ANALISIS KEMAMPUAN VISUAL-SPASIAL MAHASISWA DAN FAKTOR-FAKTOR YANG BERKONTRIBUSI DALAM MEREPRESENTASIKAN OBJEK MIKROSKOPIS ANATOMI TUMBUHAN

ABSTRAK

Dalam memahami anatomi tumbuhan perlu dilatihkan kemampuan mahasiswa dalam merepresentasikan hasil pengamatan objek mikroskopis secara visual dan spasial sehingga dapat mengimajinasikan bentuk dan fungsi jaringan tumbuhan secara utuh dari perspektif yang berbeda. Penelitian dengan menggunakan metode Embedded Mix Method Design ini berfokus pada kemampuan visual-spasial mahasiswa dalam merepresentasikan objek mikroskopis dan faktor-faktor yang berkontribusi terhadap kemampuan representasi visual-spasial dengan melibatkan 44 mahasiswa yang mengontrak mata kuliah anatomi tumbuhan. Kemampuan representasi visual-spasial mahasiswa diukur secara kuantitatif dan kualitatif dari kemampuan dalam membuat diagram 2D, diagram 3D dan mengonstruksikan model 3D yang dijaring dengan worksheet visual-spasial serta faktor-faktor yang berkontribusi ditentukan dari korelasi hasil tes kecerdasan visual-spasial, tes pengetahuan anatomi tumbuhan dan tes kemampuan observasi. Hasil penelitian menunjukkan bahwa mahasiswa memiliki kemampuan representasi visual diagram 2D (69,24) dan kemampuan spasial diagram 3D (65,58) yang baik serta kemampuan spasial model 3D (82,60) mahasiswa yang sangat baik. Mahasiswa dapat membuat diagram 2D, 3D dan model 3D sesuai hasil pengamatan dengan tepat, proporsional ukuran dan bentuk, posisi dan letak

jaringan tepat dengan mencantumkan keterangangan gambar dengan lengkap dan tepat.

Terdapat berbagai tipe representasi visual-spasial mahasiswa ketika merepresentasikan materisel, parenkim, aerenkim dan jaringan pembuluh. Hasil uji korelasi memperlihatkan adanya korelasi positif yang signifikan antara kemampuan representasi visual (2D) dengan kemampuan representasi spasial (3D dan Model 3D) dan antara faktor-faktor yang berkontribusi dengan kemampuan representasi visual-spasial. Faktor-faktor yang berkontribusi terhadap kemampuan visual-spasial yaitu kemampuan observasi mikroskopis, pengetahuan anatomi tumbuhan dan kecerdasan visual-spasial mahasiswa

Kata kunci:*Representasi, Visual-Spasial, AnatomiTumbuhan.*

ANALYSIS STUDENT'S VISUAL-SPATIAL ABILITY AND CONTRIBUTION OF FACTORS IN REPRESENTING MICROSCOPICAL OBJECTS OF PLANT ANATOMY

ABSTRACT

The ability of students to visually and spatially represent observation result of microscopic objects is very essential to completely understand plant anatomy. This ability is required so that the students can comprehensively visualize the shape and function of plant tissue from different perspectives. This study focused on students' visual-spatial ability in representing microscopic objects and related factors that significantly affect the ability of visual-spatial representation. The visual-spatial representation ability of forty-four students who enrolling plant anatomy was assessed quantitatively and qualitatively based on their aptitude to create 2D diagrams, 3D diagrams and construct 3D models using visual-spatial worksheets. Furthermore, the associated factors were determined with correlation analysis of the visual-spatial intelligence, plant anatomy knowledge and observation ability assessments on the students. The results reveals that the students had good abilities to represent the 2D diagrams and spatial 3D visual diagrams. Students also had excellent 3D spatial model abilities. Moreover, it was observed that the students were able to precisely construct 2D and 3D diagrams as well as 3D models with excellent proportion in terms of size and shape regarding to the results of observations by listing

complete and precise picture information. Apart from that, there were various types of visual-spatial representation showed by the students when representing the field of cell, parenchyma, aerenchym and vascular tissue. Analysis of correlation on the factors indicates that there is a significant positive correlation between the ability of visual representation and the ability of spatial representation. The analysis also confirms the positive correlation among the contributing factors and the ability of visual-spatial representation. However, microscopic observation skills, knowledge of plant anatomy and visual-spatial intelligence of students are found to be the main factors that contribute to visual-spatial ability.

Keywords : Representation, Visual-Spatial, Plant Anatomi.