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What can students show about higher order thinking skills in physics learning?

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Abstract

Higher order thinking skills are the ability to think, not just recall, restate, or recite but it reaches several dimensions of knowledge including metacognitive dimension. Students who have higher order thinking skills will be have the ability of connect different concepts, interpret, problem solving, communication, reasoning, and make the right decisions. Identification of higher order thinking skills needs to be done through research and the results are expected to be used as a reference to design of instructional strategies that are appropriate to the characteristics of students. In this study, identification is done by measuring the ability of problem solving, communication, and reasoning skills. The results showed that students' ability to solve of well structured problem including satisfactory but the ability to solve of ill structured problem needs to be developed. For communication skill, students are still not used to expressing their ideas in scientific writing. For reasoning skill, although students are able to reason on some aspects, but in general still not satisfactory. Therefore, it is necessary to develop a proper physics instructional design and in accordance with the characteristics of students to teach higher order thinking skills.

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References

- Anderson G L, Krathwohl D R, Airasian W P, Cruikshank K A, Mayer E R, Pinchik R P et al (ed) 2001. *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of educational objectives* (Boston: Allyn & Bacon) [Google Scholar](#)
- Ben-Cham O, Ron S and Zoller U 2000 The disposition of eleventh-grade science students toward critical thinking *Journal of Science Education and Technology* **9** 149-159 [Crossref](#) [Google Scholar](#)
- Bluck R A, Dunlosky J and Kornell N 2013 Self-regulated learning: Beliefs, techniques, and illusions *Annual Review of Psychology* **64** 427-444 [Crossref](#) [Google Scholar](#)
- Dori Y J, Tal R T and Tsavushu M 2003 Teaching biotechnology through case studies—can we improve higher order thinking skills of nonscience majors? *Science Education* **87** 767-793 [Crossref](#) [Google Scholar](#)
- Facione P A 2013 *Critical Thinking: what it is and why it counts?* [Google Scholar](#)
- Gerita L C 2015 Environmental science issues for higher-order thinking skills (HOTS) development: A case study in the Philippines *Ecology Education and Research in a Changing Planet* ed Sarinji Daniel Esther Granamilar 45-54 [Crossref](#) [Google Scholar](#)
- Garrison D R, Anderson T and Archer W 2002 Critical thinking, cognitive presence, and computer conferencing in distance education *American Journal of Distance Education* **15** 7-23 [Crossref](#) [Google Scholar](#)
- Gleaser A C, Person N and Hu X 2002 Improving comprehension through discourse processes *New Directions in Teaching and Learning* **89** 33-44 [Crossref](#) [Google Scholar](#)
- Hartigan A and Vincens V 2004 Developing higher-order thinking through an intercultural assignment *College Teaching* **52** 113-120 [Google Scholar](#)
- Jensen J L, McDaniel M A, Woodard S M and Hummel T A 2014 Teaching to the test... or testing to teach: Exams requiring higher order thinking skills encourage greater conceptual understanding *Educational Psychology Review* **26** 307-329 [Crossref](#) [Google Scholar](#)
- Kuhn D 2005 *Education for thinking* (Cambridge, MA: Harvard University Press) [Google Scholar](#)
- Madhuri GV, Kantamreddi VSSN and Gufel UNSP 2012 Promoting higher order thinking skills using inquiry-based learning *European Journal of Engineering Education* **37** 117-123 [Crossref](#) [Google Scholar](#)
- McQuiggan S, Kosturko L, McQuiggan J and Sabourin J 2015 *Mobile learning: A handbook for developers, educators, and learners* (New Jersey: John Wiley & Sons, Inc) [Google Scholar](#)
- Milner-Bolotin M and Nisnon S M 2012 The essence of student visual-spatial literacy and higher order thinking skills in undergraduate biology *Photoplasma* **249** 525-530 [Crossref](#) [Google Scholar](#)
- Mis B and Dori Y J 2009 Enhancing higher order thinking skills among inservice science teachers via embedded assessment *Journal of Science Teacher Education* **20** 459-474 [Crossref](#) [Google Scholar](#)
- Mis B, David B-C and Uli Z 2007 Purposely teaching for the promotion of higher-order thinking skills: A case of critical thinking *Research in Science Education* **37** 353-369 [Crossref](#) [Google Scholar](#)
- OECD 2018 *PIISA 2015 Results in Focus* [Google Scholar](#)
- Peterson D, Kromrey J, Lewis A and Borg J 1992 Clinical pedagogy: defining and measuring the teaching of essential and higher order thinking skills *Journal of Personnel Evaluation in Education* **6** 57-70 [Crossref](#) [Google Scholar](#)
- Resnick L 1987 *Educational and learning to think* (Washington D.C.: National Academy Press) [Google Scholar](#)
- Roets L and Maritz J 2017 Facilitating the development of Higher-Order Thinking Skills (HOTS) of novice nursing postgraduates in Africa *Nurse Education Today* **49** 51-56 [Crossref](#) [Google Scholar](#)
- Sood K M, Barbalin O A and Brown J M 2013 From higher order thinking to higher order behavior: exploring the relationship between early cognitive skills and social competence in black boys *American Journal of Orthopsychiatry* **83** 155-193 [Crossref](#) [Google Scholar](#)
- Seek S L, Beckmann C E and Thompson D R 1997 Assessment and grading in high school mathematics classrooms *Journal for Research in Mathematics Education* **28** 187-215 [Crossref](#) [Google Scholar](#)
- Timmerman B E C, Stockland D C, Johnson R L and Papp J R 2011 Development of a 'universal' rubric for assessing Undergraduate scientific reasoning skills using scientific writing *Assessment & Evaluation in Higher Education* **36** 509-547 [Crossref](#) [Google Scholar](#)
- van den Berg G 2004 The use of assessment in the development of higher order thinking skills *Africa Education Review* **1** 276-294 [Crossref](#) [Google Scholar](#)
- Vitegor H E 2010 The multidimensional curriculum model *Gifted and Talented International* **25** 153-165 [Crossref](#) [Google Scholar](#)
- Whimbey A 1984 The key to higher order thinking is precise process *Educational Leadership* **42** 66-70 [Google Scholar](#)
- Widana W 2017 *Modul penyusunan soal Higher Order Thinking Skills (HOTS)* (Jakarta: Direktorat Pembinaan SMA Direktorat Jenderal Pendidikan Dasar dan Menengah, Departemen Pendidikan dan Kebudayaan) [Google Scholar](#)
- Yeo MH, Yunus JM, Othman W, Hassan R, Tee TK and Mohalyza M 2015 Disparity of learning styles and higher order thinking skills among technical students *Procedia - Social and Behavioral Sciences* **204** 143-152 [Crossref](#) [Google Scholar](#)
- Zohar A 2004 *Higher order thinking in science classrooms: students' learning and teachers' professional development* (Greenwood Business Media: Greenwood, Springer) [Crossref](#) [Google Scholar](#)
- Zohar A and Dori Y J 2003 Higher order thinking skills and low-achieving students: Are they mutually exclusive? *The Journal of the Learning Sciences* **12** 145-181 [Crossref](#) [Google Scholar](#)
- Zohar A and Nemet F 2002 Fostering students' knowledge and argumentation skills through dilemmas in human genetics *Journal of Research in Science Teaching* **39** 35-62 [Crossref](#) [Google Scholar](#)
- Zoller U 1993 Lecture and learning: Are they compatible? Maybe for facts, unlikely for ideas *Journal of Chemical Education* **70** 195-197 [Crossref](#) [Google Scholar](#)
- Zoller U 1999 Teaching tomorrow's college science courses - Are we getting it right? *Journal of College Science Teaching* **29** 409-414 [Google Scholar](#)
- Zoller U 2003 Alternative assessment as (critical) means of facilitating HOTS-promoting teaching and learning in chemistry education *Chemical Education Research and Practice in Europe* **2** 9-17 [Crossref](#) [Google Scholar](#)
- Leou M, Aboder P., Riordan M. and Zoller U. 2006 Using "HOTS-oriented learning" as a pathway to promote science teachers' metacognitive development. *Research in Science Education* **36** 69-84 [Crossref](#) [Google Scholar](#)

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