

# A REVIEW ON CONTROL CHARTS IN LEARNING PERFORMANCE OF STUDENTS

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**Abstract-** Education performance day by day is becoming very important and the gap analysis in finding students performance to achieve the specified level of grade is becoming tough. Control chart technique will greatly help teacher in understanding the learning levels of students. Control chart use the basic mean, standard deviation which are considered to be two important parameters to understand any population, will provide control limits of marks which makes teachers to understand the performance of students in assessment and hence in turn helps in understanding learning curve.

**Index Terms-** Control charts, Upper control limit, Lower control Limit, Mean, Standard Deviation and Normal Curve.

## I. INTRODUCTION

India has mixed success when it comes to education. India has more than 50% of its population below the age of 25 and more than 65% below the age of 35. It means India has majority of the population in the age group which is suitable for education. On the positive side, the percentage of expenditure on education out of total government expenditure is the indicator of the importance of education in the scheme of expenses before the government. Control chart is one important tool that helps in controlling and monitoring the good education system. The control chart is a graph used to study how the student's performance changes over time. A control chart always has a central line for the average, an upper line for the upper control limit, and a lower line for the lower control limit. These lines are determined from historical data. By comparing current marks to these lines, we can draw conclusions about whether the students are consistent in performance or inconsistent.

## II. LITERATURE SURVEY

There are many methods available to monitor the performance of students. These methods most of the time based on individual judgment and mere comparison.

**Control chart:** The main task is to find out the mean and standard deviation of marks. To find out the same one particular subject is taken and the performance of students in this subject, test need to be conducted 25 times in successive time period under identical condition will be conducted. The assessment results will be used to find out the mean and variances. The above paper using normal distribution the Upper control limits and lower control limits are obtained.

Drawbacks:

- Conducting the assessment under essential identical condition is really a challenge
- Creating assessments /test papers which are identical will be difficult. As the matching of complexity Of test items/questions need high level intellectual.

Drawbacks:

- Behavior of students while taking test all 25 times need to be same. Since it is not in our control managing behavior part need to be given top priority
- External environment should also support for assessment

Drawbacks:

- Assessment Evaluation is another big challenge. It is better to have objective type of assessment rather than descriptive.

## III. METHODS

The control limits represent the performance variation and show us what's typical or "common cause" variation. When a performance is stable and in control, we see nothing but common reasons. **Common reason** results from the normal variations and it is expected due to the unidentifiable causes which may not be detected.

When a single student marks falls outside of the control limits, something unexpected has happened with the student. Something out of the unusual has caused the student for under performance. This is one example **special cause variation**. Special care need to be taken by discussing with student and to bring him back to performance according to expectation.

It is important to note that student's performance can reveal problems even when all of the marks fall within the control limits. If the plotted marks look non-random, with the plotted points exhibiting a form of systematic behavior, there may still be something wrong.

For example, if eight consecutive students marks below the average, that's statistically unlikely to be due to chance and it indicates that there is some problem in learning. Statistical methods to detect sequences or nonrandom patterns can be applied to the interpretation of control charts. In control processes display random deviation within the control limits.

At any given time, we come across any one of the following situation when we are using control chart for evaluation

- The evaluation process may be in statistical control and all students might be performing according to the expectation in the evaluation. But this is an very ideal situation as definitely we can expect few students will not meet expectation.
- The evaluation process is in statistical control but occasionally exhibits some abnormality.
- The evaluation process is not in statistical process control, but it might be very difficult to assign to particular student.
- The evaluation process is fully out of control.

It can be kept in mind that any evaluation process may show some trend set, but it is for sure that the trend set will not stay for a long. Definitely the student's performance will go up and down if they are not tracked properly or there is no attention devoted to individual student.

Each process fits into one of these states at a particular point in time, but will not stay in that state. All processes will move toward chaos of their own accord, over time, without due attention. Most companies only recognize the need for intervention

and improvement when the process has moved to the out of control state.

#### IV. BENEFITS OF EVALUATION PROCESS CONTROL CHARTS

Teacher has to ensure the implementation of control chart for sustained performance by students:

- It gives us the standardized process of evaluation
- It clearly gives information about individual student
- Scientifically defined method
- Bench mark the capability of student and a batch based on past performance
- Sets bench mark for the future batches. Create a baseline for future improvements Better monitoring and Control

#### **It is important to keep following steps in implementing control charts**

Firstly, we need to monitor the performance of students. It varies with the subject as different subject needs different type of evaluation

1. Arrive on evaluation methodology, preferably Objective type rather than descriptive as judgment can be avoided
2. Utmost care while deciding the complexity of questions
3. Evaluation under essential identical condition
4. Avoid manual evaluation instead go for digitalized evaluation to avoid human error.

#### V. CONCLUSION

I've learned many things through my research regarding implementation of control chart in assessing the performance of students in education. Of all the things, the most important thing is that I am able to identify students finding difficult in learning and able to counsel and improve them. This paper puts forward a system which allows teachers to identify and understand the underperformance and also to identify good performers to enhance their learning skills. Control charts help teacher to recognize deterioration in learning process if any so that changes can be made in teaching technology to fix the issue.

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