KEMAMPUAN GURU BIOLOGI MENGINTEGRASIKAN STEM DALAM *PEDAGOGICAL CONTENT KNOWLEDGE* (PCK) DAN DAMPAKNYA TERHADAP KEMAMPUAN *ENGINEERING DESIGN PROCESS* SISWA SMK PERTANIAN

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Abstrak

Penelitian ini bertujuan untuk memberikan gambaran kemampuan guru biologi mengintegrasikan STEM dalam *Pedagogical Content Knowledge* (PCK) serta dampaknya terhadap kemampuan *Engineering Design Process* Siswa SMK Pertanian. Metode yang digunakan studi kasus. Subyek pada penelitian ini adalah seorang guru biologi serta siswa SMKN PP Pertanian Cianjur, Jawa Barat. Kemampuan guru dalam mengintegrasikan STEM dalam *Pedagogical Content Knowledge* (PCK) diungkap menggunakan CoRe pada sebelum workshop, dan setelah dilakukan workshop, serta menggunakan CoRe dan PaP-eRs pada setelah kegiatan *lesson study*. Aspek terkait pengintegrasian STEM pada PCK yang dianalisis adalah Pengetahuan guru dalam mengidentifikasi ide ide besar, Pengetahuan guru dalam mengidentifikasi pengetahuan awal siswa, Pertimbangan guru untuk memilih strategi belajar mengajar, dan Pengetahuan guru dalam hal menilai pembelajaran siswa. Hasil penelitian menunjukkan bahwa sebelum workshop, kemampuan guru mengintegrasikan STEM dalam PCK tergolong pada level *pre* PCK dan setelah diberikan workshop tergolong pada *growing* PCK. Adapun kemampuan guru mengintegrasikan STEM dalam PCK setelah dilakukan *lesson study* mengalami perubahan pada aspek pemilihan strategi belajar menjadi *maturing* PCK dari level sebelumnya yakni *growing* PCK. Namun pada aspek penilaian hasil pembelajaran kemampuan guru tidak mengalami perubahan yakni tetap pada level *pre* PCK pada sebelum workshop, setelah workshop dan setelah *lesson study*. Selanjutnya kemampuan *Engineering Design Process* siswa secara keseluruhan berada pada level tumbuh meskipun pada beberapa aspek sudah masuk pada level lanjutan. Hal disebabkan oleh kemampuan siswa, ketertarikan siswa, juga stilmulus guru saat pembelajaran.

Kata Kunci : *Pedagogical Content Knowledge*, STEM, workshop, *Engineering Design Process*

ABILITY OF BIOLOGICAL TEACHERS INTEGRATING STEMS IN PEDAGOGICAL CONTENT KNOWLEDGE (PCK) AND ITS IMPACT ON ENGINEERING DESIGN PROCESS STUDENTS OF AGRICULTURAL VOCATIONAL SCHOOL

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Abstract

This study aims to provide an overview of the ability of biology teachers to integrate STEM in Pedagogical Content Knowledge (PCK) and its impact on the ability of Engineering Design Process of Vocational School Students. The method used is case study. The subjects in this study were a biology teacher and a student at the Vocational School of PP Pertanian Cianjur, West Java. The ability of teachers to integrate STEM in Pedagogical Content Knowledge (PCK) was revealed using CoRe before workshops, and after workshops, and using CoRe and PaP-eRs after lesson study activities. The related aspects of integrating STEM on PCK analyzed are teacher knowledge in identifying big ideas, teacher knowledge in identifying students' initial knowledge, teacher's consideration to choose teaching and learning strategies, and teacher's knowledge in terms of assessing student learning. The results showed that before the workshop, the ability of teachers to integrate STEM in PCK was classified as at the pre PCK level and after the workshop was given to the growing PCK. The ability of teachers to integrate STEM in PCK after lesson study has undergone changes in aspects of the selection of learning strategies for PCK maturing from previous levels, namely growing PCK. However, in the aspect of the assessment of learning outcomes the ability of teachers did not experience change, namely staying at the pre PCK level before the workshop, after the workshop and after lesson study. Furthermore, the overall Engineering Design Process ability of students is at a growing level even though some aspects have entered the advanced level. This is caused by students 'abilities, students' interest, and teacher's knowledge during learning.

Keyword : Pedagogical Content Knowledge, STEM, training, Engineering Design Process