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# Human Responsibility on Environmental Social Issues and



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# **HUMAN RESPONSIBILITY ON ENVIRONMENTAL AND SOCIAL ISSUES**

**Suciana Wijirahayu; Andik Matulesy; Nikita Sartika; Dr. Anis Rifai, S.H., M.H.; Dr. Aurora Jillena Meliala, S.H., M.H.; Rossa Ilma Silfiah; Ayih Sutarih; Endang Sutrisno; Ratu Mawar Kartina; Firly Dwi Martiana ; Elihami Elihami; Tri Suminar; Mintarsih Arbarini; Agnes Nanda Saputri; Khaled Maulana Ihya Arief Rakhman Hakim; Reny Arumsari; Susy Sriwahyuni; Darmawan; Dian Fera; Yolanda Oktaria; Yunita Setyoningrum; Carina Tjandradipura; Angel Stefani; Melissa Santoso; Rr Johana Nunik Widiанти S,Sos, MA.; Dr.H.Ali Akbarjono, M.Pd.; Nany Suryawati; Novianty Djafri; Arfan Utuarahman; Syamsu Qamar Badu; Sriyana Wahidin; Abdul Rahmat; Tri Suminar; Bagus Kisworo; All Fine Loretha; Lintang Markhamah; Dr. Dian Novita Siswanti,S.Psi.,M.Si.,M.Psi.,Psikolog; Novita Maulidya Jalal, S.Psi., M.Psi.,Psikolog; Nelly Wedyawati; Wiputra Cendana**

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**@2022. Bookchapter Title: HUMAN RESPONSIBILITY ON ENVIRONMENTAL AND SOCIAL ISSUES**

**Editor:**

**Abdul Rahmat, Rossa Ilma Silfiah, Nany Suryawati**

**Publisher: Book Shore International**

**Address: NDA Road, Shivane, Pune, Maharashtra, India-411023**

**ISBN: 978-93-90753-95-6**

**PENULIS**

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## Be Critical! Enhancing Critical Thinking Skills through Project Based Learning in Social Studies

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### Introduction

*Social science* is a multidisciplinary field consisting of many disciplines from the social sciences, arts, and humanities (Duke, Halvorsen, Strachan, Kim, & Konstantopoulos, 2021; Ting, Cheng, & Ting, 2021). One of the majors that develop science in the social field is the Department of Out-of-school Education. This department is one of the study programs at the State University of Semarang that produces academic professional education personnel who can apply science and technology in the management of educational institutions and programs and empower communities outside the school education system, both in quality and relevance to the development of the need (Suryono, 2016). To answer the needs of alumni competence, realize its alumni's abilities in the field of non-formal education. The Early Childhood Education Management course was developed. This course focuses on studying the basic concepts of Early Childhood Education management, Early Childhood Education Management functions, partnerships in Early Childhood Education management issues/problems by paying attention to and applying the social values of the humanities.

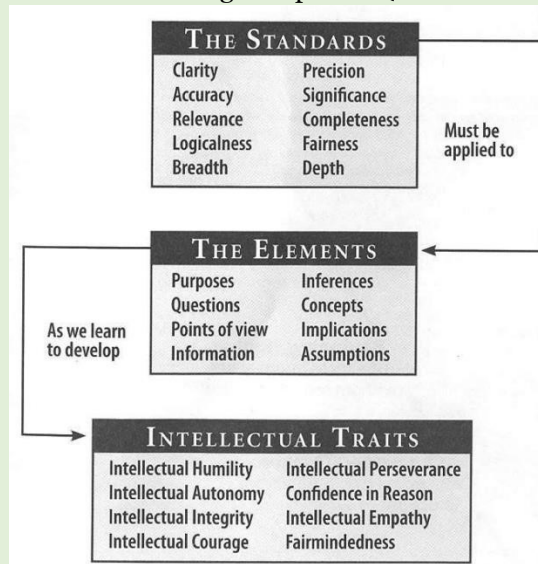
Currently, higher education is required to carry out educational practices that are not focused on learning materials but involve the World of Industry and the World of Work. Therefore, education is becoming more focused on improving critical thinking skills to solve problems that occur in the real world through lecture projects (Aránguiz, Palau-Salvador, Belda, & Peris, 2020; Boss & Krauss, 2007). The development of the 21st century as a world transition period (shifting era) has caused massive changes in almost every line of life, especially in learning. The development of technology and industry causes humans to adapt to the new paradigm of thinking Society 5.0 (Kim, Raza, & Seidman, 2019; Maida, 2011). Higher education must meet current needs to anticipate emerging trends and challenges ahead. The Industrial Revolution gradually caused changes in the social field, and, in a real sense, learning was influenced by each significant change that occurred (Herbert, 2009). Therefore, students must be prepared to face the effects of change. Skills in scientific inquiry, critical thinking, scientific applications, and engineering applications are needed as self-competence to face new situations and problems (Mutakinati, Anwari, & Yoshisuke, 2018).

Project-Based Learning (PjBL) focuses on course project-based learning that can help students (1) identify and work to overcome problems, needs, or opportunities in the institution/community; (2) carry out investigations, propose and explore environmental issues about the world near us; (3) use critical thinking, problem-solving, and collaborative skills; (4) explore authentic issues and problems; and (5) taking action based on data (Nell K, Anne L, & Stephanie L. Strachan, 2016). Students create and present project-based assignments outside of the traditional classroom (delivery of teacher-centered instruction in lectures to students as recipients of information) then link what they learn to real-world applications (Mutakinati et al., 2018).

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Critical thinking is one of the essential real-life skills. Students must possess critical thinking and communication skills for their future. Critical thinking is the ability to analyze and evaluate thinking to improve it, in other words, independent thinking, selfdiscipline, self-monitoring, and self-correction. There are six stages in critical thinking: unreflective thinkers, challenged thinkers, novice thinkers, practical thinkers, advanced thinkers, and master thinkers (Paul & Elder, 2007). Critical thinking refers to analyzing information, determining the relevance of the information collected, and then interpreting it in solving problems. This skill requires higher-order thinking; involves the process of analysis, evaluation, fairness, and reflection (Jeevanantham, 2005). Meanwhile, according to (Paul & Elder, 2007), there are eight elements of thinking: objectives, questions on issues, information, interpretations and interferences, concepts, assumptions, implications and consequences, and points of view. Academic standards describe the criteria used to evaluate the quality of critical thinking.

Figure 1. Critical Thinking Component (Paul & Elder, 2007)



Several studies have reported that problem studies in classrooms taught through PjBL improve critical thinking and problem-solving skills. Other researchers have also found that PjBL has become a successful method of teaching 21st-century skills. In addition, students have also shown more initiative by utilizing resources and revising work, as well as unusual student behavior, before they study in PjBL-instructed classes (Aránguiz et al., 2020; Handhika, Cari, Sunarno, Suparmi, & Kurniadi, 2018; Mutakinati et al., 2018; Sasson, Yehuda, & Malkinson, 2018). The results of this study indicate that PjBL can be an effective way to improve student achievement and reading the information in social studies. Learning is driven by a desire to connect the theory learned with social problems to catalyze learning through a curricular approach characterized by attention to social problems, needs, and opportunities; often collaborate with peers and others; and product development with the community. Their understanding is shaped by social and cultural contexts and interactions with knowledgeable others (Duke et al., 2021).

Early Childhood Education Management is a management process in carrying out the duties of educational institutions by utilizing all sources efficiently to achieve goals effectively in the context of Early Childhood Education institutions. Education

management is a system of managing and structuring educational resources, such as education staff, students, community, curriculum, funds (finance), educational facilities and infrastructure, management, and educational environment (Marlina, 2021). The purpose of the study was to investigate students' critical thinking skills in the study of Early Childhood Education management problems through project-based learning. In addition, this research is to increase students' awareness and understanding of Early Childhood Education management and improve students' critical thinking skills in everyday life. Therefore, students can apply what they learn in school to problems in the field/real-life and problems of everyday life. The problem in this research is how students' critical thinking skills are developed in Early Childhood Education management courses through PjBL.

#### METHOD

The approach in this study uses a qualitative approach with the mixed method (J. W. Creswell & J. David, 2013). Mixed methods research provides guidance when collecting and analyzing data by mixing qualitative and quantitative approaches during the research process. As a method, mixed research focuses on collecting, analyzing, and mixing qualitative and quantitative data in one or a series of studies (W. J. Creswell, 2014). This method uses quantitative and qualitative approaches simultaneously (combined) to better understand the research problem than being used separately.

The subjects of this study amounted to 96 5th semester students from 2 study groups (classes) in the Department of Non-School Education, UNNES, who teach Early Childhood Education management courses divided into seven groups in each class. The instrument in this study used worksheets to stimulate critical thinking skills in students. About how to explore problems in Early Childhood Education management. 7 Major themes given in class to be developed in the field include Early Childhood Education Institution Planning, Early Childhood Education Institution Organizing, Institution Leadership, Institution Coordination, Institution Supervision, Partner Cooperation Network, Institution Accreditation.

In addition to using worksheets in this course, students make learning videos and discussions according to significant themes. Learning activities are divided into six learning activities divided into 16 meetings. The six activities include Introduction of Subjects and Lecture Contracts, Early Childhood Education Management Theory, Group Discussions and Presentations on seven major themes, Discussion of case study analysis in Early Childhood Education institutions, Development of Analysis Projects of 7 Themes in Early Childhood Education Institutions, Presentation and Evaluation of Student Projects.

Data were obtained based on worksheets and observation sheets during lectures. The data is then analyzed using the critical ability rubric that has been designed by (Paul & Elder, 2007) and adapted to Early Childhood Education management courses. The critical thinking ability rubric developed by (Paul & Elder, 2007) is used by several researchers to analyze critical thinking skills because this framework is general in engineering, natural sciences, social sciences, and linguistics. The data collected was analyzed using descriptive quantitative techniques in statistical applications to see the differences in critical thinking before and after PjBL (Hothorn, 2016; Lund, Liu, & Shao, 2016).

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Table 1. Critical Thinking Rubric (Paul &amp; Elder, 2007)

dimensions	Score			
	4	3	2	1
Objectives and Questions	Clearly identify the complexity of the objectives including all relevant questions.	Clearly identify the complexity of the objectives including some relevant questions.	Identify objectives including questions that are not and/or are not sufficiently relevant	Unclear goals that do not understand the question.
Information	Accurate and complete information supported by relevant evidence.	Accurate, mostly complete information backed by evidence.	Accurate, complete information but not supported by evidence.	Inaccurate, incomplete information that is not supported by evidence.
Assumptions and Point of View	Complete and fair presentation of all relevant assumptions and points of view.	A complete and fair presentation of several relevant assumptions and points of view.	Simple presentation ignores the relevance of assumptions and points of view.	Presentation is incomplete and ignores relevant assumptions and points of view
Implications and Consequences	Clearly articulate significant, logical implications and consequences based on relevant evidence	Clearly articulate some of the implications and consequences evidence-based consequences.	Articulate unclearly and illogically, and the proposed consequences are not supported by evidence	Fail to recognize the problem and implications, and the proposed consequences are invalid due to lack of relevant evidence.



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The scores from the critical thinking rubric were compared with the criteria for developing critical thinking based on the stages of critical thinking development (Table 2).

Table 2. Critical Thinking Scoring (Paul & Elder, 2007)

Scoring	3.51 - 4.00	Master Thinker
	3.11 - 3.50	Advanced Thinker
	2.41 - 3.10	Practicing Thinker
	1.70 - 2.40	Beginning Thinker
	1.01 - 1.70	Challenged Thinker
	0.00 - 1.01	Unreflective Thinker

### Discussion Early Childhood Management through Project-Based Learning

Student Project Evaluation in Early Childhood Management as a course in the out-of-school education department focuses on materials on the basic concepts of Early Childhood Education management, Early Childhood Education Management functions, partnerships in Early Childhood Education management, institutional accreditation, Early Childhood Education issues/problems by paying attention to and applying social humanities values. This course uses project-based learning as one of the student learning methods. In this research, lecture activities using the project method are divided into six learning activities which include a subject introduction, Early Childhood Education Management Theory, group discussions and presentations on seven major themes, case study analysis discussions at Early Childhood Education institutions, Project Development Analysis of 7 themes at Early Childhood Education institutions, presentations, and presentations. Each of these learning activities is based on a semester learning plan that has been made before the academic year is implemented. Descriptions of each activity/learning process are described in table 3 below:

Table 3. Learning Activities

Course Learning Outcomes (CPMK)	Learning Materials	Learning Activities	Indicators of Learning Activities Achievement
Activity 1,2. Introduction to Early Childhood Education Courses and Management Theory			

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<p>CPMK 1. Understand the nature of the processes, concepts, strategies, and designs of Early Childhood Education Management. Introduction to Management course Early Childhood Education.</p>	<p>Introduction to lecture contracts and a group division.</p>	<p>Make basic questions about non-formal Early Childhood Education management and why it is necessary to study these courses as a graduate education outside school. Simple analysis of any problems that arise in the field of non-formal Early Childhood Education management. Presenting a point of view on the basic concepts of management Early Childhood Education State the implications of the problem and its consequences on management. EDUCATION</p>	<p>Early and Childhood Education Students actively critically respond. in Students actively contribute activities class.</p>
<p>Activity 3. Presentation and Group Discussion according to the Big Theme</p>			
<p>CPMK 1. Understand the nature of the processes, concepts, strategies, and designs of Early Childhood Education Management. Introduction to Management course Early Childhood Education. CPMK3.</p>	<p>analysis of problems and concepts of 7 major themes and presentations and group discussions on themes.</p>	<p>Make an analysis of the concept of the theme that each group has determined. Make questions about the concepts/theories explained to the group. Interpret answers from group</p>	<p>Students actively and critically respond. Students actively contribute to activities in class.</p>

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		discussions to create solutions. Analyze the results of the interpretation of the solutions made based on groups.	
Activity 4. Discussion of case study analysis at Early Childhood Education			
<p>CPMK2. Students present ideas, conduct discussions, argue and refine ideas.</p> <p>CPMK3. Students can make presentations, convey ideas, argue, and ask questions</p> <p>CPMK4. Students can understand the empowerment of all components of early childhood education institutions in the success of the development and development movement of Early Childhood Education in Indonesia through the application of effective and efficient management functions based on comprehensive educational management theories.</p>	<p>Analysis of Problems at the Early Childhood Educational Institute originating from Reputable National/International Scientific Journals/Articles</p>	<p>Finding and defining the problems faced by Early Childhood Education institutions in Indonesia and other countries.</p> <p>Design a solution plan for the problem.</p> <p>Make a construct of the problem with the given solution plan.</p> <p>Interpret solutions from other friends.</p>	<p>Students and actively and critically respond. Students actively contribute in activities class.</p>
Activity 5. Development of 7 Theme Analysis Projects at Early Childhood Education Lembaga Institute			

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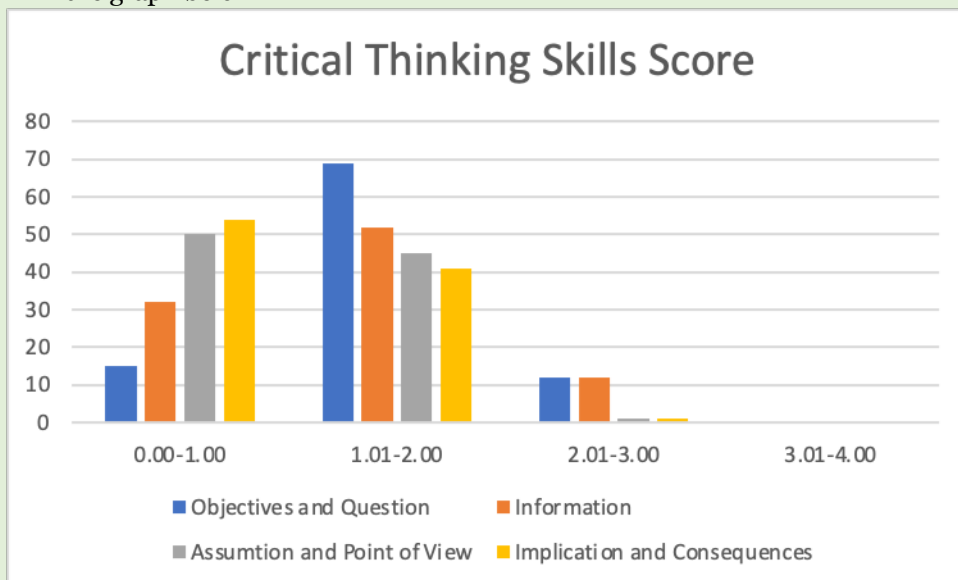
<p>CPMK4. Students can understand the empowerment of all components of early childhood education institutions in the success of the development and development movement of Early Childhood Education in Indonesia through the application of effective and efficient management functions based on comprehensive educational management theories.</p>	<p>Create a group project by collecting data through observations, interviews, and documentation to the Early Childhood Education institution to analyze the problems at the institution so that solutions can be studied according to 7 major themes.</p>	<p>They observed the Early Childhood Education Institution and defined the problems faced by the institution. Design and use theoretical constructs according to the 7 management themes of Early Childhood Education studied. Plan and carry out</p>	<p>Students actively and critically respond. Students actively contribute to group projects..</p>
		<p>in-depth investigations. Establish and explain the design of a workable solution. Proving solution design based on scientific foundations.</p>	
<p>Activity 6. Presentation and Evaluation of Student Projects</p>			
<p>CPMK2. Students present ideas, conduct discussions, argue and refine ideas. CPMK3. Students can make presentations, convey ideas, argue, and ask questions</p>	<p>Present the projects made and report on activities during the project and project results.</p>	<p>Obtain, evaluate, and communicate information. Take responsibility for assumptions and design solutions to problems according to facts in the field and relevant theories.</p>	<p>Students actively and critically respond. Students actively contribute to activities in class.</p>

### Critical Thinking Skills Analysis

The activity assessment sheet shows an increase in each learning activity. This result is evidenced by the results of the observation sheet in activity 1, and it is found that

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students have not actively expressed their opinions regarding questions about EARLY CHILDHOOD EDUCATION management. Inactivity 1, the lecturers mostly used the lecture method, although it started with big questions about the nature and concept of management. However, students are not fully active and involved in learning. This result is shown in the graph below



Based on the data above, it can be concluded that in the first activity, students' critical thinking skills are at level 2. According to (Paul & Elder, 2007), this category is included in beginner thinking. Where thinking has characteristics including in explaining objectives and questions, students can identify questions that are not and are not relevant enough. Then in reading or responding, students are pretty accurate, informed but not supported by evidence. In the field of assumptions and points of view, students can only present their assumptions even though they are not relevant and the data are not strong enough. Students cannot articulate things and consequences clearly and logistically, and the proposed consequences are not supported by evidence.

Semester Learning Plan with the PjBL model can improve critical thinking skills, where has a vital role in guiding lecturers in carrying out their duties as educators who serve student learning needs (Sari & Prasetyo, 2021). Activities 1, 2, and 3 mostly use lecture methods, group presentations, and question and answer. So activities 1,2 and 3 are not included in project-based learning. The data collected from the project-based worksheets involve background problems, solutions, results, and conclusions. The problems raised by the students were based on the themes of the problems. Most groups have different ideas about the solution that can be seen from the problem. Thinkers at this stage understand the habits they need to develop to control their thinking.

Students then evaluate and adapt the solutions they make, showing that they have critical thinking skills. They tried several experiments to get a better solution. Furthermore, students make in-depth observations about the potential of the Institute to be able to overcome the problems they face. Observations are made directly to the institution near the place of residence. The data was obtained based on interviews and observations, then bookshore.org

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analyzed to solve the problem/solution based on the theory and previous research. Based on these results, it can be concluded that students can think critically. In engineering solutions, efficiency and effectiveness must be considered. However, because the average thinker only begins by systematically approaching the improvement of their thinking. The average thinker has sufficient skills in thinking to critique their plans for systematic practice and to construct actual critiques of the power of their thinking (Duke et al., 2021; Mutakinati et al., 2018; Nell K et al., 2016). The researcher then compared the average results of students' critical thinking skills before PjBL with after PjBL and got the results as shown in the table below:

Table 5. Paired Sampel Result  
Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Before PjBL	1,7396	96	,50773	,05182
After PjBL	3,0104	96	,49193	,05021

Based on these data, it can be concluded that there is an increase in the average score of critical thinking skills in students, where after PjBL students' thinking skills increase to category three, which belongs to (Paul & Elder, 2007) the category of Thinking Stage Practice. Advanced thinkers often criticize their plans through more systematic practices to improve them thus and have formed good thinking habits. Advanced thinkers have the following characteristics. Identify the complexity of the goal, including several relevant questions. Accurate, mostly complete information backed by evidence. A complete and fair presentation of several relevant assumptions and points of view. Clearly articulate some of the implications and consequences based on evidence.

## Conclusion

This study has achieved the desired goal of investigating students' critical thinking skills in studying Early Childhood Education management problems through project-based learning. In addition, this research is to increase students' awareness and understanding of Early Childhood Education management and improve students' critical thinking skills in everyday life. RPS with the PjBL model can improve critical thinking skills, where this has a vital role in guiding lecturers in carrying out their duties as educators who serve student learning needs. The study results confirmed an increase in the average score of critical thinking skills in students. After PjBL, students' thinking skills rose to category 3, which was included in Practicing Stage Thinkers.

This study has several limitations that need to be considered when considering studies and distributions. Participants in this study were self-selected based on random distribution. There was no arrangement in group division. The group's division should consist of higher thinkers who can become leaders to guide lower thinkers.

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### Biography

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2. Mintarsih Arbarini is a Lecturer in the Department of Nonformal Education, Faculty of Education, Universitas Negeri Semarang, Indonesia. Teaching education science courses, educational innovation diffusion. Besides, she was trusted as the head of the nonformal education department at the faculty of education, Universitas Negeri Semarang. The focus of research is on equality education, functional literacy and gender studies. Also related to the membership that followed include Edurasia, Ikatan Akademisi Pendidikan Nonformal Indonesia (IKAPENFI). ID google scholar: PHuozocAAAAJ; ID Sinta: 5982944; ID Scopus: 57211540764