



Project Based Learning Vs Summative Evaluation: Assessing, Benefit And Measuring Practical Knowledge Of Students

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Abstract

Evaluation is an essential part of our educational system which aggregates the whole syllabus. The ultimate goal of it is the evaluation of the all-around development of students. For this, Summative Evaluation and Project work play an important role. Summative Evaluation takes place when the syllabus is over. The purpose of Summative Evaluation is to determine whether the students have completed a particular course of studies successfully. It is designed to determine the extent to which the instructional objectives have been achieved and is used primarily for assigning course grades or certifying students' mastery of the intended learning outcomes. Projective methods are those methods in which they provide the subject with relatively indefinite and unstructured material and then allow students to build a structure of the material in any way according to the syllabus-related project, his feelings, attitude etc. Project-based Work is a field experience which aims to provide students with the opportunity to synthesise knowledge from various areas of learning and it helps to critically and creatively applies in real-life situations.

Keywords: Summative evaluation, project based work, practical knowledge, higher secondary school Students.

Introduction

Our India's examination system's reforms are based on the British period (Resnik, 1991). After the independence period of India, the reform of the examination system was the first development, in 1958, the establishment of the Central Examination Unit by the Ministry of Education, Govt. of India. At present, this reform has spread to all the states of India, in the case of West Bengal, the same effect is noticeable. The Council for Boards of School Education (COBSE) is an autonomous body that functions in tandem with the Union Ministry of Human Resources Development.

The Education Commission highlight the achievements of the unit by stating that it has worked with thousands of higher secondary school teachers in seminars and workshops, introduced hundreds/of lectures of training colleges to the new techniques, established a large pool of test item trained paper setters of different boards of

secondary education published a good deal of literature on evaluation and carried out or sponsored several studies and investigations on various practical problems concerning evaluation(Kumar, 2017). The West Bengal Board of Higher Secondary Education are moving fast ahead in implementing examination reform and has launched comprehensive programmes for the orientation of teachers after the circulation of sample evaluation materials to all the secondary and higher secondary schools in their areas (Greenstein, 2012). In this reform of curriculum, a massive effort must be made to reach as many teachers as possible. One such venture is the development and circulation of literature and sample evaluation material (NCF,2005). This brochure on project work is part of some effort. As indicated this work is a learning experience which aims to provide students with the opportunity to synthesise knowledge from various areas of learning, and critically and creatively apply it to real-life situations. This process, which enhances students' knowledge and enables them to acquire skills like collaboration, communication and independent learning prepares them for lifelong learning and the challenges ahead(Ngereja, et.al. 2020).

Learning is one type of mental and continuous process. The various types of learning processes are discussed in psychology. For gathering some new experiences, the man uses the learning process. In education, learning is considered an essential process (Lim,2012). The teaching process is followed among the students for the help of learning in the field of education. As a result of both processes, some changes are shown among the student. The changes are spread in their different personalities. The teachers should be well conversant with the way, nature and quantity of changes.

The teachers feel it's necessary for performing their duties. Such feelings are controlled at present as it was uncontrolled and dis-systematic vastly. But the uncontrolled methods are not removed till now. At present we are recognized with the controlled system which is called evaluation. Project-based learning is a teaching and learning method that focuses on the central concepts and principles of a discipline, involves students in problem-solving and other meaningful tasks, and allows students to work autonomously to construct their learning (Larmar, 2016). It engages students in the real world. It is a style of inquiry-based and student-centred learning. In project-based learning, students work in groups over a set period on a project designed to solve a problem or search for a challenging question(Bender, 2012). Whereas, summative evaluations take place at the end of a specific time frame and do not give much feedback to students (Baht, 2019). So, some changes come in the educational system after the introduction of the project method. At present, different options arrived that the performance of project work is not evaluated properly. Somebody says that the evaluation system is not correct and another says that the pressure on learning is made on the students after introducing project work. As such the researcher is researching the different options for this evaluation system.

Concept of Summative Evaluation

This type of evaluation takes place at the end of the syllabus or session to measure the overall achievements of the students in the examination. External or annual examinations are examples of summative evaluation (Baht, A.B. 2019). The purpose of this evaluation is to certify fail or passed the examination. It evaluates the students learning, knowledge, proficiency, or success after an instruction period. Summative evaluation can help us collaborate on learning and improve teaching skills from year to year. When summative evaluation shows consistent gaps between students' knowledge and learning targets, schools may turn to improved curriculum planning or new curriculum to fill those learning gaps (Trumbull, at.el. 2013).

Concept of Project work

The project method is a method in which the school provide the subject with relatively indefinite and unstructured material and then allows students to structure the material in any way he likes the subject related project his feelings, attitude etc. in doing so, they unconsciously project themselves and reveal their personality. It is a problematic act carried to completion in its natural setting. Here students get learning opportunities based on their experience and gain field experience through handwork.

Aim of Project Work

Project Work is a learning experience which aims-

- It helps to develop a group and systematic ways learning mindset among the students.
- Allow synthesising knowledge from several of learning and it critically and creatively applies to real-life situations.
- Helps them to acquire social awareness and prepares them for lifelong learning and the challenges ahead.
- Good collaboration, communication with people and increasing independent learning.

Learning Outcome of Project based work

The learning outcomes identify the key areas of learning in the syllabus. There have four learning outcomes separately articulated: knowledge application, communication, collaboration and independent learning. These learning outcomes exist in dynamic interplay rather than as compartmentalised and distinct categories. The following are the learning outcomes for project work:

Table-1 Outcome programme of project based work

Domains	Learning Outcomes
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Knowledge Application	Students will be able to learn how to make links across different areas of knowledge and generate, develop and evaluate ideas and apply these skills to the project work.
Communication	Students will be able to communicate effectively and clear present ideas and coherently to a specific audience in both written and oral forms.
Collaboration	Students will be able to collaborative skills by working in a team to achieve common goals.
Independent Learning	Students will be able to learn and reflect on their learning and take appropriate actions in any field.

Characteristic of Project based learning

- Engages students in complex, real-life problems; where possible, the students select and define issues or problems that are meaningful to them.
- Require students to use inquiry, research, planning skill, critical thinking and problem-solving skills as they complete their project work.
- Provide opportunities for students to learn and practice interpersonal skills as they work in cooperative teams.
- Includes learning standards and outcomes for the school/state and are stated at the beginning of the project.
- Project learning is an attempt to explore the psychological reality or the underlying basic personality factor of the individual which consist of his hopes, aspiration, needs, motives, moods, attitude, conflict, complex fear etc.

Benefit of the project based learning

- Deeper engagement and interaction with learning content
- Encouragement of students in higher-order thinking and problem-solving skills.
- Development with peer and professional networks.
- Engagement with potential employers and career mentors.
- Enhanced autonomy and agency in learning.
- A sense of mastery of learning and self-efficacy.

Statement of the problem

The statement of the problem is stated as, "Project based learning vs Summative Evaluation: Assessing, benefit and measuring practical knowledge of students".

Objectives of this study

The study cannot be preceded without any objectives. As such, firstly determine the purpose of the work right to be done.

In this study, select some objectives as follows.

1. To determine the relationship between summative evaluation and project-based work.
2. To examine the significance of the difference in the scores of summative evaluation and project-based work.
3. To determine the significant difference between the scores of summative evaluation and project-based work on the criteria of gender, locality and stream of studies.

Null Hypothesis of this study

0H1: There is no relationship between summative evaluation and project-based work.

0H2: There is no significant difference between summative evaluation and project-based work based on the scores of the boys.

0H3: There is no significant difference between summative evaluation and project-based work based on the scores of the girls.

0H4: There is no significant difference between summative evaluation and project-based work based on the scores of rural boys.

0H5: There is no significant difference between summative evaluation and project-based work based on the scores of rural girls.

0H6: There is no significant difference between summative evaluation and project-based work based on the scores of urban boys.

0H7: There is no significant difference between summative evaluation and project-based work based on the scores of the urban girls.

0H8: There is no significant difference between summative evaluation and project-based work based on the scores of sciences streams.

0H9: There is no significant difference between summative evaluation and project-based work based on the scores of arts streams.

Delimitation of the study

a) **Sample:** This study intended to compare end-term exams and project-based work of higher secondary levels. Only three schools are selected from Purba Medinipur district. These schools are selected as the sample of the study.

b) **Class:** the class selected for XII

c) **Area:** the sample is selected from urban & rural areas in Purba Medinipur.

d) **Number of Students:** Three schools-one boys' and one girl from urban areas while another boy and another girls' school from a rural area are selected.

e) **Number of students:** 252 students.

Methodology of the study

Sample

In the systematic random sampling procedure initially, and then three higher secondary schools are selected from Purba Medinipur, West Bengal. And then lottery method was applied for the selection of these schools. Among the 252 students, 129 are girls 123 are boys, urban students' are 128 and that rural students are 124. Science students are 132, and those arts students are 120. All the students are taken from class XII.

Variables

A) Independent variables

The following independent variables are considered for the study:

- (i) Areas (rural and urban)
- (ii) Gender (girls and boys)
- (iii) Stream (science and arts)

B) Dependent Variables

The following dependent variables are considered for the study:

- (i) Summative evaluation
- (ii) Project based work

C) Intervening Variables

The following intervening variables are considered for the study:

- (i) Learner
- (ii) Teacher
- (iii) School
- (iv) Content
- (v) Environment

(vi) Motivation

(vii) Maturation

Instrument

Two types of tools are using by the researcher in the study as follows:

Scores of Summative Evaluations.

Score of project based work.

Procedure of the Study

The researcher with the cooperation of the authority of Higher Secondary school, selected for conducting the study fixed up the programme for experimentation and administering the tools. The researcher himself visited the institution and discussed on research activity and objectives of the study with the respective teachers of these schools. They are kind enough to extend their whole-hearted cooperation to the investigator for the time of data collection.

Results

This part presents the analysis and interpretation by the means of descriptive statistics by taking into consideration the score of the variables.

Result: Table-1

Sample	No of Students	Summative Evaluation		Project based work	
		M	S.D.	M	S.D.
Total Students	252	293.77	55.62	134.12	9.92
Boys	123	298.30	57.7256	134.08	9.88
Girls	129	289.4574	53.4069	134.16	10.00
Rural Boys	59	296.62	56.84	132.91	9.6852
Rural Girls	65	286.3692	47.9321	133.0462	9.3766

Urban Boys	64	299.8438	58.928	135.1719	10.0278
Urban Girl	64	292.5938	58.6631	135.2969	10.549
Science	132	295.2424	59.7653	142.8788	4.2999
Art	120	292.1583	50.8777	124.5	3.0126

Table-1 stated that the mean and S.D. of summative evaluation was greater than project based work of all sample.

Inferential Statistics

Table-2: Showing 't' value between summative evaluation and project based work on basis of score of total students

No of Total Students	Summative Evaluation		Practical project work		Df	t
	M	S.D.	M	S.D.		
252	293.77	55.62	134.12	9.92	502	44.85

Table-2: from the table or critical value of t with 502 degrees of freedom at 5% level of significance is 1.96. Computed value t, i.e. greater than the critical table value 1.96 and hence is significant. Therefore, the null hypothesis was non accepted and as a result.

Table-3: Showing 't' value between summative evaluation and project based work on basis of score of total boys.

No of Total Boys	Summative Evaluation		Practical project work		df	t
	M	S.D.	M	S.D.		
123	298.30	57.7256	134.08	9.88	244	31.09

Table-3: From the table 3 the critical value of t with 244 degrees of freedom at 5% level of significance is 1.97. Computed value t, i.e. greater than the critical table value 1.97 and hence is significant. Therefore, the null hypothesis was rejected as a result.

Table-4: Showing 't' value between summative evaluation and project based work on basis of score of total girls

No of Total Girls	Summative Evaluation		project based work		df	t
	M	S.D.	M	S.D.		
129	289.4574	53.4069	134.16	10.00	256	32.46

Table-4: From the critical value of t with 256 degrees of freedom at 5% level of significance is 1.97. Computed value t, i.e. greater than the critical table value 1.97 and hence is significant. Therefore, the null hypothesis was rejected as a result.

Table-5: Showing 't' value between summative evaluation and project based work on basis of score of total rural boys

No of Total Rural boys	Summative Evaluation		Practical project work		df	t
	M	S.D.	M	S.D.		
59	296.62	56.84	132.91	9.6852	116	21.80

Table-5: From the critical value of t with 116 degrees of freedom at 5% level of significance is 1.98. Computed value t, i.e. greater than the critical value 1.98 and hence is significant. Therefore, the null hypothesis was non accepted as a result.

Table-6: Showing 't' value between summative written exam and project based work on basis of score of total rural girls

Total no rural girls	Summative Evaluation		Practical project work		df	t
	M	S.D.	M	S.D.		
65	286.3692	47.9321	133.0462	9.3766	128	25.3095

Table-6: From the critical value of t with 128 degrees of freedom at 5% level of significance is 1.98. Computed value t, i.e. greater than the critical table value 1.98 and hence is significant. Therefore, the null hypothesis was rejected as a result.

Table-7: Showing 't' value between summative written exam and project based work on basis of score of total urban boys

No of Total urban boy	Summative Evaluation		Project based work		df	t
	M	S.D.	M	S.D.		
64	299.8438	58.928	135.1719	10.0278	126	22.0388

From table 7 the critical value of t with 126 degrees of freedom at 5% level of significance is 1.98. Computed value t, i.e. greater than the critical table value 1.98 and hence is significant. Therefore, the null hypothesis rejected as a result.

Table-8: Showing 't' value between summative evaluation and project based work on basis of score of total urban girls

No to total urban girls	Summative Evaluation		Practical project work		df	t
	M	S.D.	M	S.D.		
64	292.5938	58.6631	135.2969	10.549	126	21.1122

From table 8 the critical value of t with 126 degrees of freedom at 5% level of significance is 1.98. Computed value t, i.e. greater than the critical table value 1.98 and hence is significant. So, the null hypothesis was rejected as a result.

Table-9: Showing 't' value between summative evaluation and project based work on basis of score of total science students

No of total pupil of science stream	Summative Evaluation		Practical project work		df	t
	M	S.D.	M	S.D.		
132	295.2424	59.7653	142.8788	4.2999	262	29.2145

From table 9 the critical value of t with 262 degrees of freedom at 5% level of significance is 1.97. Computed value t, i.e. greater than the critical value of 1.97 and hence, it is significant. So, the null hypothesis was rejected and as a result.

Table-10: Showing 't' value between summative written exam and project based work on basis of score of arts students

No of total students of Arts stream	Summative Evaluation		Practical project work		df	t
	M	S.D.	M	S.D.		
120	292.1583	50.8777	124.5	3.0126	238	36.0353

From table 10 the critical value of t with 238 degrees of freedom at 5% level of significance is 1.97. Computed value t, i.e. greater than the critical value 1.97 and hence is significant. So, the null hypothesis was rejected as a result.

Sample	No of students	r	Remarks
Total student	252	0.2275	Low correlation
Boys	123	0.2839	Low correlation
girls	129	0.185	Slight
Rural boys	59	0.1563	Slight
Rural girls	65	0.3869	Low correlation
Urban boys	64	0.4279	Moderate correlation
Urban girls	64	0.0095	Slight
Science	132	0.3315	Low correlation
Arts	120	0.1004	Slight

The value of 'r' is a Low correlation relationship which is a marked relationship between summative evaluation and project-based work. The value of 'r' of total boys is 0.2839 i.e. the coefficient of correlation is low correlation which is a definite but small relationship. The value of 'r' of total girls is 0.185 i.e. the coefficient of correlation is a negligible relationship. The value of 'r' of rural boys is 0.1536 i.e. the coefficient of correlation is low correlation which is a definite but small relationship. The value of 'r' of total rural girls is 0.3839 i.e. the coefficient of correlation is a low correlation. The value of 'r' of urban boys is 0.4279 i.e. the coefficient of correlation is a moderate correlation. The value of 'r' of urban girls is -0.0076 i.e. the coefficient of correlation is a negligible relationship. The value of 'r' of total students of the science stream is 0.3315 i.e. the coefficient of correlation is a low correlation. The value of 'r' of total students of the arts stream is 0.1004 i.e. the coefficient of correlation is almost negligible relationship.

Finding

The study was conducted as a descriptive one. After data collection, the statistical test was applied to 252 students of class XII of higher secondary schools only. The hypotheses were farmed out and tested with the help of mean, S.D., coefficient of correlation, and t-test. After analysis of the data, the following observation was made and consolations were drawn from them-

Table-1 stated that the mean and S.D. score of the summative evaluation was greater than the project-based work of all samples.

Table-2: the critical value of t with 502 degrees of freedom at 5% level of significance is 1.96. Computed value t, i.e. greater than the critical value 1.96 and hence is significant. Therefore, the null hypothesis was rejected as a result.

Table-3: the critical value of t with 244 degrees of freedom at 5% level of significance is 1.97. Computed value t, i.e. greater than the critical table value 1.97 and hence is significant and the null hypothesis is rejected as a result.

Table-4: from the critical value of t, with 256 degrees of freedom at 5% level of significance is 1.97. Computed value t, i.e. greater than the critical table value 1.97 and hence is significant. So, the null hypothesis was rejected as a result.

Table-5: from the table value of t with 116 degrees of freedom at 5% level of significance is 1.98.

Computed value t, i.e. greater than the critical table value 1.98 and hence is significant and the null hypothesis is rejected as a result.

Table-6: from the table critical value of t with 128 degrees of freedom at 5% level of significance is 1.98.

Computed value t, i.e. greater than the critical table value 1.98 and hence is significant. Therefore, the null hypothesis was rejected as a result.

Table-7: from the table value of t with 126 degrees of freedom at 5% level of significance is 1.98.

Computed value t, i.e. greater than the table value 1.98 and hence is significant. Hence, the null hypothesis was rejected as a result.

Table-8: we find from the table critical value of t with 126 degrees of freedom at 5% level of significance

is 1.98. Computed value t, i.e. greater than the critical value 1.98 and hence is significant. Therefore, the

null hypothesis was rejected as a result.

Table-9: from the table value of t with 262 degrees of freedom at 5% level of significance is 1.97.

Computed value t, i.e. greater than the critical table value 1.97 and hence is significant. So, the null hypothesis was rejected as a result.

Table-10: from the table critical value of t with 238 degrees of freedom at 5% level of significance is 1.97.

Computed value t, i.e. greater than the critical table value 1.97 and hence is significant. Hence, the null hypothesis was rejected as a result.

Significance of the study

Project-based work involves a curriculum reformed in every syllabus in the W.B. board of higher secondary education. Students get an opportunity to gain knowledge by going to the field in every subject with involvement to project work. As a result, interest a concentration had been seen in student life. Students have collected data from various fields like school, parents, society etc. and they became skilful in every subject by getting the new field experience.

In project work, students have to depend on the both oral and written method in school. During the time of the project work, they faced many problems, and they achieved their knowledge with the help of their school guide. In this case, students developed their self-consciousness individually.

Conclusion

A traditional evaluation system checking the performance of students is not always the best way. The exam can help judge the knowledge of students, but they may not alone be effective in retaining it. Project-based learning is to enrich the knowledge of the students in various subjects through practical work. Students face endless problems while they are working on project work, but only constant practice and learning can help them solve these problems. Similar, in real-life situations where uncertainty is inevitable, project-based learning helps in images the students face reality with much more confidence. Summative assessments evaluate students' progress with identified success skills, attitudes, and performance objectives. It is the measurement at end of the syllabus. Students acquire mastery level learning through summative evaluation. But project-based learning allows the students to engage in the teaching process with much more enthusiasm and flexibility to use their learning styles to solve a problem. Hence, subjective knowledge is required for summative evaluation as practical knowledge requires for project-based learning.

References

Gupta, A.K. (1975): Examination Reform, Direction, Research and Implication, Sterling Publication, new Delhi.

- Resnick, L.B. (1991). Perspectives on Socially Shared cognitive. In L.B.Resnick, J.M. Levine, & S.D. Teasley, Shared Cognition : Thinking as social practice. pp. 1-20. Washington,DC.
- NCF(2005) National Curriculum Framework. New Delhi: NCERT.
- Bender, W.N. (2012). Project-based leaning: Differentiating Instruction for the 21st Century. Thousand Oaks,CA: Corwin Press.
- Lim, H.-J.L. (2012,Oct). peer Evaluation in Blended Team Project-Based Learning: What Do Students Find Important? Journal of Educational Technology & Society, 15(4), 214-224.
- Greenstein, L. (2012). Assessing 21st Century Skills: A Guide to Evaluating Mastery and Authentic Learning. Thousand oaks, CA: Corwin.
- Trumbull, E., & Lash, A. (2013). Understanding Formative assessment: Insights from learning theory and measurement theory. San Francisco: WestEd.
- Larmar, j. (2016). It's a project Based World. Educational Leadership, 73(6),pp.66-70.
- Kumar, M.(2017). Reforms in Evaluation: CCE A New scheme of Evaluation. Motherhood International Journal of Multidisciplinary Research & Development. V-1(III), pp.60-68.
- Baht, A.B.(2019). Formative and Summative Evaluation techniques for improvement of learning process. European Journal of Business & Social Sciences. Vol-07(05),pp.776-784.
- Ngereja, B; Hussein, B; Anderson, B.(2020). Dose project based learning (PBL) promote student Learning? A performance Evaluation. Education Sciennce. V-10(330),pp.2-15.
- Aggarwal, J.C. (2014): Essentials of Examination System, Evaluation, Test and Measurement, Vikash Publishing Pvt. Ltd. , New Delhi.
- Woolfolk, A (2015) : Educational Psychology, Twelfth Edition, Pearson, Tamil Nadu.
- Singh,A.K.(2016):Test, Measurement and Research Methods in Behavioural science, Bharati Bhawan Publishers and Distributors, Patna.
- Mangal, S.K. (2016) : Statistics in Psychology and Education, PHI Learning Private Limited, Delhi.
- Garrett, H.E, (2016) : Statistics in Psychology and Education, Sura jeet Publications, Delhi.
- Mangal, S.K. (2016) :Research Methodology in Behavioural sciences, PHI Learning

Private Limited, Delhi.

Mangal, S.K. (2016) : Advanced Educational Psychology, second edition, PHI Learning Private Limited, Delhi.

Aggarwal, J.C. (2017): Essentials of Educational Technology, Third Edition, Vikash Publishing Pvt. Ltd. , New Delhi.

[https://www.moe.gov.sg/education/programmes/project work](https://www.moe.gov.sg/education/programmes/project%20work), 25.4.2018

<http://shodhganga.inflibnet.ac.in/handle/10603/28218>, 26.4.2018

<http://shodhganga.inflibnet.ac.in/handle/10603/7266>, 26.4.2018

http://creativeeducator.tech4learning.com/v07/articles/Assessing_Student_Project_Work, 26.04.2018

[https://www.pentvars.edu.gh/index.php/academics/research student-research-project-work](https://www.pentvars.edu.gh/index.php/academics/research/student-research-project-work), 28.04.2018

[https://oupeltglobalblog.com/2010/11/26/introduction-to project-work-what-is-a-project/](https://oupeltglobalblog.com/2010/11/26/introduction-to-project-work-what-is-a-project/), 28.04.2018

[http://www.state.wv.us/admin/personnel/jobs/exam/writ. htm](http://www.state.wv.us/admin/personnel/jobs/exam/writ.htm), 31.04.2018

[https://en.wikipedia.org/wiki/Test_\(assessment\)](https://en.wikipedia.org/wiki/Test_(assessment)),01.05.2018