participation (64%–83.6%). Learning effectiveness was confirmed by an N-Gain score of 0.75 (high category). The Wilcoxon Signed Rank Test showed a significant difference between pretest and posttest scores ($Z = -3.923$, $p < 0.05$), leading to the rejection of H_0 . These results indicate that the caring economics-based microeconomics textbook significantly improved students' learning outcomes. Conclusion. These findings suggest that integrating Caring Economics into microeconomic learning enhances students' conceptual understanding while fostering altruistic values. Therefore, Caring Economics offers a meaningful pedagogical approach for strengthening both students' economic competence and their social responsibility in economic decision-making.

Keywords: Design-Based Research, Microeconomics Education, Instructional Materials, Altruism, Social Responsibility, Problem-Based Learning.

1. Introduction

The tradition of assisting others has been deeply ingrained in human societies globally and is crucial for enhancing social cohesion. Prosocial behavior, including aiding those in need, enhances social welfare and collective well-being (Rossi *et al.*, 2023; Wiepking, 2021; Wittek & Bekkers, 2015). Opportunities for assistance are prevalent in daily life, encompassing charitable the end maybe in public areas, religious organizations, and structured humanitarian efforts that aid victims of disasters, illnesses, accidents, and various social crises. Moreover, various social organizations have been founded with the principal aim of enhancing human welfare.

According to economics, individuals are often viewed as homo economicus, creatures that the end maybe to fulfil their needs and optimize their utility through rational decision-making (Melé, 2014; McCarty & Meirowitz, 2012). In this context, economic decisions are generally assessed based on costs and benefits, illustrating the rational



calculations of individuals aiming to optimize satisfaction (Mathis, 2015; Suryadi, 2025). Humans are not solely economic agents; they are also social beings who exist within communities regulated by common norms and ethical expectations (House, 2018; McDonald & Crandall, 2015; Rizal, 1994). This dual nature suggests that economic behavior must be comprehended not only through self-interest but also through ethical and social factors.

Empirical evidence demonstrates the intricacy of economic behavior in reality. Numerous studies indicate the continued existence of unethical practices in market transactions. For instance, research has identified fraudulent practices among flour traders in the Central Market of Maros, and manipulation of weighing scales by rice traders in Palangkaraya. Conversely, other studies demonstrate that many traditional market traders adhere to ethical principles by maintaining transparency in product quality, ensuring fairness in weighing goods, refraining from coercing buyers, respecting competition, and taking responsibility for the quality of their (Ayad *et al.*, 2024; Hidayat *et al.*, 2018). Nonetheless, dishonest practices such as inaccurate measurements and the sale of low-quality basic commodities continue to be reported (Elifneh *et al.*, 2024; Nisak, 2017).

In Indonesia, economics education is formally introduced at various levels of the education system, including higher education institutions. Introductory economics courses, typically offered during the first and second semesters, provide students with foundational knowledge of microeconomic and macroeconomic theories. Lecturers play a strategic role as agents of learning who are responsible for designing innovative teaching approaches that enable students to develop not only economic knowledge but also life values, social awareness, and practical competencies (Chandra *et al.*, 2016). These educational objectives are executed with systematic curriculum planning, specifically through the Semester Academic Plan, which directs the arrangement of learning activities.

Furthermore, a thorough analysis of current economics curricula reveals that numerous instructional resources are significantly shaped by neoliberal economic ideology. The references typically employed in economics education are predominantly influenced by liberal capitalist viewpoints derived from Western economic traditions. Consequently, these theoretical frameworks may inadequately represent the socio-economic realities of Indonesia, reducing students' comprehension of local economic challenges (Hatmanto *et al.*, 2023).

This limitation is partially linked to the inadequate comprehension of Adam Smith's economic theory. Although Smith's concept of *homo economicus* is often highlighted in economics education, his broader moral philosophy, as presented in *The Theory of Moral Sentiments*, is seldom addressed. In this study, Smith emphasizes that humans are not merely rational economic agents but also *homo socius*, social beings who prioritize social harmony and collective welfare, as well as *homo ethicus*, moral beings guided by ethical principles. The disregard for these viewpoints has facilitated the prevalence of neoclassical economic thought, marked by liberalism and individualism, in economics education in Indonesia (Disman, 2004).

Recent empirical studies show behavioral patterns among university students that demonstrate pronounced consumerist tendencies. Research in Pekanbaru reveals that numerous students exhibit excessive consumption behaviors, shaped by social interactions, spending patterns, and lifestyle choices (Khoirunnas, 2017). Social media encourages these trends by influencing students' perceptions of aspirational lifestyles, encompassing consumption habits, fashion, and leisure activities. Students frequently feel obligated to frequent cafés or restaurants deemed socially prestigious after watching such experiences on social media platforms. Thus, consumption increasingly serves as a mechanism for demonstrating prestige, preserving social status, and adhering to trends rather than satisfying fundamental needs (Maulidizen *et al.*, 2025; Tarka *et al.*, 2022).

Based on an economic perspective, such behavior can still be considered rational as individuals strive to optimize satisfaction in their consumption choices. The excessive rational economic behavior, when divorced from ethical and social considerations, can lead to adverse social consequences. These conditions underscore the restricted presence of economic altruism within modern economic practices. In response to this challenge, scholars have advocated for a transition from the conventional *homo economicus* paradigm to the principle of the compassionate human being. This viewpoint underscores an in-depth understanding of human behavior that acknowledges interconnection, social accountability, and reciprocal relationships within society (Van Osch, 2013). Caring economics offers a normative framework for comprehending economic behavior based on justice, empathy, and altruism.

Education serves as a strategic avenue for fostering these values. Learning processes in higher education are anticipated to promote both cognitive advancement and changes in students' attitudes and behaviors. Education



ought to facilitate the development of harmonious relationships between students, others, and their environment by integrating theoretical knowledge with ethical and social consciousness (Blake *et al.*, 2013; O'Grady, 2025). Thus, implementing the principles of caring economics into economics education is vital for promoting socially responsible economic conduct among students.

Despite its significance, the notion of caring economics is still comparatively underexamined in higher education curricula, especially in economics instructional resources. This disparity indicates the necessity for pedagogical innovations that incorporate compassionate and altruistic values into economics education. In this context, higher education institutions are instrumental in shaping students' character. Instructors are anticipated to impart academic knowledge while also fostering moral values, ethical consciousness, and social responsibility in students (Pantić & Wubbels, 2012; Ying & Jackson, 2025). As a pedagogical and normative framework, Caring Economics promotes empathy, ethical reflection, social responsibility, and concern for societal well-being in economic decision-making. Ethical awareness, in this context, refers to the capacity to evaluate the moral implications of economic choices, whereas social responsibility reflects an obligation to consider their effects on others and the broader community. Together, these dispositions are expected to nurture altruism, defined in this study as a voluntary tendency to prioritize the welfare of others without seeking personal gain. Therefore, the Caring Economics-based learning intervention, implemented through Problem-Based Learning and case-based discussions, is expected to enhance students' ethical awareness and sense of social responsibility, ultimately fostering altruistic orientations and behaviors in economic contexts. This theoretical pathway serves as the conceptual foundation for the study and guides the development of the proposed instructional materials.

Therefore, this study aims to develop teaching materials for microeconomic theory that integrate the principles of caring economics in order to foster students' knowledge, attitudes, and caring behaviors grounded in altruistic values (Figure 1). The study involves the design, development, and empirical evaluation of the teaching materials in terms of their validity, practicality in classroom implementation, and effectiveness in shaping students' caring-oriented economic perspectives.

Based on the identified research gaps, this study addresses the following research questions:

How can microeconomic teaching materials be developed by integrating caring economics values into the learning content?

How valid, practical, and effective are the developed microeconomic teaching materials in fostering students' knowledge, attitudes, and caring behaviors grounded in altruistic values in higher education?

2. Methods

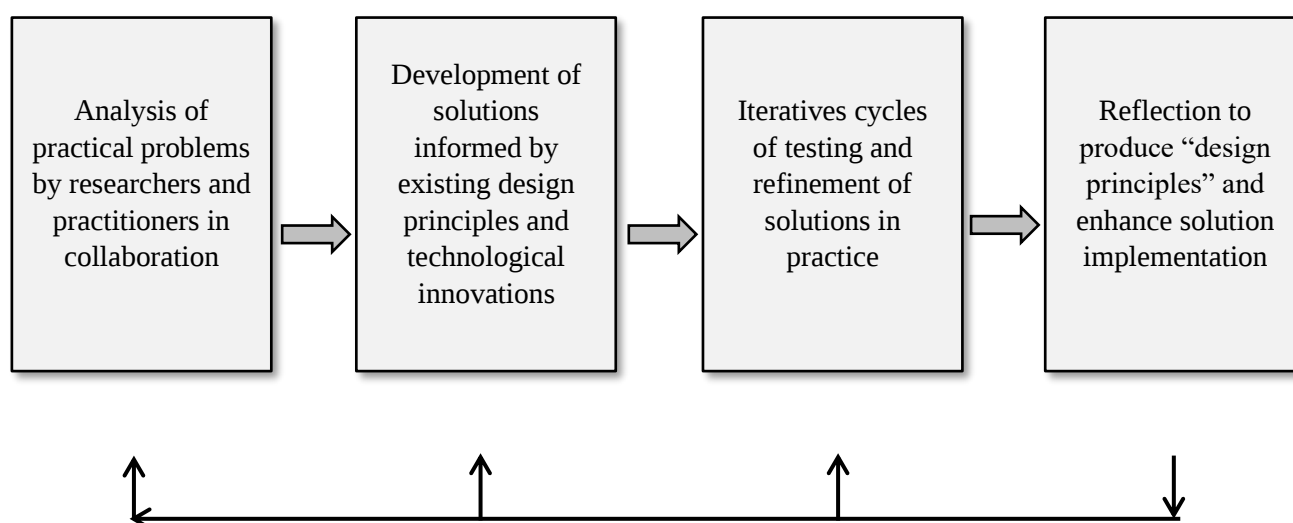


Figure 1. The Design-Based Research (DBR) Design Process (Amiel & Reeves, 2008)

This study employed a research and development (R&D) approach using the design-based research (DBR) framework. DBR is a form of educational design research that systematically designs, develops, and evaluates educational interventions—such as programs, instructional strategies, learning materials, products, and systems—as potential solutions to complex problems in educational practice. The DBR process consists of four main stages: (1) identification and analysis of the problem, (2) formulation of the proposed solution, (3) iterative cycles of testing and refinement of the design, and (4) reflection intended to produce design principles and guidelines for practical application (Amiel & Reeves, 2008; Kennedy-Clark, 2015). Through iterative processes, DBR facilitates the creation of contextually pertinent and theoretically substantiated educational innovations.

2.1 Research Design

The Design-Based Research (DBR) framework was utilized as the basis for the creation and validation of teaching materials for microeconomic theory.

1. **Problem Identification and Needs Analysis:** The identification and analysis of the problem were performed at early stages of the study, when the research issue was initially acknowledged. The issues addressed in this study include the dominance of rational economic behavior and the relatively low level of social concern among university students, as well as the absence of integration of the caring economics concept in economics courses.
2. **Design of the Proposed Solution through the Development of a Caring Economics Instructional Design:** This stage involved designing the proposed solution by developing a caring economics–based instructional design. The design process included the preparation of learning components such as the instructional scenario, course teaching materials, and assessment instruments to evaluate students' learning outcomes.
3. **Iterative Implementation and Refinement of the Instructional Design:** This stage involved iterative classroom implementation to test and refine the developed instructional design. In practice, the caring economics approach was integrated into selected topics within the microeconomic theory course materials. The aim was not only to enable students to analyze economic problems but also to foster an economic perspective that goes beyond purely financial rationality by promoting altruism as an essential component of students' academic and social character in real-life contexts. The instructional scenarios and microeconomic teaching materials based on caring economics were implemented in classroom learning activities. A pre–post test design was employed to assess the practicality and effectiveness of the developed teaching materials (Pape-Zambito & Mostrom, 2018).
4. **Reflection to Generate Design Principles and Implementation Insights:** After the completion of the field activities, a reflection phase was conducted by synthesizing the research findings and analyzing the results obtained from the study participants. This stage involved examining students' understanding of caring economics as observed during the initial assessment and comparing it with the outcomes following the instructional implementation. The reflection process aimed to derive key design principles and practical insights for improving the implementation of the caring economics–based instructional model.

2.2 Participants and Research Site

This research was carried out within the Economics Education Study Program at the Faculty of Teacher Training and Education, Universitas Islam Riau, Indonesia. The group included 20 undergraduate students taking the Microeconomic Theory course in the 2024/2025 academic year. The participants were chosen through a total sampling technique, in which every student enrolled in the course was incorporated into the study and took part in the implementation and assessment of the created learning materials. The students were in their second semester since the Microeconomic Theory course is provided as a core subject at the beginning of the undergraduate program. Including all enrolled students aimed to guarantee that the Caring Economics-based instructional design could be assessed in its genuine classroom environment, aligning with the principles of Design-Based Research (DBR). Along with the student participants, the research included one course instructor who served as the practitioner during the execution phase, three expert evaluators who evaluated the quality and practicality of the instructional resources, and two observers who oversaw classroom activities during the intervention.



2.3 Data Collection Procedures

Data was obtained using three main methods:

Expert Validation

Conducted by three experts in economics education to assess the validity and feasibility of the developed teaching materials.

Lecturer Observation

Classroom observations were conducted by two observers to assess the lecturer's implementation of the Caring Economics learning design throughout the intervention.

Student Activity Observation

Student participation and engagement during learning activities were observed and recorded by two observers using a structured observation sheet.

Effectiveness Testing

A pre-test and post-test design was employed to evaluate the effectiveness of the teaching materials in improving students' knowledge and understanding of Caring Economics concepts.

2.4 Instruments

Three instruments were created and validated for data collection purposes:

Specialist Verification Document This tool was utilized to evaluate the validity and practicality of the created Caring Economics-oriented educational materials. The validation sheet included 15 items addressing content organization, case relevance, language clarity, visual presentation, and the incorporation of Caring Economics concepts. Responses were evaluated on a five-point Likert scale from 1 (very poor) to 5 (excellent). **Instructor Observation Form** This tool was utilized to assess the lecturer's effectiveness while conducting Caring Economics instruction. The observation sheet included 10 indicators pertaining to lesson preparation, guiding classroom discussions, executing Problem-Based Learning (PBL), managing the classroom, and engaging students. Two trained observers carried out observations during each meeting. Scores were transformed into percentages and classified as Very Good, Good, Fair, or Poor. **Student Participation Monitoring Form** This tool was utilized to assess students' involvement and engagement in classroom learning tasks. The observation criteria encompassed engagement in discussions, problem-solving tasks, teamwork, responsiveness, and participation in group activities. Data was gathered by two observers in each learning session and analyzed descriptively through percentage scores and categorical classifications. **Knowledge Assessment** the success of the created teaching materials was evaluated through a pre-test and post-test featuring 10 multiple-choice questions aimed at gauging students' comprehension of microeconomic concepts intertwined with altruism and Caring Economics principles. The N-Gain formula was utilized to analyze learning gains.

2.5 Data Analysis

Data were analyzed utilizing both descriptive and inferential statistics:

- 1 Validation Results: Displayed as percentages indicating the mean evaluations of the experts.
- 2 Lecture Activity Test: Evaluated through descriptive statistics to ascertain mean scores and categorical classifications (Very Good, Good, Fair).
- 3 Effectiveness Test: Assessed via pre-test and post-test comparisons, analyzed utilizing the N-Gain formula.

$$N - Gain = \frac{\text{Score Posttest} - \text{Score pretest}}{\text{Maximum Score} - \text{Score pretets}} \quad (1)$$

The results were classified as high (>0.7), moderate (0.3–0.7), or low (<0.3); furthermore, normality and homogeneity tests were conducted to verify data reliability.



3. Results and Discussion

This section presents the findings that directly respond to the two research questions specified in the Introduction. The results are structured to illustrate (a) the validity of the created instructional materials, (b) the execution of caring economics classroom activities, and (c) their efficacy in influencing students' knowledge, attitudes, and behaviors. Each subsection pertains to the specific data gathered via the instruments mentioned in the Methodology section.

3.1 Validation Results of the Teaching Material

The assessment of the created microeconomic theory instructional materials, which incorporate the concept of caring economics grounded in altruism, was performed by three expert groups, as illustrated in Figure 2. The teaching materials were evaluated by three expert validators using a 15-item validation instrument. The percentage score for each aspect was obtained by dividing the total score awarded by the validators by the maximum possible score and multiplying the result by 100. The validation results indicated that all assessed aspects achieved scores above 86%, placing them in the "Very Valid" category and indicating that the instructional materials were suitable for implementation after minor revisions

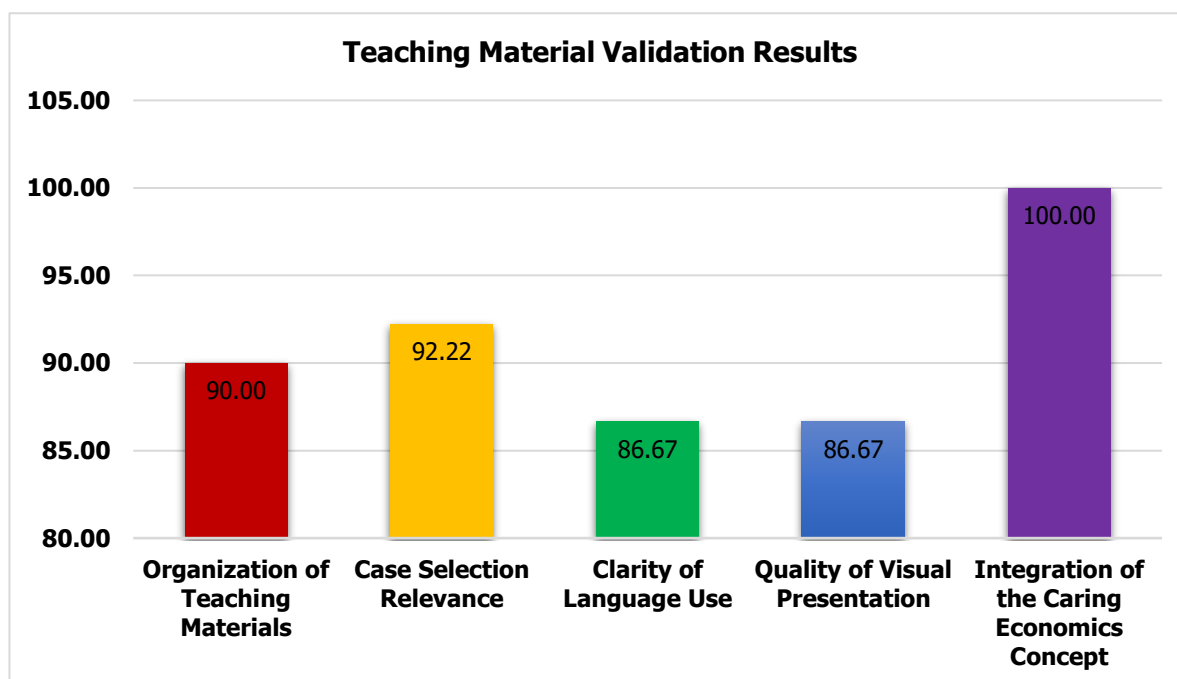


Figure 2. The Teaching Material Validation Results

Figure 2 illustrates the outcomes of the validation assessment of the developed instructional materials. The assessment was performed across five primary dimensions: organization of instructional materials, selection of cases, clarity of language, quality of visual presentation, and incorporation of the Caring Economics concept. The validation results reveal that the organization of teaching materials received a score of 90.00, indicating that the structure and systematic presentation of the materials are effectively organized.

The case selection component attained a score of 92.22, signifying that the cases incorporated in the instructional materials are deemed pertinent and conducive to students' comprehension of the learning material. Moreover, the clarity of language attained a score of 86.67, signifying that the language employed is adequately clear and comprehensible. The quality of visual presentation also received a score of 86.67, suggesting that the visual design of the teaching materials is adequate in supporting the learning process.

Meanwhile, the integration of the Caring Economics concept obtained the highest score of 100.00, demonstrating that the concept of Caring Economics has been very well integrated into the developed teaching materials. Overall, these validation results indicate that the teaching materials have a very high level of feasibility and are appropriate for use in the learning process.

3.2 The Implementation of Caring Economics Classroom Activities

During the implementation of the learning process, observations were also conducted from the first to the fourth meeting. At this stage, the observers monitored the teaching and learning activities as they occurred. The results of these observations are summarized as follows.

Table 1. Summary of Lecturer Observations on the Implementation of Caring Economics Learning Practices Based on Problem-Based Learning (PBL)

Meeting	Score	Average	Percentage	Description
1	33	6,6	66%	Good
2	39	7,8	78%	Good
3	43	8,6	86%	Very Good
4	44	8,8	88%	Very Good
Overall average			79,5%	Good

Table 1, it can be observed that the lecturer's activities from the first to the fourth meeting showed a consistent improvement. In the first meeting, the lecturer's activity achieved a percentage of 66% with a total score of 33. In the second meeting, there was a slight increase, with a percentage of 78% and a total score of 39. By the third meeting, the lecturer's activity reached its highest improvement, with a percentage of 86% and a total score of 43. In the fourth meeting, the percentage further increased to 88% with a total score of 44. Thus, the observation of the lecturer's activities across the meetings indicates a positive and consistent improvement. The lecturer activity observation sheet consisted of 10 indicators representing the stages of Problem-Based Learning (PBL). Each indicator was rated on a five-point scale ranging from 1 (very poor) to 5 (excellent). The observation score was converted into a percentage using the following formula:

$$\text{Percentage Score} = \frac{\text{Observed Score}}{\text{Maximum Score}} \times 100\% \quad (2)$$

The maximum score for each meeting was 50 points (10 indicators × 5 points). Observation results were categorized as follows: 81–100% = Very Good, 61–80% = Good, 41–60% = Fair, 21–40% = Poor, and ≤20% = Very Poor.

Furthermore, during the learning process, observations were also conducted on student activities throughout the sessions using the Problem-Based Learning (PBL) model from the beginning to the end of the class. The scores obtained from the student observation sheets.

Table 2. Summary of Student Observations on the Implementation of Caring Economics Learning Practices Based on PBL

Meeting	Score	Average	Percentage	Description
1	644	32,2	64%	Good
2	740	37	74%	Good
3	832	41,6	83,2%	Very Good
4	836	41,8	83,6%	Very Good
Overall average			76,2%	Good

Based on the table 2, it can be described that students' activities during the caring economics learning process using the Problem-Based Learning (PBL) model showed a consistent improvement from the first to the fourth meeting. In the first meeting, the total student activity score was 644, with a mean of 32.2, resulting in a percentage of 64%, categorized as Good. In the second meeting, student activity increased, with a total score of 740, a mean of 37, and a percentage of 74%, still categorized as Good. The third meeting showed a more significant improvement, with a total score of 832, a mean of 41.6, and a percentage of 83.2%, categorized as Very Good. In the fourth



meeting, the total score slightly increased to 836, with a mean of 41.8 and a percentage of 83.6%, remaining in the Very Good category.

Overall, the average total percentage of student activity across the four meetings was 76.2%, indicating that student engagement and participation during caring economics learning based on PBL were good and demonstrated a positive trend of improvement.

3.3 Effectiveness of the Teaching Materials Usage

Next, an assessment of the cognitive domain was conducted, which relates to reasoning and thinking processes. In this cognitive assessment, specific evaluation tools were employed. The first tool involved measuring N-Gain scores based on students' pre-test and post-test results using multiple-choice questions.

Table 3. The effectiveness test results of the Implementation of Caring Economics Learning Practices Based on PBL

No	Student name	Pretest	Posttest	Gain Score
1	MH 01	30	80	50
2	MH 02	30	80	50
3	MH 03	40	80	40
4	MH 04	50	90	40
5	MH 05	30	80	50
6	MH 06	30	80	50
7	MH 07	40	90	50
8	MH 08	40	80	40
9	MH 09	30	90	60
10	MH 10	40	80	40
11	MH 11	30	80	50
12	MH 12	20	80	60
13	MH 13	30	80	50
14	MH 14	50	90	40
15	MH 15	40	90	50
16	MH 16	50	80	30
17	MH 17	30	90	60
18	MH 18	30	90	60
19	MH 19	40	90	50
20	MH 20	30	80	50
	Average	35,5	84	N-gain score 0,75
Improvement in Learning Outcomes		48,5		

Table 3 presents students' pre-test and post-test scores on the multiple-choice test, which were processed using an adapted rubric for evaluating written responses. The calculation of the N-Gain score yielded a value of 0.75, or 75%, indicating a high category based on the gain score classification and corresponding to a cognitive effectiveness category according to the N-Gain interpretation (Harerimana *et al.*, 2023; Salsabila & Nasir, 2025; Sirianansopa, 2024).

Therefore, it can be concluded that the use of microeconomics teaching materials based on caring economics is effective in improving learning outcomes in the Microeconomic Theory course, as measured using multiple-choice evaluation tools.

Table 4. Situational Judgment Test pada PreTest dan PostTest Result

No	Student name	Pretest	Posttest	Gain Scor
1	MH 01	13	38	25
2	MH 02	11	38	27
3	MH 03	16	33	17
4	MH 04	11	38	27
5	MH 05	10	39	29
6	MH 06	12	37	25
7	MH 07	11	36	25
8	MH 08	12	38	26
9	MH 09	15	34	19
10	MH 10	14	37	23
11	MH 11	11	39	28
12	MH 12	16	36	20
13	MH 13	12	37	25
14	MH 14	17	32	15
15	MH 15	13	37	24
16	MH 16	13	36	23
17	MH 17	12	37	25
18	MH 18	14	35	21
19	MH 19	10	39	29
20	MH 20	13	38	25
	Reta rata	12,8	36,7	N-gain score 0,87
Improvement in Learning Outcomes		23,9		

Table 4 shows the pretest and posttest scores of students' SJT, in the test processed using an adaptation of the student SJT assessment rubric. The results of the n-gain score test calculation show a value of 0.87 or 87% which means it has a high category based on the gain score distribution category (Melzer, 2008) and a cognitive category based on the N-Gain effectiveness interpretation category (Hake, 1999). Thus, it can be concluded that the use of microeconomic theory teaching materials based on caring economics is effective in building students' altruistic attitudes.

3.3.1 Comparative Analysis

A comparative analysis was conducted to examine differences in students' understanding and attitudes toward caring economics following the implementation of a microeconomics textbook based on caring economics. This analysis involved comparing pretest and posttest scores. Prior to conducting the comparative statistical test, a prerequisite normality test was performed.

3.3.2 Normality Test

The normality test aimed to determine whether the pretest and posttest scores of students' understanding and caring attitudes were normally distributed. This test is a prerequisite for selecting the appropriate statistical method. Normality was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests.



Table 5. Results of the Normality Test

	Kolmogorov-Smirnov ^a		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
Pretest	0.247	0.002	0.841	0.004
Posttest	0.376	0.000	0.626	0.000

The results presented in Table 5 indicate that, with a sample size of 20 participants, the significance values obtained from both the Kolmogorov–Smirnov and Shapiro–Wilk tests were less than 0.05 ($p < 0.05$). This finding suggests that the pretest and posttest data were not normally distributed. Consequently, the assumption of normality required for parametric tests was not met, and the paired sample t-test was deemed inappropriate. Therefore, a non-parametric alternative, the Wilcoxon Signed Rank Test, was employed.

3.3.3 Wilcoxon Signed Rank Test

The Wilcoxon Signed Rank Test was used to analyze differences between two related samples with continuous data that do not follow a normal distribution. The statistical hypotheses were formulated as follows:

1. H_0 : There is no significant difference in students' learning outcomes in microeconomics based on caring economics between the pretest and posttest.
2. H_1 : There is a significant difference in students' learning outcomes in microeconomics based on caring economics between the pretest and posttest.

Table 6. Results of the Wilcoxon Signed Rank Test

	Posttest – Pretest
Z	-3.923
Asymp. Sig. (2-tailed)	0.000

The results of the Wilcoxon Signed Rank Test are presented in Table 6. The analysis revealed a Z value of -3.923 with a significance level of $p = 0.000$ ($p < 0.05$), indicating a statistically significant difference between pretest and posttest scores. Thus, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted. These findings demonstrate that the implementation of the caring economics-based microeconomics textbook significantly improved students' learning outcomes. Therefore, it can be concluded that the developed instructional material is effective in enhancing both students' understanding and their caring attitudes.

3.4 Integration of Caring Economics Values in Microeconomic Theory Courses

The integration of caring economics into the Microeconomic Theory course is visually supported by the instructional components illustrated in Figures 3.

As illustrated in Figure 3, the Caring Economics Instructional Design Framework conceptualizes a cyclical pedagogical pathway designed to cultivate prosocial economic agency by anchoring conventional microeconomic theory in altruistic values through Problem-Based Learning (PBL). The trajectory commences with establishing foundational analytical competencies via Microeconomic Concepts (Phase 1), which are systematically enriched by embedding normative Caring Economics Values (Phase 2) such as empathy, equity, and sustainability. These integrated constructs are operationalized within collaborative PBL Activities (Phase 3), where learners confront authentic socio-economic dilemmas through community-centric projects. To internalize these ethical dimensions, students undergo a structured Reflection phase (Phase 4) driven by self-assessment and dialogic inquiry, which ultimately translates knowledge into actionable Altruistic Economic Behavior (Phase 5), manifested through ethical consumption and prosocial spending.



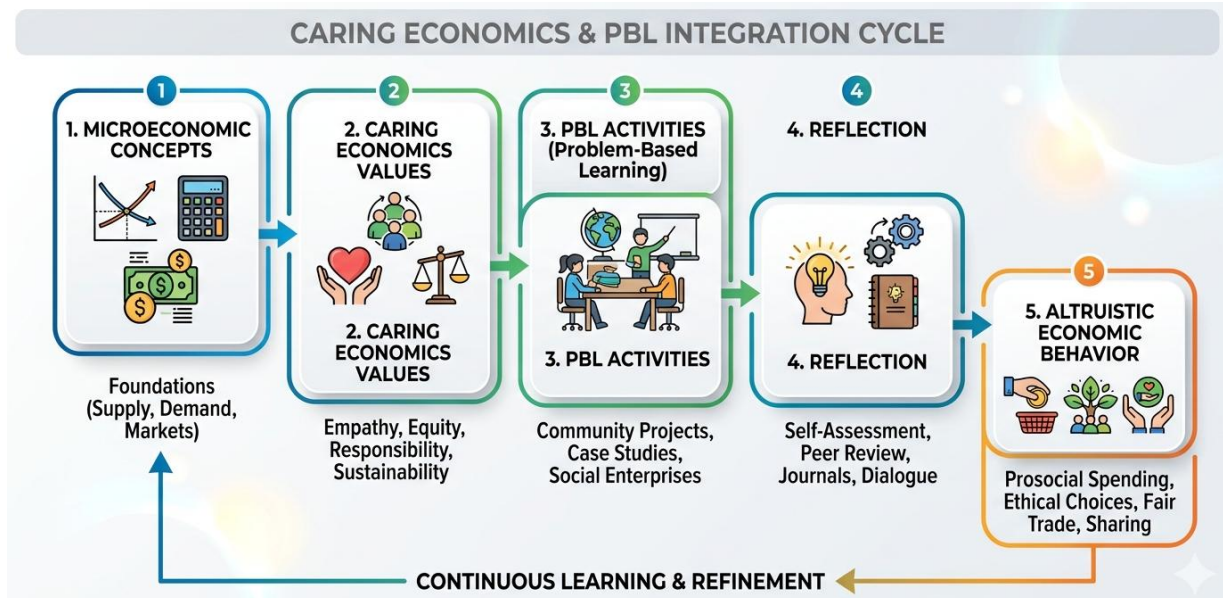


Figure 3. Conceptual Framework: Caring Economic Instructional Design.

This transformative process is sustained by a Continuous Learning and Refinement feedback loop that realigns behavioral outcomes with foundational theories, fostering a dynamic and evolutionary learning eco-system.

The lecture design focused on caring economics was effectively developed through a study utilizing the Design-Based Research (DBR) methodology. The learning design incorporates the principle of caring economics into the Microeconomic Theory course to cultivate and enhance economic care and social responsibility among students at the Faculty of Teacher Training and Education at Universitas Islam Riau. In this design, students are expected to recognize that economic decision-making should not be motivated solely by rational self-interest but must also be rooted in altruistic values, demonstrating concern for others and the environment.

The findings of this study are consistent with previous research demonstrating the effectiveness of the DBR approach in developing innovative instructional designs. For instance, DBR has been used to design learning activities that facilitate active student engagement in Stockholm, Sweden, where teachers and researchers collaboratively developed instructional practices by leveraging advances in information technology (Bergdahl *et al.*, 2018). Similarly, research by Hernwall and Söderberg (2020) shows that the DBR model has been successfully applied to develop a prototype learning program on personal financial management for secondary school students in Sweden (Hernwall & Söderberg, 2020).

In another study, reported that the Design-Based Research (DBR) model was effectively employed to develop an entrepreneurship learning design grounded in caring economics. The program aimed to strengthen students' entrepreneurial mindset while simultaneously enhancing their entrepreneurial intentions in higher education. The findings of that study contributed a learning framework for entrepreneurship education oriented toward social entrepreneurship based on partnership, emphasizing values of social responsibility and environmental sustainability (Darmawan *et al.*, 2021).

The Design-Based Research (DBR) model is particularly suitable for research aimed at developing caring economics learning, as the concept of caring economics is relatively new and has not been widely introduced in economic education, particularly among lecturers. From a theoretical perspective, the introduction of caring economics is important as a response to the growing concerns regarding the decline of economic empathy and issues related to the rationality of economic behavior among university students. The prevalence of moral hazard behaviors in economic decisions, where individuals pursue personal gain at the expense of others, underscores the necessity of providing students with a robust foundation in economic ethics. This foundation can provide a guiding framework for students to make responsible economic decisions when they become active participants in the economy.

This viewpoint corresponds with the view that design-based research is rooted in both theoretical frameworks and practical contexts. This further substantiates the argument posited by Dolmans (Dolmans, 2019) who asserts that the DBR model can be effectively implemented in genuine learning environments, as it facilitates the application

of interventions within specific educational contexts. In this regard, the developed instructional design aims to explore new knowledge and address unresolved issues within the field of economics education.

The appropriateness of employing DBR in this study is further supported by the statement of (McKenney, 2013). Who argues that design-based research is inherently pragmatic, as its primary objective is to solve real-world problems by designing and implementing educational interventions while simultaneously expanding theoretical understanding and refining design principles. To date, instructional materials related to economics—particularly within the Faculty of Teacher Training and Education at Universitas Islam Riau—have not been systematically linked to the concept of caring economics. Consequently, a caring economics-oriented instructional design was developed to cultivate students' economic awareness grounded in altruistic values. Through this learning design, students are introduced to key moral dimensions that should guide economic decision-making, including cooperation, sharing, helping, generosity, honesty, and consideration of the rights and well-being of others. These values are intended to serve as ethical foundations for economic actors when making economic decisions.

The implementation of Problem-Based Learning (PBL) combined with a case method approach in team-based learning has proven effective in fostering students' economic care and social responsibility. This approach is consistent with the integrative nature of design-based research, in which researchers combine multiple research methods and approaches—drawing from both qualitative and quantitative paradigms—according to the needs of the study. The integrative use of multiple methods enables researchers to obtain data from various sources, which helps confirm findings and enhance the credibility of the research outcomes (Wang & Hannafin, 2004).

Furthermore, caring economics learning implemented through the PBL model challenges students to think critically and analytically while continuously seeking solutions to the economic problems they encounter. During group discussions, students are encouraged to analyze issues related to caring economics, propose possible solutions, and collectively determine the most appropriate course of action. This collaborative process enhances students' communication and teamwork skills, while also encouraging greater participation in discussions and fostering the confidence to express their ideas critically.

These findings are consistent with the study conducted by (Mergendoller *et al.*, 2006) in secondary schools in Northern California, which reported that the application of PBL in economics instruction was more effective than traditional teaching methods, even among students with below-average verbal abilities and those with low confidence in their problem-solving skills. Similarly, the results of this study align with research conducted in secondary schools in Nigeria, which demonstrated that the implementation of the PBL model significantly improved students' problem-solving abilities, including communication skills, teamwork, and higher-order thinking through effective collaborative learning activities (Abubakar & Arshad, 2015).

In the implementation of caring economics learning, the problems faced by students are illustrated through various real-life cases that are relevant to the topics being studied. For this reason, the Problem-Based Learning (PBL) model in this course is applied using a case-based method. The case method allows the use of diverse scenarios that resemble or represent real-world phenomena, often accompanied by data and information that may be either relevant or irrelevant, as well as accurate or inaccurate. Consequently, these cases require further interpretation and critical analysis from the students.

Within these cases, conflicts of interest frequently arise among the parties involved. Therefore, students are encouraged to analyze the situations carefully and demonstrate attitudes that prioritize economic moral principles, applying the values of caring economics when formulating solutions and making decisions regarding the cases presented.

The teaching materials developed in this study consist of written instructional materials containing a set of Microeconomic Theory course topics framed within the perspective of caring economics. These materials were systematically organized to create a learning environment that enables students to engage actively in the learning process. The teaching materials also help shift the role of the lecturer from being the sole source of knowledge in the classroom to that of a facilitator of learning. As a result, students are encouraged to become active learners by reviewing the instructional materials in advance before attending class sessions.

With this approach, classroom time can be utilized more effectively for discussing concepts that students have not yet fully understood. This is consistent with the view that the availability of well-designed teaching materials



helps students understand course content more easily and motivates them to explore the subject matter in greater depth. Therefore, caring economics learning is essential as an effort to cultivate altruistic attitudes among university students. To achieve this, students' sensitivity toward the socio-economic issues surrounding them needs to be continuously developed through the provision of stimuli in the form of information related to both economic care and indifference within a carefully designed learning environment. Numerous studies have emphasized the importance of educational interventions aimed at strengthening altruistic attitudes among students through structured learning activities. Students should be encouraged to observe, examine, and analyze the social and economic problems present in their communities so that their altruistic motivation can be further developed.

For this reason, the implementation of caring economics learning needs to be conducted with greater intensity and broader application. Furthermore, the altruistic principles that form the foundation of economic care. The main notion of caring economics can be incorporated into diverse subjects within higher education curricula. For example, the preparation of financial statements in accounting necessitates a steadfast commitment to honesty, whereas the initiation and management of a business, as explored in entrepreneurship courses, require values such as collaboration, integrity, and respect for the rights of others.

In Problem-Based Learning (PBL) activities utilizing real-world cases, instructors, serving as facilitators, must critically choose cases relevant to the subjects under examination. Consistent practice in case analysis and problem-solving related to caring economics within the Microeconomic Theory course may develop students' sensitivity towards the welfare of others and the environment from an early age. Students, who will subsequently become educators and economic participants, are anticipated to cultivate enhanced altruistic motivations that will inform their decision-making in critical economic issues.

3.5 Practical Implications

The findings of this study offer several practical implications for economics educators and curriculum developers. First, the integration of Caring Economics principles into instructional materials provides a feasible approach to embedding ethical and social dimensions within economics education, which has traditionally emphasized rationality and self-interest. By incorporating real-world cases, reflective activities, and problem-based learning tasks, educators can encourage students to critically examine the social consequences of economic decisions and develop a stronger sense of responsibility toward others.

Second, the instructional design developed in this study can be adapted for use in various economics-related courses, including accounting, entrepreneurship, business ethics, and public economics. The incorporation of altruism-oriented learning activities may help students connect theoretical economic concepts with contemporary social challenges, such as inequality, environmental sustainability, and community welfare.

Third, higher education institutions may utilize the Caring Economics framework as a reference for strengthening character education and social responsibility within economics curricula. Through systematic integration across courses, universities can foster graduates who are not only economically competent but also ethically aware and socially responsible decision-makers.

Finally, the study demonstrates that instructional materials can serve as an effective medium for promoting values-based learning in economics education. Therefore, educators are encouraged to design learning experiences that balance analytical economic reasoning with empathy, ethical reflection, and concern for collective well-being.

4. Conclusion

This study illustrates that the creation of Caring Economics-oriented instructional materials for the Microeconomic Theory course, employing the Design-Based Research (DBR) methodology, has yielded resources that are valid, practical, and effective for higher education applications. The validation results demonstrate a high degree of feasibility, with scores of 90.00 for the organization of teaching materials, 92.22 for case selection, 86.67 for language clarity, and 86.67 for visual presentation quality, while the integration of the Caring Economics concept received the highest score of 100.00. The results affirm that the created teaching materials are systematically



structured, pertinent to learning objectives, and effectively incorporate altruistic economic values into the instructional content.

The effective implementation of the learning model showed positive learning dynamics. The lecturer's activity demonstrated a gradual rise from 66% in the initial meeting to 88% in the fourth meeting, signifying enhanced efficacy in promoting learning. Student learning activities consistently rose from 64% to 83.6%, yielding an overall average of 76.2%, classified as good, indicative of active student engagement throughout the learning process. Furthermore, the effectiveness of the teaching materials is supported by the improvement in students' cognitive learning outcomes, as indicated by an N-Gain score of 0.75 (high category).

These findings indicate that the integration of Caring Economics into microeconomic learning can enhance students' conceptual understanding while simultaneously fostering altruistic values such as cooperation, sharing, helping, generosity, honesty, and concern for others. Therefore, the integration of Caring Economics in higher education economics courses offers a meaningful pedagogical approach for developing not only students' economic competence but also their social responsibility in economic decision-making.

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Author Contributions

Akhmad Suyono: Methodology, Conceptualization, Writing - Original Draft. Hari Wahyono: Methodology, Formal analysis. Cipto Wardoyo: Writing - Review & Editing. Nasikh: Writing - Original Draft, Validation. Miranti Eka Putri: Methodology. All the authors have read and agreed to the published version of the manuscript.

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Generative AI Declaration

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) solely to assist with language editing, including grammar, spelling, sentence structure, and readability. The tool was not used to generate scientific content, research data, analysis, interpretation and conclusions. All output was critically reviewed and edited by the authors, who take full responsibility for the final content of the manuscript.

Ethics Approval Statement

This study was conducted in accordance with ethical research standards involving human participants and adhered to the principles of the Declaration of Helsinki. Prior to data collection, ethical approval was obtained from the Research Ethics Committee of Malang State University (Universitas Negeri Malang) under protocol number 20.2.8/UN324.1/LT/2024. Informed consent was obtained from all participants. All collected data were anonymized to ensure the privacy and confidentiality of the participants.

Does this article screen for similarity?

Yes

Competing Interests

The authors declare that there are no conflicts of interest regarding the publication of this manuscript.



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