

## ABSTRAK

**MITRA DHANI PINEM.** Efektivitas Penerapan Buku Ajar Kultur Jaringan Berbasis Riset Berdasarkan Keterampilan Proses Sains, Kemampuan Berpikir Kritis, Hasil Belajar Kognitif dan Sikap Ilmiah Mahasiswa Jurusan Biologi Universitas Negeri Medan. Tesis. Medan: Program Pascasarjana Universitas Negeri Medan, Juli 2020.

Tujuan penelitian ini adalah untuk mengetahui pengaruh penerapan buku ajar kultur jaringan berbasis riset berdasarkan (1) keterampilan proses sains; (2) kemampuan berpikir kritis; (3) hasil belajar kognitif; dan (4) sikap ilmiah mahasiswa. Jenis penelitian ini berupa kuasi eksperimen dengan menggunakan *pretest-posttest control group design*. Populasi penelitian yaitu mahasiswa jurusan biologi Universitas Negeri Medan semester delapan yang berjumlah 6 kelas dengan sampel sebanyak 2 kelas yang diambil secara acak. Kelas eksperimen menggunakan buku ajar kultur jaringan berbasis riset dan kelas kontrol menggunakan buku ajar biasa (konvensional). Instrumen tes berupa soal uraian untuk mengukur keterampilan proses sains, soal pilihan berganda untuk mengukur kemampuan berpikir kritis dan hasil belajar kognitif, angket sikap untuk mengukur sikap ilmiah mahasiswa. Data yang diperoleh dianalisis menggunakan Mann-Whitney test pada variabel keterampilan proses sains, kemampuan berpikir kritis, dan hasil belajar kognitif sedangkan pada variabel sikap ilmiah menggunakan uji-t. Hasil penelitian menunjukkan bahwa perbandingan dari penggunaan kedua buku tersebut berdasarkan keterampilan proses sains, kemampuan berpikir kritis, hasil belajar kognitif berbeda secara signifikan sedangkan berdasarkan sikap ilmiah tidak berbeda secara signifikan. Buku ajar kultur jaringan berbasis riset yang dikembangkan efektif berdasarkan keterampilan proses sains ( $Z= 3,099$  dan  $P=0,002$ ), kemampuan berpikir kritis ( $Z=5,719$  dan  $P=0,000$ ), hasil belajar kognitif ( $Z=4,445$  dan  $P=0,000$ ), dan tidak efektif berdasarkan sikap ilmiah ( $t_{hitung}=0,187$  dan  $P=0,861$ ). Oleh karenanya, dapat disimpulkan bahwa buku ajar kultur jaringan berbasis riset sebagai buku ajar yang lebih efektif untuk keterampilan proses sains, kemampuan berpikir kritis, dan hasil belajar kognitif mahasiswa.

Kata kunci: *kultur jaringan, buku ajar, keterampilan proses sains, kemampuan berpikir kritis, hasil belajar kognitif, sikap ilmiah*

## ABSTRACT

**MITRA DHANI PINEM.** The Effectivity of Tissue Cultur Research Based Texbook on Students Science Process Skills, Critical Thinking Skills, Cognitive Learning Outcomes and Scientific Attitude in Biology Department Medan State University. Thesis. Medan: Postgraduate Program Medan State University. June 2020.

The objectives of this study are to find out the effect of tissue cultur research based texbook application on (1) students science process skills; (2) critical thinking skills; (3) cognitive learning outcomes; and (4) scientific attitude. A quasi experimental research with pretest-posttest control group design was used in this study. The population of this study was 8<sup>th</sup> semester students of Biology department and two classes chosen as the sample by applying cluster random sampling technique. Experimental class was using tissue culture research based textbook while control class was using conventional textbook. The instrument used to obtain the data of students science process skills was description test, critical thinking skills, cognitive learning outcomes were multiple choices and students scientific attitude was questionnaire. The data of students science process skills, critical thinking skills, and cognitive learning outcomes were analyzed by using Mann-Whitney test while scientific attitude was analyzed by t-test. The ranked test scores of the two books were significantly different on students science process skills, critical thinking skills, and cognitive learning outcomes while was not significantly different on students scientific attitude. There is an effect of tissue cultur research based textbook application on students science process skills ( $Z=3.099$  and  $P=0.002$ ), critical thinking skills ( $Z=5.719$  and  $P=0.000$ ), cognitive learning outcomes ( $Z=4.445$  and  $P=0.000$ ), and there is no effect on students scientific attitude ( $t_{count}=0.187$  dan  $P=0.861$ ). Therefore, it can be stated that tissue cultur research based textbook as more effective textbook for science process skills, critical thinking skills, and cognitive learning outcomes of students.

**Keywords:** *tissue culture, textbook, science process skills, critical thinking skills, cognitive learning outcomes, scientific attitude.*