

ABSTRAK

Gloria Sirait: Pengembangan Buku Suplemen Spora Mikoriza Berbasis Literasi Sains di Hutan Kampus Universitas Negeri Medan. Tesis. Medan: Program Pascasarjana Universitas Negeri Medan, Mei 2022.

Penelitian ini bertujuan untuk mengetahui kelayakan dan efektifitas buku suplemen spora mikoriza berbasis literasi sains di hutan kampus Universitas Negeri Medan yang telah dikembangkan. Ahli materi, ahli pembelajaran, ahli desain dan mahasiswa yang mengambil matakuliah Taksonomi Organisme Tingkat Rendah di jurusan Biologi Universitas Negeri Medan merupakan subjek bagi penelitian ini. Penelitian dan pengembangan (R and D) ini menggunakan model Thiagarajan yaitu: (1) *Define* (pendefinisian), berasal dari hasil analisis kebutuhan mahasiswa memperoleh data bahwa 69% Mahasiswa sangat membutuhkan buku suplemen spora mikoriza berbasis literasi sains, (2) *Design* (perancangan), buku yang telah dirancang dibuat sesuai dengan empat aspek literasi sains yaitu, (a) Sains Sebagai Batang Tubuh Pengetahuan (*a body of knowledge*); (b) Sains Sebagai Cara Menyelidiki (*a way of investigating*); (c) Sains Sebagai Cara Berpikir (*a way of thinking*); dan (d) Interaksi Sains, Teknologi dengan Masyarakat (*Interaction of science, technology, and society*). (3) *Development* (pengembangan), pengamatan lapangan di hutan kampus Universitas Negeri Medan memperoleh tiga genus spora mikoriza yang terdapat di bawah pohon *Swietenia mahogoni* L yaitu *Glomus* sp., *Gigaspora* sp. dan *Acaulospora* sp. Dengan tingkat keanekaragaman kategori sedang (1,504). Uji kelayakan dari ahli materi memperoleh skor 81% kategori sangat layak dan 95% untuk penilaian aspek literasi sains dengan kategori sangat layak. Penilaian ahli pembelajaran memperoleh skor 85,5% kategori sangat layak dan penilaian ahli desain memperoleh skor 86,6% kategori sangat layak. (4) *Dissemination* (penyebaran), melalui uji coba produk perorangan mendapatkan nilai 87% kategori sangat layak, uji kelompok kecil mendapatkan nilai 89% kategori sangat layak dan uji kelompok terbatas mendapatkan nilai 87% dengan kategori sangat layak. Untuk membuktikan apakah buku suplemen yang dikembangkan efektif untuk dimanfaatkan pada matakuliah Taksonomi Organisme Tingkat Rendah uji *N-Gain* dilakukan dan memperoleh nilai 63% dengan kategori cukup efektif. Selanjutnya hasil *t-test* dilakukan yang berasal dari *pretest* dan *posttest* diperoleh $\text{sig.t } 0,000 < 0,05$ dengan dasar pengambilan keputusan terdapat perbedaan yang signifikan antara hasil kognitif mahasiswa pada *pretest* dan *posttest*. Berdasarkan data yang diperoleh maka dapat disimpulkan bahwa buku suplemen spora mikoriza berbasis literasi sains di hutan kampus Universitas Negeri Medan dapat meningkatkan kemampuan kognitif mahasiswa.

Kata kunci: pengembangan, buku suplemen, spora mikoriza, literasi sains, Unimed.

ABSTRACT

Gloria Sirait: Development of a Mycorrhizae Spore Supplement Book Based on Scientific Literacy in the Forest of the Medan State University Campus. Thesis. Medan: Medan State University Postgraduate Program, May 2022.

This research aims to define the viability and effectiveness of the mycorrhizae spore supplement book based on scientific literacy in the Medan State University campus forest that has been developed. Material expert, learning expert, design expert, and students who taking the Taxonomy of Low-Level Organisms at the Department of Biology at the State University of Medan are the subjects. This study use research and development from the Thiagarajan, namely: (1) Define, from the results of student needs analysis obtaining data that 69% of students need mycorrhizae spore supplement books based on scientific literacy, (2) Design, the book that has been designed is made according to four aspects of scientific literacy, namely, (a) Science as a body of knowledge; (b) Science as a way of investigating; (c) Science as a way of thinking; and (d) Interaction of science, technology, and society. (3) Development, of field observations in the forest of the Medan State University campus to obtain three genera of mycorrhizal spores found under the *Swietenia mahogany* L tree, namely *Glomus*, *Gigaspora* and *Acaulospora*. With level of diversity is (1,504) category a moderate. The viability test from material expert obtained a score of 81% in the very viability category and 95% for the assessment of scientific literacy in the very viability category. The learning expert got a score 85.5% in the very viability category and the design expert got 86.6% in the very viability category. (4) Dissemination, through individual product trials got a score of 87% in the very viability category, the small group test got a score of 89% in the very viability category and the limited group test got a score of 87% in the very feasible category. To prove whether the developed supplement book is practical for use in the Lesson Organism Taxonomy course, the N-Gain test was carried out and obtained a score of 63% with a reasonably practical category. Furthermore, the results of the t-test that came from the pretest and post-test obtained $\text{sig.t } 0.000 < 0.05$ with the basis of decision making there is a significant difference between the cognitive results of students on the pretest and post-test. Based on the data obtained, it can be concluded that the mycorrhizae spore supplement book based on scientific literacy in the Medan State University campus forest can increase students' cognitive abilities.

Keywords: supplement book, campus forest, development, mycorrhizal spores, Unimed.