

## ABSTRAK

### **Kristian Felix Silalahi, NIM 4173342005 (2017). Pengembangan Modul Biologi Sel Berbasis STEM untuk Meningkatkan Keterampilan Berpikir Kritis dan Sikap Ilmiah Siswa Melalui Pembelajaran Blended**

Latar belakang penelitian ini didasari kajian literatur yang menyatakan kurang efektifnya metode pembelajaran, kurang multidisplin ilmu pada sumber belajar serta mata kuliah biologi sel sukar untuk dipelajari. Berdasarkan masalah tersebut dan analisis kebutuhan mahasiswa penelitian ini bertujuan untuk mengembangkan dan menguji kelayakan Modul pembelajaran biologi sel berbasis STEM sebagai alternatif sumber belajar dalam meningkatkan kemampuan berpikir kritis dan sikap ilmiah. Penelitian ini merupakan penelitian deskriptif kuantitatif, adapun metode digunakan 4D (*Define, Design, Development and Disseminate*) dengan teknik pengumpulan data menggunakan instrumen soal dan angket yang disebarakan sebelum dan sesudah penggunaan modul. Berdasarkan hasil penelitian didapatkan ke validan modul rentang 83-90% dengan kriteria layak digunakan dan respon mahasiswa 92,6% dengan kategori sangat layak. Hasil evaluasi keefektifitas modul dalam peningkatan berpikir kritis *N-Gain* rentang 0,41-0,55 dan peningkatan sikap ilmiah rentang  $t_{obs} > |t_{crit}|$   $|0.73| > |0.65|$  pada kelompok kecil dan  $|0.64| > |0.47|$  pada uji kelompok besar signifikan meningkat. Maka dapat dinyatakan bahwa terdapat pengaruh pengembangan modul biologi sel berbasis STEM meningkatkan keterampilan berpikir kritis dan sikap ilmiah.

**Kata Kunci:** Pengembangan, Sumber belajar, Biologi Sel, Pembelajaran STEM Berpikir kritis, Sikap Ilmiah

## ABSTRACT

**Kristian Felix Silalahi, NIM 4173342005 (2017) The development of STEM-Based Cell Biology module to foster Students critical thinking skills and scientific attitudes through Blended learning.**

The research background based on literature study which stated that learning methods were less effective, lack of multidisciplinary literacy in learning resources and cell biology courses were difficult to learn. Based on these problems and analysis of student needs, this study aims to develop and test the feasibility of STEM-based cell biology learning modules as alternative learning resources to foster students' critical thinking skills and scientific attitudes. This research is a quantitative descriptive research, the method used is 4D (Define, Design, Development and Disseminate) with data collection techniques using questions and questionnaires distributed before and after using the module. Based on the results of the research, the module validity ranged from 83-90% with criteria worthy for used and student responses 92.6% in the very worthy category. The results of the evaluation of the effectiveness of the module in increasing critical thinking *N-Gain* in the range 0.76-0.71 and increasing scientific attitudes in the range of  $t_{obs} > |t_{crit}|$   $|0.73| > |0.65|$  in the small group and  $|0.64| > |0.47|$  in the large group test significantly increased. So it can be concluded that there is an effect that the development of STEM-based cell biology modules foster students' critical thinking skills and scientific attitudes.

**Keywords:** Development, Learning resource, Biology Cell, STEM Learning, Critical Thinking skill, Scientific Attitude