ANALISIS KEMAMPUAN MAHASISWA DALAM MEREPRESENTASIKAN OBJEK MAKROSKOPIK DAN HUBUNGANNYA DENGAN BEBAN KOGNITIF PADA PRAKTIKUM MORFOLOGI TUMBUHAN

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ABSTRAK

Pada kegiatan praktikum morfologi tumbuhan mahasiswa dituntut untuk mengamati dan merepresentasikan hasil pengamatannya tentang spesimen yang bersifat makroskopik. Selama kegiatan mengamati mahasiswa akan memproses fakta tentang spesimen tersebut di dalam memori kerja dan kemudian akan disimpan dalam memori jangka panjang. Fakta tentang spesimen yang diamati tersebut dapat direpresentasikan secara visual dalam bentuk gambar dan secara verbal dalam bentuk deskripsi. Tujuan penelitian ini adalah untuk menganalisis kemampuan representasi visual dan verbal objek makroskopik mahasiswa pada kegiatan praktikum morfologi tumbuhan serta hubungannya dengan beban kognitif yang dimiliki mahasiswa. Penelitian ini merupakan penelitian deskriptif dengan partisipan sebanyak 31 orang mahasiswa. Instrumen penelitian yang digunakan adalah rubrik penilaian gambar, rubrik penlaian verbal, *task complexcity, subjective rating scale* dan soal tes hasil belajar. Data dianalisis menggunakan Anates, *Microsoft Excel* dan Program SPSS 24. Hasil penelitian menunjukan bahwa kemampuan representasi visual dan verbal objek makroskopik mahasiswa berkorelasi lemah dengan $p > 0,05$ artinya kemampuan representasi visual dan representasi verbal objek makroskopik pada praktikum morfologi tumbuhan berdiri sendiri. Sementara itu kemampuan representasi visual dan verbal objek makroskopik dapat menopang *instrinsics cognitive load* dan *germane cognitive load* meskipun belum bisa menekan *extraneous cognitive load*.

Kata kunci: representasi visual, representasi verbal dan beban kognitif

UNDERGRADUATE STUDENTS ABILITY TO REPRESENTING MACROSCOPIC OBJECTS AND ITS RELATION WITH COGNITIVE LOADS IN PLANT MORPHOLOGY LABORATORY ACTIVITY

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ABSTRACT

On the plant morphology practical activities, students are required to observe and represent the results of their observations about specimens that are macroscopic. During the observation, students will process the facts about the specimen in working memory and then will be stored in long-term memory. The facts about the observed specimens can be visually represented in the form of images and verbally represented in the form of descriptions. The aim of this study was to analyze the ability of students' visual and verbal representations of macroscopic objects in plant morphology practical activities and its relations with cognitive load of students. This research is a descriptive study with 31 students as participants. The research instruments used were image assessment rubrics, verbal review rubrics, task complexcity, subjective rating scales and learning outcome test questions. The data were analyzed using Anates, Microsoft Excel and SPSS 20 program. The results showed that the ability of students' visual and verbal representations of macroscopic objects was weakly correlated with $p > 0.05$, meaning that the ability of visual representations and verbal representations of macroscopic objects in stand-alone plant morphology practical activities. Mean while the ability of visual and verbal representations of macroscopic objects can support instrinsics cognitive load and germane cognitive load even though it cannot suppress extraneous cognitive load.

Keywords : visual representation, verbal representasion, and cognitive load