

# Effective Learning and Learning Strategies for Some of the Department of Physics Students at Wolaita Sodo University

**Takele Teshome Somano**

Department of Physics, College of Natural and Computational Sciences, Wolaita Sodo University, Sodo, Ethiopia

**Email address:**

takeleteshome@gmail.com

**To cite this article:**

Takele Teshome Somano. Effective Learning and Learning Strategies for Some of the Department of Physics Students at Wolaita Sodo University. *Higher Education Research*. Vol. 6, No. 5, 2021, pp. 119-125. doi: 10.11648/j.her.20210605.14

**Received:** August 16, 2021; **Accepted:** September 10, 2021; **Published:** September 16, 2021

---

**Abstract:** Effective Learning Techniques are an integral part of learning strategies; the student needs to be involved in the presentation in order to be successful in learning. Student learning outcomes are stated in the analysis of sample data at a rate of 20.15; high score 29.00 low score 13.00; 4% received less than average (13 -14 marks), 3% received average marks (15 marks) and 93% received above average (16 - 29 marks). We investigated effective learning strategies (interview, video clip, role play, role play, five-minute paper, clear break, and group performance) and student learning outcomes (SLOs) among a sample of 158 Wolaita Sodo University Department of Physics. Answering a list of learning questions and assessment of student learning outcomes. We have made our analysis reveal a statistically significant correlation between effective learning strategies and student learning outcomes; therefore learning strategies should also provide 14% ( $R^2 = 0.139$ ) of variability included in students' learning outcomes and this has been found to be statistically significant ( $F(1,156) = 25.23$ ,  $p < 0.05$ ). In addition, video clip simulation emerged as the most effective learning strategy and had the highest association with student learning outcomes ( $r = 0.340$ ,  $p < 0.05$ ). The findings discuss the importance of effective learning strategies that promote learning among university students.

**Keywords:** Student Learning Outcomes (SLO), Practical Learning Strategies, Practical Learning, Undergraduate Degrees

---

## 1. Introduction

It's a growing awareness that students need to do more than just listen in order to learn in a changing environment. Active learning is central to the learning process and many adult learning models consider communication (active learning) as an integral part of some scholars refer to active learning as anything students do in the classroom without simply listening to the teacher's speech [6, 10]. This includes everything except listening habits that help students engage in what they are hearing, in short writing lessons where students respond to teaching topics, in complex group lessons where students apply lessons in real-life situations and / or new problems. The scholars suggest that in order for students to play an active role, they must do more than just listen: they must read, write, discuss, or participate in problem solving and participate in collaborative learning and group activities [10, 11, 13]. Most importantly, in order to participate actively, students must engage in high-level thinking activities such as

analysis, integration, and assessment. In view of the components of effective learning strategies, pointed out that good learning activities are the same, whether presented in traditional or online sites and activities must, among other things, have a definite beginning and end; a clear purpose or purpose and method of making a response [7].

### 1.1. Importance of Active Learning

Researchers have suggested that active participation strengthens learning regardless of the environment; effective learning requires "intellectual effort, promotes systematic thinking (analysis, integration, assessment)" and provides ways for the student to incorporate, application, and retention of learning [8, 17]. It was also suggested that strategies to promote effective reading (reading) in developing students' thinking and writing skills), improves student achievement, improves student motivation, changes students' attitudes, and basically, motivates students to learn more [1, 9]. in traditional and other forms of practice. Classroom strategies are important because of their strong

influence on students' learning. There are many strategies that promote effective reading are likened to speeches in promoting the art of content but are superior to lectures promoting the development of students' thinking and writing skills [8]. In addition, some cognitive research has shown that a certain number of people have learning styles that are better used with teaching techniques other than teaching. Therefore, a thoughtful and instructive approach to effective teaching requires that the knowledge be proficient in the many ways in which effective teaching strategies have been used effectively in all fields. In addition, each professional member should participate in self-expression, assessing his or her own willingness to try other teaching methods. Further reflection on the importance of active learning, research findings also show that over the decades, most college skills still teach their classes in the traditional culture mode where scholars speak and students listen, dominating college and university classes. Some scholars have criticized traditional teaching methods as tedious and found that it is one of the main causes of unemployment among Nigerian and Barbados students [3, 7]. Therefore, students may miss classes because they are less involved in class activities and if the content of the speech is inconsistent with the changing circumstances which are the hallmarks of the traditional study method.

### ***1.2. Active Learning Strategies and Student Learning Outcomes***

Described effective learning strategies as those that involve "students doing things and (making students) think about what they are doing [2, 17]. In addition to emphasize that good works develop a deeper understanding of important ideas to be studied [16]. To do this, activities should be built on important learning outcomes and develop thoughtful engagement on the part of the learner. The work suggested by [13] for example, encourages students to think about what they are learning. Embracing teaching practices that involve students in the learning process is a defining feature of effective learning.

Student Learning Outcomes (SLOs) are statements that specify what learners will be able to do, will be able to do or be able to demonstrate when they have completed or participate in a program / activity / lesson / project. Outcomes are often expressed as knowledge, skills, attitudes or values. (Student Learning & Outcomes Assessment; University of Rhode Island). Learning outcomes are therefore statements of what a learner should know, understand or be able to do at the end of a learning activity such as a lesson, module or the whole program [6]. Therefore, the learner is emphasized about the ability to do something using words such as descriptive, listing, pointing, word, remembering, analysing, counting, designing, and teaching - the purposes and purposes and uses of words such as know, understand, familiarize.

Others have found a connection between learning strategies and learning outcomes.

The scholars demonstrated significant effects of adopting a relaxation process between samples of 72 students in more than two subjects per semester [16]. Investigators assessed the effect of a 45-minute speech three times during a two-minute break in which students worked in pairs to clarify their notes. In the same way, teach a different group using direct speech and then evaluate the short-term and long-term study retention. Short-term retention was tested with a free memory activity in which students wrote down everything they could remember in three minutes after each talk and the results were obtained with a number of relevant facts recorded. Brief recall of the pause process is estimated at 108 correct facts compared to 80 correct points that should be remembered in the classroom in direct speech. Long-term retention was assessed with 65 multiple choice test questions given one and a half weeks after the last five statements used in the study. Test scores were 89.4 with a break program compared to 80.9 without a single phase break, and 80.4 with a rest process compared to 72.6 with no break another class. Researchers also found that cooperative groups encouraged discussion of problem-solving strategies and avoided embarrassing students who did not yet know all the skills needed [4, 5]. Reported that collaborations improve problem-solving at a much higher level than competition [13, 15]. The result is based on finding that people in cooperative groups produce better solutions to problems than people working in competitive environments. While discovery can provide strong support for collaborative learning, it is important to understand what the study does not directly demonstrate. It does not follow these results that students in co-operative areas develop strong, lasting and transferable problem-solving skills.

### ***1.3. Present Study***

From the literature reviewed, it is evident that active learning strategies are necessary for students' involvement during lectures and important in achieving learning outcomes, yet this had not been investigated among the Wolaita Sodo University of department of physics student to find out the relationships between active learning strategies and student learning outcomes (SLOs). In the present study, a wide variety of active learning techniques which supplement rather than replace lectures and the evidence for promoting learning outcomes were incorporated into the classroom activities. This study is therefore conducted to find out whether active learning strategies (video clip simulations, discussion, game show, clarification pauses, role play, one-minute-paper, group work,) will influence learning outcomes among some undergraduate students taking course phy2027: Learning Theory and Practice Course at the University of Ethiopia, Wolaita Sodo with the aim of finding out whether these strategies will influence the learning outcomes thereby suggesting ways of incorporating the strategies into classroom activities for effective learning. This study posits that active learning strategies will predict the student learning outcomes (SLOs).

### 1.4. Aims of Study

Specifically, these four research questions are addressed in this study:

- 1) Did the learning outcomes be achieved satisfactorily after the presentations?
- 2) Were the students actively participating in the lessons?
- 3) What learning strategies were most appealing to students?
- 4) Will there be a significant relationship between effective learning strategies (video, Chat, game, suspension specification, role play, one minute paper, team work,) and Learning outcomes?
- 5) Do effective learning strategies predict learners' learning outcomes?

## 2. Methods Participants

Of the 189 students, only 158 students participated in class activities at the Learning Theory and Practice at the University of Ethiopia, Wolaita Sodo University. Their age ranged between 18- 60 years (39.0 years, SD = 1.73 years). There were 59 men and 99 women, 90 from the College of Natural and Computational Sciences; 68 from the department of physics Section one; 59 were section one weekend students and in the same year the rest are summer students.

### 2.1. Measures

The two tools used to collect data in this study were: Practical Learning Questionnaires and the Learning Outcome Assessment Scale developed by the researcher.

### 2.2. Practical Learning Scale

Have three stages. Category A contains demographic variables such as gender, intelligence / department, year of study, nationality, age etc. effective learning strategies. Items include:

a. Did you take part in the game - the show during the talks?  
Yes No

If so, how often? -----

If not, why not? -----

b. Have you ever played a role during a talk?

Yes NO How often? -----

If not, why not? -----

Category C has seven subsidies with 42 items designed to measure different effective learning strategies (video, discussion, game play, clarification break, role play, one minute paper, group activity) to promote learning. There are six items in each subscale generated during the book review and class experience. Each foundation has three elements with beautiful words and three in this way:

Video clip matching

(i) Videos create images in the minds of taught topics.

(ii) Watching videos during study is a waste of time.

Conversations

(i) The discussions help me to clarify the points discussed

during the talk.

(ii) Conversation disrupts the flow of speech.

### 2.3. Team Work

(i) Team work enhances my learning success.

(ii) Team work limits my mental faculties.

### 2.4. Role

(i) Simulation creates excitement between subjects.

(ii) Imitation is just a form of entertainment game show.

(iii) A play show makes this talk lively and interesting.

(iv) There is no need for a game, like a child.

Five-minute paper

(i) A five-minute paper helps to monitor learners' understanding of the topic under discussion.

(ii) A five-minute paper is the same as the test.

### 2.5. Specification Pause

(i) Clarification pauses to clarify ambiguous points.

(ii) Temporary clarification stipulates the distortion of free course.

All items were rated with 4-point Likers response anchors based on strong agreement disagreeing with 4, 3, 2, and 1 corresponding schools. All negatives were changed during the analysis. Things were done during the book review and the first versions were given to experts to get suggestions and comments before getting the final version. The reliability of the instrument was confirmed by conducting driving lessons among students taking the course phy2027. The instrument produced the following coefficients of Cranach's Alpha as shown in Table 1.

**Table 1.** Alpha Reliability Coefficients of Active Learning Strategies with 7 subscales (N=40) = 40).

Sub Scale	Alpha Coefficients	No of Items
Video clips simulations	0.84	6
Discussions	0.83	6
Group Work	0.75	6
Role Play	0.77	6
Game Show	0.80	6
Five Minute Paper	0.70	6
Clarification Pauses	0.81	6

These reliable alpha coefficients of 7 subscales from 0.70 to 0.85 have shown that the metal has a high internal consistency and legitimacy was obtained by selecting items that had been processed by internal consistency (Cronbach's Alpha), which is an indication of the similarity of the material and an indication of the performance.

### Student Learning Outcome Assessment Scale

Has the second tool used to assess SLOs been specified in three lectures in the Learning Theory and Practice Course using 12 "short answers" covering Gestalt psychology, Learning Styles and Pavlov's Classical Conditioning Theory? It is important to describe the results as clearly and concisely as possible. When the results of the learning outcomes are clear and concise, it is much easier to measure reading,

(Institutional Assessment and Studies (IAS) of Wolaita Sodo University and contact outside resources.

- (i) By the end of the lesson, students should be able to break down the six rules of the Gestalt Psychologist that governs the idea for five minutes without covering it.
- (ii) At the end of the talk, students should be able to summarize three different learning styles as Wooldridge does two minutes without mixing them.
- (iii) At the end of the talk, students should be able to identify and demonstrate three steps in the concept of Pavlov's situation for six minutes without thinking. Therefore, the Student Learning Outcome Assessment Scale contains 12 "short answer" items produced in five-minute, two-minute and six-minute papers obtained from 30 testers for the three prescribed learning outcomes. The first versions are provided by an expert with suggestions and comments before coming up with the final versions. Therefore, the validity of the Student Learning Outcome Rate was determined by the selection of factors considered in a consistent internal analysis and found a sufficient alpha of 0.72 which is an indication of the similarity of the material and an indication of formal structure.

## 2.6. The Process

Informed students' informed consent to participate in the study was obtained during the interview prior to the administration of the questionnaire. Students are informed of the purpose of the lesson and that they are free to participate in the study if they wish. So out of 189 students, only 158 gave permission to participate and responded to both musical instruments. The remaining 31 students were not included in

the study due to poor academic performance. The Active Learning Strategies Scale was conducted after eight weeks of exposing students to different strategies and administrators took about 20 minutes, while the Student Learning Outcome Scale was conducted at the end of three different lessons. The students were tested in their classrooms with the help of three research assistants trained to handle instruments. Investigators took the time to explain to participants the process of answering the questions and were told that it was not intended for testing but for the purpose of the study and that the information was kept confidential. To prove this, students were told not to write their names or ID numbers on the instruments but were given codes so that they could match their answers to the three types of learning outcomes that would be included during the analysis. Investigators have ensured that all items in the dust are properly filled and that a questionnaire is compiled as soon as participants have completed it.

## 2.7. Data Analysis

Data collected were included in the SPSS 16 model, Descriptive Statistics, Pearson Product Moment Correlation Coefficient, and Regression Analysis were performed to analyse the data. All negatives were deferred during the analysis.

# 3. Results

## 3.1. Study Question 1

Have the learners' learning outcomes achieved satisfactorily?

To determine whether the objectives of these lectures were achieved at the end of each of the three lessons, the learning outcomes were measured, compiled and rated at 30 marks.

**Table 2.** Achievement of Student Learning Outcomes.

	N	Minimum	Maximum	Mean	St. deviation
Student Learning Outcome	150	13.00	29.00	20.15	3.28

The results in Table 2 showed that the objectives of the talks were achieved within this sample by an average of 20.15; high score 29.00 low score 13.00; 4% received less than average (13 -14 marks), 3% received moderate marks (15 marks) and 93% received above average (16 - 29 marks). Therefore, the learning outcomes of the students mentioned in these three statements have been satisfactorily achieved.

## 3.2. Research Question 2

Were students involved during the PSYC 2009 lectures?

Students were asked to indicate whether they participated in class activities in the implementation of effective learning strategies.

**Table 3.** Participation in Class Activities (n=158).

Class Activities/Learning Strategies	Yes	No		
	(Frequency) (%)	(Frequency) (%)	(Frequency) (%)	(Frequency) (%)
Participated in game show	147	93	11	7
Took part in discussions during lectures	151	96	7	4
Role played during lectures	134	85	24	15
Watched videos during lectures	154	98	4	2
Took part in group presentations	157	99	1	1
Participated in 5 minute paper	138	87	20	13
Clarified points during lectures	132	84	26	16
Total	158	100	158	100

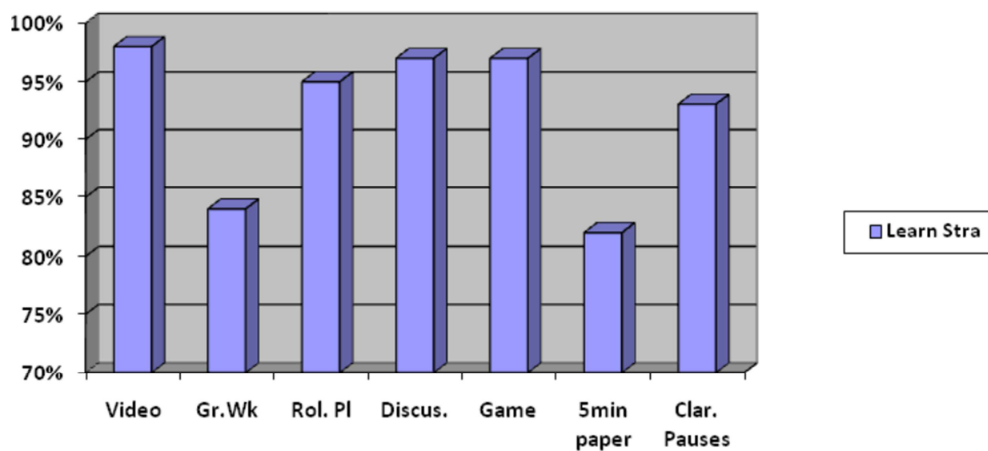
From the findings in Table 3, it is clear that students play an active role in class activities. Almost all the students participated in the group presentation and most of them were involved in other activities.

### 3.3. Study Question 3

What strategies work best for effective learning among students?

**Table 4.** Profile of students' ratings on strategy that best facilitated active learning.

S/N	Items	SD		D		A		SA	
		F	%	F	%	F	%	F	%
1	Group work facilitates active Learning	2	1	24	15	82	52	50	32
2	Role Play promotes Student engagement during lectures	0	0	8	5	93	59	57	36
3	Five-minute-paper ensures students' participation in lectures	3	2	26	16	96	61	33	21
4	Videos promote active learning during lectures	0	0	4	2	80	51	74	47
5	Clarification pauses foster active listening during lectures	3	2	8	5	103	65	44	28
6	Game show enhances active learning in this course	1	1	3	2	81	51	73	46
6	Discussion promotes active learning lectures	0	0	2	1	90	57	66	42



**Figure 1.** Active Learning Strategy that Best Facilitates Active Learning.

Results in Table 4 and Figure 1 show that video clip comparisons are at the top of the list. With 98% of students agreeing that it improves functional learning, while interviews and play. The show was ranked 2nd by 97%, impersonation was fourth by 95%, clarification was abolished by fifth by 96%, group work was sixth by 84% and last by paper was 82 minutes by 82%. Yet all strategies have been shown to promote effective learning as revealed by

students' responses that they improve learning.

### 3.4. Study Question 4

Will there is a significant relationship between active learning strategies (video, discussion, game play, temporary clarity, role play, five-minute paper, group work) and student learning outcomes?

**Table 5.** Correlations between Active Learning Strategies and Student Learning Outcomes.

Variables	1	2	3	4	5	6	7	8
1. Learning Outcomes	-							
2. Discussion	0.339**	-						
3. Group Work	0.182*	0.319**	-					
4. Role - Play	0.223**	0.481**	0.344**	-				
5. Video	0.340**	0.548**	0.313**	0.547**	-			
6. Game show	0.236**	0.486**	0.386**	0.675**	0.597**	-		
7. Five Minute Paper	0.238**	0.294**	0.152**	0.465**	0.356**	0.294**	-	
8. Clarification Pauses	0.302**	0.428**	0.202**	0.406**	0.656**	0.492**	0.397**	-

The findings shown in Table 5 comparing the video clip is at the top of the list. Only 98% of students agree that it improves effective learning, while having conversations and playing. The show was ranked second by 97%, impersonation was fourth by 95%, clarification was completed by fifth by 96%, group performance was sixth by

84% and finally on paper 82 by 82%.

### 3.5. Study Question 5

Do effective learning strategies predict learners' learning outcomes?

**Table 6.** Multiple Regression table showing active learning strategies as predictors of Student Learning Outcomes.

Variables	B	SE (b)	$\beta$	t	Sig. (P)
Active Learning Strategies	9.53	.019	.373	5.02	.001
Rsq = 0.139; *Sig p<.001 F (1,150) = 25.23,*Sig p <.001					

Note: SE (b) (inconsistent coefficients show the predicted increase in the estimated value of the predictive variable, increase the t value increase, significantly increase the effect of the predictable variance) R-sq. square of integration level and indicator that the model is suitable for future prediction of learning outcomes among university students.

The results of the retrospective table 6 analysis showed that effective learning strategies were rated as high as 14% (R-square = 0.139); (F (1,156) = 25.23, p <.05) differences in student learning outcomes. Therefore, effective learning strategies strongly predict student learning outcomes within Wolaita Sodo University of physics, Ethiopia.

## 4. Discussions

In this study investigated the relationship between effective learning strategies and student learning outcomes. The first major finding for students to participate in phy2027 studies. These departments of physics students were always involved in lessons, participated in discussions, asked and answered questions, participated, made video clips, details, 5-minute paper, team performance and games of the game and thought a lot about what they were doing. Therefore, they understood the beliefs of the various reading ideas that were discussed during the talks and thus developed a deeper understanding of the important ideas that were being studied. Not surprisingly, most students reported participating in strategic discussions and PowerPoint presentations as a tool. These findings confirm previous reports by [17] that appropriate learning strategies contribute to greater emphasis on students' assessment of their meanings, contexts and values and thus develop a deeper understanding of key concepts suggested [12]. These findings continue argue that by looking at selection, students tend to choose strategies to promote effective reading in indigenous languages and that many strategies that promote effective reading are likened to speeches in developing content knowledge but in addition to lectures to encourage students' thinking and writing skills [7, 17]. The second major result of this study was that the simulation of the video clip emerged as a very effective learning strategy. Therefore, the inclusion of these multiple media promotes the development of emotional communication and improves participants' satisfaction with the learning process. Therefore, it is not surprising that a sample of this study reported that video simulation helped you learn better for a practical purpose and was intended to provide you with practical information that works in real-world situations. This is in line with Mantsla who emphasizes that appropriate learning strategies must have a clear purpose or objective and have a way of delivering feedback [6]. Suffice it to say that the exposure of participants in the imitation of video clips gave them the opportunity to emulate and refresh the ideas that helped them learn. This suggest that in order for students to play an active role, they must do more

than just listen: they must read, write, discuss, or participate in problem-solving, advanced research activities such as analysis, integration, and assessment [2]. A sample of this study was able to work with different learning materials and learning styles; audio, visual and deep understanding.

Interestingly, the results in Table 2 show that almost all students currently participating in Activity Training are ranked sixth in the student ratings in Table 3. The main reason for this is that the sample study participated in group performance through their evaluation presentations in table 3. One of the most important findings in this study that effective learning strategies are related to SLOs. This remarkable positive link between effective learning strategies and SLOs has shown that effective learning depends on students' participation in speech. In the present study, SLOs identified by measurable terms what students would be able to do in the phy2027 study, which they would be able to do or be able to demonstrate at the end of a lecture as suggested earlier by [8]. Therefore, at the end of each of the three lectures these learning outcomes were measured, compiled and marked with a 30-point mark to determine whether the learning objectives were achieved. The outcome in Table 2 indicated that the objectives of the presentations were satisfactorily achieved within this sample. It is expected that learning strategies will be used throughout the course and a sample of this study was heavily involved in discussions from beginning to end so they were able to acquire the necessary knowledge and skills through interviews, group work, role play, video simulation - clips, etc. These findings are strongly related to the discovery of literature in the field of practice that activities should be based on critical learning outcomes and encourage thoughtful participation on the part of the learner [9]; it should encourage students to think about what they are learning and that embracing teaching methods that involve students in the learning process is a defining feature of effective learning [12]. The final result of this study was that effective learning strategies predict SLOs within this sample, rated as high as 14% (R-square = 0.139); (F (1,156) = 25.23, p <.05) difference in SLOs. The reason is that effective learning strategies focus on success compared to traditional learning methods, so effective learning strategies are important in the use of SLOs. These findings also confirmed by [1] findings that effective reading goes hand in hand with a variety of learning styles, motivating the reader. Succeeding, develops students' interest, changes students' attitudes, and, in fact, enables students to learn more; that many strategies that promote effective reading are likened to discourses that promote content art but are higher than

discourses that promote the development of students' thinking and writing skills.

## 5. Conclusion

The paper argued that the result necessity to ingenuity, Wolaita Sodo university teachers and all those interested in solving the problem of failure and effective learning in institutions to incorporate effective learning strategies into their learning activities and to apply seven effective learning strategies. Acting, interviewing, drama, role play, group work, details, one / five minute break) as a predictable learning outcome in their learning outcomes of achievable learning outcomes.

All the findings regarding the learning objectives of the fact that Wolaita Sodo University students from the tables above have shown that the learners is expected to work, work and work in his or her environment in order to learn well. The need for students to work hard cannot be overemphasized in a changing environment especially because the emergence of new technologies is changing society, and as a result, education systems are under great pressure to change the way we teach our children to adequately prepare for life, learning, and work globally. Education is about change and art, so there must be creative models for engaging in learning in the challenging environment of 21st century education.

The result also shows that in Table 5 comparing the video clip is at the top of the list. Only 98% of students agree that it improves effective learning, while having conversations and playing. The show was ranked second by 97%, impersonation was fourth by 95%, clarification was completed by fifth by 96%, group performance was sixth by 84% and finally on paper 82 by 82%. The limited use of these methods may be due to a lack of training in the use of these methods or the reluctance of educators. The main challenges of effective learning and learning strategies identified in this paper are the lack of points, poor student attitudes, poor student attention, and language barriers.

## References

- [1] Astin, A., (1993) What Are the Things in College? Reviewed for Two Critical Years, Jossey-Bass: San Francisco, CA, Bonwell CC, and JA Eison, (1991) Effective Learning: Creating Classroom Excellence, ASHEERIC Higher Education Report No. 1. Retrieved from: [http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince\\_AL.pdf](http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince_AL.pdf)
- [2] Rebuke, A. W. & Gamson, Z. F. (1987). Seven principles of good practice. AAHE Bulletin, 39 (7), 3-7.
- [3] Fayombo, GA, Babalola, BJ, Olaleye, Y. L. (2012). Cross-sectional study on the causes of unemployment among university students in Barbados and Nigeria. Journal of Education and Development Psychology 2 (1), 122 -136 DOI: 10.5539/jedp.v2n1p122. Available at: <http://www.ccsenet.org/journal/index.php/jedp/article/view/16608/11075>
- [4] Feden, P., and Ro Vogel, (2003) Teaching Methods: Introducing the Science of Understanding to Promote Student Learning, McGraw Hill Higher Education.
- [5] Hartley, J., and Davies, I., (1978) Taking a Note: Important Updates. Programmed Learning and Educational Technology, (15) 207-224.
- [6] Hunter, S. & Tetley, J. (1999). Speeches. Why don't the disciples come? Why do the disciples attend? Proceedings of the HERDSA Annual General Conference held in Melbourne on 12-15 July 1999, Higher Education Research and Development Society of Australia, Milperra, NSW.
- [7] Harasim, L., Starr, R. H., Teles, L. & Turnoff, M. (1997). Learning networks: A field guide for leaching and online learning. Cambridge, MA: Massachusetts Institute of Technology.
- [8] Kennedy, D. (2006) Learning Outcomes at UCC. International Symposium on Learning Outcomes UCC10 –11 Feb 2006. Retrieved from: <http://www.nairtl.ie/documents/LOConf06presentations/KennedyDeclan.pdf>
- [9] Millis, B., and P. P. Cottell, (1998) "Partnerships in Higher Education Learning," American Council on Education, ORYX Press.
- [10] Paulson, D. R, and Faust, J. L. (2010). Practical Learning in the College Class. California State University, Los Angeles, CA, 90032 Retrieved from: <http://www.calstatela.edu/dept/chem/chem2/Active/>
- [11] Qin, Z., Johnson, D., and Johnson, R., (1995) "Cooperation Comparing Competitive Efforts and Problem Solving," Educational Research Review, 65 (2) 129-135.
- [12] Ruhl, K., C. Hughes, and P. Scholes, (1987) "Using the Pause Procedure to Enhance Lecture Recall," Teacher Education and Special Education, Vol. 10, winter, pages 14-18.
- [13] Cress well, J. W. (2003). Research Design: Appropriate, Measurement, and Mixed Methods. Thousands of Oaks, CA: Sage.
- [14] Student learning and assessment results; University of Rhode Island Office of Student Learning & Outcomes Assessment University of Rhode Island, Kingston, RI 02881 Retrieved from: [http://www.uri.edu/assessment/media/public/page\\_files/uri/outcomes/student/outcomes/outcomestools/Handout\\_Student\\_Learning\\_Outcomes\\_101\\_\\_8\\_7\\_06.pdf](http://www.uri.edu/assessment/media/public/page_files/uri/outcomes/student/outcomes/outcomestools/Handout_Student_Learning_Outcomes_101__8_7_06.pdf)
- [15] Wiggins, G., and J. McTighe, (1998) "Understanding by Design," Merrill Education / ASCD College Textbook Series, Alexandria, Virginia.
- [16] Takele T. (2021). Promoting active learning methods. Global Research and Development Journal for Engineering | Volume 6 | Issue 9 | August 2021 ISSN: 2455-5703.
- [17] Bonwell C. C., and J. A. Eison, (1991) Active Learning: Creating Excitement in the Classroom, ASHEERIC Higher Education Report No. 1. Retrieved from: [http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince\\_AL.pdf](http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince_AL.pdf)