

# Digitizing learning assessment to develop students' critical thinking

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**Abstract.** The objective of this paper is to design a learning assessment program in this education revolution 4.0, the so-called *Plickers*. It is one of the innovative on-line applications for students' reading assessment triggering students' critical thinking as well as their creativity. This research belongs to Educational Research and Development (R&D) which is divided into three main stages: exploration, development, and field-testing phase. The data analysis of this research used descriptive qualitative. Some interviews, document analysis, and classroom observation were employed to collect the data of this study. The reading test through *Plickers* was designed based on students' need. The finding shows that both teachers and students positively responded to digitize their learning assessment to accommodate both their critical thinking and creativity.

## 1. Introduction

In this 21<sup>st</sup> century, English, as a universal language, has an important role in responding and dealing with some opportunities in daily life. English is needed in many aspects including education. Indonesia has some levels of education - beginning from primary, secondary (junior and senior high) and vocational schools. Accordingly, since independence-day, 1945, Indonesian government puts forward the teaching of English as the first foreign language to be taught in Indonesian schooling.

One of the fundamental skills in English language teaching is reading. This paper reveals the technology-based test employed in vocational schools. The national education curriculum of Indonesia demands students to be active in the class and have critical thinking in the learning process, in fact, most students become less active when teachers ask them questions. It is one of the problems for teachers to assess the students' reading comprehension.

In measuring students' competencies in the language learning process, a good assessment is needed. Language assessment is an important instrument in language teaching and learning. Assessment should give a good improvement for students' competencies and students' opportunities to manage and know their own learning. Therefore, educators or teachers should know what students' need. In addition, teachers need to create an assessment becoming interesting, sufficient, and innovative. In fact, many schools still use a conventional way (paper based-test) to assess the students' understanding. Based on observation in learning process, the researcher found out that students feel bored and less interested in doing test. They prefer to cheat others' work rather than do it themselves. Having a conventional way (paper-based test) makes the learning process obstacles. It is not impossible if the teacher or students are often getting lost the student's result work. Therefore, it is a challenge for the teacher to create an



innovative assessment by designing an appropriate test. In this study, the researcher used formative assessment in assessing students' competencies. It can increase teaching effectiveness, confirm students' understanding, and encouraging themselves to evaluate their learning progress.

To overcome those problems, *Plickers*, is designed to create innovative and interesting learning assessment for students so it can support the teacher in assessing students' understanding. Brown suggests that assessment is an ongoing process that encompasses a much wider domain [1]. Whenever a student responds to a question, offers a comment, or tries out a new word or structure, the teacher subconsciously makes an assessment of the student's performance. A good test is constructed by considering the principle of language assessment - practicality, reliability, validity, authenticity. Hutchinshon & Water (1987) in Yulia (2017), mention three aspects in finding out the students' needs, they are (1) necessities (what the learner has to know to function effectively), (2) lacks (what the learner knows and does not know already), and (3) wants (what the learners think they need). Those aspects are used to reach the goal (why a course is being taught and what the learners need to get from it). It means that for figuring out the students' needs and reaching the goal of the students' learning, a researcher needs to know the students' necessities, lacks, and wants.

Assessing students' competencies is one of the important aspects of the learning cycle. Bull states that the two main uses of technology in the assessment process are identified as: using technology to perform the actions and cognitive processes a tutor would employ to arrive at a grade, and using technology to aid the assessment process [2]. It means that technology can be used to assess the students in a learning process. It can be a common thing that a teacher can use technology to replace the conventional test (paper-based test).

*Plickers* is one of the innovative on-line applications which can help the teacher in assessing the students' work without collecting their paper or any devices. It collects real-time formative assessment data which can be used by teachers to restructure their lessons. This assessment tool allows teachers to collect students' work on the spot without collecting their paper or any devices that they used. It provides the students to participate and engage in learning English without feeling bored. The students will be challenged to answer the questions of the test because it is done on the spot. It is very easy to be used for the students.

## 2. Method

Dealing with the research objectives in designing a reading test using *Plickers*, Educational Research and Development (R&D) was employed. Borg and Gall conclude that R & D consists of a cycle in which version of the product is developed, field-tested and revised on the basis of field-testing data. However, the researcher realized that designing a test using Borg and Gall's steps was time-consuming and it was difficult to be practiced [3]. On the other hand, Sukmadinata's step of R&D (2016: 46) was employed - exploration, development, and field-testing.

## 3. Result and discussion

In the education field, testing is one of important tools in assessing students' understanding. Meanwhile, the students often thought that a test was a scary thing because they were nervous to do it and afraid of knowing the result of the test. It would be a challenge for the teacher to increase students' enthusiasm for doing a test. Not only in the learning process, but also in the testing section technology could be a tool of assessment.

In the exploration phase, data were revealed based on observation class, interviews, and document analysis. It consists of generic structures - orientation, events, and reorientation. One of the questions of the text is identifying the main idea which revealed one of the indicators. The existing test had good content validity because the material in the test was stated in the syllabus. In assessment process, students were busy talking each other and eventually students cheated and 45 minutes later, the teacher asked them to submit their works. Some of the students complained about the time allocation. They said that they need more time to do the test.

T: Have you finished?

S9: Not yet Ma'am!

S5: *Sudah.*

S10: *Belum, Ma'am. Mbok tambahin waktunya, Ma'am.*

S7: *Iya, Ma'am. **Waktunya kurang,***

T: Please submit your work, please!

S22: *Bentar, Ma'am. Belum selesai.*

T: *Makanya jangan ngobrol sendiri terus. Ayo kumpulkan!*

S22: *Ah yo wis sak-sak e.*

#### *Appendix1/transcript of classroom observation*

Based on such, the teacher urgently needed to use technology as the tool of learning assessment due to time management and students' better achievement. Technology could also be implemented not only in the teaching-learning process but also it could be used in the testing section.

Several factors were revealed regarding the aim of teaching English. Teachers said that students learn English to understand simple written English. It was proved by the teacher's utterances.

*Hmm.. Untuk apa ya mereka belajar bahasa Inggris? Ya paling tidak mereka bisa mengetahui materi Bahasa Inggris yang masih simple - simple. Bacaan-bacaan yang tidak terlalu rumit. Bahasa Inggris kan juga penting soalnya kan sebagai bahasa internasional juga. Anak-anak diharapkan dapat menguasai sesuatu yang sederhana untuk ukuran mereka.*

#### *Appendix2/transcript of teacher's interview*

Meanwhile, the students' answer was to pursue their dream. They had a dream to live and had a vacation in English speaking country.

R: *Apa tujuan kalian belajar Bahasa Inggris?*

S1: *Agar dapat menguasai pelajaran Bahasa Inggris dengan.. dengan.. dengan baik, Mbak.*

S2: *Karena saya memiliki cita-cita besar di luar negeri, Mbak, bukan di Indonesia gitu lho.*

#### *Appendix4/transcript of students' interview*

Therefore, English was needed to be mastered by students. When the teacher asked them why they learn English, the teacher responded that they had less motivation in learning English; thus, their vocabulary was limited.

T: *Motivasi siswanya masih rendah mbak kalau disini, jadi kosa kata mereka juga masih terbatas. Kalau kurang motivasi kan kelasnya juga kurang kondusif kan ya mbak.*

#### *Appendix2/transcript of teacher's interview*

In the interview section, when the researcher asked about the obstacle faced by the teacher in the teaching process, the teacher said that the students' less motivation was one of her difficulties to be overcome. She claimed that most of the students still had less motivation in studying; thus, it made them have a limited vocabulary. She also said that students' less motivation could also make the class less conducive. It meant that there was a relationship between students' motivation and their achievement in learning English.

In line with the teacher's statement of the students' motivation in learning English, one of the students said that some students had less motivation in learning English. He said that many students did not want to master English vocabulary.

*R: Menurut kalian kenapa kok Bahasa Inggris di sini bisa tertinggal?*

*S2: Ya gimana ya? Kalau disini itu anak-anaknya males-males. Kosa kata aja nggak mau dikuasai.*

*R: Jadi itu masalahnya dari siapa?*

*S2: Ya dari siswanya sendiri. Hehe.*

Appendix4/transcript of students' interview

Thus, it could be concluded that the students' motivation was an important thing to consider. Good cooperation between students and teachers was needed to increase students' motivation that impacts upon students' achievement.

Regarding the use of technology, it was still less. The researcher found different statements between the teacher and the students.

*R: Apakah Ibu sering menggunakan media teknologi dalam proses pengajaran Bahasa Inggris? Apa saja?*

*T: Kalau saya sih enggak, tapi ya pernah. Kebetulan juga sekarang LCD-nya banyak yang rusak, jadi ya jarang pakai LCD.*

*R: LCD masih bisa kan, bu?*

*T: Masih bisa, tapi warnanya sudah kuning-kuning gitu.*

*R: Kalau dalam testing, apakah Ibu pernah menggunakan teknologi sebagai media assessment-nya?*

*T: Kalau untuk testing, belum pernah sih Mbak.*

Appendix2/transcript of teacher's interview

The teacher said that she was rarely used technology such as LCD and laptop in the classroom because of some factors, such as some LCDs were broken and the display of the LCD was not clear enough. Meanwhile, the students mention that the teacher did not use the technology yet in the classroom.

*R: Apakah guru sering menggunakan media teknologi, seperti power point dalam pembelajaran dan penilaian kemampuan siswa?*

*S2: Nooo!*

*S3, S1, S4, S5: Nggaaak!*

*S3: Nggak pernah, Mbak!*

*R: Berarti seringnya menggunakan buku LKS dan paket?*

*S3: Nggak pernah pake buku paket, Mbak!*

*S1: Never!*

*R: Berarti seringnya pakai LKS ya?*

*S1: Iya, Mbak.*

Appendix4/transcript of students' interview

In line with the implementation a technology in the class, the teacher acknowledged that she had a lack in implementing technology in the class. It could be seen in the statement as follows:

*R: Dengan perkembangan teknologi saat ini, bagaimana menurut Ibu tentang implementasi teknologi dalam proses pembelajaran?*

*T: Kalau saya jujur masih kurang ya Mbak dalam menggunakan teknologi di dalam kelas. Ya nanti mungkin saya bisa belajar dari calon guru-guru muda seperti mbak ini, agar dapat memaksimalkan penggunaan teknologi di dalam kelas.*

Appendix2/transcript of teacher's interview

One of the teachers said that she was interested in implementing technology in the class. The teacher wanted to know how the technology can be used in the learning process. However, a student stated that

he was bored to finish a test from his module. Thus, the students shared their desire to have a test consisting of multiple choices with some requirements.

*R: Tes seperti apa yang kalian inginkan?*

*S4: Tesnya yang pake bahasa indonesia semua. Hahaha.*

*R: Wah ya nggak bisa. Hahaha.*

*S2: Kosa katanya yang familiar gitu, yang sering digunain.*

*R: Terus apalagi?*

*S2: Yang jangan terlalu panjang. Singkat-singkat gitu lah, Mbak.*

*S1: Iya, yang pendek-pendek.*

*S3: Singkat tapi jelas.*

Appendix4/transcript of students' interview

They noted that they wanted multiple choice test using a common vocabulary, simple, brief, and clear sentences. Based on the result of some activities held in the exploration stage, the conclusion is as follows:

1. The teacher said that the goal of learning English was to master the simple material/text of English while the students stated that learning English was to pursue their dream.
2. The teacher and students had the same statement that students had limited vocabulary.
3. The students have less motivation in learning English.
4. The test is lack of reading passages which were in line with the syllabus.
5. They have lack of time to practice a test using technology based-test.
6. The students want to have a multiple-choice type of test.

Based on the conclusion of the exploration stage, the different method needs to be implemented in order to minimize students' boredom and help the teacher in assessing students' understanding. Thus, the reading test through *Plickers* was needed to be developed.

In development phase, course grid was developed to reveal the prototype of the test. The theme of the test was chosen based on the students' want focusing on core competence, basic competence, indicators, and micro and macro skills of reading. After developing the prototype, internal experts were involved to revise the prototype of the test. In revising the product, LOTS questions were changed onto HOTS questions because the 2013 curriculum stipulated students to think critically.

The last stage was field testing stage. In this stage, try out of *Plickers* was administered. Before doing the test, the procedures of *Plickers* were explained. They seemed enthusiastic and they did the test seriously. Most of the students wrote they felt enthusiast and happy to do the test.

The test eventually was revised in terms of layout and language structure. The layout of the product was revised to make a product more readable. The change of words as well as questions were done to have more effective and natural test.

Overall, *Plickers* can be a different method in assessing students. Technology based-test increased students' attention towards the test given. They felt enthusiast and able to manage their time well. The more creative the test was held, the more students engaged.

Regarding the strengths of the product, teachers noted that (1) *Plickers* can engage students' participation in the class and (2) instant feedback can be revealed and learnt. Improving students' performance is a crucial thing in learning and teaching. *Plickers* can be a tool in assessing students' understanding of the material given. It can engage them in discussing the questions. *Plickers* could support students' critical thinking and allow them to engage in the learning process with a feeling of self-confident. In a traditional class, a teacher asked a question and only the confident or extraverted students raised their hand and answered the question. Some students do not participate in such an open manner. *Plickers* can put all of the students to participate and engage in learning when answering a question by showing the card. In addition, teachers can also be able to give instant feedback to the students, since she can see all students' answers, correct or incorrect, in real-time. *Plickers* can be used to check students' understanding of material learned in a previous lesson or just learned in the current lesson. If the class is struggling with the lesson, teachers enable to see right away, using *Plickers*

questions as a formative assessment, and decide to re-explain or focus more time on those aspects of the lesson that have proven difficult for the students. On the other hand, teachers can speed up a lesson if the students seem to be mastering the material faster than expected.

However, *Plickers* also has some weaknesses: (1) time management, (2) limited number of words. If there is a student who comes late during *Plickers* activity held, there would be no way to return to the previous question since it will disappear from the queue. It is a problematic thing if *Plickers* is used for quizzing and the teacher wishes to give a make-up quiz for absentees. In addition, there was no column for writing the text so the researcher wrote down the recount text in Ms. Word because of the limitation number of words.

#### 4. Conclusion

Based on the data, it could be concluded that the development of the reading test was needed. The reading test was designed based on students' need. It could increase students' motivation in doing a test. In addition, *Plickers* gave different method for the teacher to assess the students' understanding. It made the students felt enthusiastic in doing the test so they could make better accomplishment.

As well, the researcher concluded that assessing students' understanding using *Plickers* can facilitate teachers to measure the students' reading skills. Teacher can give valuable feedback to the students directly. It also can engage students' participation in order to make a better accomplishment. However, the developed reading test using *Plickers* also has some weaknesses: limited number of words and time management.

Teachers need to create a valid test based on the curriculum and syllabus used in the school and they also need to develop their competence, especially in assessing the students. They should engage the students in developing the test because the need, opinion, and lack of the students will be the basic thing to create an appropriate test and this will improve students' enthusiasm in conducting a test.

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