PENGEMBANGAN MODEL *PROJECT BASED LEARNING WITH LEVELS OF INQUIRY* (PjBL-LoI) UNTUK MENINGKATKAN *INQUIRY SKILLS*, KETERAMPILAN BERPIKIR KREATIF DAN *SELF-DIRECTED LEARNING* MAHASISWA CALON GURU FISIKA

DISERTASI

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PENGEMBANGAN MODEL *PROJECT BASED LEARNING WITH LEVELS OF INQUIRY* (PjBL-LoI) UNTUK MENINGKATKAN *INQUIRY SKILLS*, KETERAMPILAN BERPIKIR KREATIF DAN *SELF-DIRECTED LEARNING* MAHASISWA CALON GURU FISIKA

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ABSTRAK

Penelitian ini bertujuan menghasilkan model pembelajaran *Project Based Learning with Levels of Inquiry* (PjBL-LoI) dengan perangkat pendukungnya untuk meningkatkan *inquiry skills*, keterampilan berpikir kreatif dan *self-directed learning* mahasiswa. Penelitian ini menggunakan metode *Developmental Research* dengan model pengembangan ADDIE (*Analyze*, *Design*, *Develop*, *Implementation*, dan *Evaluation*). Subjek penelitian berjumlah 58 mahasiswa calon guru fisika semester III di perguruan tinggi LPTK di Kota Pontianak, yang terbagi menjadi kelompok eksperimen (37 mahasiswa diterapkan Model PjBL-LoI) dan kelompok kontrol (21 mahasiswa diterapkan Model LoI). Instrumen penelitian berupa tes *inquiry skills*, tes keterampilan berpikir kreatif dan skala sikap *self-directed learning*. Seluruh instrumen melewati tahap validasi ahli dan uji coba sehingga memenuhi kriteria yang valid. Hasil penelitian disimpulkan bahwa; (1) Telah berhasil dikembangkan Model PjBL-LoI dengan karakteristik: didasari teori belajar konstruktivisme; berorientasi untuk melatih keterampilan berinkuiri, keterampilan berpikir kreatif dan *self-directed learning* mahasiswa; dan terdiri dari sintaks empat tahapan utama; (2) *Inquiry skills* mahasiswa meningkat dengan kategori sedang sebagai efek diterapkannya Model PjBL-LoI; (3) Keterampilan berpikir kreatif mahasiswa meningkat dengan kategori sedang sebagai efek diterapkannya Model PjBL-LoI; (4) Model PjBL-LoI dan Model *Levels of Inquiry* sama-sama memiliki pengaruh yang signifikan dalam meningkatkan *inquiry skills*, namun Model PjBL-LoI secara signifikan memiliki pengaruh dengan *effect size* kuat dalam meningkatkan keterampilan berpikir kreatif jika dibanding Model *Levels of Inquiry*; (5) *Self-directed learning* mahasiswa berkategori yang tinggi setelah diterapkan Model PjBL-LoI; dan (6) terhadap hubungan positif yang kuat dan signifikan antara keterampilan berpikir kreatif dan *inquiry skills* mahasiswa setelah diterapkan Model PjBL-LoI. Model PjBL-LoI dapat diterapkan dalam perkuliahan materi fisika lainnya yang menargetkan pada peningkatan keterampilan berinkuiri, keterampilan berpikir kreatif dan *self-directed learning* mahasiswa. Penelitian lanjutan dapat dilakukan dengan mengembangkan langkah pembelajaran yang melatih mahasiswa menyelesaikan permasalahan melalui beragam solusi proyek. Pengembangan media pendukung masih diperlukan sesuai karakteristik materi dan memperhatikan efektivitas waktu penerapan model.

DEVELOPMENT OF A PROJECT-BASED LEARNING WITH LEVELS OF INQUIRY (PjBL-LoI) MODEL TO IMPROVE INQUIRY SKILLS, CREATIVE THINKING SKILLS, AND SELF-DIRECTED LEARNING FOR PROSPECTIVE PHYSICS TEACHER STUDENTS

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ABSTRACT

This study aims to develop a Project-Based Learning with Levels of Inquiry (PjBL-LoI) model along with its supporting tools to enhance students' inquiry skills, creative thinking skills, and self-directed learning. The research employed a Developmental Research method with the ADDIE model (Analyze, Design, Develop, Implementation, and Evaluation). The participants were 58 third-semester prospective physics teacher students at an LPTK university in Pontianak, divided into an experimental group (37 students using the PjBL-LoI model) and a control group (21 students using the Levels of Inquiry model). The research instruments included an inquiry skills test, a creative thinking skills test, and a self-directed learning attitude scale. All instruments underwent expert validation and pilot testing to ensure validity. The results of the study can be summarized as follows: (1) The PjBL-LoI model was successfully developed with the following characteristics: it is grounded in constructivist learning theory; it is oriented toward fostering inquiry skills, creative thinking skills, and students' self-directed learning; and it consists of four main stages of syntax. (2) Students' inquiry skills improved to a moderate category as a result of applying the PjBL-LoI model. (3) Students' creative thinking skills also improved to a moderate category as a result of applying the PjBL-LoI model. (4) Both the PjBL-LoI and Levels of Inquiry models had a significant effect on improving inquiry skills; however, the PjBL-LoI model demonstrated a significantly stronger effect size in enhancing creative thinking skills compared to the Levels of Inquiry model. (5) Students' self-directed learning was categorized as high after the implementation of the PjBL-LoI model. (6) There was a strong and significant positive correlation between creative thinking skills and inquiry skills after the application of the PjBL-LoI model. The PjBL-LoI model can be applied in other physics courses aimed at improving inquiry skills, creative thinking skills, and students' self-directed learning. Further research may focus on developing instructional steps that train students to solve problems through a variety of project-based solutions. In addition, the development of supporting media remains necessary to align with the characteristics of the subject matter and to ensure time-effectiveness in the implementation of the model.

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DAFTAR GAMBAR

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