INTEGRATING JIGSAW WITHIN SA IN COMPARISON TO THE CONVENTIONAL SA IN TEACHING READING

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Abstract: This research aims to investigate the difference on students' reading comprehension achievement between those who were taught using integrated Jigsaw-SA and the conventional SA, which reading aspect was best practiced, and the implementation of integrated Jigsaw-SA. The research was conducted quantitatively and qualitatively. It involved experimental and control classes of the seventh graders of SMPN 4 Pringsewu. The data were collected through a reading test, observations, and interviews. The result shows that there is a significant difference on the students' reading comprehension achievement. It also verifies that integrated Jigsaw-SA promotes better comprehension in reading a text as it fosters students' achievement, especially in the aspect of identifying main idea. Moreover, the students claimed to enjoy learning through the integrated Jigsaw-SA. Thus, integrated Jigsaw-SA is an effective and fun way of fostering students' reading comprehension achievement as during its implementation it gives more chances to the students to optimize their learning experiences.

Keywords: *Integration, Jigsaw, Reading, Scientific Approach.*

Abstrak: Penelitian ini bertujuan untuk melihat perbedaan pada pemahaman bacaan siswa antara mereka yang diajar menggunakan Jigsaw-SA terpadu dengan SA konvensional, aspek membaca mana yang paling terlatih, dan pengimplementasian Jigsaw-SA terpadu. Peneltian dilaksanakan secara kuantitatif dan kualitatif. Penelitian ini melibatkan kelas eksperimen dan kontrol di kelas tujuh SMPN 4 Pringsewu. Data diperoleh melalui tes membaca, observasi dan wawancara. Hasilnya menunjukkan bahwa ada perbedaan yang signifikan pada kemampuan pemahaman membaca siswa. Hasilnya juga memverifikasi bahwa Jigsaw-SA terpadu mendorong pemahaman yang lebih baik dalam membaca teks karena hal ini mendorong pencapaian siswa, terutama dalam aspek mengidentifikasi gagasan utama. Disamping itu, siswa-siswa berpendapat bahwa belajar dengan Jigsaw-SA terpadu menyenangkan. Maka, Jigsaw-SA terpadu adalah cara yang efektif dan menyenangkan untuk mendorong pencapaian pemahaman bacaan siswa karena selama pelaksanaannya memberikan lebih banyak kesempatan kepada siswa untuk mengoptimalkan pengalaman belajar mereka.

Kata Kunci: *Jigsaw, Membaca, Pendekatan Ilmiah, Perpaduan.*

INTRODUCTION

Indonesian government has paid serious attention to the improvement of education field. This can be inferred from the curriculum that has been developed several times. In the course of history since Indonesian Independence (1945), the national curriculum of Indonesia has undergone several changes, namely in 1947, 1952, 1964, 1968, 1975, 1984, 1994, 2004, curriculum of KTSP 2006 (best known as School Based Curriculum), and the latest is curriculum 2013. Schubert (1986) states that curriculum is socially, politically and culturally constructed. It is obvious that those revisions are logically consequences of political issue, government system, social cultural, economic, science and technology change in the living of state community. Further, he also states that curriculum improvement is serious and inescapable. Thus, the presence of the factors surround curriculum must be taken into account in its creation and implementation. The market has demanded employees (graduates) with the ability to solve problems. McCain, Rice and Wilson, Lunenberg, as cited in Castronova (2010), state the need of graduates with the ability to acquire, interpret, and evaluate data to learn, reason and solve problem. Thus, schools must not isolate themselves from changes.

The latest curriculum among other things is intended to empower teachers to facilitate learners in developing their competency independently. Teachers are facilitators to help learners to develop their competency through scientific principles. The curriculum requires the learners to be active or to be the center of the learning process. Another major characteristic of the curriculum is the provision of implementing scientific models of learning, namely Scientific Approach, Problem Based learning, Project Based learning, and Discovery learning. These learning models are required to be implemented in the learning process of all subjects including language learning.

The Scientific Approach (SA) as one of the suggested models of learning in curriculum 2013 proposes a scientific learning procedure namely observing, questioning, collecting data, associating, and communicating. Decree of Education and Cultural Ministry number 103/2014 provides the guidance to implement the learning model. The procedure of implementing SA states that learners are required to be involved in the stages of observing, questioning, collecting information, associating, and communicating.

Through these series stages of SA, learners are trained to construct their own knowledge. They are trained to have high order thinking skills. The stages proposed by SA in the 2013 curriculum are actually reflection of the principles of Constructivism, in which the steps are designed in order for the learners to construct their knowledge through interaction. As Resnick, cited in Richardson (2003), defines constructivism as learning or meaning making that individuals create their own new understanding on the basis of interaction between what they already know and believe and ideas and knowledge with which they come into contact. Hoover, as cited in Mvududu & Burgess (2012), states two important notions of constructed knowledge. The first is that learners

construct new understanding using what they have already known. The second one is learners remain active throughout the process of learning. Thus, the notions of constructivism are definitely what scientific approach tries to achieve.

Taber (2011) claims that constructivism is applicable for teaching at all levels and in all disciplines when teachers pay more attention on the instructions. Therefore, the researcher assumed that SA can be well applied in language learning as well. The researcher is interested in integrating Jigsaw technique within SA as it is the learning model suggested by the latest curriculum. SA requires learners to have experience in group work learning and Jigsaw provides learning activities that oblige learners not only to work in group but to cooperate well.

Jigsaw technique provides learning experiences through cooperation and peer teaching in groups, while SA facilitates learning through the steps of observing, questioning, collecting information, associating, and communicating. Both SA and Jigsaw train students to discover and solve problems within groups. However, Jigsaw raises students' accountability and responsibility. The integration of Jigsaw technique within SA is shown in the table below.

Table 1. The Integration of Jigsaw Technique within Scientific Approach

Scientific Approach	Jigsaw Technique	Jigsaw Technique within SA
- Observing - Questioning - Collecting Information - Associating - Communicating	- Students are divided into 5 to 6 persons in a Jigsaw group - The teacher appoints one student in each group to be the group leader - The material is divided into 5 - 6 segments and distributed for each member of the group - Each student ought to study their own part of material - The teacher gives time for students to read and understand the part of the material given - Forming the expert groups in which the students should gather to those who have the same material - Students return to their home/Jigsaw group and teach their peers in their Jigsaw group - Each student presents their part - The teacher floats from group to group in order to observe the process	**Pre-Reading** - Topics are introduced - Jigsaw groups are formed - Chief of each group is appointed. - Within the Jigsaw groups, each chief leads the discussion to decide who will be responsible for certain topic described by the teacher earlier.
		While-Reading *Observing* - Expert groups are formed and chief of each group is appointed. - Chiefs of the group get instruction on how to lead the group to meet the targeted learning objectives - Reading materials are assigned to the group to be observed and discussed - Each group will have different piece of material. (descriptions of person, animal, object, and place) - Each group member will observe/read the reading material
		Questioning - Each group member is given chance to initiate their questions/opinions related to the material they observe/read.
		Collecting Information - Each member of the expert groups will make notes on important information found in the text such as the main idea,

	- The teacher gives a quiz on the material	the pronoun, details and new vocabulary
		Associating - Students' worksheet is assigned to each expert group. - Each expert group will solve the problems presented in the worksheet. - Each member of expert group must be ensured that they can deliver the material and problems they have solved well when they are back in their Jigsaw groups.
		Communicating - The members of expert group return to their Jigsaw group. - Every Jigsaw member has a chance to report the result of their expert group discussion and give explanation to any comment or questions related to his/her topic. Thus, they communicate their knowledge. - Every group member works together to solve the problems in the last worksheet assigned by the teacher which contains all of the materials discussed in the expert groups. Thus, they will make a network to work together in order to complete each other's knowledge.
		Post-Reading - Teacher leads the student to conclude the material. - Teacher gives the students chance to discuss their problems during the learning process.

Referring to the background, the formulation of the problems in this research is formulated in the following research questions:

1. Is there any significant difference between students' reading comprehension achievement after being taught through the integration of Jigsaw technique within SA and the conventional SA?
2. What aspect of reading will be best practiced through the integration of Jigsaw technique within SA?
3. How is the implementation of integrating Jigsaw technique within SA for teaching reading?

METHODS

The study was both quantitative and qualitative. It used the static-group comparison design. The researcher took two classes of grade seventh of SMPN 4 Pringsewu that had nearly the same average report score. They were class 7.1 (experimental class) and class 7.2 (control class). The data needed to answer the research questions of the research were collected through some techniques, thus it needed some instruments as well. To answer the first and second research questions, a test was administered. Further, observation and interview were conducted to answer

the third research question. The instruments needed in the research were a reading test, observation sheet, and interview guidance.

The validity and reliability of the reading test that was used as the instrument in this research to collect the quantitative data was measured. The validity of the reading test items was measured by inter-raters while the reliability of the items was measured by SPPS version 23. The validity and reliability in a qualitative research refers to the data collected. Validity refers to the authenticity of the data (Setiyadi, 2006). Reliability of the data refers to the consistency of the data. Triangulation was used to see the consistency of the data collected. Setiyadi (2006) describes triangulation as the use of two or more methods to collect data.

The data collected in the research were analyzed quantitatively and qualitatively. The quantitative data gained from the reading test were analyzed by using independent sample t-test via Statistical Package for Social Sciences (SPSS) version 23. The qualitative data, gathered from the observation and interview, were analyzed typologically.

RESULTS AND DISCUSSION

RESULTS

The result of the experimental class shows that the lowest score was 34.29 and the highest score was 97.14 while in the control class, the lowest score was 31.43 and the highest score was 91.43. It appeared that the result of both groups ranged between 30 and 100, thus we divided the range into 3 and classified the achievement into upper, medium and lower classifications.

Tables below provide the result of students' reading comprehension achievement in both experimental and control classes.

Table 2. Distribution Frequency of Experimental Class' Reading Test Scores

No	Classification	Score Interval	Frequency	Percentage (%)
1	Lower	30.00 - 53.99	2	6.06
2	Medium	54.00 - 76.99	12	36.36
3	Upper	77.00 - 100	19	57.58
Total			33	100

The table shows that out of 33 students in the experimental class, 2 students were in the lower group, 12 students were in the medium group, and 19 students were in the upper group. It means that 57.58% of the students were in the upper group. Thus, this class was successful in the test as most of the students belonged to the upper group classification.

Table 3. Distribution Frequency of Control Class' Reading Test Scores

No	Classification	Score Interval	Frequency	Percentage (%)
1	Lower	30.00 - 52.99	5	14.71
2	Medium	53.0 - 75.99	18	52.94
3	Upper	76.00 - 100	11	32.35
Total			34	100

This table shows that out of 34 students in the control class, 5 students were in the lower group, 18 students were in the medium group, and 11 students were in the upper group. It means that only 32.25% of the students were in the upper group while most students (52.94%) belonged to the medium group.

Further analysis was conducted to see whether or not the difference in the test scores showed by the two classes is significant. Independent sample t-test of SPSS version 23 was used to analyze. The following tables describe the results.

Table 4. Summary of Reading Test Scores

	Class	N	Mean	Std. Deviation	Std. Error Mean
Score	7.1 (Experimental)	33	75.9300	14.79460	2.57541
	7.2 (Control)	34	67.7306	14.18116	2.43205

This table shows the summary of both experimental and control classes' statistics. Class 7.1 (the experimental class) had 33 students and the mean score of the test was 75.93. Class 7.2 (the control class) had 34 students and the mean score was 67.73. The mean score of the experimental class was higher than the control class by 8.1994. Further result of the analysis is presented in the table below.

Table 5. Analysis of Reading Test Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Nilai	Equal variances assumed	.063	.802	2.316	65	.024	8.19941	3.53999	1.12957	15.26925
	Equal variances not assumed			2.315	64.659	.024	8.19941	3.54226	1.12433	15.27450

The result of the computation shows that the data of both classes were homogenous as the p (sig) value is 0.802. It is higher than 0.05. Thus, the results of the data analysis of students' mean score are presented in the equal variances assumed row.

The mean difference of both classes is 8.19941. It has shown that the experimental class has positive

difference, yet the difference needs to be significantly proven. The degree of freedom of data is 65. Referring to the t-value table, to be considered significant, the t-value should be at least 2.000. The table above shows that the t-value is 2.316. It is higher that the t-value listed in the t-table that is 2.000. Further, the α value (sig. two-tailed) is 0.024. It is lower than 0.05. Thus, it was proven that there is a significant difference in students' reading comprehension achievement after being taught through the integration of Jigsaw technique within SA and the conventional SA.

The researcher analyzed each aspect of reading comprehension in the students' test to answer the second research question that is to see which aspect of reading was best practiced through Jigsaw technique which was integrated within SA. The table below provides the achievement of the students' reading comprehension aspects of both experimental and control classes.

Table 6. Summary of Reading Aspects Achievement

No	Reading Aspects	Experimental Class		Control Class		Difference in Percentage (%)
		Total Correct Answer	Percentage (%)	Total Correct Answer	Percentage (%)	
1	Main Idea	167	**84.34**	123	60.29	24.05
2	Supporting Details	375	81.17	376	**78.99**	2.18
3	Reference	73	*36.87*	64	*31.37*	5.50
4	Inference	127	64.14	115	56.37	7.77
5	Vocabulary	135	68.18	128	62.75	5.43

The table shows in general that the highest mean difference is in the aspect of main idea in which it was also the aspect where the experimental class got best achievement. The least mean difference is in the aspect of supporting details in which it was the aspect best achieved by the control class although it was still below the achievement of the experimental class.

The treatment of both experimental and control classes lasted for 3 meetings. The observation was conducted during all the meetings. They are summarized in the table below.

Table 7. Summary of Students' Activities during the Learning Process

No	SA Steps	Control Class (Conventional SA)	Experimental Class (Jigsaw within SA)
1	Observing	Not all groups' members actively read the text given	All groups' members actively read the text given
2	Questioning	Few groups' members asked questions or delivered idea	All groups' members asked and most of them delivered ideas
3	Collecting Information	Most groups' members made note	All groups' members made note (mostly different)
4	Associating	Not all groups' members responsibly did the task	All groups' members responsibly did the task (some students could not do maximally)
5	Communicating	Only a few groups' members took part in the presentation	Every groups' members had a chance to present their information (some students could not deliver well)
Conclusion		Not all groups' members were	Every groups' members was

	actively involved in the whole learning process	actively involved in the whole learning process

The table shows that the implementation of SA in the control class actually triggered the students to learn actively, yet it still gave a leak for students who were less responsible to depend themselves to their peers who were more diligent as they all worked on the same texts.

The responses given by the students during the interview were analyzed and grouped. The result of the interview analysis is summarized in the following table.

Table 8. Summary of the Interview

No	Questions	Experimental Class (8 groups)		Control Class (7 groups)	
		Yes	No	Yes	No
1	Did everyone read the text carefully?	100%	0%	0%	100%
2	Did anyone ask anything about the text?	100%	0%	100%	0%
3	Did anyone try to answer the questions arise in the group?	100%	0%	100%	0%
4	Did anyone ask for clarification on the information?	100%	0%	100%	0%
5	Did everyone actively seek for information (by using a dictionary/notebook/cell phone to get the information)?	100%	0%	57%	43%
6	Did everyone make notes?	100%	0%	71%	29%
7	Did everyone involve in doing the task?	100%	0%	0%	100%
8	Did anyone have ideas on how to finish the task?	100%	0%	100%	0%
9	Did everyone cooperate well to finish the task?	100%	0%	57%	43%
10	Did anyone try to make conclusion?	100%	0%	71%	29%
11	Did everyone communicate well in delivering their information?	50%	50%	14%	86%
12	Did anyone communicate their agreement or disagreement on their peers' work?	100%	0%	29%	71%
13	- Did everyone enjoy learning this way?	100%	0%	-	
	- Did you and your friends learn better through the activities?	100%	0%		
	- What activities that you think fun to do?	Discussion			
	- What activities that you think difficult to do?	Presentation			
14	- Did everyone join the whole activities actively?	-		0%	100%
Conclusions		Everyone participated		Many students did not participate	

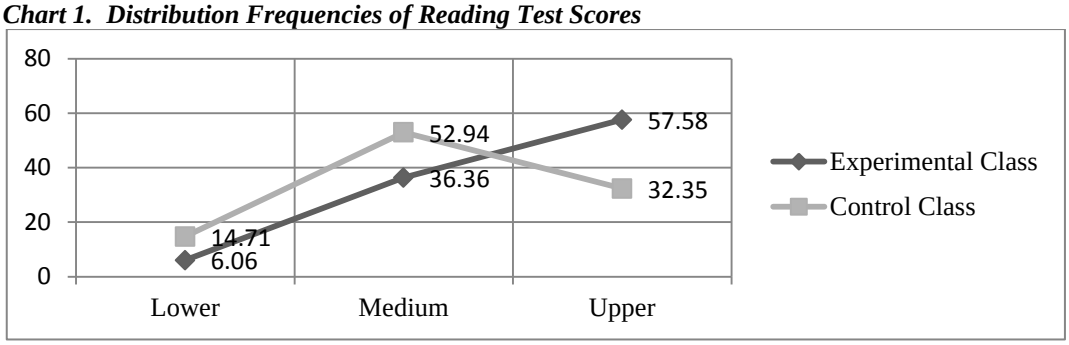
The table shows that the patterns of the students of experimental class's responses towards the questions did not much differ. They described their friends as active participants in the whole learning activities even if some students had difficulties in participating due to their low ability. They affirmed that the learning activities were fun and enjoyable as they could discuss a lot during the process. The session when they had to transfer their information turned to be the most challenging one.

The responses of the students from the control class were quite different with the experimental class. They informed that some of their peers were active and some were not. Every group affirmed that there were students who were not active during the learning process.

DISCUSSION

Comparing the two mean scores of the experimental and control classes' test, it is obvious that the students in the experimental class got better reading comprehension achievement than the control class. The mean score of the experimental class was higher than the control class. Analyzing further on the frequency of both classes' test scores, it is figured out that integrating Jigsaw within SA also did well in delivering the students to the higher level of achievement. The chart below shows the frequency of both experimental and control classes' reading test scores in percentage.

Chart 1. Distribution Frequencies of Reading Test Scores



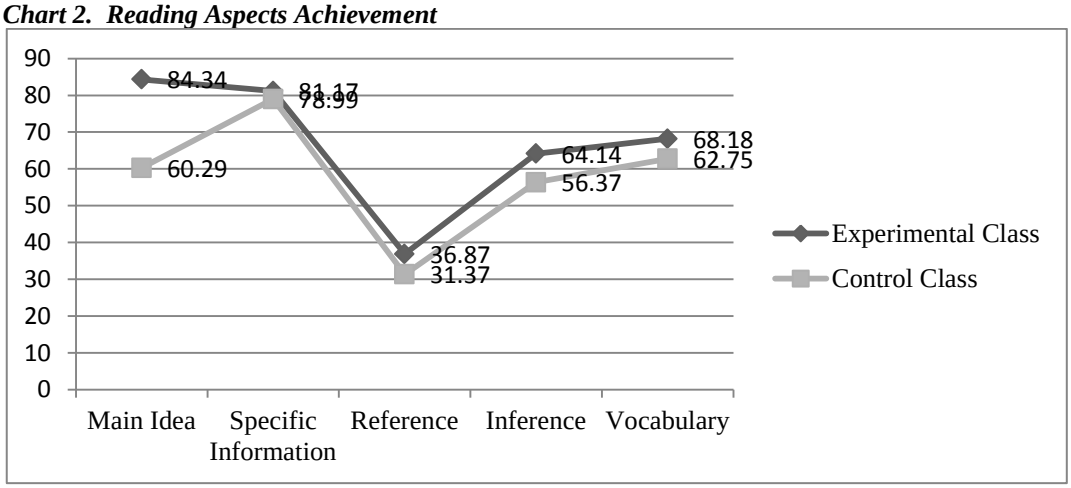
The chart shows that 6.06% of students in the experimental class belonged to the lower classification while there was 14.71% of students in the control class belonged to it. It means that more students of the control class belonged to the lower classification. Further, 36.36% of students in the experimental class belonged to the medium classification while in the control class there was 52.94% of students belonged to it. It indicates that more students of the control class belonged to the medium classification. Finally, in the highest classification that is the upper classification, 57.58% of the students in the experimental class belonged to this classification and 32.35% of the students in the control class belonged to this. It shows that more students of the experimental class belonged to this classification.

Referring to the results of the reading test from both experimental and control classes, it is assumed that both treatments were actually effective to promote students' reading comprehension achievement in regard

to the government's criteria of passing grade. The average score reached by the control class was 67.73, while the experimental class' was 75.93. Both average scores were above the national passing grade determined by the government that is 60 (Kemdikbud, 2016). It proved that both treatments had successfully brought the students to reach the minimum standard required. In addition, as the experimental class achieved higher scores, it indicates that integrating Jigsaw technique within SA had optimized the process of learning in the experimental class which resulted in better achievement. It can be said that the integration of Jigsaw within SA promoted students' reading comprehension achievement better than the conventional SA significantly.

The achievement of each reading aspect of students' result of reading test is presented in the chart below.

Chart 2. Reading Aspects Achievement



This chart shows the achievement of both experimental and control classes in all aspects of reading. In general, the experimental class achieved better than the control class. The biggest difference was in the aspect of identifying main idea while the lowest one was in the aspect of finding specific information.

This finding also implies that integrating Jigsaw technique within SA helped the students to comprehend the text better as they were successful in identifying the main idea. It supports the theory of reading by Suparman (2012) who states that the main purpose of comprehension is getting the main idea. There is no reading without understanding the main idea. Moreover, Amer and Khouzam (1993) state that main ideas are the gist of the texts that must be constructed from the information presented in the texts. Thus, it can be assumed that the students of the experimental class were able to identify the main idea of the text better.

Considering the process of learning and the result of both classes' reading test, the researcher assumes that the design of integrating Jigsaw within SA definitely had a good effect on the achievement of students' reading comprehension. The integration of Jigsaw technique within SA had optimized the process of constructing knowledge done by the students. As

all of the steps of SA require the students to be active in every steps of learning, the result showed that the students in the experimental class achieved better comprehension than the control class. This is in accordance to Vygotsky (cited in Taber, 2011) who states that each individual has to construct their own concepts which are modified by interactions with others. Thus, by having more interaction with their peers, students will construct better knowledge. The integration of Jigsaw technique within SA also facilitated the learning process to get closer to the objectives of implementing SA itself in classroom learning as required by the curriculum 2013. The integration gave more opportunities for the students to be critical, creative, collaborative, and communicative.

The results and findings of the observation and interview discussed previously have strengthened researcher's assumption that the integration of Jigsaw technique within SA has positive effect in optimizing the objectives of implementing SA in learning process as well as promoting students' reading comprehension achievement. The researcher underlined the strength points of how the implementation of integrating Jigsaw technique within SA had promoted students' reading achievement. It was obvious that Jigsaw technique within SA was well implemented to teach reading for the seventh grade students. The steps of Jigsaw technique can be well integrated into the steps of SA. The researcher noticed that there were some advantages and disadvantages during the implementation of integrated Jigsaw-SA technique. The advantages are:

1. The students are more motivated to actively participate in the learning process.
2. The students are trained to have self confidence, responsibility, and creative and critical way of thinking.
3. The students enjoy discussing with their peers. It results in maximum communication and cooperation.

Some disadvantages that were identified during the whole learning process are:

1. Classroom becomes noisy.
2. A member of the jigsaw group may hinder the discussion when s/he cannot transfer her/his information well.
3. The teacher cannot accommodate all the groups' activities at once.
4. The conclusion drawn in the groups might be different as the sources of information are merely based on the members of the groups' capability.

It was proven that integrating Jigsaw technique within SA is more effective than the conventional SA. The maximum interaction that happened during the learning process had led the students to better learning experiences which resulted in better achievement. As the result, the students of the experimental class got better achievement than the control class. The difference was not only on certain aspect of reading. All of the aspects of reading were comprehended better.

CONCLUSION

Considering the results and discussion of the implementation of integrating Jigsaw technique within SA for teaching reading, some conclusions were drawn. First, integrating Jigsaw technique within SA is an effective and fun way of teaching reading in

junior level of EFL class. It is a fruitful strategy to assist students to achieve better in reading comprehension. Moreover, the integrated Jigsaw-SA provides learning activities which are supportive to guide students to practice their skills in discovering information in all aspects of reading, especially in the aspect of identifying main idea. Further, it can be said that Jigsaw can be well implemented within SA for teaching reading. It optimizes the achievement of not only language learning goal but also curriculum 2013 goals that is to develop students' 21st century skills as the students are more facilitated to be more creative, critical, communicative and collaborative during the whole process of learning.

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