



# **Lecture method recoil: Effect of formative assessment and simulation activities on the learning outcomes of social studies students**

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Journal for Educators, Teachers and Trainers, Vol. 13 (2)

<https://jett.labosfor.com/>

Date of reception: 11 Jan 2022

Date of revision: 12 Mar 2022

Date of acceptance: 20 Mar 2022

**Sunday Obro, Enayemo, Oghenetajiri Gift (2022). Lecture method recoil: Effect of formative assessment and simulation activities on the learning outcomes of social studies students *Journal for Educators, Teachers and Trainers*, Vol. 13(2). 174 –182 .**

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## **Lecture method recoil: Effect of formative assessment and simulation activities on the learning outcomes of social studies students**

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### **ABSTRACT**

Traditionally, teachers use the face-to-face method, but with the improvement of high technology, such as internet and video technology, there is the necessity to embrace innovative and student-centred instructional methods. Furthermore, in every formal learning, achieving enduring quality in students' learning outcome depends on well-conceived approaches to assessment that have both simulation and formative functions. For active learning to occur, the teaching style needs to be innovative. The study explored formative assessment and simulation activities effect on Social Studies students' learning outcome. Quasi-experimental as a qualitative research method was employed. The Social Studies Learning Outcome Test (SSLOT) with 25 test items was the tool/instrument for data gathering with Upper Basic 8 students. The study results established that formative assessment had a significant statistical effect on learning outcome of students; simulation activities had a significant statistical effect on learning outcome of students. The study conclusion was that formative assessment/evaluation and simulation activities would advance students' learning outcomes if used for social studies instructions/classrooms; if embraced, formative assessment and simulation activities can be successfully utilized within the regular class period to boost the students learning.

**Keywords:** Lecture Activities; Formative Assessment, Simulation Activities; Social Studies Students; Social Studies Students; Learning Outcome

### **INTRODUCTION**

A persistent worry in learning is the best approach to accomplish a better outcome and moderate the number of school dropouts, and accomplishing these objectives may require an adjustment in the methods of teaching utilised for instructions. (Lopez-Perez, Perez-Lopez & Rodriguez-Ariza, 2010). Traditionally, teachers use the face-to-face method, but with the enhancement of high technology, such as internet and video technology, there is the necessity to embrace innovative and student-centred instructional methods. Furthermore, in every formal learning, achieving enduring quality in students' learning outcomes depends on well-conceived approaches to assessment that have both simulation and formative functions. Therefore, for active Social Studies learning to occur, the method or style of teaching needs to be innovative. Adewuyi (2001) notes that the form of teaching employed by teachers is a potent factor in motivating learners to learn.

Formative assessment and appraisal are the process and interaction wherein students and teachers/instructors provide answers and responses during the instructional process to organise the learning process to increase students' learning outcomes (McManus, 2008). Miller and Lavin (2007) asserted that formative assessment enlightens teachers on whether students have grasped the subject matter or learned and indicates how to plan their following lessons. An essential components of formative assessment/appraisal is posing inquiries (Hodgson & Pyle, 2010). In addition, when a new theme or topic is introduced, students must communicate their needs, goals and criteria for successful notes and results (Lombard & Schneider, 2013). One of the advantages of sharing objectives with students is that assignments are given in line with stated objectives/goals (Moss & Brookhart, 2009).

Furthermore, formative assessment, for Bordoh, Bassaw and Eshun (2013), is utilised to provide information on likely students' performance, describe the strengths or weaknesses and results given to students, telling them the items they got correct or wrong. It improves the efficiency or proficiency of instructional techniques or methods of teachers. It is the adjustment of teaching tactics during the ongoing learning process. Thus, it enables students to assess and improve their learning (Panadero & Alonso-Tapia, 2013).

Then again, simulation activities facilitate learning through representation and practice in a repeatable focused environment (Tao, Yeh, & Hung, 2015). Goldsim (2011) opined that simulation activities help comprehend and

pinpoint factors that control and direct the system and anticipate its future behaviour. Simulation activities are applicable in Social Studies instruction by providing real-life situations or settings such as involving students in a village market scene where they trade in typical articles like garri, plantain, fresh fish, and pepper. In addition, simulation activities include role-playing games. According to Okonkwo (2012), using simulation activities for instruction /classroom is challenging to comprehend employing the traditional/lecture method. Thus, they have the potentials to aid students achieve more than the conventional or traditional instructional strategies. Which proper educational methodology will allow students to widen their Social Studies content knowledge conceptions and solve real-life problems? The study, thus, explores formative assessment and simulation activities and students' learning outcomes.

### **Study Objectives**

1. Ascertained formative assessment effect on learning outcome of Social Studies students.
2. Examined simulation activities effect on learning outcome of Social Studies students.

### **RQ**

1. Is there effect of formative assessment on learning outcome of Social Studies students?
2. Will simulation activities affect learning outcome of Social Studies students?

### **Hypotheses**

1. Formative assessment will not significantly affect the learning outcome of social studies students.
2. Simulation activities will not significantly affect the learning outcome of social studies students.

## **LITERATURE REVIEW**

### **Conceptualisation of Formative Assessment**

Formative assessment is a learning assessment that entails the adjustment of instructional or learning tactics during ongoing instruction and learning. Formative assessment/evaluation are instructional processes and pedagogic strategies that enable and stimulate students and teachers to reflect on their current work and improve it in real-time (Popham, 2008, Hwang & Chang, 2011). Formative assessment could play a significant role in helping students self-regulate and gain autonomy over their learning. Feedback, reflection, and improvement on work done are valuable formative assessment practices. Nonetheless, certain individuals consider formative assessment a collection of administered assessments and recorded scores (Bennett, 2011). Others define it as an assessment process that impacts ongoing teaching and learning. Panadero and Alonson-Tapa (2013) and Johnson (2016) describe formative assessment as students' self-assessment and a portion of the pedagogic process through which teachers seek students on their work reflection. This suggests that, ultimately, formative evaluation or assessment should involve teachers and students.

Furthermore, formative assessment practices are very useful for instruction and can help to improve scholarly outcomes. Formative assessment enables students to self-assess and to advancing or boosting learning. Self-assessing properties of formative assessments lend themselves to exploring this instructional procedure and interaction as a method/strategy for learning and improving learning outcomes (Panadero & Alonso-Tapia, 2013).

### **Simulation Activities as an Instructional Technique**

Simulation activities are models of the real or natural world in which the students have specific roles to play, make decisions and address solutions to specified problems (Sulaiman, Ibi & Bukar, 2016). According to Gruss (2016), simulation activities represent real-life situations and past events to learn and understand more about them. This can be inferred from the definition given by Ogosi (2015) that simulation activities are a selective representation of reality containing only those elements of reality that the designer deems relevant to his purpose. This follows; therefore, those simulation activities are forms of experienced learning situations where a student is set in a world defined and characterised by the instructor. They represent a reality wherein students interact/intermingle while the teacher/instructor directs the world's parameters and utilises them to accomplish the anticipated learning and educational outcome. Simulation activities are laboratory experiments where students' test subjects are. This method advances the utilisation of evaluative, fundamental and critical reasoning. Furthermore, since the circumstance feels genuine, it prompts a seriously captivating interaction by providing motivating activities found enjoyable by students (Moore, Herzog & Perkins, 2013).

Simulation activities and instructional use at various levels have been recorded in history and recent literature (Chen & Howard, 2011). They have been reported and shown to have high motivational value. For Pytlikzillig et al. (2011), this feature is a furthestmost distinctive feature/attribute of simulation that is acceptable at all stages/ levels of learning. He further concludes that if any teaching technique succeeds in creating motivation in learners, all other problems may be drastically reduced while targeting instructions to students. Akinsola and Igwe (2002) suggest that teachers make learning experimental by allowing students to take control of learning. Thus, some essential learning skills inherent in simulation activities instructional technique include:

- **Communication:** Students must communicate with members of their small group, write out their group results, present group results, discuss questions and write for assessment. Hence, Adewuyi (2001) notes that the style of lecturing employed by the instructor or teacher is a potent factor in motivating learners to learn.
- **Critical/Creative Thinking:** Students must analyse, differentiate and discern.
- **Personal and Social Values and Skills:** Students must ponder the significance of competition and cooperation, learn and practise how to invite members of their group to discuss their ideas, the audience, and how to present their idea to the audience. Students are habitually deeply involved in simulation activities in school given that they are aspects and features of the activity; therefore, the opportunity/chance exists for increased activity and engagement (Ajai, 2013). Consequently, it is hoped that issues and challenges like pollution, election violence, cultism, e.t.c., can be more deeply appreciated through simulation activities.

### **Formative Activities and Learning outcome**

It is imperative to conceptualise the relationship between teachers and the content (subject matter) as a two-way relationship, teachers' capacity to explore and reinterpret the subject content is vital for effective pedagogy. Furthermore, the interaction should change from identifying a school subject with the teacher to between students and the subject. Then, at that point, there will be a continual withdrawal of the instructor/teacher from the job and the role of a mediator.

Formative assessment or appraisal motivates teacher-student relationships. The general public has considered formative assessment a critical source of motivation for learning; (Yin, Shavelson, Ayala, Ruiz-Primo, Brandon & Furtak, 2008, Olagunju, 2015). They studied twelve (12) teachers and their students in middle-level school over 65 to 249 days. They found out that varying levels of implementation may have been the factors behind the systematic review or evaluation of research evidence. Additionally, the researchers found out that a system of feedback that connects ongoing to future learning was essential to boosting students' learning (Hattie & Timperley, 2007; Havnes, et al., 2012).

### **Simulation Activities and Students Learning outcome**

The effective use of models, games, maps, charts, and simulation activities teaching was evaluated by Onwukwe (2010) on the combined effect of play simulation and teaching and analogy on achievement among Chemistry students. Three hundred and twenty (320) students from 4 schools were employed as the study sample. The study result revealed that teaching methods significantly improved students achievement in Chemistry. Specifically, the play simulation combined with analogies improved students' achievement significantly in comparison to the lecture technique/method. It was also confirmed that simulation activities gave the students equal chances of achievement.

### **Theoretical Context**

This study hinged on Gagne's (1985) theory of learning conditions and instruction. It views learning as an interface between the cognitive structure and incoming information, resulting in meaningful learning. The simulation activities environment affords ample learner opportunity for this interaction. Simulation activities teaching strategy guarantees that the material to be learned is conceptually explicit and presented with language and examples connected to the learners' prior knowledge. The central concept to be learned is also broken down into smaller units, subordinate concepts, and then arranged hierarchically from simple to complex as the activities progress.

The significance or significance of this theory is that, its propositions are considered the necessary ingredients for activity-based instruction/teaching. It provided the theoretical background or foundation for systematising formative evaluation or assessment and simulation activities. The theory has exposed that effective instruction requires the teacher to step outside the realm of his experience to the learners' world. It is the learner who must be engaged or occupied for learning to happen. The learner is the one who must commit to learning. For significant or authentic learning to happen or occur, it must be individually and separately constructed. Learning happens or occurs as students process, measure, decipher and discuss the connotation of the new information, which is intensely impacted by formative evaluation/assessment, values, expectations, sanctions, and rewards that affect the learning environment.

## **METHODOLOGY**

### **Research design**

The study utilised the quasi experiment of the pretest-posttest control group design. The instructional/teaching approaches include Formative Assessment (FA) and Simulation Activities (SA) as treatments on two groups (I and II). Simultaneously, the lecture/traditional method was employed for the third group (III) (control group). Thus, the two treatment/experimental groups were subjected to treatments, the lecture/control group did not experience any treatment. Accordingly, differences observed in the aftermath learning/study outcome were ascribed to the treatment given.

**Sample**

One hundred and ninety-four (194) Upper Basic 8 students were engaged in the study. Using the balloting technique, the students were drawn using the multistage procedure at three levels. Forty-nine (49) students were utilised for the formative assessment group, fifty (50) students in the simulation activities group and 95 for lecture method.

**Instrument**

The study instrument is Social Studies Learning Outcome Test (SSLOT). It consisted of twenty-five (25) multiple-choice items and was centred on social studies contents during experimentation. Therefore, the test items covered the contents: Culture, National Value and Health Problems. In the test construction, a table of specifications (blueprint) was designed showing the test contents and objectives to be tested. The total points earned in the test is 75. That is three (3) points for a test item.

**Instrument’s Reliability**

The test-retest technique was utilised to ascertain the instrument’s reliability using thirty (30) students outside the selected schools. There was two weeks (2wks) interval between the tests. The two-week interval was to ascertain the stability of students’ responses over time. After subjecting data to the Pearson (r) calculation, a value of 0.79 was obtained. The value means that the instrument yielded stable scores over time and, therefore, is appropriate for the study.

**Instrument Administration**

The experiment was carried out for four (4) weeks. After selecting the subjects and giving methods to them, the SSLOT was given as a pretest in intact classes of the schools randomly selected. After the pretest, teaching/treatments followed using the selected instructional treatments.

**Data Analysis**

Statistics of mean was applied to analyse the various pretest data and posttest data generated. This process helped in recognising and placing each subject according to performance level. Thus, Analysis of Covariance (ANCOVA) becomes necessary to test various hypotheses.

**RESULTS**

**RQ (1):** Is there effect of formative assessment on learning outcome of Social Studies students?

**Table 1: Descriptive Statistics of Pretest and Posttest Students instructed with Formative Assessment Scores**

Treatment	N	Pretest	Post-Test	Mean
		$\bar{X}$	$\bar{X}$	Increase
Formative Assessment	49	51.14	58.16	7.02
Lecture Method (control)	45	43.24	49.96	6.72
<b>Total</b>	<b>94</b>	<b>47.19</b>	<b>54.06</b>	<b>6.87</b>

Table 1 expresses that students instructed with formative assessment had 51.14 mean in the pretest, and 58.16 mean, in posttest, giving mean increase of 7.02. The result indicated that students instructed with formative evaluation/assessment performed better in posttest than the pretest. Thus, it was effective and improved students learning outcomes. The lecture/traditional or control method mean at pretest was 43.24 lower or smaller to the total mean of 47.19.

However, formative assessment mean at posttest was 58.16, also better to 54.06 total mean and mean increase of 7.02 better than the total mean gain (6.87); Whereas the lecture/traditional method had a total mean of 49.96 that, was lesser than the total mean of 54.06, and a mean increase of 6.72, which was lower than the total mean increase, the result in the table, thus indicates that those put through formative assessment attained a higher score than the lecture/traditional or control method. Thus, formative assessment boosted learning outcome in comparison to the lecture or control method.

**RQ 2:** Will simulation activities affect learning outcome of Social Studies students?

**Table 2: Descriptive Statistics of Pretest and Posttest Scores of Students imparted with Simulation Activities.**

Treatment	N	Pretest	Post-Test	Mean
		$\bar{X}$	$\bar{X}$	Increase
Simulation Activities	50	65.96	76.80	10.84
Lecture/Control Method	50	43.85	48.42	4.57
<b>Total</b>	<b>100</b>	<b>54.91</b>	<b>62.61</b>	<b>7.71</b>

Table 2 shows that students instructed with simulation activities had a mean of 65.96 in the pretest and 76.80 in the posttest, making the mean increase of 10.84. The result indicated that students instructed with simulation

activities achieved more or better in the posttest than in the pretest. Thus, it was effective and improved students learning outcome. Whereas the lecture/control method pretest mean was 43.85 lower than the total mean of 54.91.

However, in simulation activities at posttest, mean was 76.80, which also increased than the total mean of 62.61 and mean increase of 10.84, more significant than the total mean increase (7.71); while the lecture/control method had a total mean of 48.42 lesser than the total mean of 62.61 and mean increase of 4.57, which was lower than the total mean increase (7.71). The result in the table thus indicates that those instructed with simulation activities had a better or remarkable score than the traditional/lecture method. In effect, formative assessment boosted learning outcome more than the traditional/lecture method. The result revealed that students instructed with simulation activities improved in the posttest than in the pretest.

**Ho1:** Formative assessment will not significantly affect learning outcome of Social Studies students.

**Table 3: ANCOVA Summary of Formative Assessment on Students' Learning Outcome.**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	18488.875 <sup>a</sup>	1	9244.438	46.440	.000	.497
Intercept	8598.949	1	8598.949	43.197	.000	.315
PRETEST	13176.377	1	13176.377	66.192	.000	.413
FORMATIVE	2713.258	1	2713.258	13.630	.000	.127
Error	18711.784	94	199.062			
Total	343412.000	97				
Corrected Total	37200.660	96				

As shown in Table 3, formative assessment significantly affects students' learning outcome. This is shown by the calculated ( $F(1,96) = 13.630, p = 0.000$ ). As  $p = 0.001$  is less than 0.05, the hypothesis of no significant effect of formative assessment on students' learning outcome is thus, rejected. The implication is that treatment's effect on learning outcome was significant. Thus, the null hypothesis was rejected.

**Ho2:** Simulation activities will not significantly affect the learning outcome of social studies students.

**Table 4: ANCOVA Summary of Simulation Activities on Students' Learning Outcome.**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	38077.485 <sup>a</sup>	1	19038.742	229.442	.000	.830
Intercept	5539.189	1	5539.189	66.755	.000	.415
Pretest	7797.658	1	7797.658	93.972	.000	.500
Simulation Activities	3566.734	1	3566.734	42.984	.000	.314
Error	7799.959	94	82.978			
Total	391248.000	97				
Corrected Total	45877.443	96				

Table 4 confirms that simulation activities significantly affect learning outcome of students. Table revealed that simulation activities on learning outcome was significant ( $F(1,96) = 42.984, p = 0.000$ ). Since  $p = 0.001$  is less than 0.05, the hypothesis of no significant effect of simulation activities on students' learning outcome is therefore rejected. Thus, simulation activities significantly affect students' learning outcome.

## DISCUSSION

Hypothesis one indicates a significant formative assessment effect on learning outcome of students. Students educated with formative evaluation/assessment increased their learning outcome. This infers that formative assessment effectively improved students learning outcome. The finding corresponds with that of Yin, Shavelson, Ayala, Ruiz-Primo, Brandon and Furtak (2008), Bekoe and Eshun (2013), Quashigah, Eshun and Mensah (2013), Eboh (2014), Ugodulunwa and Okolo (2015) and Olagunju (2015) that formative assessment is significantly effective and improved learning outcome. Formative assessment effectiveness could promote classroom dialogue and set up an environment for interactive regulation by transforming students' responsibility for their learning. Also, the method is a feedback method that connects ongoing to future learning, hence, its ability to improve students learning output or outcome.

The result of hypothesis two demonstrates that simulation activities are more effective than the traditional/lecture method. Instructed students simulation activities method improved in comparison with those tutored with the lecture/traditional method. This connotes that simulation activities are effective and enhance learning outcome. This result corresponds with Umo (2001), Onwukwe (2010), Achor, Imoko and Ajai (2010)

and Adeyemi and Ajibade (2011), Ogosi (2015), Sulaiman, Ibi and Bukar (2016), Al-Zaytoonah (2016), and Obro, Ogheneakoke and Akpochafo (2021) who established a significant effect of simulation activities on students learning outcome.

Furthermore, the study result supports Kornak-Bozza (2017), Fatokun, Egya and Uzoechi (2016) and Hursen and Asiksoy (2015) that established that students tutored with simulation activities achieved better in comparison to the traditional/lecture method. In addition, Adeyemi and Ajibade (2011) and Ogheneakoke, Obro and Benike (2019) attributed simulation activities effectiveness to the unique opportunity for integrating the domain (cognitive, affective and psychomotor) and social aspects of learning. However, the result is at contrast with Umo (2001), who observed that simulation activities did not help boost students' learning outcomes. An essential feature of simulation activities that might have contributed to the effectiveness is its activity orientations and problem-solving. It offers students the opportunity to participate and be actively involved in the entire learning process. Learning built on previous experience or learning in simulation activities strategy improves learning and discourages memorisation. Teaching using this strategy ensures prudent utilisation of efforts as the students actively participate at every stage of learning.

## CONCLUSION

The study resolved or concluded that formative assessment and simulation activities boosted learning outcome of students. Formative assessment and simulation activities usage by teachers enhanced or increases learning outcome for students. Thus, both strategies boosted learning outcome significantly.

The results have provided a practical empirical basis for maximising social studies teaching and classroom learning since the group exposed to formative assessment and simulation activities instructional method performed better.

## RECOMMENDATIONS

1. Formative assessment/evaluation and simulation activities instructional methods should be incorporated into the curriculum of those institutions preparing teachers.
2. The school administrators/ managers should emphasise regular formative evaluation/assessment for regular diagnostic of students learning difficulties.
3. School-based in-service training seminars and workshops should be organised so that the instructional method of formative assessment and simulation activities can be widely used.
4. Teachers should endeavour to introduce interactive or student-centred methods in to improve learning outcome of students' in the subject.

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