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Development of Hybrid Problem-Based Learning (HyProBeL) Learning Model on Basic Programming Algorithm Material

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ABSTRACT

Objective: Hybrid learning is environmental learning through the internet used in groups. Hybrid learning activities are expected so that students can actively ask and speak because learning is student-centered. **Method:** The type of research used by researchers is development research, known as Research and Development (R & D), which refers to the Borg and Gall model. **Results:** The research produces a product in the form of a model; the results show that the implementation of the HyProBeL learning model can improve critical thinking and problem-solving skills. Research findings related to the HyProBeL learning model begin with the development of a Hybrid Problem Based Learning model for basic programming algorithm material. **Novelty:** The results of the development of the HyProBeL model obtained a development value of 95.1%, which has a very good category, with the conclusion that the HyProBeL model learning model has a validity level that is valid, effective, and practical to use.

INTRODUCTION

Hybrid learning is a learning environment through the internet that is used in groups, encouraging active student participation and discussions and making learning student-centered. The teacher in hybrid learning acts as both an instructor and a guide, aiming to optimize the teaching and learning system and support independent learning campuses (Mourtzis et al., 2023; Pischetola, 2022; Singh et al., 2021; Singh et al., 2021). Informatics subjects lay a foundation of computational thinking, an essential problem-solving skill crucial in the digital age. Students tackle computational problems that increase in complexity from class X to XII, developing from minor, simple problems to large, complex ones and from concrete to abstract issues. The algorithms and programming material in class X informatics subjects under the independent curriculum focus on creating programs using textual programming languages and applying computational thinking strategies to enhance critical thinking and problem-solving skills.

Preliminary studies at State Senior High School 1 Sidoarjo and 4 Sidoarjo, involving interviews with informatics teachers, revealed that informatics teaching for basic programming algorithm material in class X predominantly employs lecture, discussion, and question-and-answer methods. This approach leaves students struggling with fundamental programming problems, as they are not accustomed to problem-solving due to the traditional teaching methods. Teachers noted that students face difficulties in understanding and solving problems, having been rarely involved in active problem-solving exercises (Dita et al., 2021; Education et al., 2021; Hobri et al., 2020; Mangaroska et al., 2022). Interviews with students indicated that classroom learning fails to adequately convey informatics concepts, as teachers dominate the sessions with

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