Analisis Penguasaan Konsep dan Miskonsepsi Siswa SMA pada Materi Genetika

(Defi Firman Suparyana)

Abstrak

Penelitian ini bertujuan untuk menganalisis profil penguasaan konsep dan miskonsepsi siswa serta kontribusi faktor-faktor penyebab miskonsepsi siswa pada materi genetika. Penelitian ini dipusatkan pada konsep gen, DNA, kromosom dan hubungan konsep gen, DNA dan kromosom dalam proses sintesis protein (sintesis protein). Penelitian dilakukan dengan menggunakan metode penelitian *deskriptif*. Sampel penelitian ini ditentukan dengan tehnik *purposive sampling*. Subjek penelitian ini adalah 108 orang siswa kelas XII di Kabupaten Bandung Barat dan Kabupaten Tasikmalaya. Instrumen penelitian menggunakan tes penguasaan konsep dan miskonsepsi, lembar observasi dan motivations and learning strategies questionnaire (MSLQ). Hasil penelitian menunjukkan bahwa penguasaan konsep seluruh siswa berkategori rendah (49.04%), kemampuan memahami berkategori rendah (55.09%) dan kemampuan menganalisis berkategori sangat rendah (43.06%). Miskonsepsi seluruh siswa berkategori rendah (26.06%), kemampuan memahami berkategori rendah (19.79%); dan kemampuan menganalisis berkategori sedang (34.41%). Miskonsepsi pada konsep gen berkategori sedang (32.72%); DNA-RNA berkategori rendah (20.68%); kromosom berkategori rendah (27.78%) serta sintesis protein berkategori rendah (29.01%). Kontribusi faktor penyebab miskonsepsi, yaitu: (1) faktor yang berkontribusi terhadap miskonsepsi siswa, diantaranya: (a) Dalam proses pembelajaran yang menunjukkan adanya konsep yang tidak disampaikan dan ada pula konsep yang disampaikan dengan tidak tuntas serta tingkat kesulitan konten materi genetika; (2) beberapa faktor yang tidak berkontribusi terhadap miskonsepsi siswa, diantaranya penguasaan konsep, ketidakpahaman konsep siswa, motivasi siswa, strategi belajar siswa dan pengetahuan guru.

Kata kunci:
Penguasaan konsep, miskonsepsi, angket motivasi dan strategi belajar, genetika

Analyses of Senior High School Students' Mastery and Misconceptions of Genetics Concepts

(Defi Firman Suparyana)

Abstract

The aims of this research were to analyze students' mastery of concepts and misconceptions and to identify factors contributing to students' misconceptions about genetics. This research focuses on the concept of genes, DNA, chromosomes and the connected concepts among genes, DNA and chromosomes in the process of protein synthesis (protein synthesis). The research method was descriptive method. The research sample was chosen through purposive sampling technique. The research subjects were 108 of 12th grade students from West Bandung County and Tasikmalaya County. The data were collected by applying the test of concepts' and misconceptions' mastery, observation sheets and motivations and learning strategies questionnaire (MSLQ). The results of research showed that the students' mastery of concepts was at the low level (49.04%); mastery of understanding was at the low level (55.09%) and mastery of analyzing was at the very low level (43.06%). The students' misconceptions were at the low (26.06%), misconceptions of mastery of understanding were at the low level (19.79%); and misconceptions of mastery of analyzing were at the average level (34.41%). Students' misconceptions in genetics content were at the average level (32.72%) in the concept of genes, at the low level (20.68%) in the concept of DNA, at the low level (27.78%) in the concept of chromosomes, and at the low level (29.01%) in concept of protein synthesis. Factors affecting students' misconceptions about genetics were: (1) Factors which contributing to students' misconceptions, such as: (a) In the learning process, the teachers did not deliver some essential concepts and some concepts were unfinished; (b) the difficulty level of content of genetic material; (2) factors which did not contributing to students' misconceptions, such as: students' mastery of concept, incomprehension of concepts, students' motivations, students' learning strategies, teacher's knowledge.

Keywords:
Mastery of concepts, misconceptions, motivations and learning strategies questionnaire, genetics