

Effect of Continuous and Comprehensive Evaluation on the Academic Achievement of College Going Students in Psychology of Instruction: An Experimental Study

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Cite this paper as: Jagjivan Tirkey, Prof. Khem Chand Kapoor, (2025) Effect of Continuous and Comprehensive Evaluation on the Academic Achievement of College Going Students in Psychology of Instruction: An Experimental Study. *Journal of Neonatal Surgery*, 14 (32s), 1965-1971.

ABSTRACT

It was an experimental study which the investigations carried out with an aim to find out the effectiveness of CCE on the academic achievement of college-going students in 'Psychology of Instruction' as the Course of UG 3rd Semester students. A sample of 26 UG 3rd Semester was drawn by making use of simple random sampling technique and divided the sample into two-groups, i.e., experimental group and control group. Experimental group was provided an intervention (CCE through formative testing) and the control was run as usual in conventional way of teaching and learning process. At the end of the experiment, it was found that the CCE as the scheme of evaluation has given better outcome on the summative criterion test as compared to the academic achievement of the students of control group.

Keywords: Continuous and Comprehensive Evaluation (CCE), Formative Tests, Summative Criterion Referenced Evaluation, Instructional objectives, Academic Achievement.

1. INTRODUCTION

Education plays a vital role in the development of any human being and nation as a whole. But it is also a well-known fact that the education system of any nation is greatly influenced by its inputs, process, and outputs. There is relationship in these parameters of the education system. The output of the system refers to academic achievement of the students, the output (academic achievement) of the students depends upon the process which is a matter of curriculum transaction in classroom situation. Effectiveness of the process depends upon the various inputs. But, the most important parameter is the output which is measured by using different ways and means in any educational system. The effectiveness of any educational system determined by its outputs and the output is measured and evaluated. The process of evaluation speaks about the quality of educational output. Evaluation is a process in which one gives some judgement about an object (student). The most extended definition of educational evaluation has been brought out by Beeby, C.E. (1997), "Evaluation is the systematic collection and interpretation of evidences leading as part of the process to judgement of value with a view to action." Norm Referenced Evaluation (NRE) is absolutely conventional/ traditional system of evaluation which goes with the criterion of minimum learning (qualifying score: 33%), selected study having choice in attempting the test items and conducting one test at the end of academic session and certifying the students. On the other hand, there is Criterion Referenced Evaluation (CRE) which are scientific and modern scheme of evaluation which is being adopted widely across the globe to ensure the maximum learning among the students. Glaser (1963), Criterion Referenced Test defined as deliberately constructed test to yield measurements that are directly interpretable in terms of specified high performance of standards (> 90% score on criterion test). The basic idea is that the students need to learn at mastery level any of the specified course content. For this, Continuous and Comprehensive Evaluation (CCE) is essentially need to be adopted through the formative testing. The scheme of CCE recommended strongly in NCFSE- 2005, NPE-1986, POA-1992, SSA-2001 and NEP-2020 as an educational Programme recommended for CCE to facilitate the students in the process of learning. The scheme CCE of students through formative testing is based on the structure and principles of optimistic theory of mastery learning propagated by Carroll (1963) and Bloom (1971).

The concept of Continuous and Comprehensive Evaluation (CCE) represents a paradigm shift in educational assessment, moving away from traditional examination-focused models. As Kumar and Singh (2018) articulate, "CCE transforms evaluation from a terminal judgment to an ongoing process of learning enhancement." This approach, which systematically

assesses both scholastic and co-scholastic domains, has gained particular significance in the Indian educational context. CCE embeds evaluation within daily teaching-learning activities through continuous and comprehensive evaluation and summative assessments ensuring consistent feedback and improvement (**Bhattacharyya, 2019**). In India, CCE was formally introduced under the Right to Education Act (2009) and later emphasized in the National Education Policy (NEP) 2020 to reduce exam stress, promote skill-based learning, and ensure equitable progress tracking (**MHRD, 2020**). Its implementation in India faces challenges, including inconsistent teacher training, infrastructural gaps, and resistance to non-traditional grading methods (**Nair, 2017**). Despite these hurdles, CCE's focus on formative feedback and multidisciplinary growth reflects India's shift toward a learner-centered education system (**NCERT, 2021**). Modern education system increasingly integrates technology and adaptive assessments like Continuous and Comprehensive Evaluation (CCE) to enhance equity and learning outcomes, and also CCE aligns with global competency-based education trends (OECD, 2018). Here are a few reviewed research articles which have been put as follows:

2. REVIEW OF RELATED RESEARCH STUDIES

Javed, S., et al. (2024) examined the attitude of undergraduate social sciences students towards assessment for learning and emphasized its impact on study habits and academic performance. There were 50 students who did survey with self-designed questionnaire from the departments of Education and Psychology. This study findings highlight the significant influence of assessment on learning outcomes among undergraduates in education and psychology. Research suggested to acquire adequate time for teachers to plan, evaluate, and provide feedback to enhance the learning experience. A meta-analysis by **Hattie (2023)** examined the impact of combining formative and summative evaluation schemes on student performance across various disciplines. The study analyzed data from over 800 meta-analyses, revealing that courses using both formative and summative assessments consistently achieved significantly higher student performance compared to those relying on a single method. The findings underlined the importance of a balanced assessment approach, where formative assessments provide ongoing feedback and opportunities for improvement, while summative evaluations measure overall mastery. This dual approach was found to enhance both learning outcomes and student engagement. **Carless (2022)** conducted an experimental study at a university in Hong Kong to compare the academic performance of students in courses with and without technology-integrated formative assessments. The study involved 300 undergraduate students divided into experimental and control groups, with pre- and post-tests used to measure learning gains. The findings revealed that formative evaluation schemes, when integrated with technology, significantly improved academic performance. The study emphasized that technology-enhanced formative assessments provide more personalized and immediate feedback, leading to better learning outcomes. **Munna, A.S., et al. (2021)** examined the teaching and learning process as a knowledge transformation from teachers to students, emphasizing the importance of setting learning objectives, developing resources, and implementing effective strategies. It evaluates teaching effectiveness in higher education through academic journals, pedagogy, and inclusive practices, using experimental methods. The findings of the study reveal that positive formative feedback and role-playing activities significantly boost student confidence and engagement, while active learning environments promote inclusivity and improve academic performance for both students and faculty. **Nicol and Macfarlane-Dick (2020)** conducted a qualitative study in a higher education institution in Scotland, using case studies of psychology courses. Data were collected through student reflective journals, focus group discussion, and instructor feedback. The sample consisted of 120 undergraduate psychology students and 8 instructors. The study found that formative feedback helped students develop critical thinking and self-regulation skills, which are essential for mastering instructional theories. It emphasized the importance of timely and constructive feedback in fostering deeper learning. **Boud and Falchikov (2020)** investigated how combining formative assessments with summative assessments could offer a more comprehensive view of student performance. Over two years, they tracked 300 undergraduate students and 12 instructors from an Australian university, focusing on education and social science courses. Data was collected through a mix of assessment tools and surveys. The study found that formative assessments not only helped students prepare more effectively for summative tasks but also reduced anxiety and improved overall learning outcomes. The balanced approach to assessment is to integrate both formative and summative methods—provides a fuller understanding of student progress and enhances their academic experience. **Meenakumari, N. (2020)** investigated the effectiveness of formative assessment on academic excellence among paramedical students. The main objective of the study was to assess the impact of formative evaluations on the academic performance of paramedical students using a retrospective observational methodology. Data from 38 nursing students were analyzed, with marks from weekly exams and university exams collected and graded on a ten-point scale. Results revealed a significant positive correlation between weekly exam marks and university exam marks across all subjects except psychology, indicating that students who performed well in formative assessments inclined to excel in summative assessments. The findings underlined a strong link between formative and final exam outcomes, suggesting that consistent performance in weekly exams predicts success in university exams. This highlights the importance of formative assessments (CCE) in enhancing academic achievement in paramedical education.

Black and Wiliam (2018) explored how formative assessments—like quizzes, peer reviews, and reflective journals—impact student learning in a UK university. They worked with 250 undergraduate students and 15 instructors from social science and humanities departments, blending quantitative data with qualitative insights from interviews and classroom

observations. The study found that formative assessments significantly improved student engagement and understanding of complex concepts. It emphasized that regular feedback and opportunities for self-assessment were critical in enhancing learning outcomes. **Patel, R., et al. (2018)** investigated the impact of formative evaluation on delayed academic achievement: A case study of UG Education students. Scholars conducted a quasi-experimental study focusing on undergraduate (UG) Education students to investigate the impact of formative evaluation on delayed academic achievement. The study was carried out under two groups: a treatment group that underwent a formative evaluation scheme, including continuous feedback, quizzes, and peer assessments, and a control group that followed conventional evaluation methods. A summative criterion test was administered two weeks after the completion of instruction to assess delayed academic achievement. The findings revealed that the treatment group significantly outperformed the control group on the summative test, demonstrating the effectiveness of formative evaluation in enhancing learning retention and academic performance. The study emphasized the value of incorporating formative assessment strategies in higher education to promote deeper understanding and long-term knowledge retention. **Kumar, R. and Singh, S. (2015)** conducted a study on the effectiveness of formative assessment on academic achievement: a study on undergraduate students. Researchers conducted a quasi-experimental study on undergraduate (UG) students in India to examine the impact of formative evaluation on delayed academic achievement. The study divided students into two groups: a treatment group exposed to formative evaluation techniques, such as quizzes, peer assessments, and reflective journals, and a control group following conventional evaluation methods. A summative criterion test was administered two weeks after the completion of instruction to measure delayed academic achievement. The results revealed that the treatment group scored significantly higher on the delayed summative test compared to the control group, highlighting the effectiveness of continuous assessment and feedback in reinforcing learning and improving retention. The study emphasized the importance of integrating formative evaluation into educational practices to enhance long-term academic outcomes. **Ruiz-Primo, M.A., et al. (2007)** conducted a comparative study on exploring teachers' informal formative assessment practices and students' understanding in the context of scientific inquiry. This study evaluated the effectiveness of formative and summative assessment methods on student learning outcomes. Their methodology involved an experimental design where one group of students received formative evaluation while the other group followed traditional summative evaluation methods. The findings were that while both groups performed similarly in immediate tests, the formative evaluation group demonstrated significantly better results in delayed assessments. This underscores the role of formative evaluation in promoting sustained learning and long-term retention of knowledge, as it encourages deeper engagement and understanding of the material compared to summative methods.

There are large number research studies on formative evaluation ensuring continuous and comprehensive evaluation and along with required feedback and reinforcement such as Mustamin, R. (2024), Alouini, A., et al. (2024), Denise Wilkinson (2024), Gupta & Sing (2023), Das, A. & Sen, S. (2022), Pradhan, D.D. (2020), Mehta, S. & Patel, R. (2019) etc. from all these studies the authors of this research paper obtained a deep sense of conducting the study at tertiary level by adopting the UG students of education. Hence, the following research problem selected and planned to carry out:

3. STATEMENT OF RESEARCH PROBLEM

Effect of Continuous and Comprehensive Evaluation on the Academic Achievement of College Going Students in Psychology of Instruction: An Experimental Study.

4. OBJECTIVES OF THE STUDY

1. To study the effectiveness of continuous and comprehensive evaluation on the **immediate academic achievement** of UG 3rd students of Education on the summative criterion test immediately after the completion of instructions: one following the continuous and comprehensive evaluation scheme and another following the conventional scheme of evaluation.
2. To study the effectiveness of continuous and comprehensive evaluation on **one-week delayed** academic achievement of UG students of Education on the summative criterion test after the completion of instructions: one following the continuous and comprehensive evaluation scheme and another following the conventional scheme of evaluation.

5. HYPOTHESES OF THE STUDY

1. There will be no significant difference between the **immediate academic achievement** mean scores of two groups of UG 3rd semester students on the summative criterion test immediately after the completion of instruction: one following continuous and comprehensive evaluation scheme and another following conventional scheme of evaluation.
2. There will be no significant difference between the **one-week delayed** academic achievement mean scores of two groups: one following continuous and comprehensive evaluation scheme and another following conventional scheme of evaluation

6. DELIMITATIONS OF THE STUDY

The study has been delimited to:

- i. Continuous and comprehensive evaluation and Summative Criterion Evaluation
- ii. UG students of 3rd Semester of Education
- iii. The course of Education: CC-05 Psychology of Instruction

7. METHODOLOGY

- i. **Methodology:** As per the nature of the present study, the investigators adopted experimental method of research by employing the Pre-Test and Post-Test design. The experiment was carried out on UG 3rd semester students of Education by selecting the course content CC-05: Psychology of Instruction. The sample of 26 students of education studying in UG 3rd semester was selected by following the simple random sampling technique and dividing the sample into two equivalent groups designating as the experimental (N=13) and control group (N=13).
- ii. **Tools Used**

For the purpose of conducting experiment and collecting the required data, the Researcher used the following materials and tools:

1. The Researcher selected the course-CC-05: Psychology of Instruction for B.A. Education 3rd Semester and formulated the course objective (COs), Course specific objectives (CSOs) or teaching specific objectives (TSOs) or Instructional objectives (IOs) and the same CSOs/TSOs/IOs have been treated as learning objectives. All these LOs tested through the continuous and comprehensive evaluation.
2. For each unit of the course-CC-05: Psychology of Instruction, the Researcher designed and developed the continuous and comprehensive evaluation by covering all the instructional objectives with varieties of items.
3. Summative criterion referenced test used for measuring final outcomes of the selected sample of experimental and control groups of education course students.

iii. Phases of Experiment

The Researcher conducted the experiment on the 3rd Semester students of Education in Salesian College Siliguri (Autonomous) from August 2023 to December 2023. The instructional objectives or Learning objectives of the academic course-CC-05: Psychology of Instruction was formulated and instructed to the subject teacher and students of the course-CC-05. The experiment was completed with utmost justification in two phases.

Phase I: Pre-Test Setup

The study involved 26 third-semester Education students, divided into experimental and control groups with one-to-one matching. Before the experiment, participants were briefed on its purpose and their roles, with all doubts addressed to ensure readiness. A summative criterion-referenced test (SCRT) covering the *Psychology of Instruction* course was administered to both groups to establish baseline performance. The pre-test scores were recorded as X_1 (experimental group) and X_2 (control group) for later comparison.

Phase II: Teaching and Post-Test

During the experimental phase, the experimental group was taught unit-I using interactive methods aligned with course objectives, followed by continuous and comprehensive evaluation. Majority of students obtained 80 per cent or more marks on the continuous and comprehensive evaluation and students who were found lesser than 80 per cent score. They were provided a little feedback and given the same test to them and finally they showed the desired performance on unit-I of the course-CC-05. After ensuring 80/80 criterion in terms of learning of students, the teacher moves to the next unit-II. Meanwhile, the control group was taught conventionally without administering continuous and comprehensive evaluation. At the end of the experiment, the Researcher administered the summative criterion referenced tests (SCRTs) to the students of experimental and control groups of Education to obtain the Post-Test Scores, which were denoted by Y_1 and Y_2 for experimental and control groups of students, respectively.

8. ANALYSIS AND COMPUTATIONS OF RESULTS

Objective-1: To study the effectiveness of continuous and comprehensive evaluation on the immediate academic achievement of UG 3rd students of Education on the summative criterion test immediately after the completion of instructions: one following continuous and comprehensive evaluation scheme and another following conventional scheme of evaluation.

Hypothesis-1: There will be no significant difference between the immediate academic achievement mean scores of two groups of UG 3rd semester students on the summative criterion test immediately after the completion of instruction: one

following continuous and comprehensive evaluation scheme and another following conventional scheme of evaluation.

For achieving the objective-1 and testing its hypothesis, the obtained pre-test and post test scores were analyzed by employing ANCOVA as the statistical technique, the computed results have been summarized and put in table-1

Table -1: Showing the summary of the results of ANCOVA of Experimental and Control Groups Pertaining to Immediate Academic Performance in Course:CC-05

Components of Variability	Sum of Square (SS)	df	Variance	F
Between samples or treatments, D	150043.594	1 (C-1)	150043.594	
Within Samples of Errors, Ew	15879.121	23 (N-C-1)	690.396	217.329
Total E_t	165922.715	24 (N-2)		

Table -2: Showing the Adjusted Academic Achievement Mean Score of Experimental and Control Groups UG 3rd Semester students of Education.

Group	No. of students in the Group	M_Y	M_X	Adjusted Mean (M_{YX})
Experimental (Education)	13	402.769	32.66	402.7242
Conventional (Education)	13	250.769	32.46	250.8138
			$GM_X = 32.56$	

Interpretation: Table -1 reveals that the computed F-value came out to be (217.329) for $1/23$ df. As the computed F- value (217.329) is greater than the criterion F-Value (7.88) at .01 level of significance for $1/23$ df, therefore, the formulated hypothesis: ***“There will be no significant difference between the immediate academic achievements mean scores of two groups of UG students on the summative criterion test immediately after the completion of instruction: one following continuous and comprehensive evaluation and another following conventional scheme of evaluation.”*** got rejected. It means that there is significant difference between the immediate academic achievement mean scores of two groups of UG 3rd semester students on the summative criterion test. Further, it has also been observed that the students of experimental group who were treated with continuous and comprehensive evaluation (CCE), these students performed better than the students of control group in their immediate academic achievement. It shows that the continuous and comprehensive evaluation has been found quite effective in the immediate academic achievement of UG 3rd semester students of education as compared to the students of the control group following the conventional scheme of evaluation. The table-2 make it clear and explanatory in nature. It is concluded that continuous and comprehensive evaluation and Summative schemes of evaluation need to be adopted to improve the immediate academic achievement of the students.

Objective-2: *To study the effectiveness of formative evaluation on one-week delayed performance of UG 3rd semester students of Education on the summative criterion test after the completion of instruction: one following continuous and comprehensive evaluation and another following conventional system of evaluation.*

Hypothesis-2: *There will be no significant difference between the one -week delayed academic achievement mean scores of two groups: one following continuous and comprehensive evaluation and another following conventional scheme of evaluation.*

For achieving the objective-2 and testing its hypothesis, the obtained pre-test and post test scores were analyzed by employing ANCOVA as the statistical technique, the computed results have been summarized and put in table-3

Table- 3: Showing the summary of the results of ANCOVA of Experimental and Control Groups Pertaining to One-week Delayed Academic Performance in Course: CC-05

Components of Variability	Sum of Square (SS)	Df	Variance (V)	F
Between samples or treatments, D	234969.388	1 (C-1)	234969.388	
Within Samples of Errors, Ew	37228.275	23 (N-C-1)	1618.620	145.166
Total E_t	272197.663	24 (N-2)		

Table -4: Showing the adjusted Academic Achievement Mean Scores of Experimental and control Groups UG 3rd Semester Students of Education.

Group	No. of students in the Group	M_Y	M_X	Adjusted mean (M_{YX})
Experimental (Education)	13	392.307	32.66	392.2746
Conventional (Education)	13	200.153	32.46	200.1853
			$GM_X = 32.56$	

Interpretation: The table-3 shows that the computed F-Value was found to be 145.166 for one-week delayed academic performance scores of UG 3rd semester students of experimental and control groups in education. The computed F-Value (145.166) has been found greater than the criterion table F- Value (7.88) at .01 level of significance for $1/23$ df, hence, the computed F-Value (145.166) has been considered significant and the formulated hypothesis: *“There will be no significant difference between the one-week delayed academic achievement mean scores of two groups: one following continuous and comprehensive evaluation and another following conventional scheme of evaluation.”* got rejected. From this, it is interpreted that students' experimental and control groups differ significantly in their one-week delayed academic performance. Further, it has been marked that the experimental group, following continuous and comprehensive evaluation, possesses a higher one week delayed academic mean score (392.307) than the mean score (200.13) of control group students. This makes it clear that the continuous and comprehensive evaluation scheme does have some positive effects on students delayed academic performance.

9. FINDINGS AND DISCUSSIONS

The table-1 indicates that the computed F-value was found to be 217.329 which has been considered significant at .01 level of significance ($P < .01$) for $1/23$ df and consequently the formulated hypothesis got rejected. It means that the significant difference has been recorded in the academic achievement of UG 3rd Semester of education on summative criterion test: one following continuous and comprehensive evaluation and another following conventional scheme of evaluation. Moreover, the experimental group showed better performance due to Continuous and comprehensive evaluation as compared to the students of control group. The studies like Manzoor, R., et al. (2024), Das, A. et al. (2022), Nicol and macfarlane-Dick (2006), Kingston and Nash (2011) have also shown the same pattern of results.

10. CONCLUSION

In view of the findings of this experimental study, finally it is concluded that the continuous and comprehensive scheme of evaluation through the system of formative testing comes out indicating very positive impact on the immediate academic achievement of UG 3rd Semester college going students of education, hence, the continuous and comprehensive evaluation needs to be used extensively in the system of Indian higher education. In addition to this, the experiment proved that CCE has also shown the positive effect on the delayed academic performance of students.

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