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# Continuum Paradigm: Synchronization of Learning Process Elements (Models, Strategies, Methods, Approaches) Based on Problems from Basic Inquiry to Reog Ponorogo Culture-Based Industry Competencies in Generation Z and Alpha

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**A B S T R A C T**

The transformation of 21st-century education demands a continuous and contextual learning approach that aligns with the characteristics of Generation Z and Generation Alpha students. However, learning practices across educational levels remain fragmented, resulting in unsystematic development of student competencies. This study aims to examine the continuum paradigm in synchronizing problem-based learning from elementary to vocational high school levels by utilizing the local culture of Reog Ponorogo as a learning context. This research employed a descriptive qualitative approach through literature review, curriculum document analysis, and contextual observations in Ponorogo Regency. The findings indicate that the continuum paradigm enables the progressive development of student competencies, starting from basic inquiry skills in elementary school, strengthening critical and analytical thinking in high school, and applying practical competencies aligned with local culture-based creative industries in vocational high school. The main output of this study is a conceptual continuum framework that synthesizes learning models, strategies, methods, and problem-based learning approaches across educational levels within a local cultural context. The integration of Reog Ponorogo into problem-based learning enhances learning relevance, strengthens cultural identity, and supports student readiness for workforce demands. This study is expected to serve as a conceptual reference for the development of sustainable and integrated local culture-based learning designs.

**Keywords**: *Continuum Paradigm, Problem-Based Learning, Reog Ponorogo, Generation Z, Generation Alpha*

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## INTRODUCTION

The development of education in the 21st century requires a change in the learning paradigm from what was originally oriented towards knowledge transfer to the development of high-level thinking competencies. Education no longer emphasizes content mastery enough, but must be able to equip students with critical thinking skills, problem solving, collaboration, creativity, and character formation that are relevant to social dynamics and the ever-changing world of work (Arends, 2012). This condition demands a learning design that is not only pedagogically effective, but also contextual, sustainable, and integrated between levels of education.

These challenges are even more complex when associated with the characteristics of Generation Z and Generation Alpha students who currently dominate educational spaces. Various studies show that these two generations have a tendency to learn visually, collaboratively, experientially, and are very familiar with digital technology. Learning patterns that are linear, fragmented, and not continuous between levels of education are considered incapable of accommodating these characteristics, thus having an impact on the weak continuity of students' competency development from basic education to vocational education.

In the national context, the Independent Curriculum emphasizes the importance of meaningful, contextual, and oriented learning to strengthen the Pancasila Student Profile through a project-based approach and problem-solving (Ministry of Education and Culture, 2022). However, implementation in the field still faces a fundamental problem in the form of a lack of connection between learning levels of education. Learning in Elementary, Senior College, and Vocational High School is often designed separately, so that the development of students' competencies takes place partially and not systematically. This condition has the potential to create a gap between learning outcomes at school and the real needs of the community and the world of work.

On the other hand, Indonesia has a rich local culture that has great potential to be used as a source of contextual learning. Ponorogo Regency, with Reog Ponorogo as an intangible cultural heritage, holds relevant historical, social, artistic, and economic values to be integrated in learning. The culture of Reog Ponorogo not only functions as an object of cultural preservation, but also as a pedagogical medium that is able to connect learning with the reality of students' lives. The integration of local culture in learning is expected to increase the relevance of teaching materials while strengthening the cultural identity and identity of the younger generation.

One of the pedagogical approaches that is considered to be in line with these demands is Problem-Based Learning (PBL). PBL places learners as active subjects who learn through direct involvement in authentic problem-solving (Barrows, 2002). Through this approach, learners not only develop conceptual understanding, but also inquiry skills, critical thinking, and applicative abilities. However, various studies show that the implementation of PBL still tends to be partial, limited to certain levels or subjects, and has not been designed in a sustainable framework across educational levels.

Previous studies have emphasized the importance of continuous learning in developing students' competencies. Arends (2012) emphasized that effective learning must be designed systematically and in stages in order to be able to build deep understanding and thinking skills. Barrows (2002) underlines that the essence of PBL lies in an inquiry process oriented towards authentic problem-solving, while UNESCO (2015) asserts that continuing education must be rooted in the cultural values and social context of the community. In addition, Trilling and Fadel (2009) emphasize the importance of integrating 21st century skills—critical thinking, collaboration, creativity, and communication—in the context of real learning. From the perspective of vocational education, Suyanto and Jihad (2013) highlight the importance of education that is able to develop professional competencies contextually and relevant to the needs of society and the world of work.

However, these studies still leave a research gap. First, problem-based learning is generally studied separately at a certain level without a framework of continuity across educational levels. Second, the integration of local culture in PBL is still often positioned as an additional context, not yet as the main conceptual medium in learning design. Third, there have not been many studies that explicitly link competency development from basic inquiry at the initial level of education to the readiness of the creative industry at the vocational level in a complete and sustainable learning paradigm.

Based on this gap, a conceptual framework is needed that is able to synergize models, strategies, methods, and problem-based learning approaches on an ongoing basis. The continuum paradigm is seen as relevant to answer these needs because it places the learning process as an interconnected series from basic inquiry to mastery of industrial competencies. When this paradigm is contextualized with the culture of Reog Ponorogo, learning not only becomes pedagogically meaningful, but also deeply rooted in the social and cultural realities of Generation Z and Generation Alpha students.

The Continuum Paradigm in this study is defined as a conceptual framework of learning that views the educational process as a continuous and interconnected series between levels, starting from the development of basic inquiry in early education to the mastery of professional and industrial competencies in further education. This paradigm emphasizes the

synchronization of elements of the learning process—including models, strategies, methods, and approaches—in a single line of progressive, adaptive, and contextual competency development. In contrast to discrete and fragmented learning approaches, the Continuum Paradigm places learning as an accumulative process that allows students to build knowledge, skills, and attitudes gradually and integrated according to their cognitive, social, and vocational development stages.

In the context of problem-based learning, the Continuum Paradigm does not position Problem-Based Learning as a single, static strategy, but as a dynamic approach that transforms along with the level of education. At the initial level, PBL functions as a vehicle for the development of basic inquiry and sensitivity to contextual problems; at the intermediate level, as a means of strengthening critical thinking, collaboration, and complex problem-solving; and at the vocational level, as a medium for the development of applicative competencies and the readiness of the creative industry. Thus, the Continuum Paradigm becomes a conceptual foundation to bridge the continuity of learning from primary to vocational education in one complete pedagogical design.

When this Continuum Paradigm is contextualized with the culture of Reog Ponorogo, local culture does not only serve as a background or illustration of learning, but as a source of authentic problems, objects of inquiry, and the basis for the development of creative competencies based on the cultural industry. This integration allows problem-based learning to have a dual function, namely as a means of developing 21st century skills for Generation Z and Generation Alfa as well as an effort to strengthen cultural identity and social relevance of learning

Thus, the purpose of this research is to conceptually examine the continuum paradigm in problem-based learning across educational levels, describe the integration of Reog Ponorogo culture as a problem-based learning context for Generation Z and Generation Alpha, and analyze the synchronization of student competency development from basic inquiry to the readiness of the creative industry based on local culture. This research is expected to make a theoretical and conceptual contribution to the development of learning designs that are holistic, sustainable, and relevant to the challenges of 21st century education.

## METHODS

This research uses a descriptive qualitative approach with a conceptual and contextual study design. The qualitative approach was chosen because the research does not aim to test hypotheses, measure the relationship between variables, or assess the effectiveness of treatment quantitatively, but to understand in depth the concept, meaning, and relationship of the educational phenomenon being studied. Conceptual studies are used to analyze and synthesize theories related to the continuum paradigm, problem-based learning, local culture-based education, and the learning characteristics of Generation Z and Generation Alpha. Meanwhile, the contextual study is directed to relate the theoretical construction to the reality of local education and culture in Ponorogo Regency, especially those related to the Reog Ponorogo culture, so that this study focuses on the development of a systematic and coherent framework of thought, not on statistical generalization.

The context of the research is in Ponorogo Regency, East Java, which has the peculiarities of Reog Ponorogo culture as an intangible cultural heritage that has the potential to be used as a source of contextual learning. The focus of the research is directed at the synchronization of problem-based learning across levels of education, including elementary schools, high schools, and vocational high schools, by placing the Reog Ponorogo culture as the main context of learning. In addition, this study highlights the sustainable development of competencies of Generation Z and Alpha Generation students, starting from strengthening basic inquiry, critical thinking skills, to applicative competencies relevant to the needs of the creative industry based on local culture. With this focus, this study does not empirically examine the implementation of learning in certain educational units, but analyzes the tendencies,

opportunities, and potential integration of problem-based learning within the framework of a continuum paradigm.

The research data source consists of conceptual primary data and secondary data obtained through literature study, document analysis, and non-participatory contextual observation. Conceptual primary data is sourced from theories, models, and scientific ideas regarding problem-based learning, educational continuum paradigms, local culture-based education, and the learning characteristics of Generation Z and Alpha. Secondary data were obtained from national curriculum documents, education policies, scientific publications, as well as reports and studies on the culture of Reog Ponorogo. The validity of the data is maintained through source triangulation, theoretical consistency, conceptual trail audits, and researcher reflexivity to ensure that the resulting conclusions have credibility and a strong theoretical foundation.

Data analysis techniques are carried out qualitatively through several systematic stages. The first stage is the inventory and selection of conceptual data, which is to identify key theories, models, and ideas that are relevant to the research focus from scientific literature, policy documents, and trusted academic sources. The second stage is data reduction and categorization, by grouping the main concepts into thematic categories, such as the learning continuum paradigm, problem-based learning stages across levels, the integration of local culture in learning, and the competency development of Generation Z and Generation Alpha.

The third stage is thematic and comparative analysis, which is comparing and relating various learning concepts and approaches to identify patterns of continuity, common points, and differences between levels of education. At this stage, a logical relationship between basic inquiry, strengthening critical thinking, and developing applicative competencies based on the creative industry is explored. The fourth stage is conceptual synthesis, which is to formulate a Continuum Paradigm framework as a result of integration between the concepts that have been analyzed, including the synchronization of models, strategies, methods, and problem-based learning approaches in the context of Reog Ponorogo culture.

To maintain the validity and credibility of the analysis, this study applies source triangulation by comparing various theoretical references and policy documents, theoretical consistency between referenced concepts, and conceptual trail audit through systematic tracing of the analysis process. The researcher's reflexivity is also applied to minimize interpretive bias in formulating conceptual conclusions. The entire analysis process refers to the principles of qualitative data analysis proposed by Miles and Huberman (2014), especially at the stages of data reduction, conceptual data presentation, and conclusion drawn.

## FINDINGS AND DISCUSSION

### Continuum Paradigm in Problem-Based Learning Across Education Levels

The results of the conceptual analysis show that the continuum paradigm in problem-based learning can be understood as a learning approach that places each level of education in one continuous competency development flow. This paradigm does not view the elementary, high school, and vocational levels as separate entities, but as progressive stages in the process of forming students' cognitive, affective, and psychomotor skills.

The Learning Continuum Paradigm conceptual model places the learning process as a continuous flow from basic inquiry to industry competence. This model emphasizes that learning does not stand alone at each level, but rather reinforces each other and forms a long-term competency trajectory. Conceptually, the continuum paradigm consists of three main layers, namely (1) basic inquiry and cultural literacy at the elementary level, (2) strengthening critical thinking and contextual analysis at the high school level, and (3) the application of professional and entrepreneurial competencies at the vocational level.

At the elementary level, students are directed to get to know Reog Ponorogo through observation activities, simple exploration, and basic questions. This stage serves as a cognitive and affective foundation that fosters curiosity and cultural literacy. The Alpha generation at this stage shows dominant learning characteristics through observation, exploration, and

concrete experiences. The integration of the cultural context of Reog Ponorogo in learning allows students to ask simple questions related to cultural phenomena in the surrounding environment.

Furthermore, at the high school level, the continuum paradigm moves towards strengthening analytical and reflective skills. Generation Z is starting to show the ability to identify problems that are more complex and abstract. In the context of Reog Ponorogo-based problem-based learning, students are directed to analyze social and cultural issues, such as the sustainability of traditional arts, the dynamics of changing cultural values, and the challenges of preservation in the midst of globalization. The results of this study show that this approach has the potential to develop students' critical and argumentative thinking skills more systematically. This stage strengthens higher *order thinking skills*.

At the vocational level, the continuum paradigm reaches the applicative phase, namely the translation of Reog cultural knowledge and values into the competence of the creative industry and tourism. Students are trained to design Reog-based products, services, or performances that have economic value. Thus, this conceptual model shows a clear continuity between the inquiry process, problem solving, and the achievement of industrial competence, as well as the principle of problem-based learning (Barrows, 2002). In addition, at the vocational level, problem-based learning is no longer limited to conceptual analysis, but is directed at the application of competencies in the context of work and industry. The integration of Reog Ponorogo at this stage allows students to develop vocational skills relevant to the local creative industry sector. This indicates that the continuum paradigm can be an effective framework to bridge the world of education and the world of work contextually.

**Reog Ponorogo as a Multidisciplinary Problem-Based Learning Context**

Reog Ponorogo contains a multidisciplinary dimension, including aspects of history, art, philosophical values, and creative economy. According to Suyanto (2018), learning based on local wisdom is able to strengthen the identity and relevance of education. In the context of PBL, Reog can be used as a source of authentic problems that encourage exploration, collaboration, and reflection on values. Reog not only represents traditional artistic expressions, but also contains historical, social, economic, and technological aspects that can be studied from various scientific perspectives.

At the elementary school level, Reog Ponorogo functions as a contextual learning medium that supports the development of cultural literacy and early communication skills. Problem-based learning at this stage emphasizes more on the process of exploration and simple interpretation of cultural phenomena. These findings show that the use of local cultural contexts in early education has the potential to increase student involvement in the learning process.

At the high school level, Reog Ponorogo is positioned as an object of critical study that allows students to analyze socio-cultural problems in more depth. Through a problem-based learning approach, students are trained to identify problems, gather information, and formulate alternative solutions. The results of the study indicate that this approach is in line with the characteristics of Generation Z who tend to favor collaborative and project-based learning.

At the Vocational High School level, Reog Ponorogo is used as a base for vocational competency development. Students not only learn about Reog as a cultural heritage, but also as a potential creative economy. The results of the analysis show that this approach has the potential to increase the relevance of learning to the needs of the world of work, especially in the creative industry sector based on local culture.

Table 1. Synchronization of Problem-Based Learning Competency Based on Reog Ponorogo

| Education Level | Focus on the Continuum Paradigm | Forms of Problem-Based Learning | Key Competencies Developed | Context of Reog Ponorogo |
|---|---|---|---|---|
| **SD** | Basic inquiry and exploration | Simple environment- | Curiosity, cultural literacy, basic communication | Introduction of characters, |

| | | | | |
|---|---|---|---|---|
| | | based contextual problems | | folklore, meaning of Reog symbols |
| **High School** | Critical analysis and reflection | Socio-cultural and conservation issues | Critical thinking, collaboration, argumentation | Historical, social, and sustainability studies of Reog |
| **SMK** | Application and productivity | Real problems in the world of work and the creative industries | Vocational skills, creativity, entrepreneurship | Reog show production, costume design, digital promotion |

**Competency Synchronization from Basic Inquiry to Industry Competencies**

Competency synchronization is a key element in the problem-based learning continuum paradigm. The results of the study show that the development of students' competencies can be arranged gradually and structured according to the characteristics of each level of education.

At the elementary school level, the competencies developed are mainly related to the ability to observe, ask questions, and communicate the results of observations. This competency serves as a foundation for the development of advanced thinking skills at the next level.

At the high school level, competence develops towards the ability to think critically, analytically, and reflectively. Students are trained to relate cultural problems to the broader social and economic context. The results of this study indicate that Reog Ponorogo-based problem-based learning can be an effective means to develop these competencies.

At the Vocational High School level, competence is directed at applicative and professional skills relevant to the industrial world. Students are trained to produce products or services based on local culture that have economic value. This synchronization of competencies between levels shows that the continuum paradigm has the potential to support sustainable human resource development.

**Compatibility of the Continuum Paradigm with Generation Z and Alpha Characters**

The results of the study show that the problem-based learning continuum paradigm has a relatively high level of conformity with the learning characteristics of Generation Z and Alpha. These two generations show a tendency to learn through direct experience, collaboration, and the use of digital technology. The characteristics of Gen Z and Alpha that are adaptive, visual, and collaborative are in line with the principles of PBL which emphasizes active and meaningful learning (Arends, 2012). Local culture-based learning provides a tangible context that reinforces learning motivation and engagement.

Problem-based learning provides space for learners to be actively involved in the learning process. The integration of Reog Ponorogo culture as a local context makes learning more meaningful and relevant. The results of this study indicate that this approach has the potential to increase student learning motivation and engagement, although its effectiveness still needs to be tested through advanced empirical research.

**Discussion Synthesis**

Overall, the results and discussion in this study show that the local culture-based problem-based learning continuum paradigm has strong conceptual potential to be applied across educational levels. Reog Ponorogo's cultural integration provides an authentic and relevant learning context, while the problem-based learning approach provides a pedagogical framework that is appropriate to the characteristics of Generation Z and Alpha students.

However, this study is still conceptual and contextual, so its practical implementation requires further empirical study. Thus, the results of this research are expected to be the basis for further research as well as the development of a more tested local culture-based learning model.

## CONCLUSION

Based on the results of the conceptual studies and contextual analysis that have been carried out, it can be concluded that the continuum paradigm in problem-based learning is a relevant pedagogical framework to answer the challenge of learning fragmentation across educational levels. This paradigm views the learning process as a continuous flow that integrates the development of students' competencies progressively from primary education to vocational secondary education. This study shows that problem-based learning, when placed within the framework of a continuum paradigm, has the potential to support the continuation of student skill development ranging from basic inquiry, critical thinking skills, to applicative competencies relevant to the world of work. At the elementary school level, problem-based learning functions as a means of strengthening curiosity, cultural literacy, and early communication skills. At the high school level, problem-based learning plays a role in developing students' analytical, reflective, and argumentative skills in understanding social and cultural problems. Meanwhile, at the Vocational High School level, problem-based learning is directed at the application of competencies in the context of practice and productivity that are in line with the needs of the industry, especially the creative industries based on local culture. The integration of Reog Ponorogo culture as a problem-based learning context provides significant added value within the framework of the continuum paradigm. Reog Ponorogo not only serves as an object of cultural learning, but also as a contextual medium that allows learners to relate academic knowledge to the social, economic, and cultural realities in their environment. Through this integration, learning becomes more meaningful and relevant for Generation Z and Generation Alpha students who tend to need contextual, collaborative, and real-experience learning experiences. Furthermore, this study indicates that the local culture-based problem-based learning continuum paradigm has the potential to bridge the gap between the world of education and the world of work. The gradually-built synchronization of competencies allows learners not only to understand cultural values, but also to develop skills that can be applied in the context of the creative industry. Thus, local culture-based education is not solely oriented to cultural preservation, but also to strengthening the capacity of students as adaptive and productive human resources. However, this study has a number of limitations. First, this study is conceptual and contextual so that it does not involve empirical data from the implementation of learning in certain educational units. Second, the cultural context analyzed is focused on Reog Ponorogo, so the conceptual findings do not necessarily fully represent the dynamics of other local cultures in Indonesia. Third, the analysis has not examined in detail the readiness of teachers, operational curricula, and school ecosystems in implementing the continuum paradigm in a practical way. Therefore, further research is recommended to test the application of the local culture-based problem-based learning continuum paradigm through empirical approaches, such as case studies in elementary, secondary, and vocational schools, classroom action research, and research and development (R&D) of learning models. The next research can also expand the local cultural context other than Reog Ponorogo and examine the impact of the continuum paradigm on students' competency achievements, job readiness, and strengthening cultural identity in a more measurable manner. Thus, the development of the continuum paradigm does not only stop at the conceptual level, but can be validated and refined through real educational practices.

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