

ANALISIS KEMAMPUAN *SCIENTIFIC EXPLANATIONS* SISWA MELALUI PENERAPAN PEMBELAJARAN BERBASIS INKUIRI PADA MATERI SISTEM PERNAPASAN

ABSTRAK

Penelitian ini bertujuan untuk menganalisis kemampuan *scientific explanations* siswa, yang meliputi aspek *claim*, *evidence* dan *reasoning*. Penelitian yang dilakukan merupakan penelitian eksperimen semu (*quasi experiment*) dengan desain nonequivalent comparison group design. Penelitian ini melibatkan dua kelas siswa kelas XI SMA di Bandung, dengan pengambilan sampel menggunakan teknik *purposive sampling*. Sampel penelitian yaitu kemampuan *scientific explanations* siswa kelas XI IPA 2 dengan penerapan *levels of inquiry* sebagai kelas eksperimen 1 dan kelas XI IPA 3 dengan model pembelajaran *5E* sebagai kelas eksperimen 2. Kemampuan *scientific explanations* siswa diukur dengan menggunakan tes *scientific explanations* berupa soal uraian. Instrumen tes *scientific explanations* diberikan sebelum dan sesudah pembelajaran dengan penerapan pembelajaran berbasis inkuiri dan model *5E*. Secara keseluruhan, sebelum pembelajaran semua kelompok memiliki kemampuan *scientific explanations* yang rendah. Kemampuan *scientific explanations* siswa untuk setiap aspek *claim*, *evidence* dan *reasoning* kurang dari 50%. Hasil penelitian menunjukkan bahwa penerapan pembelajaran berbasis inkuiri (*Inquiry based learning/IBL*) dapat meningkatkan kemampuan *scientific explanations* siswa pada kedua perlakuan, tetapi terdapat perbedaan hasil pada keduanya. *Levels of Inquiry (LoI)* meningkatkan kemampuan *scientific explanations* siswa dengan kadar *N gain* 20% kategori tinggi, 60% kategori sedang dan 20% rendah. Model *5E* meningkatkan kemampuan *scientific explanations* siswa dengan kadar *N gain* 17% tinggi, 50% sedang dan 33% rendah. Penerapan *LoI* membantu meningkatkan kemampuan *scientific explanations* siswa pada kategori rendah. Penerapan model *5E* membantu meningkatkan kemampuan *scientific explanations* siswa pada kategori sedang.

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Kata kunci: kemampuan *scientific explanations*, pembelajaran berbasis inkuiri, penerapan *LoI*, model *5E*

ANALYSIS OF STUDENTS' SCIENTIFIC EXPLANATIONS THROUGH INQUIRY BASED LEARNING ON RESPIRATORY SYSTEM

ABSTRACT

The purpose of this research is to analyze students' scientific explanations ability, including aspects of claim, evidence and reasoning. Research method was quasi experiment with nonequivalent comparison group design. This research involved eleventh grade senior high school students in Bandung as participants, which was then determined the number of sample class by purposive sampling. The sample research are students' scientific explanations ability of XI IPA 2 with Levels of Inquiry application as experiment group 1 and XI IPA 3 with 5E model as experimental group 2. Students' scientific explanations ability was measured by using scientific explanations test in the form of essay test. Scientific explanations test was administered before and after Inquiry Based Learning (IBL). All students' group had low scientific explanations ability. Students' scientific explanations to each aspect of claim, evidence and reasoning was less than 50%. Research result shows that application inquiry based learning can increase students' scientific explanations ability of both treatments, but that there was difference outcome of both treatments. Levels of inquiry improve students' scientific explanations with N gain 20% high, 60% moderate and 20% low. The 5E model improve students' scientific explanations with N gain 17% high, 50% moderate and 33% low. Application of *LoI* help students from low category increase their scientific explanations ability. Application of 5E model help students from moderate category increase their scientific explanations ability.

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