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The Banathy Model: An Innovation to Improve the Quality of Inquiry Learning

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ABSTRACT

Although inquiry learning is widely recognized as an effective approach to promote critical thinking and active student engagement, its classroom implementation often remains procedural and less systematic, resulting in suboptimal learning quality. The Banathy Model, as a systems-based instructional design approach, offers a structured framework to strengthen inquiry learning processes. This study aims to analyze the implementation of the Banathy Model as an innovation to improve the quality of inquiry learning in junior high school. This research employed a qualitative approach with a descriptive case study design conducted at Sekolah Menengah Pertama 1 Arjasari, Bandung Regency. The participants consisted of five teachers and twenty seventh-grade students. Data were collected through in-depth interviews, classroom observations, and documentation studies, and were analyzed using data reduction, data display, and conclusion drawing techniques. The findings indicate that the implementation of the Banathy Model enhances the quality of inquiry learning by promoting structured lesson planning, systematic learning stages, and active student participation. Students demonstrated increased engagement in group discussions, improved questioning skills, and greater involvement in problem-solving activities. The model also supported teachers in organizing inquiry-based instruction more effectively. The study contributes theoretically to the development of systems-based instructional design in inquiry learning and practically provides guidance for teachers and schools in implementing innovative learning models to improve classroom learning quality.

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1. INTRODUCTION

Banathy's lesson planning model is recognised in education as a learning approach that supports active learning at various levels of education, as per the research of Laferrière et al. [1]. Because learning with a variety of models is an inevitable need to make the teaching and

learning process interesting [2], [3]. Teachers and learners will be actively involved in the learning process.

In addition, Banathy's model offers an innovative approach with six main stages, including: *a) formulating objectives, b) developing tests, c) analysing teaching and learning activities, d) designing teaching systems, e) developing tests, and f) making improvements based on evaluation results* [4]. The Banathy model integrates various complex learning components into an effective activity, resulting in optimal learning quality [5]. The Banathy learning model is a learning system approach that is oriented towards achieving learning outcomes [6], [7].

Previous research shows that the application of the Banathy model specifically supports the inquiry method in the classroom in improving student learning outcomes. The inquiry method is known as an innovative pedagogical approach that emphasises student-centred learning through active exploration, questioning, and problem solving [8]. Inquiry learning is important in encouraging students' creativity, co-operation in learning, critical thinking, and problem-solving skills [3].

Although the Banathy model contributes to the learning process, many teachers are not familiar with integrating it, especially with the Inquiry method. Many learning contents, pedagogies, and learning outcomes have not understood the relationship between Banathy's model and inquiry. The report's content does not comprehensively analyse the learning activities and fails to consider the specific conditions of students aged 6 to 12 [9]. Many teachers noted that their initial training on inclusive education and collaborative learning models was inadequate, resulting in a lack of confidence in meeting the needs of diverse learners [10]. Many first-time teachers lack technology skills, which is further exacerbated by their limited exposure to technology during their university education [11].

The lack of comprehensive training for teachers often creates a gap between theoretical understanding and field practice. Most training programmes have not been able to bridge theory with concrete application in the classroom, so many teachers have difficulty in effectively implementing innovative methods, which in turn creates a gap between the material taught and daily teaching practice [12]. Teachers often face limited support and a lack of ongoing training after completing initial education. The Train the Teacher Model (TTM) emphasises the importance of a combination of basic training and ongoing mentoring to ensure the successful implementation of an effective education system [13].

Many junior secondary school leaders are hesitant to equip their facilities and infrastructure for Banathy model training, primarily due to a lack of understanding of the model's benefits [14]. One of the fundamental challenges faced by schools is the limited infrastructure and supporting resources. These conditions include the availability of inadequate learning materials, unrepresentative laboratories, and educational facilities that are generally of low quality [15]. Nyoni [16] revealed that another obstacle lies in the lack of effective training programmes for curriculum implementers. When training is inadequate, school leaders and teachers struggle to understand and implement an innovative education model [16]. This indicates that the lack of training on Banathy and inquiry models hinders teachers' ability to integrate Banathy's model into the learning process.

The lack of insight among school principals into the Banathy model and inquiry method leads to high student participation in learning, which is not matched by the availability of teachers. This results in a heavier teacher workload, making it difficult for them to implement the new learning model they have obtained [17]. The situation further strengthens the hesitation of school leaders to equip facilities and infrastructure that support innovative training.

The implementation of an integrated Banathy model on inquiry method is important because the implementation of Inquiry learning in junior high schools still faces various obstacles, such as the dominance of the lecture method and the lack of an integrated planning system [18].

Banathy's model offers a systems-based approach that connects objectives, processes, evaluation, and the learning environment as a whole, inquiring learning more structured, innovative, and sustainable [19]. Thus, this research is expected to make an academic contribution to the development of learning design theory, as well as practical benefits in the form of increasing teacher competence as well as critical thinking skills, problem-solving, and student learning independence, according to the demands of the Merdeka Curriculum and 21st-century needs.

Based on the description above, a research gap can be identified, namely the absence of an in-depth study that integrates the Banathy planning model with the inquiry learning approach at the junior high school level. Thus, it is important to conduct this research to help teachers design inquiry learning that is more focused, systematic, and contextualised.

The formulation of the problem in this study is how the application of Banathy's lesson planning model improves the quality of inquiry learning in junior high school. Thus, this study aims to analyse the application of Banathy's lesson planning model in improving the quality of inquiry learning in junior high school.

2. METHOD

This research employs a qualitative approach, specifically a case study type. This approach was chosen to gain a deep understanding of how Banathy's learning planning model can improve the quality of inquiry learning in junior high school. Case studies allow researchers to explore the process of planning, implementing, and evaluating learning holistically in a real context [20].

The research was conducted at Junior High School 1 Arjasari, Bandung Regency, West Java, from January to April 2025. The research subjects consisted of five teachers and 20 students who were purposively selected based on their direct involvement in inquiry learning.

Data collection was conducted through three techniques, namely: (1) in-depth interviews, to explore teachers' and principals' understanding and experiences related to the implementation of the Banathy model; (2) direct observation, to observe the practice of planning and implementing inquiry learning in the classroom; and (3) documentation study, to review lesson planning documents such as lesson plans, semester programmes, and teacher evaluation notes.

Data analysis was conducted using Miles and Huberman's interactive analysis technique, which includes data reduction, data presentation, and conclusion drawing and verification stages. To maintain data validity, source triangulation and technique triangulation techniques were used, as well as member checks with key informants to ensure data conformity with the researcher's interpretation.

3. RESULTS AND DISCUSSION

3.1. Results

The findings of this study indicate that the implementation of the Banathy Model in junior high school has not yet been formally institutionalized through structured training programs. Nevertheless, its partial and adaptive application has significantly contributed to improving the quality of inquiry-based learning. The results are organized into four major themes derived from in-depth interviews, classroom observations, and document analysis: (a) learner-centered planning, (b) systemic instructional integration, (c) enhancement of inquiry learning quality, and (d) implementation challenges and institutional support.

a. Learner-Centered Planning

The first theme highlights teachers' growing awareness of the importance of designing instruction based on students' characteristics. Although teachers admitted limited formal understanding of the theoretical foundations of the Banathy Model, they intuitively adopted its core principle—designing learning as a system centered on learners' needs and potentials.

One teacher stated:

"The children in my class like to learn through practice and exploration, so I design activities that allow them to ask questions and try things out for themselves, although my understanding of Banathy's learning model is still lacking" (Teacher, 10 February 2025).

Document analysis of lesson plans revealed that teachers attempted to integrate exploratory tasks, open-ended questioning, and collaborative activities. Learning objectives were increasingly formulated in terms of higher-order thinking skills rather than mere content mastery. Observations further confirmed that classroom activities were structured to allow students to investigate problems independently before receiving formal explanations.

This indicates that even without comprehensive training, teachers demonstrated pedagogical transformation toward inquiry-oriented design. The Banathy Model's systemic perspective appeared to influence teachers' planning processes by encouraging alignment between student characteristics, learning objectives, and instructional strategies.

b. Systemic Integration of Learning Components

The second theme concerns the interconnectedness of instructional elements. The Banathy Model emphasizes that objectives, materials, learning activities, and assessment must function as an integrated system rather than as separate components.

A teacher explained:

"I need to connect the objectives with the activities and also the assessment. If the goal is exploratory, then the activities should provide space for exploration, and the assessment should also be open, but due to my limited understanding of this model, it needs to be implemented continuously from the school" (Teacher, 10 February 2025).

This statement reflects the systemic logic underlying Banathy's instructional design framework. Observations showed that lessons generally followed a coherent sequence: initial questioning to activate prior knowledge, exploratory activities through experimentation or discussion, collaborative interpretation of findings, and reflective sessions to consolidate understanding.

Assessment documents revealed the use of performance-based and process-oriented evaluation methods. Teachers assessed not only final answers but also participation, questioning ability, and group collaboration. This systemic alignment between objectives, activities, and evaluation suggests a shift from fragmented instructional practice to a more integrated inquiry learning structure.

c. Enhancement of Inquiry Learning Quality

The third theme relates to observable improvements in inquiry learning quality. Classroom observations consistently indicated higher levels of student engagement compared to conventional teaching practices previously used.

A teacher remarked:

"The children used to be passive, but now they are actively asking questions and being curious. They discuss with each other and find out that it is what makes the class atmosphere more lively, but there needs to be additional explanation of the material through videos" (Teacher, 10 February 2025).

Students demonstrated increased participation in group discussions, greater willingness to present ideas, and improved confidence in expressing opinions. Inquiry processes became more visible through active questioning, hypothesis formation, and collaborative problem-solving. The classroom atmosphere shifted from teacher-dominated instruction to interactive dialogue.

Furthermore, students showed improved metacognitive awareness. During reflection sessions, they were able to articulate what they had learned and how they arrived at conclusions. This indicates that the Banathy Model not only enhances participation but also strengthens students' reflective thinking capacity, which is a core component of inquiry-based education.

d. Implementation Challenges and Institutional Support

Despite these positive outcomes, the research identified several structural and professional challenges. One key issue is the limited formal training provided to teachers and school leaders regarding systemic instructional design.

A teacher noted:

“Although the school leaders do not understand the effective form of training, in the field we can run it with all the limitations” (Teacher, February 2025).

Teachers reported time constraints in designing integrated lesson plans, especially when required to align objectives, inquiry activities, and performance-based assessments. Additionally, transitioning from conventional teacher-centered instruction to inquiry-based systems required a shift in mindset that was not fully supported through professional development programs.

Institutional support from the principal played a moderating role. While formal training was limited, moral encouragement and flexibility in instructional experimentation enabled teachers to adapt the model gradually. Peer collaboration also emerged as a supportive factor, as teachers shared lesson designs and classroom experiences.

These findings suggest that while the Banathy Model demonstrates strong potential for improving inquiry learning quality, its sustainability depends on structured professional development, leadership commitment, and institutional policy alignment.

e. Synthesis of Findings

Overall, the results indicate that the Banathy Model contributes to improving inquiry learning quality through systemic instructional planning, alignment of learning components, and increased student engagement. Even in the absence of maximal training, its principles can influence pedagogical practice positively. However, the effectiveness of its implementation is strongly influenced by institutional readiness, teacher capacity, and leadership support.

3.2. Discussion

The results showed that to improve the quality of teachers in managing learning, it is necessary to organise regular training and workshops for teachers and principals on the implementation of the Banathy Model. These activities should not only emphasise the theoretical aspects but also include hands-on practice, allowing participants to experience firsthand how to design and implement learning effectively. This kind of effort is proven to improve teachers' pedagogical competence while strengthening learning innovation in schools [21]

This finding reinforces Banathy's theory that learning should be designed as an open system involving various interrelated elements, such as learning objectives, strategies, media, learning environment, and evaluation [22]. In the context of inquiry learning, the relationship between these components is crucial because students are required to think critically, ask questions, explore, and discover knowledge independently [23].

Implement a mentoring programme where teachers experienced in the Banathy Model can mentor their peers, not only accelerating the knowledge transfer process, but also creating a collaborative learning community [24]. Through this interaction, novice teachers receive direct mentoring, while senior teachers have the opportunity to reflect on and deepen

their practice, creating a culture of innovation and continuous improvement in learning quality [25], [26]. Collaboration between schools can also encourage the exchange of ideas and experiences in implementing this model.

Regular evaluation is important to ensure that the learning process is on track and that weaknesses can be rectified immediately. Conduct periodic evaluations to show the real benefits of implementing the model. Regular evaluation of student learning outcomes provides objective data that can be used to assess the success of learning methods and activities [18].

Student involvement in demonstration activities is proven to make a positive contribution to learning outcomes because demonstrations that involve students can improve learning outcomes [27], [28]. This increases school leaders' confidence to invest in training.

4. CONCLUSION

This study confirms that the Banathy Model functions as a systemic instructional innovation capable of strengthening the quality of inquiry learning at the junior high school level. Even without comprehensive formal training, its principles—particularly learner-centered planning and systemic alignment among objectives, strategies, and assessment—encourage pedagogical transformation toward more structured and reflective inquiry practices. The model supports a shift from fragmented instructional design to a more coherent and integrated learning system that promotes student engagement, critical thinking, and collaborative exploration.

The implications of this research are significant for educational practice and leadership. First, the findings emphasize that improving inquiry learning quality requires not only methodological change but also systemic instructional design competence among teachers. Second, school leaders play a strategic role in facilitating professional development, mentoring programs, and collaborative learning communities to sustain instructional innovation. Third, the study highlights the importance of integrating systemic design thinking into teacher training programs to ensure sustainable implementation of inquiry-based learning models.

This research is limited by its qualitative case study design conducted in a single junior high school, with a relatively small number of participants. As such, the findings provide contextual depth rather than statistical generalization. The level of institutional readiness, leadership style, and teacher experience may vary across schools, potentially influencing the effectiveness of Banathy Model implementation in different contexts.

Future research is recommended to expand the scope by involving multiple schools and educational levels to examine the broader applicability of the Banathy Model. Quantitative or mixed-method approaches could be used to measure its impact on specific learning outcomes, critical thinking skills, or long-term academic performance. Further studies may also explore structured professional development models and digital integration strategies to enhance systemic instructional design in inquiry-based education.

In a broader societal context, this research contributes to efforts aimed at improving educational quality through systemic and learner-centered innovation. By promoting structured inquiry learning supported by institutional collaboration and professional growth,

the Banathy Model offers a pathway toward developing more critical, reflective, and independent learners. Such outcomes are essential not only for academic achievement but also for preparing students to navigate complex social and intellectual challenges in contemporary society.

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