PENGEMBANGAN PRAKTIKUM *AUTHENTIC INQUIRY PROJECT* TENTANG *NYALE* UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KRITIS DAN KREATIF MAHASISWA

DISERTASI

diajukan untuk memenuhi sebagian syarat memperoleh gelar Doktor Pendidikan IPA

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BANDUNG

2025

Pengembangan Praktikum *Authentic Inquiry Project* tentang *Nyale* untuk Meningkatkan Keterampilan Berpikir Kritis dan Kreatif Mahasiswa

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PERNYATAAN

Dengan ini saya menyatakan bahwa disertasi yang berjudul "**PENGEMBANGAN PRAKTIKUM *AUTHENTIC INQUIRY PROJECT* TENTANG *NYALE* UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KRITIS DAN KREATIF MAHASISWA**" beserta seluruh isinya adalah benar-benar karya saya sendiri dan saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika keilmuan yang berlaku. Atas pernyataan ini, saya siap menanggung sanksi tindakan hukum yang dijatuhkan kepada saya apabila dikemudian hari ditemukan pelanggaran terhadap etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

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Yang membuat pernyataan

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Puji dan Syukur penulis panjatkan kehadirat Tuhan yang Maha Esa, karena atas berkat, cinta dan rahmat-Nya, penulis dapat menyelesaikan disertasi yang berjudul "**Pengembangan praktikum *authentic inquiry project* tentang *nyale* untuk meningkatkan keterampilan berpikir kritis dan kreatif mahasiswa**". Disertasi yang penulis susun digunakan untuk memenuhi sebagian syarat memperoleh gelar Doktor Pendidikan IPA pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam, Universitas Pendidikan Indonesia.

Praktikum *authentic inquiry project* tentang *nyale* memberikan kesempatan bagi mahasiswa untuk terlibat secara aktif dalam merumuskan masalah, mengajukan hipotesis dan merencanakan praktikum sehingga mampu melatihkan keterampilan berpikir kritis dan kreatif mahasiswa. Praktikum ini mengangkat masalah dalam kehidupan nyata yang dekat dengan mahasiswa sehingga proses praktikum dalam pembelajaran IPA menjadi lebih bermakna. Praktikum ini juga merupakan reorientasi praktikum bagi mahasiswa tingkat atas yang berbasis *textbook* menjadi praktikum yang dikemas dalam proyek yang mengangkat masalah dunia nyata. Praktikum ini memberikan peningkatan pada keterampilan berpikir kritis dan keterampilan berpikir kreatif mahasiswa.

Penulis menyadari bahwa dalam penulisan disertasi ini masih terdapat berbagai keterbatasan dan kekurangan, oleh karena itu penulis sangat mengharapkan adanya kritik dan saran yang membangun demi penyempurnaan disertasi ini. Kiranya hasil penelitian ini dapat memberikan manfaat dan mampu berkontribusi demi pengembangan ilmu secara khususnya dalam pembelajaran Anatomi dan Fisiologi Hewan khusunya hewan invertebrata *nyale*.

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PENGEMBANGAN PRAKTIKUM *AUTHENTIC INQUIRY PROJECT* TENTANG NYALE UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KRITIS DAN KREATIF MAHASISWA

ABSTRAK

Nyale merupakan cacing laut yang khas di pulau Sumba, karena melibatkan makna dalam budaya Sumba dan memiliki nilai gizi tinggi. Dalam pembelajaran IPA, mengangkat suatu masalah dalam dunia nyata, merupakan suatu langkah untuk memberikan kesempatan kepada mahasiswa dalam mengembangkan keterampilan berpikir kritis dan kreatifnya, sehingga menghasilkan pendidikan berkualitas. Hal ini dapat pula memperkenalkan kehidupan lingkungan bawah air yang lebih baik. Kedua macam keterampilan berpikir mahasiswa diperlukan dalam kehidupannya, agar dapat bersaing secara global. Penelitian ini bertujuan untuk menghasilkan petunjuk praktikum berbasis *authentic inquiry project* tentang *nyale* dan mengimplementasikannya, untuk meningkatkan keterampilan berpikir kritis dan kreatif mahasiswa. Metode penelitian yang digunakan adalah *mixed methods* dengan desain *exploratory development model*. Implementasi praktikum melibatkan 48 mahasiswa dari program studi Pendidikan IPA di salah satu universitas di Pulau Sumba, Nusa Tenggara Timur. Kedua macam keterampilan berpikir tersebut dilatihkan dalam setiap proses praktikum, mulai dari tahap perencanaan, pelaksanaan, hingga penyelesaiannya, dengan bantuan lembar kerja mahasiswa (LKM). Tes keterampilan berpikir kritis dan kreatif diukur dengan soal uraian diberikan sebelum dan sesudah implementasi praktikum. Teknik analisis data yang digunakan adalah perhitungan *gain*, *N-gain,* uji beda dan uji korelasi. Hasil penelitian menunjukkan bahwa praktikum: 1) memiliki karakteristik yang merupakan langkah awal reorientasi praktikum bagi mahasiswa tingkat lanjut, menggabungkan *authentic inquiry project* dengan melatihkan tahapan-tahapan *inquiry*; 2) membantu mahasiswa dalam merancang perencanaan praktikum, terutama berhipotesis; 3) membantu mahasiswa dalam melaksanakan dan melaporkan hasil proyek; 4) meningkatkan keterampilan berpikir kritis mahasiswa pada kategori sedang; dengan capaian indikator tertinggi pada *elementary clarification* dan terendah pada *basic support* 5) meningkatkan keterampilan berpikir kreatif mahasiswa, pada kategori sedang; dan capaian indikator tertinggi *flexibility, elaboration* dan *originality,* serta terendah pada *fluency* dan *redefinition*; 6) terdapat korelasi positif antara keterampilan berpikir kritis dan kreatif mahasiswa; 7) memiliki keunggulan mengangkat masalah dalam kehidupan nyata, melibatkan mahasiswa secara aktif pada setiap langkah inkuiri, melatihkan dan meningkatkan keterampilan berpikir kritis dan kreatifnya, serta mendukung program SDGs dengan fokus pada *quality of education* dan *life underwater* Sebaliknya keterbatasan praktikum adalah membutuhkan waktu dan sumber daya yang lebih banyak, memerlukan bimbingan yang lebih dari dosen dan, membutuhkan kemauan mahasiswa untuk mengembangkan diri. Praktikum ini. Peneliti selanjutnya dapat menerapkan bentuk praktikum ini dalam berbagai praktikum IPA yang mengangkat masalah dunia nyata yang lain.

Kata kunci: praktikum *authentic inquiry project*, *nyale*, keterampilan berpikir kritis, keterampilan berpikir kreatif.

THE DEVELOPMENT OF AUTHENTIC INQUIRY PROJECT LABORATORY ACTIVITIES OF NYALE TO IMPROVE STUDENTS' CRITICAL AND CREATIVE THINKING SKILLS

ABSTRACT

Nyale is a typical sea worm on the island of Sumba. It has great meaning in Sumba culture and also it has high nutritional value. In science learning, raising a problem in the real-world situation is a step to provide opportunities for students to develop their critical and creative thinking skills, therefore increase quality of education. It also introduce better underwater life environment. The two models of thinking are needed in students' life, therefore they shoud be compete globally. This study aims to produce students' laboratory activities instructions and to implement it, based on an authentic inquiry project of nyale to improve students' critical and creative thinking skills. The research using a mixed methods with the exploratory development model. The laboratory activities implementation involved 48 students in the Science Education study program at one of the universities on Sumba Island, East Nusa Tenggara. Critical and creative students' thinking skills are trained in every laboratory activities processes, starting from the planning stage to completion of laboratory activities using students' worksheets (LKM). Students'critical and creative thinking skills were evaluate using essay test, before and after the laboratory activities implementation. The data analysis technique used is the calculation of gain , n-gain, t-test and correlation test. The results showed that the laboratory activities : 1) it has characteristics as the first step of reorientation of laboratory activities for upper-level students, combining authentic inquiry project, which practicing each stage of inquiry; 2) it helps students in designing of laboratory activities planning based on hypothesis ;3) it helps students in carrying out and reporting project results; 4) it improves students' critical thinking skills, in medium category; with the highest indicator elementary clarification and the lowest indicator of basic support; 5) it improves students' creative thinking skills, in medium category; with the highest indicator of flexibility,elaboration,and originality,but the lowest indicator of fluency dan redefinition; 6) there is a positive correlation of students' critical and creative thinking skills; 7) it has the advantage of raising problems in real life situation, actively involving students in each stage of inquiry, also practicing and improving their critical and creative thinking skills, and also it will support the SDGs program especially on quality of education and better life underwater. On the contrary it has limitations as requires more time and resources, more intense guidance from the lecturer, and the willingness of students to develop themselves. Future researchers can apply this laboratory activities construct in other various science activities that raise other real-world problems.

Keywords: *authentic inquiry project*, nyale, critical thinking skills, creative thinking skills.

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