STUDI MIKROGENETIK PADA PERKEMBANGAN REPRESENTASI SISWA KELAS IV SEKOLAH DASAR TENTANG MATERI SIFAT-SIFAT CAHAYA

DISERTASI

diajukan untuk memenuhi sebagian syarat untuk memperoleh
gelar Doktor Pendidikan Dasar

oleh

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SEKOLAH PASCASARJANA

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PERNYATAAN KEASLIAN DAN BEBAS PLAGIARISME

Dengan ini saya menyatakan bahwa disertasi dengan judul "Studi Mikrogenetik pada Perkembangan Representasi Siswa Kelas IV Sekolah Dasar tentang Sifat-Sifat Cahaya" ini beserta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung risiko/sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

Penulis

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ABSTRAK

Sifat-sifat cahaya merupakan materi di sekolah dasar yang mendasari pemahaman konsep siswa yang lebih lanjut pada jenjang berikutnya. Berdasarkan studi pendahuluan dan berbagai temuan penelitian sebelumnya, teridentifikasi banyak profil siswa dengan miskonsepsi dan kurangnya representasi dikarenakan pembelajaran yang hanya menggunakan representasi verbal. Oleh karena itu, representasi pada materi sifat-sifat cahaya sangat urgen dikuasai siswa melalui fasilitasi pembelajaran perubahan konseptual yang berbasis representasi. Perkembangan representasi merupakan parameter dalam memahami *Learning Progression* siswa secara mendalam selama pembelajaran. Oleh karena itu, penelitian ini bertujuan untuk menganalisis *Learning Progression* siswa sekolah dasar tentang sifat-sifat cahaya guna memperoleh gambaran dari pola perkembangan dan mikrogenetik perkembangan dari representasi siswa selama periode pembelajaran. Penelitian *mix method* dengan *The Convergent Parallel Design* dan berpendekatan mikrogenetik telah digunakan selama menganalisis perkembangan representasi siswa pada sebuah sekolah dasar yang terletak di pinggiran kota. *Five-tier diagnostic test* dan LKPD berbasis model pembelajaran CTS digunakan dalam mengumpulkan data representasi siswa pada pra, proses, dan pasca pembelajaran model CTS berbasis representasi yang kemudian dianalisis secara mikrogenetik. Temuan penelitian menunjukkan bahwa pola *Learning Progression* siswa membentuk trayek yang bermula dari level LOR/MIS ke arah ASR/PR selama proses pembelajaran dan berakhir dengan SR/ASR sebagai representasi akhir yang didominasi siswa. Berbagai aktivitas percobaan dalam pembelajaran menjadi sumber perkembangan representasi ilmiah siswa. Mayoritas siswa memiliki representasi ilmiah yang meluas selama periode pembelajaran. Jalur perkembangan representasi siswa memiliki tren kenaikan ke arah level ilmiah meskipun belum maksimal. Namun begitu, siswa memiliki laju perkembangan yang relatif lambat. Sementara, variabilitas level representasi tetap ditemukan selama periode pembelajaran. Rekomendasi diberikan terhadap penyesuaian kurikulum, pembelajaran, serta penilaian yang dibutuhkan untuk perkembangan representasi ilmiah siswa. Selain itu, penelitian dengan metode mikrogenetik di masa depan dibutuhkan dalam mengkaji penguasaan siswa pada aspek lainnya dan memperkaya bagian teoretis penelitian semacam ini.

Kata kunci: *learning progression*, metode mikrogenetik, representasi

ABSTRACT

The properties of light are elementary school content that underlie students' understanding of more advanced concepts at the next level. Based on preliminary studies and previous research findings, many student profiles were identified with misconceptions and lack of representation due to learning that only uses verbal representation. Therefore, representation in the material on the properties of light is urgent for students to master through the facilitation of conceptual change learning based on representation. Representation development is a parameter in understanding students' Learning Progression in depth during learning. Therefore, this study aims to analyze elementary school students' Learning Progression on the properties of light to obtain a picture of the pattern development and microgenetic development of students' representations during the learning period. Mixed-method research with the Convergent Parallel Design and microgenetic approach has been used to analyze the development of student representation in an elementary school in the suburbs. A five-tier diagnostic test and Student worksheet based on the CTS learning model are used to collect student representation data in pre-, process, and post-learning of the CTS model based on representation, which is then analyzed microgenetically. The research findings show that the pattern of students' Learning Progression forms a trajectory that starts from the LOR/MIS level towards ASR/PR during the learning process and ends with SR/ASR as the final representation dominated by students. Various experimental activities in learning become a source of development of students' scientific representations. The majority of students have scientific representations that breadth during the learning period. The path of student representation development has an upward trend towards the scientific level, although it has yet to be optimal. However, students have a relatively slow rate of development. Meanwhile, variability in the level of representation is still found during the learning period. Recommendations are given for adjusting curriculum, learning, and assessment to develop students' scientific representation. In addition, future research using microgenetic methods is needed to examine students' mastery of other aspects and enrich the theoretical part of this kind of research.
Keywords: learning progression, microgenetic methods, representation

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