R.N.I. No.: PUNENG/2014/59759 ISSN: 2348-9936

PLICKERS: AN INNOVATIVE ASSESSMENT TOOL FOR STUDENT TEACHERS

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ABSTRACT

Assessment in education refers to a variety of methods and tools that teachers or educators use to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, and knowledge gained by their students. Formative assessment is an integrated part of the teaching and learning process which includes observations, asking questions, and the use of digital games in the classroom. Plickers is an example of formative assessment tools that use technology inside the classroom during teaching-learning situations. It is handy, uses very few digital devices in the classroom – a smartphone with wifi, laptop, and projector for the use of teachers. Plickers gives both students wise and questions wise analysis so that the teacher can do the formative assessment easily. Use of Plickers reduces classroom noise during oral questions, students will pay more attention to the teaching. Present research paper attempts to find the attitude of Student-teachers towards the use of Plickers quiz tool during their teaching-learning process. Student-teachers irrespective of their subject specialization enjoy their learning during formative assessment as well as develop a positive attitude towards the use of Plickers tool during their internship process as the tool is handy, easy to use, provides digital record of assessment and engages their students actively through a fun activity.

Keywords: *Formative Assessment, ICT Tools for Assessment, Plickers*

Introduction

Assessment in education refers to a variety of methods and tools that teachers or educators use to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, and knowledge gained by their students. There are four types of assessment which are followed in schools – Summative, Formative, Diagnostic, and Benchmark (interim). All these serve distinct purposes and make up a comprehensive assessment of students' learning.

Formative assessment is an integrated part of the teaching and learning process which includes observations, asking questions, and the use of digital games in the classroom. This is used to measure student learning during the lesson. It is an indicator for the teacher for the effectiveness of teaching and the learner gets the clarity of their learning instantly. It is informal and designed to give students an opportunity to demonstrate their understanding of the content during the teaching-learning process. Some of these assessments use little technology inside the classroom and others are oral or paper pen tests. Round robin charts, strategic questioning, 3- way summaries, think pair share, one-minute papers, concept maps are the tools that do not use digital technology in the classroom. Collaborative boards, Classroom polls, Clickers, Plickers are some examples of formative assessment tools that use technology inside the classroom during teaching-learning situations.

Plickers can be used as a formative assessment tool as well as a digital attendance marker. It is handy, uses a very small number of digital devices in the classroom – a smartphone with wifi, laptop, and projector for the use of teachers. This tool uses a printable QR code assigned to each student to give a response to the questions. The letters A, B, C, and D are printed around the edge of the QR code image with one letter on each side of the image.

How to get Plickers cards and use them in the classroom?

Plickers is a free interactive tool for formative assessment. Students will be provided with printed Plicker code (QR code) cards and they do not

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require any digital devices. These cards can be either obtained by purchasing online ($16 for 40 cards, $ 20 for 63 cards) or by taking a print of QR code generated cards and laminating them. Teachers can download the Plickers app on their mobile and login to plickers.com using their gmail account. Creation and managing the account is free. Once the account is created, they can create a class or multiple classes, enroll students in each class. A set of questions can be created in 'New Set' which later will be stored in the library. Plickers has two versions, free and paid, a free version is Plickers and the paid version is called Plickers Pro ($6 per month for an annual subscription, $9 for one-month subscription). The only difference between these two is, in a free version there can be a maximum of 5 questions in each set of questions and in a paid version, there is no limit for the number of questions. But there is no limit for the number of question sets and also the number of classes that can be created in both versions. The only limitation of both free and paid versions is the number of students in each class is limited to a maximum of 63, as the Plickers card is generated only for 63 unique codes. The same 63 cards can be used for different classes at different times.

The teacher displays the question (Multiple choice question with 4 options – graded or Survey, Statement having True or False as a response, multiple-choice question based on Image) during the class on the display board using a projector. Students are asked to hold the cards such that their response letter (A or B or C or D) is facing top so that the teacher can scan the responses shown by students in the form of cards using Plickers App installed in their smartphone. The teacher can instantly see the students' responses and assessment data for each question which student/s has given correct response and which student/s has given wrong responses. Teachers can run the activity using a smartphone. The teacher first asks the question. Students are able to view the questions and the options displayed on the screen. Students are told to show their responses by holding the card in the proper position (alphabet of the response should face up). As the teacher starts scanning the responses, the students' name gets displayed on the left side of the display on the board, and students also come to know whether their response is recorded or not. If the response of the student is recorded, their names will be filled with blue color else it will be in black color. This helps both teachers and students to record the responses of those students whose name is in black color.

As soon as the teacher is scanning, the teacher can get the name of the student whose response is being scanned in the smart mobile along with red (wrong response) or green (correct response) dots. If responses from all the students got recorded either the teacher can go to the next question and repeat the process or can show the correct answer for the question and the number of students opted for each response.

The rationale for the use of Plickers

Plickers gives both students wise and questions wise analysis so that the teacher can do the formative assessment easily. All students will be given a chance to give a response, no noise, no copying is observed in class, Students will not feel hesitant during the process of assessment if they have given the wrong response because the name of the student who had given the wrong response will not be displayed to students. Students get to know whether their response is recorded or not, and the number of students' responses to each option for the questions. The only teacher gets to know which student has given the right response and wrong response. Teachers can show the correct response and the number of students opted for each response to the class and proceed with teaching. Plickers encourage the learning of students in the class (Wood, Brown and Grayson, 2017) and make a positive contribution to the lesson (Gurisik and Demirkan, 2019). Students enjoy their learning in the class, the fact that Plickers shows the correct and incorrect responses instantly to the students makes it more interactive. Teachers assess the knowledge gained by the students instantly and are able to clarify the doubts, if any, during the execution of the tool and give instances to make their students understand better. Participation of students in

classroom activities increases which in turn is related to the increase in knowledge and nurturing the creativity of students (Thomas, Fernandez, Salguero, Lobo and Pradas, 2016). Plickers is a useful assessment tool that gives instant feedback, saves time, facilitates the work of teachers (Demirkan, Gurisik and Akin, 2017). Graph feature of Plickers is an advantage to teachers which gives the number of students responding to each option of the question, also it gives the record of individual student responses to the questions in the given question set.

Objectives of the Study

1. To find out the attitude of student teachers towards the use of the Plickers formative assessment tool.
   (a) To find out whether there is a difference between the attitude of student teachers with differences in their subject of specialization (Science and Humanities) towards the use of Plickers in their learning.
   (b) To find out whether there is a difference between the attitude of student teachers with differences in their subject of specialization (Science and Humanities) towards the use of Plickers in the classroom during the internship program.
   (c) To find out whether there is a difference between Science and Humanities student-teachers difficulties faced in the use of Plickers.

Hypotheses of the study

(a) There is no difference between the attitude of student teachers with differ in their subject of specialization towards the use of Plickers in their learning.
(b) There is no difference between the attitude of student teachers with differ in their subject of specialization towards the use of Plickers in the classroom during the internship program.
(c) There is no difference between difficulties faced by student teachers in the use of Plickers

Methodology

The researcher used the Plickers tool for Formative assessment for B Ed sem I Classes in the subject Critical Understanding of ICT for 2 periods. The researcher while teaching the topics of Critical Understanding of ICT to the students used this tool of formative assessment, and all students participated. Students not only participated during classroom activity, but they were also made familiar with the Plickers App and some of its features (Showing correct response, showing responses graphically). Later during the Laboratory session, Practical learning experience was provided to all student-teachers. All Student-teachers created their Classroom in Plickers and downloaded the Plickers app in their smart mobiles. Initially, 8 groups of students were made, 7 members in 2 groups and 6 members in 6 groups. In each group, one student-teacher was assigned the role of teacher and the rest of them acted as students in the group formed. The leaders of the groups, assigned as teachers, enrolled the members assigned to them as students to their class. Created 5 Questions of different types (MCQ with four Options, True or False type, Graded, and Survey type of questions). Every student was provided with the Plickers cards, the trial session was worked out and student-teachers were given enough time to participate and clarify their doubts. Similarly, the workshop activity was repeated by exchanging the role of students and teachers and the activity was repeated. A Questionnaire to collect the 'Attitude of Student Teachers towards the use of Plickers' was used to collect the data from the student teachers. Google form was created and was made available to student teachers in the LMS platform in which the ICT classes were conducted for them. The responses collected were analyzed as follows.

Analysis and Findings

The data collected were analyzed using the Chi-Square test to find out the association between Science and Humanities Subject specialization and Students' attitude towards use of the Plickers and the results are tabulated in tables 1, 2, and 3.

Table 1: The attitude of Science and Humanities student-teachers towards the use of Plickers in their learning

Statement	Subject Specialization	F	SA	A	U	D	SD	Total	χ^2
It is fun to answer questions with Plickers	Science	O	5	18	2	0	0	25	**1.92 NS**
		E	4	19	1.5	0	0.5		
	Humanities	O	3	20	1	0	1	25	
		E	4	19	1.5	0	0.5		
I like the fact that Plickers shows the test results right away	Science	O	8	15	1	1	0	25	**5.33 NS**
		E	6.5	17	1	0.5	0		
	Humanities	O	5	19	1	0	0	25	
		E	6.5	17	1	0.5	0		
Plickers shows correct and incorrect answers instantly after the exam make me correct my mistakes	Science	O	5	15	2	2	1	25	**1.64 NS**
		E	5.5	15	2.5	1.5	O.5		
	Humanities	O	6	15	3	1	0	25	
		E	5.5	15	2.5	1.5	O.5		

Table 2: The opinion of student teachers towards the use of Plickers in the classroom during the internship program

Statement	Subject Specialization	F	SA	A	U	D	SD	Total	χ^2
Plickers helps in saving students' responses for later use	Science	O	6	17	1	1	0	25	**1.82 NS**
		E	5	18	1.5	0.5	0		
	Humanities	O	4	19	2	0	0	25	
		E	5	18	1.5	0.5	0		
Students feel excited when Plickers are used for the first time	Science	O	10	14	0	0	1	25	**4.42 NS**
		E	7.5	16.5	0	0.5	0.5		
	Humanities	O	5	19	0	1	0	25	
		E	7.5	16.5	0	0.5	0.5		
Plickers helps in checking students' progress and understanding of the content	Science	O	6	15	4	0	0	25	**2.07 NS**
		E	4.5	16	4	0.5	0		
	Humanities	O	3	17	4	1	0	25	
		E	4.5	16	4	0.5	0		

Table 3: The difficulties faced by student teachers in the use of Plickers

Statement	Subject Specialization	F	SA	A	U	D	SD	Total	χ^2
I can get my Plickers card scanned easily by my teacher's mobile phone	Science	O	6	10	4	5	0	25	**11.79 ***
		E	3	15.5	3	3.5	0		
	Humanities	O	0	21	2	2	0	25	
		E	3	15.5	3	3.5	0		
I can easily decide the direction of rotation of my Plickers card	Science	O	4	14	3	1	3	25	**8.76 NS**
		E	2	16.5	3	2	1.5		
	Humanities	O	0	19	3	3	0	25	
		E	2	16.5	3	2	1.5		
I have enough time to think about the answer while answering questions with Plickers	Science	O	1	18	4	0	2	25	**5.52 NS**
		E	0.5	17	5	1.5	1		
	Humanities	O	0	16	6	3	0	25	
		E	0.5	17	5	1.5	1		

(for df = 4, $\div^2$ = 9.488 at 0.05 level, 13.27 at 0.01 level)

Results and Discussions of the Study

The table 1 shows that the obtained value of Chi-square is, 1.92, 5.33 and 1.64 are less than the table value of 9.488 at 0.05 level for df = 4, therefore the null hypotheses are accepted that there is no difference between the Science and Humanities Student-teachers' attitude towards the use of Plickers in their learning as it is fun to answer questions with Plickers, Plickers shows the test results right away and Plickers shows correct and incorrect answers instantly after the exam which make them correct their mistakes. Students prefer to answer quizzes through Plickers and would enjoy their learning if Plickers are used irrespective of the field of study (Wood, Brown and Grayson, 2017), answering questions using Plickers is easy and does not stress the students (Gurisik, 2019).

The table 2 shows that the obtained values of Chi-square are, 1.82, 4.42 and 1.64 are less than the table value 9.488 at 0.05 level at df = 4, therefore the null hypotheses are accepted that there is no difference between Science and Humanities student -teachers attitude towards the use of Plickers in the classroom during the internship program as Plickers helps in saving students' responses for later use, Students feel excited when Plickers is used for the first time and Plickers helps in checking students' progress and understanding of the content. As teachers, students – teachers like to use plickers in their classroom because of its simple usage and saves time, displays the students' responses graphically and immediate feedback is given to the students (Demirkan, Gurisik and Akin, 2017).

The table 3 shows that the obtained value of Chi-square 8.76 and 5.52 is less than the table value 9.488 at 0.05 level at df = 4 and the null hypotheses are accepted for the difficulties faced by Science and Humanities student-teachers in the use of Plickers as they can easily decide the direction of rotation of my Plickers card and have enough time to think about the answer while answering questions with Plickers. Also from the table 3, the obtained chi-square value of 11.79 is greater than the table value 9.488 at 0.05 level, therefore the null hypothesis is rejected and the alternative hypothesis is accepted that there is a difference between Science and Humanities student-teachers difficulty faced in the use of Plickers as they can get their Plickers card scanned easily by my teacher's mobile phone. Students get enough time to respond to the question using Plickers cards and their cards get scanned easily by teachers (Gurisik and Demikan 2019).

Educational Implications

Based on the findings of the research the following implications were drawn:

1. Teacher educators should use Plickers Quiz to engage the student-teachers to provide meaningful assessment of their learning to develop Higher order thinking skills.
2. Student-teachers should be given proper training to use Plickers Quiz and encourage them to the Plickers Quiz during their internship programmes.
3. Student-teachers should make use of Plickers Quiz to engage their students actively and to consider assessment of learning as a small digital activity that helps students to correct their mistakes instantly.

Conclusion

Plickers is a digital formative assessment tool, irrespective of the subject of teaching it can be used by teachers to engage their students in the classroom. The results of the study indicate that irrespective of subject specialization, whether Science or Humanities student-teachers have a positive attitude towards using Plickers. They opine that they like to participate in the in-class activities which motivate them to be involved in learning. Plickers use minimum digital devices but involve every student in the participation of classroom assessment and instant feedback of the assessment will be given to students. Use of Plickers reduces classroom noise during oral questions, students will pay more attention to the teaching. Assessing individual performance of students becomes easier, less paperwork and the digital record will be maintained.

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