

Validity of Peer Assessment on Teaching ICT Online

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ABSTRACT: In today's globalization era, ICT (Information and Communication Technology) has been introduced to enhance teaching and learning in language classroom. Technology and the wider world web are challenged to boost student's four skills of English as second language. In the implementation of ICT in language teaching, assessment is needed. The use of Peer Assessment (PA) to evaluate the online language teaching is now becoming familiar among online teachers/instructors. However, the validity of such kind of test is still questionable. This paper aims at reviewing peer assessment conducted by the students who take online lessons. The design of the study is qualitative-based because the researchers wanted to know how the validity of peer assessment on ICT learning online. Henning (1987) says that validity of assessment can be measured non-empirically in which the instrument used was the assessment rubric as a guide. The material in this rubric was divided into 3 parts namely: 1) assessment components that serve as a guide in the assessment of tasks (related to the material), 2) evaluation of online peer-assessment, 3) the feedback given by the assessors in the group have been evaluated before the rubric distributed manually or online, the researchers perform validation instrument. Validation instrument through two processes, namely: validation of media and content validation involving *validators* who were expert in media and ICT learning in particular, each expert consisted of two persons. In this study researchers ask their students who are programming ICT subject with the number of 168 students. From the rubrics assessed by the students and the *validators*; lecturers and the experts of multi-media, the result indicates that there is no significant different found from the pattern of the assessment by the students and the *validators*. It means that the peer assessment done by the students on ICT teaching online is valid.

Keywords: *validity, peer assessment, teaching ICT online*

1. Introduction

Information and Communication Technology (ICT) is a field of study that few years back began to flourish in Indonesia and has been implemented in various fields. No exception is in teaching language in higher education. ICT in language classrooms develop innovative teaching methods. In some ways it helps teachers conduct the teaching process and prepare students to be independent dealing with the material taught and assignments during the interaction with the process. Kinds of technology in the field of ICT in language teaching is given a collection of knowledge which is now being implemented in the form of hardware such as CD's, the files in the document, flash disc, software, application of computers' program and Internet.

The rapid development of ICT, especially Internet, enables information services well-implemented in an educational institution. Other educational services

conducted through Internet are the online courses and course materials accessed by anyone who need them, so the learning process should not always be conducted face-to-face; communication between faculty and students can be executed online. In a period of learning and teaching teachers can serve and communicate to a lot more students. However, there is a limitation of assessing a number of students' performance when they are online at the same time.

Because the paradigms shift from teacher-centered to student-centered is not only affecting on learning methods and activities, but also on the way learning outcomes are assessed. For example, the tendency of students who feel awkward to express ideas and opinions in the classroom when dealing with teachers, so their communication skills are not visible. On the other hand the students will be more comfortable when they deliver their opinion on the idea and their colleagues, because they use

the equivalent language in the speech. Meanwhile, when communication occurs between peers, it is difficult to be judged by the lecturers. Therefore it is necessary to develop an innovation in the assessment to obtain the need for communication skills so that the curriculum learning objectives can also be achieved.

2. Theoretical Framework

In this study exposure some theoretical concepts legalize and give authorization for a series of experiment in completing this study that it did not deviate from the action taken.

2.1. Why Using Peer Assessment

One of the innovations in the current assessment is developing Peer Assessment. Peer assessment is the involvement of members of the group to assess the other group members in the same group as possible (Bostock, 2000). According to Isaac (1999) and Milman (2005) using peer assessment can ease the task of a lecturer to assess the group process. Because the group process cannot be done by lecturer while a students who faced a lot of assignments. Lecturers will not be able to supervise all student activities directly in the same time. Further, peer assessment is traditional strategies to assess the students' work and their peers using rubrics. It clarifies and even standardizes the evaluation process. Having the rubrics available while working on a project allows students to better target and refine their efforts. All of this means that students to make use of the rubrics and trained in their use maybe prepared to evaluate and assign grades to project similar to the evaluation and grade the instructor would have assigned. The results of the assessment can be used as feedback for improvement of learning a lecturer and give feedback (Belfast, 2005) to the student's ability based on their assessment. Application of peer assessment can help students to practice evaluating and criticizing their work, it will evaluate the ability to train students to consider the criteria of right and wrong in accordance with the procedures set.

2.2. Online Peer Assessment

The use of online peer assessment is an alternative in language assessment. Such assessments allow students to assess the work of their peers and even assess their own work.

Unlike the self-assessment techniques, which are usually limited to basic cognitive level (Bloom, 1956; Anderson & Krathwohl, 2001), peer assessment allows to develop cognitive learning at high levels. This is a method that involves students in the assessment, revision and feedback process work online. Online peer assessment system does not only launch the implementation of peer assessment activities, but also other online assessment functions. It has functions including online evaluations, collecting data, analyzing data, confirming the quality assessment, and diagnostic errors. In addition, peer assessment also can generate feedback on the material and the learning process. In response to that matter, other author such as Bostock (2000) believes that the assessment of other students' work with the students themselves has several advantages for the learning process, both for the assessor and students. Bostock indicates that peer assessment encourages students to become independent and develop cognitive skills in the field of high education. He admitted certain weaknesses of this type of assessment, particularly for estimating a friend to work, but he explains that this can be avoided by setting up a system that would guarantee the neutrality of assessment, some kind of assessment, a large number of assessors, and moderation by teachers.

Another advantage gained from online peer-assessment is the assessment results can be immediately obtained because the online peer-assessment is a structured system that does not require a long time to get the results. In addition, Bostock, determined that the Internet and information and communication technology enables easier management with a greater number of students. From the similarity of the evaluation and the instructor who assigned to be the grader can be the elements to be included in validity of the assessment for teaching ICT online. While offline peer assessment takes a longer time to get the result since all the process are done conventionally through one to one step of activities in a set structured system of assessment. This situation is caused by the involvement of more than one parties in assessment process. The result of assessment in the form of scoring or grading of the assessed material is worth for the next step of evaluation.

Also, online peer-assessment programs allow the application in a large number of participants in assignments in a manner that is logistically and economically efficient. Each assignment typically offers multiple opportunities for students to analyze, evaluate, and synthesize assessment online. The first phase offers a rich opportunity for the sort of thinking outlined in the learning, an opportunity which continues into subsequent phases as students continue to elaborate, evaluate, explore and explain online. Moreover, the structure of the assignments, encourage students to be engaged, and to take a constructivist approach to learning. Thus, all things considered, online peer-assessment assignments seem to represent the perfect complement to well constructed peer assessment. A well constructed assessment can assess the lower levels of Anderson and Krathwohl's hierarchy and the online peer assessment can support the development of the skills reflected in the higher levels. The result would be students who not only possess knowledge, but also the skills to criticize, analyze, synthesis, and create the assessment at the same time to the peer involved in the assessment.

2.3. Issues on Validity

The issue of validity has appeared when some assessors have to execute question 'Is the content of the test consistent with the stated goal for which the test is being administered?' Validity is accurately reflecting the extent to which students have mastered the content of instructions (Henning, 1987). Validity may be determined in a variety of ways. Experts describe three kinds of validity; face, content and response validity. Many specialists on testing make no distinction between content and face validity. Others differentiate by noting that face validity is determined impressionically, intuitive and logical. Content validity is concerned with the content of the test sufficiently representative and comprehensive for the test to be valid measure what it is supposed to measure. Response validity is to describe that the examinees cooperate and participate to the best of their ability during testing situation. Invalid response can be detected by asking examinees about the quality of their participation or by

interviewing examinees with unusual or irregular response patterns. In order to ensure content validity of achievement and proficiency exam it is necessary to seek the advice of content experts. It is better to have a panel of experts examine each part of the test and to provide a rating of its local representativeness and global comprehensiveness. Weaker parts of the test would be revised until the experts are in near agreement that the test exhibit content validity. In this way the test developer would have evidence to support that the test is valid.

Some methods can describe validity of assessments. Some of these methods are empirical, involving the collection of data and the use of formulae. Other methods are non empirical, involving inspection, intuition, and common sense. A distinction has been made between empirical and non-empirical kinds of validity. Non-empirical validity does not require the collection of data or the use of formulae. There no coefficient or mathematical computation involved. Face or content validity includes these kinds of validity. While empirical kinds of validity involve mathematical formulae for the computation of validity coefficient.

When administering validity some threats should be considered particularly when it is determined that the method is non-empiric. First, invalid application of tests may ruin the measurement. Although the scores resulting from the administration of such test may prove to be highly reliable; it remains invalid if it fails to measure what it is intended to measure. Second, inappropriate selection of content may happen when items do not match the objectives or the content of instruction. The test can be said lack of face or content validity when the items are not comprehensive reflecting all major points of instructional program. Third, when the situation of imperfect cooperation of the examinee appears. Whenever the examinees do not approach the testing situation in the expected manner, the result may prove to be invalid. This possibly happens when the examinees are insincere, misinformed or hostile to test.

2.4. Validity on Online Peer Assessment

In practice the validity of peer assessment on teaching ICT online implemented qualitative research is remained

arguable. It is much on the misleading concept of validity and reliability. Cho et al. (2006) note that validity is sometimes misreported in literature as reliability. This leads us to clarify these two concepts based on the definitions provided by Cho et al. (2006). The author regards the reliability of peer assessment as a variable that can be measured by the similarity between the marks given by peers. They consider the validity of peer assessment as a variable that can be measured by the similarity between the marks attributed by peers and by teachers. Moreover, as Henning (1987) says that the validity on assessment can be measured by non-empirical kinds of validity which does not require the collection of data or the use of formulae, and no coefficient or mathematical computation involved. In this case, the role of *validators* as a controller since they set the standard of measurement is very much needed to check whether the assessments have the similarity attributed by the students and the teachers.

3. Previous Studies

Sadler & Good (2006) carried out a peer assessment experiment on 4 secondary school classes. By comparing the marks awarded by teachers with those awarded by pupils and with those obtained by self-assessment, they claim to have obtained a very high correlations ($r=0.91$ to 0.94). They also noticed that pupils slightly underestimate work of their comrades, whereas they overestimate their own. Regarding the impact of peer assessment on the learning process, they claim that self-assessment reinforces pupils' learning whereas peer assessment does not. Lastly, they explain that peer assessment considerably reduces the teachers' workload.

Bouzidi & Jaillet (2009) conducted the online peer assessment that could contribute to reducing the workload and improve learning quality by assigning the assessment task to students. To answer the question of validity they carried out an experiment of online peer assessment in which 242 students, enrolled in 3 different courses, took part. The results showed that peer assessment was equivalent to the assessment carried out by the professor in the case of exams requesting simple calculations, some mathematical reasoning, short algorithms, and short texts referring to

the exact science field (computer science and electrical engineering).

Based on the reasoning above it is important to study how the validity of the application on peer assessment as an assessment tool and in improving communication skills in ICT learning online. While feedback is important to be extracted from the student participants of this ICT learning to determine if an online assessment of ICT can meet their needs related to learning process they have exposed.

4. Methodology

Qualitative research-based was chosen because the researchers wanted to know how the validity of peer assessment on ICT teaching online (Anderson, 2003). Considering that validity on peer assessment can be measured non-empirically in which the instrument used was the assessment rubric as a guide. The material in this rubric was divided into 3 parts namely: 1) assessment components that serve as a guide in the assessment of tasks (related to the material), 2) evaluation of online peer-assessment, 3) the feedback given by the assessors in the group have been evaluated before the rubric distributed manually or online, the researchers perform validation instrument. Validation instrument through two processes, namely: validation of media and content validation involving *validators* who were expert in media and ICT learning in particular, each expert consisted of two persons. In this study researchers used subjects with the number of 168 students. Research subjects are the students who programmed the ICT courses. At the time of the assessment exercise classes were divided into small groups. Each group consisted of two students. The material assessed was a power point display, designed with multimedia learning materials designed for teaching high school students. Tasks were collected using two ways, namely; hardcopy and softcopy form of a CD of material uploaded to the Yahoo group created for the whole class students who register to ICT subject.

4.1. Subjects of the Study

Three kinds of subjects were involved in this study. The first subject was 4th semester students' of English department of teacher training education who took ICT subject to

their program with a total of 168 students. They were from four parallel classes and taught by four different lecturers. Each class consists of forty two students and grouped of two students so there were twenty one working-groups in the classroom. Random sampling was used to get the representatives from each classroom and four groups were chosen randomly from each class. Altogether there were 16 teams assessing their peer tasks' for final exam. For this study the item assessed was chosen randomly from each class. There were four tasks in the form of CD or up-loaded to the Yahoo group.

In this study the validity of peer assessment can be verified by *validators* who validate the assessment by comparing peer assessment with the assessment carried out by the *validators*. Lecturers and experts are chosen as they are assumed to be reliable assessor (Cho et al., 2006).

Lecturers as first validator were involved since they were responsible to the material delivered to the students. There were four ICT classes taught by four different lecturers. Basically they are assigned to assess students' tasks in the regular basis. In this study, the assessments from the lecturers were already provided from the regular assessment. So that the researchers need only to take the intended assessment gathered for the study.

The second *validator* for this study were two experts. They are also lecturers in duty but they do not involve directly to ICT classrooms. To be a validator of this study the lecturers should possess expertise in teaching ICT, computer assisted to language learning (CALL), or teaching online. Their role was also needed since they responsible to validate the assessment conducted by peer-group for the item assessed that were chosen randomly from each class.

4.2. Data of the Study

Data were the item assessed that were chosen randomly from each class. There were four tasks in the form of CD or up-loaded to the Yahoo group. Data were then described in rubrics and questionnaires that were provided online. The students, lecturers and *experts* can access the data and submit the assessment online.

4.3. Data Collection

Having obtained a valid instrument the evaluation was done in two ways: online and manually. Batch 2007 students manually programmed ICT courses are grouped by yahoo grouping. Before grouping students must have an e-mail address and send to the email address to the lecturer who leads the subject. Students who join the yahoo group will receive material and messages via email. By way of online students are expected to always open the e-mail and read or communicate with the lecturer. The communication can be done vice versa. Manual assessment conducted under the supervision of the lecturers. At a time, manual assessment conducted where the students, lecturers and *experts* were gathered in one specific room to watch all tasks or items to be assessed in the form of power-point presentation. The evaluations were described in rubrics then sent trough Yahoo groups so that the students, lecturers and *experts* can access them followed by the questionnaires. The last step was analyzing the rubrics by the researchers.

5. Data Analysis

5.1. Results from rubrics

Peer group assessment was carried out manually and/or online. Three components were included in the assessment, they were (1) peer-group students, (2) selected lecturers who teach ICT class took role as validators, and (3) experts who keen on ICT also took role as *validators*. At the time *validators* and peer-groups were given the rubrics after assessing the material assessed manually and/or online. The results from the rubrics of the assessment with 16 groups of four materials are displayed as follows:

5.1.1. Assessment by peer-group students

The analysis carried out in this research is conducted first by the peer-group students. The item analyses are power-point presentation, multi-media application and content material related to the assigned research project. From the rubrics distributed to all peer-group, the result shown in Table 1. The recapitulation displays the spread of scoring from rank 1 (66-69), rank 2 (70-75), rank 3 (76-79), rank 4 (80-85), and rank 5 (86-100) for three points of assessed.

Table 1: Recapitulation of the assessment by peer-group students

Points of Assessed		1		2		3		4		5	
1	Power-point	66-69	%	70-75	%	76-79	%	80-85	%	86-100	%
	a. Fonts can be read clearly	1	6	5	31	4	25	4	25	2	13
	b. Font color contrast but not dazzling	2	13	3	19	5	31	5	31	1	6
	c. Selection template in accordance with the material	1	6	5	31	4	25	4	25	2	13
	d. Creative illustration and in accordance with the material	1	6	5	31	4	25	4	25	2	13
	e. Creative animation and in accordance with the material	2	13	5	31	3	19	3	19	3	19
	Total	7	9	23	29	20	25	20	25	10	12
2	Multi- media										
	a. The use of hyperlink	2	13	4	25	6	37	4	25	-	-
	b. The diversity of media connected with hyperlinks such as blogs, websites, YouTube, Hot Potatoes blog, website, YouTube, Hot Potatoes	1	6	3	19	6	37	6	37		
	c. The diversity of media connected in accordance with the material	3	19	3	19	4	25	5	31	1	-
	Total	1	2	6	12	19	39	12	25	1	2
3	Material										
	a. Conformity with the learning objectives for the chosen level of education	1	6	2	13	7	44	2	13	1	6
	a. Systematic presentation of material	1	6	5	31	7	44	3	19	-	-
	b. Completeness of the activities include the theory and practice	4	25	3	19	4	25	4	25	1	6
	Total	6	12	10	21	18	38	9	20	2	6

5.1.2. Assessment by lecturers

Table 2: Recapitulation of the assessment by lecturers as first validator

Points of Assessed		1		2		3		4		5	
1	Power-point	66-69	%	70-75	%	76-79	%	80-85	%	86-100	%
	a. Fonts can be read clearly	1	6	5	31	4	25	4	25	2	13
	b. Font color contrast but not dazzling	2	13	3	19	5	31	5	31	1	6

	c. Selection template in accordance with the material	1	6	5	31	4	25	4	25	2	13
	d. Creative illustration and in accordance with the material	1	6	5	31	4	25	4	25	2	13
	e. Creative animation and in accordance with the material	2	13	5	31	3	19	3	19	3	19
	Total	7	9	23	29	20	25	20	25	10	12
2	Multi- media										
	a. The use of hyperlink	-	-	2	13	6	37	2	13	6	37
	b. The diversity of media connected with hyperlinks such as blogs, websites, YouTube, Hot Potatoes blog, website, YouTube, Hot Potatoes	1	6	1	6	6	37	6	37	2	13
	c. The diversity of media connected in accordance with the material	-	-	3	19	7	44	4	25	2	13
	Total	1	2	6	12	19	39	12	25	10	21
3	Material										
	a. Conformity with the learning objectives for the chosen level of education	1	6	2	13	7	44	6	37	-	-
	b. Systematic presentation of material	1	6	5	31	7	44	3		-	-
	c. Completeness of the activities include the theory and practice	4	25	3	19	4	25	4	25	1	6
	Total	6	12	10	21	18	37	13	27	1	2

5.1.3. Assessment by experts

Table 3: Recapitulation of the assessment by experts as second validators

Points of Assessed		1		2		3		4		5	
1	Power-point	66-69	%	70-75	%	76-79	%	80-85	%	86-100	%
	a. Fonts can be read clearly	1	6	5	31	5	31	4	25	1	6
	b. Font color contrast but not dazzling	3	19	3	19	5	31	3	19	2	12
	c. Selection template in accordance with the material	3	19	5	31	4	25	4	25	-	-
	d. Creative illustration and in accordance with the material	2	13	6	37	5	31	3	19	-	-
	e. Creative animation and in accordance with the material	4	25	7	44	3	19	2	13	-	-
	Total	13	16	26	32	22	27	18		1	2

2	Multi- media										
	a. The use of hyperlink	2	13	4	25	6	37	4	25	-	-
	b. The diversity of media connected with hyperlinks such as blogs, websites, YouTube, Hot Potatoes blog, website, YouTube, Hot Potatoes	1	6	3	19	6	37	6	37		
	c. The diversity of media connected in accordance with the material	3	19	3	19	4	25	5	31	1	-
	Total	6	12	10	21	16	33	15	31	1	2
3	Material										
	a. Conformity with the learning objectives for the chosen level of education	1	6	2	13	7	44	6	37	-	-
	b. Systematic presentation of material	1	6	5	31	7	44	3		-	-
	c. Completeness of the activities include the theory and practice	4	25	3	19	4	25	4	25	1	6
	Total	6	12	10	21	18	37	13	27	1	2

Peer group of students assessed the object of assignments of from all groups. The object is in the form of teaching material. The points assessed are divided into three different points; the display of power-point, the use of multi-media in power-point and the relevance of material included in the teaching material. To give clearer assessment each point of assessed is still divided into more detailed measurement. From the data shown on tabulation reflect the result of assessment done by three assessors: students, lecturers and experts. The scoring of assessment is spread from all area of ranks given.

To determine the validity of each assessment can be done by combining the results of assessment of the percentage collected by students, lecturers and experts. This was done to determine if there are trends or similarities which can draw conclusions related to the validity of peer assessment. The figures below are the reflection of trends or similarities drawn from three assessors; students, lecturers and experts.

5.1.4. Power-point assessment

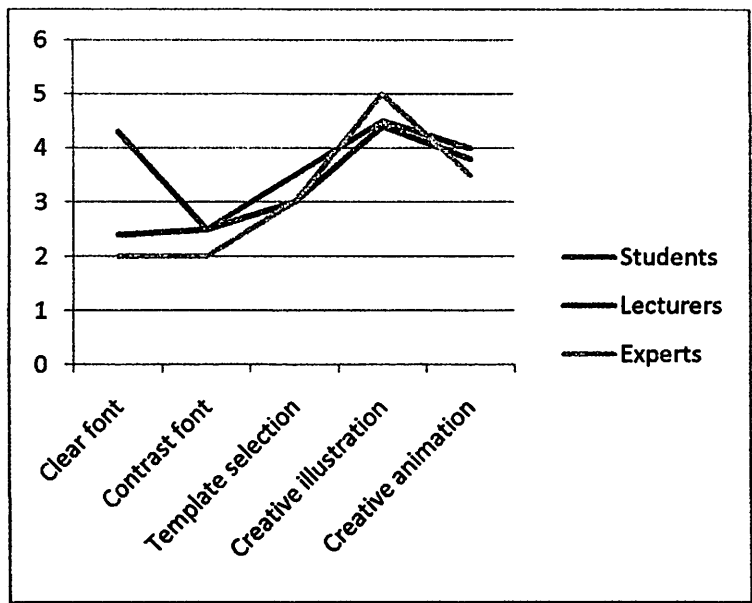


Figure 1: Joined assessment from assessors assessing power-point

From the results of a power-point assessment conducted by the assessors, it can be described as the similarity made between these three assessors. Similarity was obtained from items of assessment on contrast font, template selection, creative illustration and creative animation. Only, three assessors have a different opinion to font selection. Considering the tendencies can be concluded that the third assessor valuation valid for items

that have a similar tendency. All assessors agreed that contrast font used for power-point was a bit dazzling so that the score achieved were only at rank 3 (76-79). Again, they agreed that most power-point displayed with creative illustration, so it was performed by achieving the highest scoring rank 5 (86-100). Validity of assessment was shown from the conformity of the assessment above.

5.1.5. Multi-media assessment

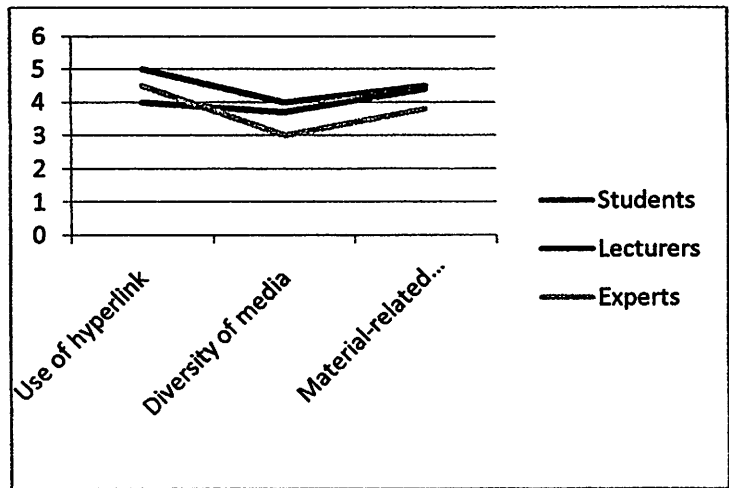


Figure 2: Joined assessment from assessors assessing multi-media

All assessors agreed that diversity of media used should vary so that the score achieved were only at rank 3 (76-79). Moreover, they agreed that students have mastery the use of hyperlink when they present in

power-point, it was performed by achieving the highest scoring rank 5 (86-100). It also happened to material-related media assessment.

5.1.6. Material assessment

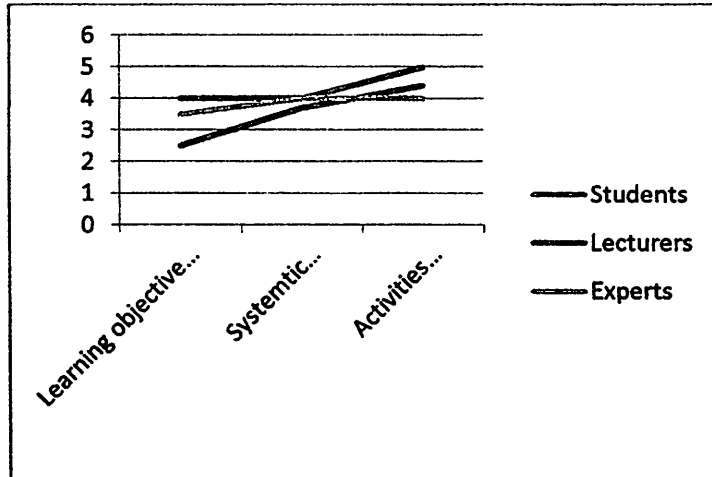


Figure 3: Joined assessment from assessors assessing material

The figure above describes the tendency of the same assessment among assessors in item analysis of conformity with the learning objectives for the chosen level of education,

systematic presentation of material and completeness of the activities include the theory and practice.

5.2. Results from questionnaires

Table 4: Percentage of feedbacks

No	Points of Assessed	Agreed	Less agreed	Disagreed
01	Media display			
02	Evaluation on peer-assessment online	12 peer-groups	3 peer-groups	1 peer-group
03	Feedback	<ul style="list-style-type: none"> • Need to increase the diversity of multi-media • Need to manage contrast on color • Need to manage the animation 		

6. Interpretation

From the results of data analysis it can be described that the factors supporting and inhibiting the validity of peer assessment online are as follows:

A. Supporting factors:

1. Media display: a) Almost all the students have no difficulty in making power point media, b) Almost all students can easily find material for the connecting with the material to be

- displayed, c) All students will master the material set forth in the media power point.
2. Evaluation of peer assessment online: a) 75% of students agreed assessment tasks online, b) 19% of students agreed less online assessment tasks for students from out of town, c) 6% of students disagreed online assessment tasks for students from out of town and did not have internet facilities.
 3. Feedback: Students have been selective in choosing material to support the media view

B. Inhibiting factors:

1. Media display: a) A minority of students does not understand the meaning of media power point so that the media display more on texts, b) A minority of students do not understand the benefits of animated illustrations, background color and template selection.
2. Evaluation of peer assessment online: Internet access outside the city is not as easy in the city so that students work hard if the assessment conducted online.
3. Feedback: It has to do with internet access outside the city so that students cannot freely choose to view material supporting media.

7. Conclusion

Having performed the data analysis above, it can be said that the result of peer assessment is valid if the result obtained by the group of students is almost similar to the standards set by the lecturer / instructors and the experts.

Data validation results obtained the following results:

- a. Media displayed: 1) almost all the students have no difficulty in making power point media, 2) almost all students can easily find material to be linked to the material displayed, and 3) all students will master the material delivered in the media of power point, but there are weaknesses in the completeness of the theory and practice activities.
- b. Implementation of peer assessment and manual or online is more than 70% of

students agreed to place an online peer assessment and / or manual.

- c. Students have been selective in choosing material display support materials.

From the rubrics assessed by the students and the *validators*; lecturers and the experts of multi-media, the result indicates that there is no significant different found from the pattern of the assessment by the students and the *validators*. It means that the peer assessment done by the students on ICT teaching online is valid. In the future teachers need to explicitly assess the characteristics for learners to use ICT competently to learn languages.

8. Discussion

The design of this study is qualitative research based which uses tabular and trend reasoning to see the validity of online peer assessment. The result shows that it gives a scene of validity to this assessment method. However, one must take some precautions to quantitative design of methodology to the later research. It is possible to attain referring to the exact science field such as statistical treatment, calculations, mathematical reasoning, and short algorithms on item analysis to see the validity of online peer assessment. In particular, this method helps teachers identify the correlation between item analyses from data processed. Consequently, the researcher must supplement the solution by creating a system that enhances online assessment by an automatic phase that makes it possible to put peer assessments carried out in classroom online. Concerning the educational aspect, the research will be supplemented by an analysis of the interaction occurring between all of the assessors (students, lecturers, and experts) participating in the experiment. This will give us information on the impact that this assessment method has on the learning process.

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