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## Integration of Higher Order Thinking Skills in Assessment Instrument Accounting Computer at Higher Education

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**Abstract:** One of component which shall be noticed in the learning process is assessment. Assessment can provide constructive feedback for teachers as well as students. Assessment results can also provide motivation for students to achieve better. Even assessment can influence the learning behavior because students tend to direct their learning activities towards the assessment that conducted by teacher. In carrying out the assessment, teacher needs assessment instruments in good test items for testing the abilities of students. The instrument of assessment is a set of questioning for measuring a sample of behavior. The teacher questions have the greatest impact because the level of student thinking directly proportional to the level of questions asked. Thus, when planning questions must consider the purpose of each question and then develop the appropriate level and type of question to accomplish the purpose. The objective of this research is to know the feasibility and an effectiveness of integration of higher order thinking skills on instrument of assessment observed from critical thinking skills. This research used the experiment research method. The subjects of research were Accounting Education Department students of higher education. The data of research were collected through essay test which then analyzed using quantitative. The results of this research showed that: 1) The instrument of assessment which integrated with higher order thinking skills is declared feasible to be used, 2) Integration of higher order thinking skills on assessment instrument effective observed from critical thinking skills.

**Keyword:** assessment instrument, critical thinking skills, higher order thinking skills.

### 1. INTRODUCTION

Increasing the quality of education becomes big daring for Indonesia state, remembering the condition of education that stills to concern. Anies Baswedan's minister of education and culture call currently education in condition emergency based on result of PISA's survey (*Programme for International Study Assessment*) showed that Indonesia stay on 64 from 65 states (Wahyudi, 2014). *The United Nations Development Programme (UNDP)* informed Indonesia's *Human Development Index (HDI)* stay on 108 from 187 states, while Malaysia at positioning 62, Thailand at positioning 89 (UNDP 2014). It is show that the quality of the nations can increase if there is the increasing of human resources quality. One of the ways to increase human resources quality is through the increasing of learning process quality.

Based on result of research Siswandari and Susilaningsih (2003) One of ability which shall be increased and suggested by user is ability to run accounting computer. Dispitefully, the result of research Siswandari and Muchsini (2014)

showed that student's skills to run accounting computer still low relative. It is show learning process to accounting computer shall be increased. Based on observed in learning practice on accounting computer showed that students just applied what do be commanded, so they will be easily to forget what already been studied up to lecturing.

Contemporary learning demands the learners to involve more actively develop their knowledge. The activities of learners are the core of learning process in the future, thus teacher's position in contemporary learning is as facilitator rather than as instructor (Yaniawati, 2013). One of model of learning process which suitably in contemporary learning namely direct instruction. In the direct instruction, the students do the learning activities such as observing, questioning, gathering the information, associating or analyzing and communicating what they have already found in the analyzing activity (Rasiman & Pramasdyahsari, 2014). It is shows that in this learning activity, the teacher must have competences are to develop creativity, curiosity, the skill to formulate the

question to shape critical thinking. Critical thinking is thinking skill concerning with conceptualizing, applying, analyzing, synthesizing or evaluating information gathered from observation, experience, reflection, reasoning, or communication as a guide to belief and action. Thus, momentarily to measure the student's critical thinking skills in the contemporary learning.

One of component which shall be noticed in the learning process is assessment. Assessment can provide constructive feedback for teachers as well as students. Assessment results can also provide motivation for students to achieve better. Even assessment can influence the learning behavior because students tend to direct their learning activities towards the assessment that conducted by teacher. The quality of learning outcomes assessment instruments will influence directly in achievement of student learning outcomes. Therefore, the position of learning outcomes assessment instrument is strategic for teachers in decision making related to learning outcomes achievement (Budiman & Jaelani, 2015).

The instrument of assessment is a set of questioning for measuring a sample of behavior. Questioning is a vital part of the teaching and learning process. The art of questioning begins with establishing what is known and allows the teacher to extend beyond ideas and understandings (Limbach & Waugh, 2009). Thus, teachers should use questioning techniques to inspire higher level thinking in the classroom.

Questioning techniques can be used to foster the thinking ability of students. Questions can be categorized in a number of different ways. One simple method is to use the general categories of convergent and divergent questions. Convergent questions seek one or more very specific correct answers, while divergent questions seek a wide variety of correct answers. Convergent questions apply to Bloom's lower levels of remembering, understanding, and applying. Divergent questions apply to Bloom's higher levels of analyzing, evaluating, and creating; and are generally open-ended to foster student-centered discussion, thereby encouraging higher level thinking (Limbach & Waugh, 2009). Questions

or tasks that trigger the students to think analytical, evaluative, and creative can practice students in higher order thinking skills (HOTS) (Budiman & Jaelani, 2015).

According to Teepee (2011) higher order thinking is the transformation of information and ideas through comparing, organising, inventing, deconstructing, hypothesising, checking, producing, experimenting, designing, deciding, constructing, planning, creating, finding, interrogating, critiquing, judging. The students of the future should be able to solve problems, think creatively, think critically, make decisions, analyse and evaluate the information and ideas, plan for future. Skills for future if they become employment are communication, team work, problem solving, initiative and enterprise, planning and organising, and self management.

Higher order thinking skills as those skills that go beyond straight recall or learning of facts They encompass a wide range of activities including problem identification and problem solving, evaluation of information and of arguments, deduction, inference, taking alternate points of view, creating reasonable arguments in support of a position, and making decisions (Fremer & Daniel, 1985).

Based on the above issues, in the assessment instrument need to be developed higher order thinking skills test items in essay in accounting computer semester 3. Integration of higher order thinking skills in assessment instrument developed aims to produce a valid and reliable instrument for measuring critical thinking skills students. This research has its benefits, such as: the assessment instruments are valid and reliable can be used to measure critical thinking skills students.

## 2. RESEARCH METHOD

This research is experiment research. In this research, students of Accounting Education Department A are as experiment group and 27 student of Accounting Education Department B are as control group. The experiment group used divergent questions in questioning techniques at the classroom. The control group used convergent questioning in questioning techniques at the classroom.

The data in this study includes quantitative HOTS test item product testing. The research data. The quantitative data obtained from a

Table 2. Scoring rubric to value critical thinking

Score	Indicator
4	Consistently does all or almost all of the following: 1. Accurately interprets evidence, statements 2. Thoughtfully analyzes and evaluates major alternative points of view. 3. Draws warranted, judicious, non-fallacious conclusions. 4. Justifies key results and procedures, explains assumptions and reasons. 5. Fair-mindedly follows where evidence and reasons lead.
3	Does most or many of the following: 1. Accurately interprets evidence, statements. 2. Offers analyses and evaluations of obvious alternative points of view. 3. Draws warranted, non-fallacious conclusions. 4. Justifies some results or procedures, explains reasons. 5. Fair-mindedly follows where evidence and reasons lead.
2	Does most or many of the following: 1. Misinterprets evidence, statements. 2. Ignores or superficially evaluates obvious alternative points of view. 3. Draws unwarranted or fallacious conclusions. 4. Justifies few results or procedures, seldom explains reasons. 5. Regardless of the evidence or reasons, maintains or defends views based on self-interest or preconceptions
1	Consistently does all or almost all of the following: 1. Offers biased interpretations of evidence, statements. 2. Ignores or superficially evaluates obvious alternative points of view. 3. Argues using fallacious or irrelevant reasons, and unwarranted claims. 4. Does not justify results or procedures, nor explain reasons. 5. Regardless of the evidence or reasons, maintains or defends views based on self-interest or preconceptions.

Instrument in this research are classified into two types, each of which is used to meet the criteria of valid and reliability. HOTS test item is examined individually and the results were analyzed quantitatively to know the estimated coefficient of validity and reliability assessment instruments.

HOTS test item organized by HOTS indicators and Basic Competency (KD) indicators. HOTS indicator synthesized from indicators of Bloom's higher level: analyzing, evaluating and creating.

Design of assessment instrument of each experiment group and control group can be seen following table 1.

Table 1. Design of assessment instrument

Experiment Group	Control Group
Divergent Question	Convergent Question
Performance assessment as group task	Performance assessment as individual task
Student be able to browse from all source to finish their task	Students works their task according to road map from teacher

In this research, critical thinking consists of five skills: interpretation, analysis, evaluation, inference, and explanation. The scores were valued on a scale from 1 (weak) to 4 (strong) based on Facione & Facione, (2009) scoring rubric with some modification

The data of research were collected through essay test. To measure feasibility test used validity and reliability testing. Validity test used correlation product moment by Pearson and reliability test used alpha coefficient.

Technique of data analyze used in this research was one way analysis of variance and then it is analyzed by scheffe test.

### 3. RESULT AND DISCUSSION

#### 3.1 Feasibility Test

Feasibility test can be seen from result validity and reliability test. Result validity test can be seen following table 3.

Table 3. Result validity test

No Item	$r_{xy}$	$r_t$	Note
1	0,455	0,301	valid
2	0,819	0,301	valid
3	0,897	0,301	valid
4	0,904	0,301	valid
5	0,876	0,301	valid
6	0,906	0,301	valid

Based on result validity testing all item test are declared valid, and based on result reliability test ( $0,902 > 0,301$ ) is declared reliable. Thus, instrument is used in this research can be declared feasible to use.

### 3.2 Effectiveness Integration of higher order thinking skills on assessment instrument computer accounting

Based on data analysis can be known that integration of higher order thinking skills on assessment instrument computer accounting effective observed from critical thinking skill. this point can be seen from the result of essay test  $F_o > F_t$  ( $56,54 > 3,956$ ) and scheffe value  $> F_{nk}$  ( $24,095 > 3,956$ ), so there is difference of effect which significant between integration higher order thinking skills on assessment instrument (used divergent question) in learning process computer accounting with learning process which used convergent question.

Despitefully, the result of calculation average score critical thinking skill experiment group (46, 86) has a higher effectiveness than score critical thinking skill control group (39, 34). It showed that learning process which used divergent question, in other word assessment instrument which integrated higher order thinking skill better than convergent question in learning process computer accounting.

Questioning techniques can be used to foster the thinking ability of students. Thus, teacher should designed Questions or tasks that trigger the students to think analytical, evaluative, and creative can practice students in higher order thinking skills.

Question which integrated higher order thinking skill can help the students of the future should be able to solve problems, think creatively, think critically, make decisions, analyse and evaluate the information and ideas, plan for future. So if they become employment, they will have skill as communication, team

work, problem solving, inisiative and enterprise, planning and organising, and self management.

## 4 CONCLUSIONS

The result of this research can be concluded following:

Assessment instrument which integrated higher order thinking skill is declared feasible to measure critical thinking skill.

### Integration of higher order thinking skill on assessment instrument effective observed form critical thinking skill

Questions or tasks was designed with integrated higher order thinking skill can be help student to think analytical, evaluative, and creative. In computer accounting, critical thinking skill is needed to develop skill as communication, team work, problem solving, inisiative and enterprise, planning and organising, and self management.

## 5 REFERENCES

- Budiman, A., & Jaelani. (2015). Developing an Assessment Instrument of Higher Order Thinking Skill (HOTS) in Mathematics for Junior High School Grade VIII Semester 1. *Implementation And Education Of Mathematics And Sciences 2015* (pp. 81-94). Yogyakarta: Yogyakarta State University.
- Facione, P. A., & Facione, N. C. (2009). *The Holistic Critical Thinking Scoring Rubric - HCTSR: A Tool for Developing and Evaluating Critical Thinking*. USA: The California Academid Press.
- Fremer, J., & Daniel, M. (1985). *The Assessment of Higher Order Thinking Skills: Recent Development*. Washington DC: ERIC.
- Limbach, B., & Waugh, W. (2009). Developing Higher Level Thinking. *Journal of Instructional Paedagogies*, 1-9.
- Oliver, S. (2011). *Higher Order Thinking Questions*. Retrieved September 8, 2015, from [www.edutopia.org](http://www.edutopia.org)
- Rasiman, & Pramasdyahsari, A. S. (2014). Development of Mathematics Learning Media E- Comic Based on Flip Book Maker to Increase the Critical Thinking Skill and Character of Junior High School Students. *International Journal of Education and Research*, 535-544.
- Siswandari, & Muchsini, B. (2014). Pengukuran Transferable Skill Mahasiswa Berdasarkan QAA for Higher Education. *Seminar Nasional dengan tema Penelitian dan PPM untuk Mewujudkan Insan Unggul* (pp. 332-349). Yogyakarta: LPPM UNY.
- Siswandari dkk. 2003. Profil Lulusan Program Studi Pendidikan Ekonomi FKIP UNS (*User's View*). Laporan Penelitian tidak dipublikasikan. LPPM UNS.
- Siswandari dan Susilaningih. 2013. Dampak Sertifikasi Guru Terhadap Peningkatan Kualitas Pembelajaran.

- Jurnal Pendidikan dan Kebudayaan*. Volume 19 No. 3, September 2013
- Tando, A. A. (2014). MEA 2015: Ajang Kompetisi Kualitas Tenaga Kerja. Retrieved September 12, 2015, <http://suaramahasiswa.com/mea-2015-ajang-kompetisi-kualitas-tenaga-kerja>
- Teepee. (2011, April 9). Higher Order Thinking for Gifted and Talented Student. 1-129.
- UNDP. 2014. *Human Development Report 2014*. <http://hdr.undp.org/en>. Diunduh pada tanggal 20 September 2014, jam 20.55.
- Wahyudi, I. (2014, December 1). *Mendikbud: Pendidikan Indonesia dalam Kondisi Gawat Darurat*. Retrieved September 11, 2015, from <http://www.antaraneews.com/berita/467070/mendikbud--pendidikan-indonesia-dalam-kondisi-gawat-darurat>
- Yaniawati, R. P. (2013). E-Learning to Improve Higher Order Thinking Skills (HOTS) of Students. *Journal of Education and Learning* , 109-120.