

## ABSTRAK

**Larasati Esti Utami, Anastasia: “Pengaruh Kemampuan Berbahasa, Kemampuan Matematis dan Penguasaan Konsep Fisika Terhadap Kemampuan Mengerjakan Soal Fisika Pada Bahasan Kinematika di Kelas XI IPA SMA Pangudi Luhur Sedayu dan Kelas XI IPA 2 SMA Pangudi Luhur Yogyakarta”. Program Studi Pendidikan Fisika, Jurusan Pendidikan Matematika dan Ilmu Pengetahuan Alam, Universitas Sanata Dharma Yogyakarta, 2013.**

Penelitian bertujuan untuk mengetahui pengaruh kemampuan berbahasa, kemampuan matematis, dan penguasaan konsep fisika, dalam kemampuan mengerjakan soal fisika. Serta untuk mengetahui efektifitas metode House Model dalam mengungkapkan kesulitan siswa terkait dengan kemampuan berbahasa, kemampuan matematis, dan penguasaan konsep.

Subyek penelitian adalah siswa kelas XI IPA SMA Pangudi Luhur Sedayu dan Kelas XI IPA 2 SMA Pangudi Luhur Yogyakarta yang berjumlah 89 siswa. Data diperoleh melalui tes kemampuan bahasa Indonesia, tes matematika kemampuan dan tes kemampuan fisika menggunakan metode CRI (*Certainty of Response Index*) dan House Model (HM). Untuk mengetahui pengaruh kemampuan berbahasa, kemampuan matematis terhadap kemampuan mengerjakan soal fisika, digunakan teknik analisa regresi linear berganda. Untuk mengetahui pengaruh penguasaan konsep terhadap kemampuan mengerjakan soal, digunakan metode CRI. Untuk mengetahui efektifitas metode HM, digunakan ANOVA dengan tes Tukey perbandingan post Hoc.

Hasil penelitian menunjukkan bahwa apabila dilihat secara terpisah, kemampuan berbahasa dan kemampuan matematis tidak mempengaruhi secara signifikan terhadap kemampuan mengerjakan soal fisika. Penguasaan konsep berpengaruh terhadap kemampuan mengerjakan soal fisika. Meskipun kemampuan berbahasa dan matematis tidak berpengaruh secara signifikan, namun tidak dapat diabaikan karena selain harus menguasai konsep, di dalam setiap tahap pengerjaan dibutuhkan keterampilan berbahasa atau matematis.

Metode House Model efektif untuk mengungkap kesulitan siswa. Namun, HM belum dapat memberikan jawaban yang akurat untuk mengidentifikasi apakah kesulitan tersebut disebabkan oleh lemahnya penguasaan konsep, lemahnya kemampuan bahasa atau lemahnya kemampuan matematis.

**Kata kunci:** kemampuan berbahasa, kemampuan matematis, penguasaan konsep, kemampuan mengerjakan soal fisika, metode *House Model*

## ABSTRACT

**Larasati Esti Utami, Anastasia: The Influence of Language Abilities, Mathematical Abilities and Mastery of Physical Concept against the Ability of Doing Physics Exercises on the Subject of Kinematics in science class XI of Pangudi Luhur Sedayu SHS and science class XI 2 of Pangudi Luhur Yogyakarta SHS. Physics Education Study Program, Department of Mathematics and Natural Science Education, Faculty of Teacher Training and Education, Sanata Dharma University, 2013.**

The purpose of this research is to reveal the influence of language abilities, mathematical abilities and mastery of concept against the ability of doing physics exercises, and to find out the effectiveness of House Model methods in revealing students' difficulties related to language abilities, mathematical abilities and mastery of physical concept.

The subjects of the research were 89 students of science class XI of Pangudi Luhur Sedayu SHS and science class XI 2 of Pangudi Luhur Yogyakarta SHS. The data was obtained through Indonesian ability test, mathematical ability test and physical ability test using CRI (Certainty of Response Index) method and House Model (HM). The influence of language abilities and mathematical abilities against the ability of doing physics exercise, was analysed by using multiple linear regression analysis was applied. The influence of mastery of concept against the ability of doing physics was analysed by using CRI. The effectiveness of House Model methods was analysed by using ANOVA with a Tukey's test for post hoc comparison.

The research result showed that if it was seen separately, language abilities and mathematical abilities did not significantly affect on the ability of doing physics exercises. Mastering physics concept affected students' abilities of doing physics exercises. Although language abilities and mathematical abilities did not influence significantly, it can not be ignored as in addition, mastering concept, in every stage of the work it requires language abilities and mathematical abilities.

House Model methods are effective to reveal students' difficulties. However, HM has not been able to provide an accurate answer to indentify whether or not the difficulties are caused by weak mastery of concept, weak language abilities, or weak mathematical abilities.

**Key words:** language abilities, mathematical abilities, mastery of physical concept, difficulties of doing physics exercises, House Model method