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## **BALANCING BENEFITS AND RISKS: STUDENTS' PERCEPTIONS OF AI IN PROGRAMMING LEARNING**

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### **Abstract**

*The increasing use of Artificial Intelligence (AI) in programming education presents both opportunities and challenges for student learning. This study examines the balance between perceived benefits and risks of AI usage among polytechnic students in programming courses. A quantitative research design was adopted using a structured questionnaire to explore students' usage patterns, perceived effectiveness, risk awareness,*

*and acceptance of AI tools. Findings indicate that AI is widely used to support conceptual understanding, code exploration, and debugging, highlighting its role as a learning facilitator rather than merely a task-completion tool. Students also report positive perceptions of AI in enhancing problem-solving abilities and improving learning engagement, demonstrating its contribution to a more effective learning experience. However, the perceived risks of AI usage are relatively low. Concerns related to academic dishonesty, dependency, and reduced independent thinking are minimal, suggesting that students generally use AI in a responsible manner. Despite this, students emphasise the importance of instructor guidance to ensure appropriate and ethical use of AI in learning activities. In conclusion, the study suggests that the benefits of AI in programming education outweigh the associated risks when proper instructional support is provided. These findings highlight the need for educators to integrate AI thoughtfully into teaching strategies to maximise learning outcomes while maintaining academic integrity.*

**Keywords:**

Artificial Intelligence, Programming Education, Benefits and Risks, Student Perception, Polytechnic Students