Predicting Student Performance Using Past Data during COVID-19 Pandemic: A Validation Study

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Abstract

COVID-19 has been a time of test in almost all sectors of life, and education is not an untouched sector. The online teaching-learning process emerged to be the only viable and effective mode of carrying on instructional processes in HEIs. However, it became difficult to ensure that learning happened the way it is expected in the offline mode of teaching-learning. The guiding underlying rationale behind the present study is the impact of teaching online mode on students in terms of learning and evaluation. Student testing and evaluation without the assurance of meaningful learning is an emergent problem owing to poor online connectivity and the digital divide denying democratic access to all learners. Through the present study, the authors want to propose that some indigenous alternative strategies should always be tested and tried in advance to evaluate students. This can solve the problems of unforeseen, unfavourable and unpredictable times, such as the COVID-19 pandemic, with regard to student evaluation. The study aims to suggest a viable student evaluation strategy using the statistical technique of prediction. The present paper discusses this effective and innovative strategy tried out using the available examination result database of the PG programme students from Mizoram University for three consecutive sessions spanning from 2015-2019 and the prediction of the final semester result of the 2018-2020 session. Pearson product-moment correlation, regression analysis, and Student t-test were used to analyze the data. The result of the analysis suggests that statistical prediction must be adopted as an alternative strategy for evaluating students.

Keywords: Prediction using Past Data, Student Performance, COVID-19 Pandemic, Validation Study

Introduction

When the COVID-19 pandemic hit the world, no one had the faintest clue about the drastic impact it has in terms of shattering the educational systems worldwide. Education as a sector has been seriously impacted due to the closing down of educational institutions, which are prime public places. Due to the high transmission rate and rapid spreading of the COVID-19 virus, a complete lockdown of all kinds of public activities was done worldwide as a measure to curb the pandemic in the face of no effective measures and vaccines (Mudenda et al.,2023). This led to the shutting down of educational institutions right from school education to higher education institutes. Closing of schools, institutions and other learning spaces impacted more than 94 per cent of the world's student population (Pokhrel & Chhetri, 2021). The higher education institutions of learning in 185 countries were closed (Marinoni et al.

2020). The impact of this pandemic on public institutions is of manifolds more of a negative nature. Offline mode of education, especially in India, has been the most viable and effective means of conducting the teaching-learning processes both in schools and Higher Education Institutions (HEIs). But in the face of the COVID-19 pandemic worldwide, a sudden switching on to an online mode of education has not been so easy for both teachers and students. Especially in places where the digital form of education is a new thing, there are many questions surfacing in everyone's mind. Technology, on the one hand, is disruptive, failing to establish connections with the affective and psychomotor domain along with the cognitive domain of the learner, whereas on the other hand, it is rewarding by enabling the continuation of education amidst the pandemic (Kaur & Vadhera, 2021). The teaching community is facing challenging scenarios in the new mode of online teaching-learning processes as they have never faced it before. Our teaching-learning processes had always been in face-to-face mode. With the upsurge of the pandemic, the digital platform of education became the most promising medium we had, and only in the past few years that HEIs realized its potential and gravity when they actually used it. However, in a country like ours, where a large digital divide is already built in the societal milieu, it is very difficult to predict the role of technology in student evaluation practices and benefits. Every student does not have equality on the grounds of the quality of technological access. The problem is two-fold: firstly, access to the right digital platforms is restricted to urban-economically well-to-do sections of society and secondly, not all higher education teachers are prepared for this change in evaluating students. A similar scenario is visible in school education as well. Owing to the loss of education, parents of lower-grade students in schools felt that it would be better to let their children repeat the next academic year (Pokhrel & Chhetri, 2021). As the whole country witnessed the problem of evaluating students through online platforms of education, there was an urgent need to devise some innovative mechanism to evaluate students utilizing existing information databases so that in times of emergencies like the global pandemic, we can resort to some full-proof, tried and tested modalities of student evaluation. Innovation does not happen in a vacuum. Rather, it happens out of compelling circumstances that demand a reform of existing practices. Alternative assessments are a viable option for assessing students if measures are implemented to reduce associated academic integrity risks (Adama et al, 2023). A similar innovative thinking has been tried during the COVID-19 pandemic by predicting student's term end scores using regression analysis which may evolve as a suitable means of student evaluation in future. The practice is not new in the context of many developed educational systems worldwide, but it is very new in our country, especially its usage in student evaluation. In recent times predicting student academic performance has drawn considerable attention in education (Namoun & Alshanqiti, 2021). In the present study, the prediction of PG (postgraduate) students' end-term scores is made in terms of their SGPA (Semester Grade Point Average) scores in the fourth semester and CGPA (Cumulative Grade Point Average) of all 4 semesters. It is hypothesized that a prediction equation based on the previous year's database of students' scores of SGPA and CGPA can correctly predict the end semester SGPA and CGPA of any outgoing batch. This can thus enable safe prediction of students' examination results in the absence of a face-to-face mode of examination.

Rationale of the Study

University Grants Commission (UGC), the governing body for HEIs (Higher Education Institutions) in India, came up with guidelines for the conduct of examinations in the year 2020. The critical analysis of various alternatives of examinations suggested by the UGC gives a clue that there is always a scope for innovation in student evaluation at an institutional level reserved for adverse situations. As per the UGC guidelines, notified on 6th July 2020, there is a suggestion to the HEIs to follow any of the following three alternatives/models of examination to address the issues relating to the examinations of final year/semester students in the face of COVID-19 pandemic viz.: a) Traditional Examination; b) Online Examination &c) Blending of Traditional and Online examination. However, there is another alternative that has been suggested by various educationists and stakeholders like students, parents, and the community. Owing to the adversities of the digital divide, it is foreseen students are facing trouble in accessing digital platforms for education. Even if they gain access, the communication is asynchronous most of the time during the curriculum transaction due to poor network availability. Although technology-enabled classrooms are popularizing democratic access to education, the question of the successful transfer of value of knowledge often arises. The guiding underlying rationale behind the present study is the impact of teaching through online mode. Testing without assurance of meaningful learning has no meaning, and that was the crux of the problem of evaluating students in the midst of COVID-19 times. It is difficult to assess students' performance on collective fronts of cognitive, affective and conative domains. Students' mindset also needs to be explored in light of new evaluative modalities on account of the severe negative impact of the pandemic and stress. Therefore, it is felt that some alternative mechanism must be worked out in advance to enable a more transparent, viable, valid and reliable student evaluation process in the face of any crises. It is thus proposed that some indigenous alternative strategy should always be tested and tried in advance to solve the problems of unforeseen, unfavourable and unpredictable times such as the COVID-19 pandemic.

Objectives of the Study

A. Primary Objective:

To work out an alternative strategy to allocate end-term scores to PG program University students in response to the absence of a face-to-face mode of examination.

B. Secondary Objectives:

The secondary objectives have been classified into two sub-categories

Category 1: Objectives for Prediction of Scores

1. To find out the correlation between the average SGPA of the first three semesters with the SGPA of the fourth semester of students in 2015-17, 2016-18 and 2017-19 academic sessions separately.

2. To find out the correlation between the average SGPA of the first three semesters of all three batches of students (2015-17, 2016-18, & 2017-19) with their SGPA of the fourth semester.

3. To establish a simple regression equation for the prediction of the fourth semester SGPA from the average SGPA of the first three semesters.

4. To study the significance of the difference between predicted

SGPA and actual SGPA of the fourth semester.

5. To test the significance of differences between the average SGPA of the first three semesters and the SGPA of the fourth semester.

6. To study the consistency in students' performance in all four semesters.

7. To predict the fourth-semester SGPA of the target session (2018-20) on the basis of the regression equation.

8. To suggest a mechanism for the assignment of SGPA and CGPA to fourth-semester students of the ongoing batch of MA Education on the basis of the findings of this study.

Category 2: Objectives Post-Prediction of Scores

1. To correlate the predicted score of the fourth-semester SGPA and CGPA of the target batch, 2018-2020, with their actual obtained SGPA and CGPA scores, respectively.

2. To find out the correlation between the average SGPA of the first three semesters and the SGPA of the fourth semester of students of the 2018-20 batch for which prediction was made.

3. To study the significance of the difference between the predicted SGPA and actual SGPA of the fourth semester for the 2018-20 batch.

4. To test the significance of differences between the average SGPA of the first three semesters and the SGPA of the fourth semester for the 2018-20 batch

Methodology of Study

A descriptive methodology is used for the present study. The sample used for establishing the regression equation were the students' SGPA and CGPA scores from 2015 to 2019 for three consecutive batches of the M.A. (Education) programme of Mizoram University with proper consent from the Examination Department of Mizoram University. The target batch for which the prediction was made is the outgoing batch of the M.A. (Education) 2018-20 session. In the face of the sudden pandemic in 2020, the end-semester examination could not be conducted in traditional face-to-face mode. Instead, an online mode of examination was tried in the University for the first time, which created a lot of problems both on the part of teachers and students in providing and undergoing evaluation safely. Hence, small action research was performed to come out with an alternative strategy to allocate marks to students if the pandemic sustains and resurges in the near future. The following formula is used to calculate the SGPA and CGPA as reflected in the PG mark sheet of Mizoram University

SGPA= Sum of Grade Points awarded for a Semester/ Total Credit of a Semester.

CGP=Sum of Grade Points awarded for the entire Programme/ Total Credit for the entire Programme.

The CGPA between 8-10 is regarded as Distinction, of 6 and less than 8 is regarded as First division and CGPA between 5 and less than 6 is regarded as Second division. The study was conducted in two phases: firstly, the phase of predicting students' end semester scores and secondly, the analysis of data post-prediction of end semester scores.

Both descriptive and inferential statistics have been utilized for the analysis of data. Descriptive statistics,

like measures of central tendency and dispersion, are highly useful in explaining the data and finding patterns. Further, under inferential statistics, relationship analysis was performed using the Pearson product-moment correlation, which is justified since the students' academic achievement score relates to the interval scale of measurement. Student t-test of two-sample assuming equal variances was performed for testing of significance of difference pertaining to essential objectives of study. An f-test was performed to measure the variance assumptions of the sample.

Statistical Analysis and Findings:

I) **Findings of Secondary Objectives for Prediction of Scores under Category 1**

1. To find out the correlation between the average SGPA of the first three semesters with the SGPA of the fourth semester of students in 2015-17, 2016-18 and 2017-19 academic sessions separately.

2. To find out the correlation between the average SGPA of the first three semesters of all three batches of students (2015-17, 2016-18, & 2017-19) with their SGPA of the fourth semester.

Findings: It is found that there is a significant and very high correlation between the aggregate SGPA of the first three semesters and the SGPA of the fourth semester for each of the batches 2015-17, 2016-18 and 2017-19; the data of which was available to the investigators. Also, the overall correlation between the aggregate/combined SGPA scores of the first three semesters and the SGPA of the fourth semesters combined for all 3 batches is also significantly high (Table 1).

Table -1: Correlation Coefficient Values between Aggregate SGPA of First Three Semesters and SGPA of 4thSemester

Independent Variable(X)	Dependent Variable(Y)	N	Df	Pearson's Correlation Coefficient	Significance level
Aggregate SGPA of First three Semesters of Batch (2015-17)	Fourth Semester SGPA(2015-17)	29	27	0.844	Significant**
Aggregate SGPA of First three Semesters of Batch (2016-18)	Fourth Semester SGPA(2016-18)	34	32	0.783	Significant**
Aggregate SGPA of First three Semesters of Batch (2017-19)	Fourth Semester SGPA(2017-19)	38	36	0.734	Significant**
Aggregate SGPA of First three Semesters of all three Batches (2015-17, 2016-18, & 2017-19)	Fourth Semester SGPA(2015-19)	101	99	0.808	Significant**

*Source: Field data. ** Significant at .01 level*

1. To establish a simple regression equation for prediction of fourth semester SGPA from the average SGPA of the first three semesters.

On the basis of obtained value of overall correlation coefficient

between the aggregate SGPA of first three semesters and the SGPA of fourth semesters combined for all 3 batches a regression equation was tried to develop.

Following is the generalized form of the linear regression equation:

Y = Y intercept+ slope * X

Wherein X=IV (Independent variable);

Y=DV (Dependent variable)

X= Regressor Variable, Aggregate of First three Semesters of all three Batches (2015-2019)

Here Y intercept means the value of Y variable i.e. SGPA of Fourth Semester if X=0 i.e. IV=0

Table 2 depicts the obtained regression equation.

Table-2: Prediction of Regressed Variable (Y) from Regressor Variable (X)

Regressor Variable(X)	df N(101)	R²	R	Standard Error of Estimate	Regression Equation for predicting Variable Y, SGPA of Fourth Semester
Aggregate of First three Semesters of all three Batches (2015-19)	99	0.653	0.808**	0.299	Y = 1.323+0.851*X

**Significant at 0.01 level

1. To study the significance of the difference between the predicted SGPA and actual SGPA of the fourth semester for the three batches.

On the basis of established regression equation, it was tried to see how it works with the available data of 3 consecutive batches (2015-2019). If it has a good power of prediction there should be no difference between the predicted scores and actual obtained scores

in the fourth semester SGPA. A null hypothesis is thus proposed.

Null Hypothesis: There is no significant difference in Mean Scores of Predicted and Actual SGPA scores of fourth semester

Findings: It is found that there is a good power in the established regression equation in predicting students' 4th semester scores as there is no significant difference in predicted and actual scores (Table 3).

Table-3: Significance of Difference between Predicted and Actual SGPA of Fourth Semester Students of 2018-20 Batch

Variables	N	Mean	S.D.	SEM	't-value'	Df	'P value'	Significance of Difference	Decision on H0
Predicted SGPA of Fourth Semester	101	7.459	.408	.0406	.039	200	.9689	NS	Accepted
Actual SGPA of Fourth Semester	101	7.446	.505	.0503					

NS: The test suggests that the difference between the two means is not significant at 0.05 level.

1. To test the significance of differences between the average SGPA of the first three semesters and the SGPA of the fourth semester.

   Also, it was tried to see whether the average SGPA score of students for the first 3 semesters differed from the SGPA scores of the fourth semester from the available data of 3 consecutive batches (2015-19). A null hypothesis was proposed as

Null Hypothesis: There is no significant difference in Mean Scores of the average SGPA of the first three semesters and the SGPA of the fourth semester.

Findings: The test suggests that in the available data the SGPA of fourth semesters had been significantly higher than the average SGPA of first 3 semesters. It indicates that scores in fourth semester are generally higher and perhaps judge the overall CGPA of the students (Table 4).

Table-4: Significance of Difference between Average SGPA of First Three Semesters and SGPA of Fourth Semester

Variables	N	Mean	S.D.	SEM	't-value'	Df	'P value'	Signifi-cance of Differ-ence	Decision on H0
Average SGPA of First three Semesters	101	7.199	.4802	.0478	3.572	200	.0004	S**	Rejected
SGPA of Fourth Semester	101	7.446	.505	.0503					

**The test suggests that the difference between the two means is extremely significant at 0.01 level.

1. To study the consistency in students' performance in all four semesters.

   Findings: The consistency of students' performance was also analysed using the available data from three consecutive batches. A bird's eye view approach was employed as the sample size was 101 only. It was found that the SGPA scores obtained in all 4 semesters were quite consistent, with a trend of gradual improvement towards the end of semesters. None of the students scored both SGPA and CGPA below 6 points. All were first class, and many obtained distinction points as well. This analysis was done to narrow down to the conclusion that in the past, the students' scores were indicative of consistency and can be taken as a clue that the trend of the traditional face-to-face mode of evaluation has been providing consistent scores with gradual improvement in higher semesters.

2. To predict the fourth-semester SGPA scores of the students of the target session (2018-2020) on the basis of the regression equation.

   For this analysis the obtained regression equation (1.323+ 0.851*X where X= aggregate scores of students obtained in first three semesters of 2018-20 session) was used.

   Findings: The description of predicted scores shows that the mean obtained SGPA score in the 4th semester is likely to be 7.634 (Table 5), indicating a predictable good performance of the outgoing target batch (2018-20).

Table-5: Descriptive Statistics of Predicted Scores of Fourth Semester SGPA of 2018-20 Batch of MA Education Students

Number	Mean of SGPA	Standard Error of Mean	Standard Deviation	Sample Variance
37	7.634	0.0491	0.299	0.089

1. To suggest a mechanism for the assignment of SGPA and CGPA to fourth-semester students of the ongoing batch of MA Education on the basis of the findings of this study.

    On the basis of estimated predicted scores, it was suggested that the strategy of providing grace marks in correspondence to the predicted SGPA of the students for end-semester examinations through internal assessments be applied only in the face of no examinations. However, with complete safety measures, the online mode of examination was conducted in August- September 2020, after the completion of the online mode of teaching-learning processes from April 2020 to August 2020 in all UG and PG departments under Mizoram University.

II) Findings of Secondary Objectives for Post-Prediction of Scores under Category 1

1. To correlate the predicted score of fourth-semester SGPA and CGPA of the target batch 2018-20 with their actual obtained SGPA and CGPA scores, respectively.

    Findings: Once the final results of the target outgoing batch of 2018-2020 were published in October 2020, it was tried to correlate the predicted and actual scores of the fourth semester both in terms of SGPA and CGPA. It was found that both the predicted and obtained scores are significantly and very highly correlated in the case of SGPA and CGPA. It is thus concluded that students' scores were correctly predicted for the target sample of students (Table 6).

Table-6: Correlation between the Predicted Score of Fourth Semester SGPA and CGPA of the Target batch 2018-20 with their Actual Obtained Scores

Variable 1	Variable 2	N	Df	Pearson's Correlation Coefficient	Significance Level
Obtained SGPA in Fourth Semester	Predicted SGPA in Fourth Semester	37	35	0.98	Significant**
Obtained CGPA in Fourth Semester	Predicted CGPA in Fourth Semester	37	35	0.99	Significant**

*Source: Field data. ** Significant at .01 level*

1. To find out the correlation between the average SGPA of the first three semesters and the SGPA of the fourth semester of students of the 2018-20 batch for which prediction was made.

    Findings: It was also tried to correlate the aggregate SGPA of

the first 3 semesters and the SGPA of the fourth semester for the target outgoing batch (2018-20). It was found that the correlation is significantly high, indicating that the trend is consistent with the earlier trend (Table 7).

Table-7: Correlation between the Average SGPA of the First Three Semesters and the Predicted SGPA of the Fourth Semester of Students of the 2018-19 batch.

Variable 1	Variable 2	N	Df	Pearson's Correlation Coefficient	Significance level
Aggregate SGPA of First three Semesters of Batch (2018-2020)	Fourth Semester SGPA(2018-20)	37	35	0.98	Significant**

*Source: Field data. ** Significant at .01 level*

1. To study the significance of the difference between the predicted SGPA and actual SGPA of the fourth semester for the 2018-20 batch.

   In order to study the significance of the difference between the Mean Scores of Predicted and Actual SGPA scores of the fourth semester for the 2018-20 batch following null hypothesis is proposed

Null Hypothesis: There is no significant difference in Mean Scores of Predicted and Actual SGPA scores of the fourth semester for the 2018-20 batch.

Findings: An insignificant difference between the predicted and actual mean SGPA of the fourth semester of 2018-20 is a clear indication/ evidence that predicted scores in this study were quite accurate (Table 8).

Table-8: Significance of difference Between Predicted SGPA and Actual SGPA of Fourth Semester of 2018-19 Batch

Variables	N	Mean	S.D.	SEM	't- value'	Df	'P value'	Signifi-cance of Differ-ence	Decision on H0
Predicted SGPA of Fourth Semester	37	7.63	0.299	0.049	1.76	72	0.081	NS	Accepted
Actual SGPA of Fourth Semester	37	7.51	0.293	0.048					

NS: The test suggests that the difference between the two means is not significant at 0.05 level.

2. To test the significance of the difference between the average SGPA of the first three semesters and the SGPA of the fourth semester for the 2018-20 batch.

A null hypothesis is thus proposed, which is as follows:

Null Hypothesis: There is no significant difference between Mean Scores of the average SGPA of the first three semesters and SGPA of the fourth semester for the 2018-20 batch.

Findings: A similar analysis of comparison of aggregate SGPA of the first 3 semesters and SGPA of the fourth semester of the target outgoing batch (2018-2020) showed that there is no significant difference, indicating that scores were given very consistent to students' last performance (Table 9). However, this trend was not in agreement with the earlier collective trend of the last three batches, where the fourth semester mean SGPA scores were significantly better than the last three semesters. This finding suggests that students in the target batch were given average scores to nullify the shortcomings of online teaching-learning processes. The student evaluative strategy followed the midway approach of neither being lenient in allotting marks nor being stringent at the same time.

Table-9: Significance of Difference between the Average SGPA of the First Three Semesters and SGPA of the Fourth semester.

Variables	N	Mean	S.D.	SEM	't- value'	Df	'P value'	Signifi-cance of Differ-ence	Decision on H0
Aggregate SGPA of First three Semesters	37	7.42	0.35	0.058	1.28	72	0.20		
SGPA of Fourth Semester	37	7.51	0.29	0.048				NS	Accepted

NS: The test suggests that the difference between the two means is not significant at 0.05 level.

III) Findings of the Primary Objective

The primary objective for the present study is to work out an alternative strategy to allocate end-term scores to PG program University students in response to absence of face-to-face mode of examination.

In 2020, an online mode of examinations was conducted for end-semester examinations in the face of the sudden pandemic in Mizoram Central University. In the Department of Education, statistical prediction of the scores of students was made through regression equations based on available data from the last three batches (2015-2019). A regression equation for predicting variable SGPA of the fourth semester was established, and scores were predicted. It was found that the predicted scores for the fourth semester SGPA and CGPA of the batch 2018-2020 are highly and positively correlated with the scores they obtained. The findings suggest that on the basis of prediction, marks could be allotted on the basis of internal assessments in certain emergencies, such as the current pandemic of COVID-19. On the basis of statistical findings, it is proposed that prediction can be used as a viable alternative model for students' evaluation. The power of prediction has been much less explored in evaluating students in our indigenous settings. The regression analysis suggests that students' predicted scores highly correlate with their actual

obtained scores; hence, it is a reliable and valid means to evaluate students who lack actual exams. It is suggested the end-term scores can be worked out on the basis of the available database of students. Maintaining a thorough database is thus a prerequisite for the implementation of this strategy.

Discussion

India, like many other countries, announced the cancellation of the school annual examinations and promotion of the students in the absence of examinations due to the increasing number of COVID-19 cases. This measure was taken to ensure students' safety. Several alternative strategies were worked out to decide the criterion of promotion on the basis of previous performances. When in the year 2021, both class X and class XII board exams were finally cancelled, a unique methodology was applied to calculate the final grades of students' board exams. For the CBSE (Central Board of Secondary Education) class X result declaration, as per the new evaluation criteria, schools evaluated students for 80 marks on the basis of the various internal assessments taken during the academic session, which was just 20 earlier. Similarly, for evaluating CBSE class XII results, the theory marks of each subject were computed using 40 per cent of the marks they got in the subject pre-boards or mid-term exams held by their schools earlier, 30 per cent from their Class XI final exam marks, and 30 per cent from their Class X board exam results. This was then added to the actual marks of students who got in their Class XII internal assessments and practicals for that subject. In a similar wakeup call, former Union minister Mr Kapil Sibal raised the question of online examination being "extremely discriminatory" (The Hindu, 2020). He mentioned that examinations shouldn't be the priority at the university level until there is a pandemic because there exists a digital divide in the country, especially in remote and rural belts, and hence examinations will be working against the students from poor and marginalised sections of society. However, he asserted that major changes would take place in the education system in the coming years with better internet connectivity and convergence across the country, which would enable better access to quality education in difficult pandemic situations. Digitisation is perhaps the only solution that will provide connectivity to every school and college in different corners of the country in the coming times. The unpredictability of the pandemic time needs strategic planning and better innovative solutions for proper student evaluation, as the present mechanism does not give a scope for democratic assessments. The present evaluative pattern favours the students with resources and works against those who do not possess them. The pandemic compelled us to think of this important aspect of education. Further, the University Grants Commission (UGC) released an advisory in July 2020 to follow any of the three alternative models for the evaluation of students, which were either to conduct a traditional examination following standard operating procedure or to conduct an online examination and a third model of blending of both the traditional and online examination was also suggested. However, many autonomous institutions like the IITs (Indian Institute of Technologies) and colleges have cancelled exams and have promoted students on the basis of past performance. IIT Goa came out with a unique method for evaluating students (Timesnownews.com, 2021). Students were asked to frame questions, answer them and get marks. The method adopted by IIT Goa is considered to be innovative and unique. Prediction of students' future performance is also one

such reliable and authentic mechanism which does not discriminate the unprivileged over privileged students. Also, regression analysis has been successfully used to predict the future performances of students in many advanced countries where the culture of maintaining databases is a common practice.

Considering the Indian context, the majority of the student population in higher education go for UG (Undergraduate) and PG (Postgraduate) programmes of 3 years and 2 years, respectively. Amidst the pandemic of Covid 19, HEIs across the country took a decision to cancel face-to-face examinations, including the end-semester examinations. Students were to face either the 2nd, 4th or 6th semesters for UG courses and the 2nd or 4th semesters for PG courses during the first wave of the pandemic. The first wave of the COVID-19 pandemic commenced with increased detection of cases in January-March 2020, with the September 2020 peak (Banerjee, 2020) with receding cases for the first time across the country by October 2020 (Hindustantimes. com). The present study evidently supports that the decision to promote students during the first wave of the COVID-19 pandemic in India was not futile. Specifically considering the end-semester examination, Table 10 depicts the summary of student evaluations already done and remaining in various UG & PG programs during the first wave of the COVID-19 pandemic. The summary conveys that when bulk student evaluation is already over, promotion on the basis of past performances is risk-free. As far as non-end semesters are concerned, student promotion is granted considering the amount of remaining time available for their complete assessments. It

is very evident that high-performing students will consistently perform well in upcoming exams and vice versa. Today's educational system, especially Indian higher education, is very immune to change of any kind and is busy producing graduates and postgraduates, very much confirming the marks-ridden criterion of qualifying and succeeding in the examinations. For that matter, evaluation through examination is restricted to the filtration of candidates, and examinations provide no feedback on holistic aspects of one's progress. Feedback is the key to evaluation of any kind, and continuous internal assessment is the game changer. The prediction of students' scores is very much based on their continuously assessed performances on the basis of which future performance can be assessed. The method is highly reliable and authentic, leaving no scope for biased student assessment, which may operate and discriminate the unprivileged over privileged students. Regression analysis as a technique has been tested across time and space which has the potential to predict the future performances of students.

The present study reiterates this fact through the analysis done in the post-prediction phase,

where a very high correlation is obtained between the predicted and the actual end-semester scores obtained through online examination by the students of the Education PG program in the year 2020. Through the present study, the authors want to propose that some indigenous alternative strategies should always be tested and tried in advance to evaluate students. This can solve the problems of unforeseen, unfavourable and unpredictable times, such as the current pandemic, in terms of student evaluation.

Table-10: Summary of Evaluation Already Done and Remaining in Various UG & PG Programs during First Wave of COVID-19 Pandemic, 2020

Sl. No.	PG Programmes (2 yrs. Duration)	Students have Already been Examined For	Exams to be Conducted Only For
	M.A.	**3 Semesters** (75% of Teaching & Evaluation Through Traditional Mode is already over)	**4th Semester** (Only 25% Evaluation is Remaining)
	M. Sc.		
	M. Com.		
	M.B.A.		
	M. Lib. Sci.		
	M. Tech.		
	Any other PG Programme		
	UG Programmes (3 yrs. Duration)	Students have Already been Examined For	Exams to be Conducted Only For
	B.A.	**5 Semesters** (83% of Teaching & Evaluation Through Traditional Mode is already over)	**6th Semester** (Only 17% Evaluation is Remaining)
	B.Sc.		
	B. Com		
	L.L.B. (Three Yrs)		
	B.B.A.		
	UG Programmes (4 yrs. Duration)	Students have Already been Examined For	Exams to be Conducted Only For
	B. Tech.	**7 Semesters** (87% of Teaching & Evaluation Through Traditional Mode is already over)	**8th Semester** (Only 13% Evaluation is Remaining)
	M.B.B.S.		
	B.Ed.4yrs. Integrated		
	Any Other UG Programme of 3yrs duration		
	Integrated Programmes (UG+PG) (5 yrs. duration)	Students have Already been Examined For	Exams to be Conducted Only For
	Integrated MBA	**9 Semesters** (90% of Teaching & Evaluation Through Traditional Mode is already over)	**10th Semester** (Only 10% Evaluation is Remaining)
	Integrated LLB		
	Integrated M. Lib. Sci.		
	Any other Integrated (UG+PG) Programme		

Understanding the Online Teaching –Learning amidst the Covid 19 Pandemic: The Indian Context

Several new modalities found their way in, especially in the dynamics of online classrooms amidst this pandemic. Alternative assessments such as oral assessment or viva or live psychomotor skill demonstration via Zoom or similar video conferencing, submission of video recordings of presentations, take-home open book assessments, time-limited online open-book assessments and assignments, take-home long and short answer assessments are viable options for assessing students if measures are implemented to reduce associated academic integrity risks (Adama et al, 2023). The COVID-19 pandemic kindled a shift in traditional pedagogy, especially for university-level students, changing the way students learn, attend classes, or communicate with teachers (Tulaskar & Turunen, 2022). Innovative ideas like team teaching came up as a major choice by many higher education institutions across the country, offering tremendous benefits when it is tried in online mode. When two or more teachers interact collectively with students in online platforms they can prove to supplement and complement their assets and shortcomings. Their difference in teaching style actually enhances the attention and retention on the part of the students. In 2020 and 2021, for the first time, an online interface is adopted in Teacher Training Institutions (TTIs) spanning pre-internship, internship and post-internship online sessions (Dvivedi & Kaur et al.,2022). It was a successful attempt and is in the process of documentation in terms of teachers' and trainees' first-hand experiences. Students from the neighbourhood, available in the vicinity, were taught by pupil teachers solving the problem of the non-availability of schools for internship. The pupil-teacher recorded the lessons, creating a simulated environment for the purpose. They also created a laboratory at home for demonstrating simple experiences. Something out of the box was trying to overcome the boredom of online platforms of learning. Sometimes, students provide the best solution to a problem by peer-teaching, creating discussion forums, and using online space for writing, expressing poetry, and academic discussions during the online internship. Some special case studies of innovations in teaching sciences during the COVID-19 pandemic, such as biological laboratory in-house/out-of-school, technological embedment in preparing science projects and use of science learning demonstrative videos, etc., were tried in different online instruction times by the pupil teachers. The concept of CUBE (Collaboratively Understanding Biology Education) program at the Homi Bhabha Center for Science Education (Tata Institute of Fundamental Research) is a project-based science education program classes meant for teaching online and distance biology. It is one of the most successful ideas, and it is well-recognized and documented (Kharatmal, Nagarjuna & Yadav, 2020).

The year 2020 has been a big year for educational technology amidst the pandemic. A lot of ICT tools found their way to online classrooms, such as Google platform/workspace, including Google quizzes/ forms, jam boards (interactive boards), Google Docs, Google Sheets, Slido polls, Pedlet, Learning Management Systems (LMS) like Moodle, all used in Mizoram University along with other Indian HEIs. Software like Microsoft Teams, Zoom, Cisco Webex and social media tools like Whats app, Facebook, YouTube, etc., are being extensively utilized to facilitate the teaching-learning process. Traditionally, people think there are both pros and cons to applying technology to education. On one side, it offers great benefits of

reaching out to distant learners, but on the other side, it is problematic, especially in determining whether learning has occurred or not. The latter problem has doubled on account of the prevailing digital divide in the country. Technology is thus a means but not the end. The opportunities and challenges of emergency remote teaching-based experiences of COVID-19 times are vital knowledge reservoirs for taking up teaching-learning processes in the post-COVID times and now need to be documented for future planning. Many pertinent questions are on the floor, such as how can we make maximum use of the potential of our students through technology? Are the teachers ready to perform online evaluations with transparency? is the blended mode of teaching-learning processes the best for current times and the future? etc. The rise in student mental health difficulties has been a growing international concern long before the onset of the COVID-19 pandemic (Cuijpers et al. 2019). Working on student's emotional health is essential and hence the role of affect in online classes needs to be researched. Is it totally missing, or is it all the same? The online examination amidst the COVID-19 pandemic raised many questions about the authenticity of examinations, and their impact on the emotional well-being of students during the pandemic still remains an unaddressed question. As found by Reeves (2005), there is "no significant difference" in terms of students' achievement with respect to the modality of learning experiences, i.e. between offline and online teaching-learning processes. For many of us, teaching through online mode is as good as face-to-face, but we forget students' perspectives, experiences, and limitations. We need to focus on effect rather than cognition alone while teaching concepts.

According to Mok et al. (2021), many studies during the pandemic raised the issue of assessment while shifting to the complete online modality of transaction of content, leading to a serious impact on student competence. Further, it is reiterated in their study that this sudden shift to online learning has opened the room for improving the current assessment standards, leading to innovating new non-traditional methods not focusing on learning outcomes but on student experience. Innovative, creative and sustainable development skills of youth, which are missing in the present evaluative system in our nation, are to be prioritized. Evaluation on the basis of skilled competency is important. Providing emergency training for unfavourable circumstances such as a pandemic, providing counselling services for proper mental health, and involving learners' experiences and creative solutions are new lessons learned. Our training is very poor on digital platforms, and we have proven to be good teachers in face-to-face learning. How can we overcome the gap through minimal digital investment? Is a new question to be answered. Lessons need to be learned from developed countries which have used this pandemic time to devise and strategize new modes of examination and are still improvising to fit new situations. Some promising practices evolved during the last four years amidst the pandemic and post-pandemic times, which all need to be documented. Various ways to design meaningful learning experiences for students by adding technology to the methodology are being tried. However, adding technology should target improving the quality of students' experiences. Flexibility in design in terms of time, space, content (context-based), and evaluation is the call of the new days based on the central question: how do students feel they should be evaluated? An argument is

placed that responsibility for the design should be shared by both teachers and students, and students' needs should be bulk shared in designing experiences through technology (Oliver, 2015). Thus, where on one end, developed countries utilized the COVID-19 pandemic to innovate and refine existing practices of evaluating students online; on the other end, developing countries like ours had a chance to gain first-time experiences in online teaching-learning processes. The experience is unique both at the level of students and teachers and is a vital reservoir readily available for proper future education planning at HEIs specifically.

Conclusion

The objective of the present study was to draw attention to sensitive aspects of student evaluation through digital platforms, especially in the context of higher education. During the COVID-19 pandemic when, for almost the entire 2020-2021 session, online teaching-learning processes were the only valid and viable mode of instruction. It is very important to understand the validity of various digital platforms in educating the youth, especially in a nation like ours, where both teachers and students have the opportunity to have exclusive firsthand experience. The present study suggests that a culture of maintaining databases should be encouraged at higher educational levels so that effective and innovative strategies of prediction can be tried out. The present study made a similar attempt using the available examination result database of the PG programme students from Mizoram University. The result of the analysis is suggestive that statistical prediction must be adopted as an alternative strategy to evaluate students. Technology and its application in educational settings have proved to be a blessing in disguise in COVID-19 times. Across the globe, there

are many best practices for evaluating students online, especially lessons from developed countries, which should be discussed more now in order to strengthen evaluative strategies. Some of the tested innovative strategies are an equal partnership of both teacher and students in designing digital experiences, discussion forums as an apt way to overcome the boredom of online platforms of learning, the concept of providing achievement badges to acknowledge learners and provide feedback, open book examination to bring in tr4ansparency in evaluative practices, use of problem-oriented integrated curriculum packages such as life skill, competency-based curriculum packages to strengthen learner's engagement, online team teaching, online /blended mode of internships in Teacher Training Institutions (TTIs) and statistical prediction of students' score. The importance of using students' data to drive improvement in education planning is one of the most used strategies, as well as techniques for obtaining knowledge from databases such as large arrays of student data from academic institution databases (Arsad & Buniyamin, 2014). The COVID-19 pandemic brought in tough times globally. The educational sector is deeply impacted, although the extreme situations enabled education to think out of the box. The pandemic, as a challenge, compelled us all to be more promising in our efforts to combat it. We learnt new things and practised them. Technology has become our partner in solving problems and providing innovative solutions in many places, but it has also become a hurdle for the marginalized section. The COVID-19 pandemic led us all to think of a different perspective on technology, mostly solving the problem of teaching only to those who have adequate resources to access it. Circumstantially, many new ideas for student evaluation were tried in many places where the prediction of

students' scores emerged as a valid and reliable alternative model which needs to be documented as an objective practice for the sake of transparency in student evaluation.

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