

## ABSTRAK

**DAMAYANI PANGGABEAN:** Pengembangan Buku Nonteks *Lichens* Sebagai Bioindikator Pencemaran Udara Berbasis Riset di Kota Medan. Tesis. Medan: Program Pascasarjana Universitas Negeri Medan, Januari 2021.

Penelitian ini bertujuan menghasilkan produk buku nonteks tentang *Lichens* sebagai bioindikator pencemaran udara berbasis riset di kota Medan yang layak ditujukan kepada masyarakat umum dengan tingkat pendidikan minimal strata satu (S1) dan mahasiswa S1 jurusan Biologi. Buku nonteks yang dikembangkan divalidasi berdasarkan aspek materi dan penyajian materi diperoleh hasil skor berupa persen yakni 88% kategori sangat layak, aspek bahasa buku diperoleh hasil skor berupa persen yakni 82% kategori sangat layak dan aspek kegrafisan buku diperoleh hasil skor berupa persen yakni 83% kategori sangat layak. Hasil uji coba produk untuk buku nonteks diperoleh dari tiga aspek yakni, uji coba perorangan diperoleh hasil skor berupa persen yakni, 87% dengan kategori sangat layak, uji coba kelompok kecil diperoleh hasil skor berupa persen yakni, 82% dengan kategori sangat layak dan uji coba kelompok terbatas diperoleh hasil skor berupa persen yakni 85% dengan kategori sangat layak. Buku nonteks dinyatakan sangat layak disebarkan dan diuji efektifitas penggunaannya kepada 28 mahasiswa jurusan Biologi Universitas Negeri Medan diperoleh hasil rata-rata nilai *N-Gain* sebesar 0,84 dengan kategori tinggi, dan skor persen 80% kategori efektif dan masyarakat umum sebanyak 25 guru SMA diperoleh hasil rata-rata nilai *N-Gain* sebesar 0,93 dengan kategori tinggi, dan skor persen 93% kategori efektif. Selanjutnya hasil *t-test* diperoleh  $t_{hitung} > t_{tabel}$  yakni,  $9,096 > 1,703$  untuk kemampuan kognitif mahasiswa jurusan Biologi Universitas Negeri Medan, dan hasil *t-test* diperoleh  $t_{hitung} > t_{tabel}$  yakni,  $8,345 > 1,729$  untuk kognitif masyarakat umum, maka dapat disimpulkan hasil *t-test* yang diperoleh signifikan dan buku nonteks berpengaruh dalam meningkatkan kemampuan kognitif mahasiswa dan masyarakat umum, dengan  $\alpha = 0,05$ .

**Kata kunci:** bioindikator, buku nonteks, *Lichens*, pengembangan, riset.



## ABSTRACT

**DAMAYANI PANGGABEAN:** Development of Lichens Non-Text Book as a Research-Based Bioindicator of Air Pollution in Medan City. Thesis. Medan: Postgraduate Program, State University of Medan, January 2021.

This study aims to produce a non-textbook product about Lichens as a research-based bioindicator of air pollution in the city of Medan, which is suitable for the general public with a minimum level of undergraduate education (S1) and undergraduate students majoring in Biology. Non-text books developed were validated based on material aspects and material presentation, the results obtained were scores in the form of a percent, namely 88% very feasible category, the language aspect of the book obtained a score in the form of percent, namely 82% very feasible category and book graphic aspects obtained a score result in the form of percent, namely 83% category very worthy. The results of product trials for non-text books were obtained from three aspects, namely, individual trials obtained scores in the form of percent, namely, 87% with very feasible categories, small group trials obtained results in the form of percent, namely, 82% with very feasible categories and trials. In the limited group, the score was obtained in the form of percent, namely 85% with the very feasible category. Non-text books were declared very feasible to distribute and their effectiveness tested for 28 students majoring in Biology at the State University of Medan obtained an average N-Gain value of 0.84 in the high category, and a percent score of 80% in the effective category and the general public as many as 25 high school teachers. the average result of the N-Gain value is 0.93 with the high category, and the percentage score of 93% is the effective category. Furthermore, the t-test results obtained  $t_{count} > t_{table}$ , namely,  $9,096 > 1,703$  for the cognitive abilities of students majoring in Biology at the State University of Medan, and the t-test results obtained  $t_{count} > t_{table}$ , namely,  $8,345 > 1,729$  for general public cognitive, it can be concluded that the t-test results obtained significantly and non-text books have an effect in improving the cognitive abilities of students and the general public, with  $\alpha = 0.05$ .

**Key words:** bioindicator, non-textbook, Lichens, development, research.

