

**PENGEMBANGAN LEMBAR KERJA PESERTA DIDIK MODEL  
PROJECT BASED LEARNING MATERI EKSTRAKSI DNA  
UNTUK MENINGKATKAN KEMAMPUAN  
COLLABORATIVE PROBLEM-SOLVING  
PESERTA DIDIK SMP KELAS IX**

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**ABSTRAK**

Penelitian ini bertujuan (1) mengetahui kelayakan LKPD materi ekstraksi DNA model *project based learning* dalam meningkatkan kemampuan *collaborative problem-solving* menurut validator, (2) mengetahui peningkatan kemampuan *collaborative problem-solving* menggunakan LKPD materi ekstraksi DNA model PjBL berdasarkan pengujian hipotesis menggunakan uji statistik deskriptif.

Model yang digunakan adalah model pengembangan Borg&Gall yang terdiri atas tujuh tahap (1) studi dan pengumpulan informasi, (2) perencanaan, (3) pengembangan produk awal, (4) uji coba terbatas, (5) revisi, (6) uji coba lapangan, dan (7) revisi. Subjek penelitian adalah peserta didik kelas IX B SMP N 2 Gamping sejumlah 33 peserta. Pembelajaran dilakukan 6 x 40 menit di dalam kelas dan 6 hari di luar kelas. Data kelayakan produk dikumpulkan menggunakan lembar validasi komponen produk dan angket respon peserta didik. Teknik pengumpulan data *collaborative problem solving* adalah observasi menggunakan bentuk instrumen lembar observasi, penilaian diri dan penilaian teman menggunakan bentuk instrumen angket. Teknik analisa data adalah *mean*, uji normalitas, dan *t-test*.

Penilaian produk oleh ahli menghasilkan nilai A dengan kategori sangat baik pada aspek kelayakan isi, penyajian, kebahasaan, dan grafis. Respon peserta didik terhadap produk LKPD adalah valid dan dapat digunakan. Kemampuan *collaborative problem solving* meningkat secara signifikan menurut penilaian observer, *self-assessment*, dan *peer-assessment* berdasarkan hasil perhitungan mean, persentase dan *t-test*.

Kata kunci: *Collaborative Problem Solving, LKPD, Project Based Learning,*

**THE DEVELOPMENT OF PROJECT BASED LEARNING STUDENT  
WORKSHEET FOR DNA EXTRACTION INCREASING  
PROBLEM SOLVING SKILL OF PUPILS  
GRADE IX**

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**ABSTRACT**

The aims of this research (1) knowing the feasibility of worksheet that use project based learning model for extraction of DNA based on expert assessment, (2) knowing the enhancement of collaborative problem solving skill of the pupils grade IX junior high school by using the developed worksheet based on statistical analysis.

Development of the worksheet based on Borg&Gall stage. There are seven stages (1) collecting data, (2) designing, (3) development of the first-touch product, (4) limited trials, (5) revision, (6) field testing, (7) revision. Subject of the research is grade IX students of SMP N 2 Gamping consist of 33 students. The teaching&learning activity done by 6 x 40 minutes in class and 5 days out of school hour. The data for expediency of product collected using validation sheet and student's responses sheet. While the data of collaborative problem solving skill collected by doing observation based on observation sheet, self assessment and peer to peer assessment use questionnaire.

Analysis of the data use mean, normality test, and t test to know the differences between before the product given and after the product given. The expert give A score in four aspects (content, serving, language, and design). The worksheet is valid and can be used according to pupils. Collaborative problem solving skill significantly increased according to observer's assessment, self assessment, and peer assessment after data analyzed (mean&percentage) and tested using t-test.

*Keywords: Collaborative Problem Solving, LKPD, Project Based Learning,*