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Assessment of Teacher Readiness for Outcome Based Education under NEP (2020)

Manasi Govind Shinde[1], Sanika Sanjay Patil[1], Gitanjali. A. Gadhari[2]
Student, Department of Statistics, Rajarshi Chhatrapati Shahu College, Kolhapur, India[1-2]
Assistant Professor, Department of Statistics, Rajarshi Chhatrapati Shahu College, Kolhapur, India[3]
manasishinde4801@gmail.com[1], sanu232003@gmail.com[1], gitanjaligadhari01@gmail.com[2]

Abstract: *The National Education Policy (NEP) 2020 is well known, and it is bringing notable changes to the Indian education sector. With this in mind, teachers bear the main responsibility for improving infrastructure. A project called "Teachers Preparedness for implementation of NEP 2020 in selected colleges from Kolhapur city" has been launched. This study looks at the capabilities of institutions and the use of technology in higher education through a multi-analytical approach. It uses data from different teacher groups to explore how factors like experience, qualifications, and department affect their self-reported readiness for NEP 2020, using ordinal logistic regression. The primary findings reveal significant differences in readiness based on the level of formal training and digital skills. In areas emphasized by NEP 2020, such as holistic multidisciplinary education and outcome-based education, awareness is high, but actual implementation is limited. The Kruskal-Wallis analysis indicates specific differences in lesson planning and assessment systems related to teaching experience. This suggests that experienced teachers and those in early or mid-career face distinct challenges in adapting their teaching methods. The study assesses institutional infrastructure and finds that while basic digital labs and Wi-Fi are available, the necessary management support for advanced technology integration is seen as inconsistent. The research ends with the creation of a "readiness index," which serves as a diagnostic tool for policymakers to pinpoint areas needing quick intervention. This research adds to the conversation about educational reform by offering an empirical framework to connect policy goals with classroom practices..*

Keywords: NEP 2020, Teacher Preparedness, Outcome-Based Education (OBE), Institutional Infrastructure, Ordinal Logistic Regression, Higher Education Reform, Digital Integration.

I. INTRODUCTION

The National Education Policy (NEP) 2020 [1], introduced by the Government of India, represents a landmark reform in the country's education system. It aims to revamp the existing framework to make education more holistic, flexible, multidisciplinary, and skill-oriented, aligning it with the rapidly changing global educational and employment landscape. The policy emphasizes competency-based learning, integration of technology, vocational education, and the promotion of critical thinking and creativity among learners. The Indian Higher Education system is currently at a historic crossroads with the rollout of the National Education Policy (NEP) 2020. This policy represents a paradigm shift from traditional, rigid academic structures toward a flexible, Holistic, and Multidisciplinary framework. However, the true success of NEP 2020 depends not on policy mandates, but on the readiness of the teaching fraternity and the robustness of institutional infrastructure. This project presents a data-driven inquiry into the current landscape of teacher preparedness across diverse academic institutions. Utilizing primary data from educators at colleges like Rajarshi Chhatrapati Shahu College, and The New College, this study explores how digital literacy, pedagogical innovation, and administrative support converge to facilitate a modern learning environment. It moves beyond theoretical discussions to analyse practical realities: how often teachers use digital tools, the state of college computer labs and Wi-Fi, and the specific hurdles such as heavy workloads and outcome-based lesson planning that define the daily lives of educators today.

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II. OBJECTIVES

To identify the primary communication channels through which teachers first acquired information about the National Education Policy (NEP) 2020.To identify the major obstacles and challenges faced by teachers while implementing the NEP (2020)To identify the influence of ICT training on the regularity of student tracking learning outcome. To identify the impact of formal NEP training on teachers comfort with multidisciplinary teaching approaches.To evaluate the teacher's awareness training of the core focus areas of NEP 2020.To analyze teacher's comfort with multidisciplinary approaches, and their teaching methods.To analyze the relationship between Experience & Training, Qualification & Training.To evaluate impact of formal training and ICT support on teachers preparedness level.To examine the influence of various factors affects on teacher readiness.

III. LITERATURE REVIEW

The implementation [2] of Outcome Based Education (OBE) under the National Education Policy (NEP) 2020 has drawn significant attention to the preparedness of teachers and the institutional environment within higher education systems. Contemporary research suggests that although awareness of NEP principles is increasing among educators, the transition from traditional teaching practices to outcome-oriented and multidisciplinary learning approaches remains complex. Studies frequently identify professional training, digital competence, and administrative support as key determinants influencing the effectiveness of policy implementation. Empirical investigations using statistical and non-parametric analytical techniques indicate that factors such as teaching experience, academic qualification, and participation in structured training programs significantly affect educators' readiness to adopt innovative instructional strategies. Additionally, evidence from predictive and regression-based models highlights that ordinal logistic regression model successfully predicts teacher preparedness with an overall accuracy of 76.19%. Teacher readiness is directly shaped by specific training interventions and institutional digital support. Collectively, these findings emphasize that strengthening teacher training initiatives, improving ICT infrastructure, and fostering supportive institutional ecosystems are essential for ensuring the effective implementation of OBE and the broader goals of NEP 2020 in higher education.

MS Tools: MS-Excel, Ms- Word

Software: Python

IV. METHODOLOGY

1.Method design: This study adopts a descriptive research design to assess the readiness of teachers for the implementation of NEP 2020. The study focuses on teachers from seven colleges in Kolhapur like Rajarshi Chhatrapati Shahu college Kolhapur, Rajaram college Kolhapur, The New college Kolhapur, Gokhale college Kolhapur, DRK college Kolhapur, Mahaveer college Kolhapur, Shree Shahaji college Kolhapur.

2. Sample Size Determination

The sample size was calculated using Yamane's formula:

$$n = \frac{N}{(1 + N * e^2)} \quad (1)$$

Where, n = sample size, N= population size, e = margin of error (level of precision)

Using 3% margin of error:

$$n = \frac{249}{(1+249*0.03^2)} = 203 \quad (2)$$

For practical purposes, the sample size is rounded to 210 teachers.

3. Sampling Technique: Stratified Random Sampling was used to ensure representation from each college. The population was divided into seven strata (colleges), and the sample from each stratum was determined proportionally.

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4. Data Collection: Data was collected using a structured questionnaire focusing on teacher awareness, readiness, and implementation practices for NEP 2020.

Graphical Tools: Bar diagram

Test: Normality Test, Spearman Rank Correlation, Kruskal-Wallis H Tes Chi-Square Test, Mann Whitney U Test, Ordered Model.

V. GRAPHICAL REPRESENTATION

The fig.1 shows that, the combination of sources, particularly "social media", "news articles", were the most popular ways for teachers to learn about the NEP. Fig.2 shows that, the Heavy workload is the most prominent challenge faced by teachers than other.Fig.3 shows that, there is a positive association between training formality and teacher confidence, where formal training yields the highest comfort rate compared to informal or not attained training. Fig.4 shows that, Teachers who receive formal training show the highest levels of confidence, feeling comfortable.

Fig.1

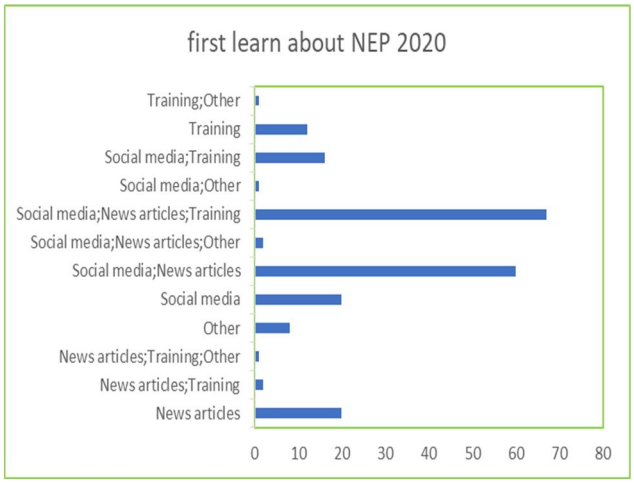

Fig.2

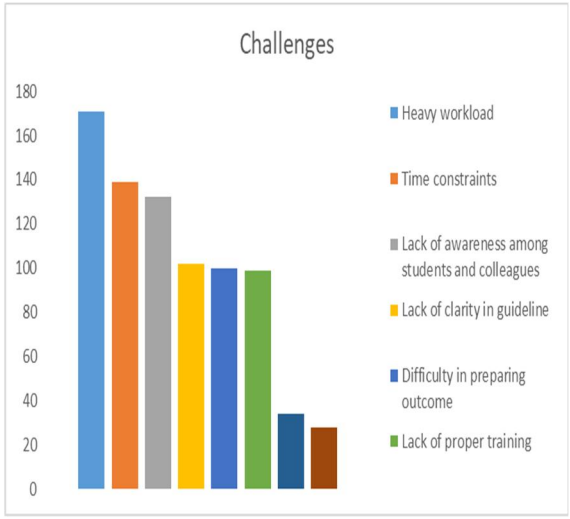

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Fig.3

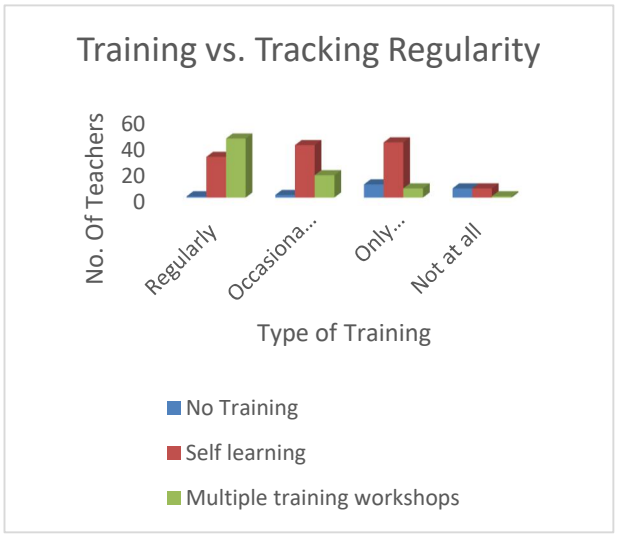
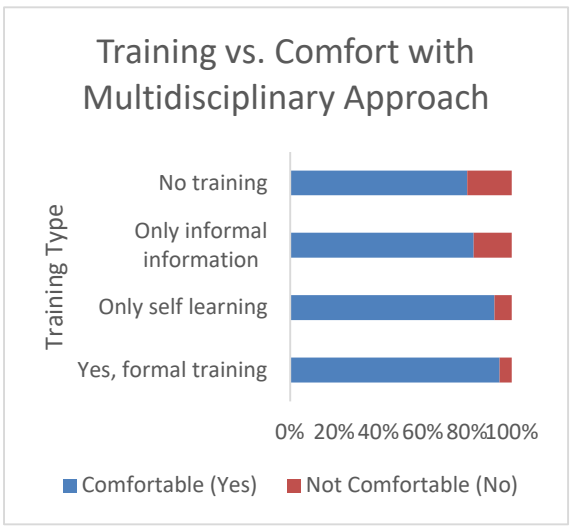


Fig.4



VI. TESTING OF HYPOTHESIS

1. Normality Test [7]

Here, Shapiro-Wilk Test Statistic: 0.7305

P-value 3.3866e-18

Conclusion: Since, P-value <0.05, we reject H_0.

Therefore, Data appears does not to be normally distributed.

2. Spearman Rank Correlation

This analysis determines the strength and direction of the relationship between ranked variables [6].

Hypothesis:

H_0: There is no significant association between Training and Preparedness.

H_1: There is a significant association between Training and Preparedness.

Result: Correlation = 0.4359, p-value = 3.7781e-11.

Here, we reject the Null Hypothesis Since your p-value is extremely small. There is a statistically significant link between Training and Preparedness.

3. Kruskal-Wallis H Test

Kruskal-Wallis H Test [4], a non-parametric statistical method used to determine if there are statistically significant differences between three or more independent groups.

3.1 Hypothesis:

H_0: There is no significant difference in teachers preparedness levels between those who are comfortable and those who are not comfortable with multidisciplinary approach.

H_1: There is significant difference in teachers' preparedness levels between those who are comfortable and those who are not comfortable with multidisciplinary approach.

Result: H Statistic: 9.207

P-value: 0.0024

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Here, P-value< 0.05. i.e. we reject H_0, Therefore, there is significant difference in teachers' preparedness levels between those who are comfortable and those who are not comfortable with multidisciplinary approach.

3.2 Hypothesis:

H_0: There is no significant difference between teachers preparedness levels and combinations of teaching methods used by teachers.

H_1: There is significant difference between teachers preparedness levels and combinations of teaching methods used by teachers.

Result: H Statistic: 19.909

P-value: 0.0466

Here, P-value< 0.05, i.e. we reject H_0. Therefore, there is significant difference between teacher's preparedness levels and combinations of teaching methods used by teachers.

4. Chi-Square Test:

To determine if there is a significant relationship between two categorical variables.

4.1Teaching Experience vs. NEP 2020 Training

Hypothesis:

H_0: There is no significant relationship between the Teaching Experience & NEP 2020 Training.

H_1: There is significant relationship between the Teaching Experience &. NEP 2020 Training.

Observation table:

Teaching Experience	No Training	Only Informal Information	Only Self Learning	Yes, Formal Training	Total
0 - 5 years	8	20	8	27	**63**
6 - 10 years	2	14	5	43	**64**
11 - 15 years	0	7	0	55	**62**
16 + years	0	0	0	21	**21**
Total	**10**	**41**	**13**	**146**	**210**

Test Statistics: $\chi^2 = \sum_{i=1}^{k} \frac{(O_i - e_i)^2}{e_i}$

Result: Chi-Square Statistics: 46.20266529

Degrees of Freedom: 9

P-value: 5.52223E-07

Here, P-value< 0.05, i.e. we reject H_0.Therefore, There is significant relationship between the Teaching Experience and NEP 2020 Training.

4.2Qualification vs. NEP 2020 Training

Hypothesis:

H_0: There is no significant relationship between the Qualification & NEP 2020 Training.

H_1: There is significant relationship between the Qualification & NEP 2020 Training.

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Observation table:

Qualification	No Training	Only Informal Information	Only Self Learning	Yes, Formal Training	Total
Post Graduate	8	37	13	84	**142**
M.Phil	0	0	0	3	**3**
Ph.D	1	4	0	59	**64**
Other	1	0	0	0	**1**
Total	**10**	**41**	**13**	**1**	**210**

Test Statistics: $\chi^2 = \sum_{i=1}^{k} \frac{(O_i - e_i)^2}{e_i}$

Result: Chi-Square Statistics: 43.71426013
Degrees of Freedom: 9
P-value: 1.59325E-06
Here, P-value< 0.05, i.e. we reject H_0. Therefore, there is significant relationship between the Qualification & NEP 2020 Training.

5. Mann Whitney U Test:

The Mann-Whitney U test [5] is a non-parametric statistical test. It compares two independent groups to determine significant differences in their distributions.

Hypothesis:

H_0: There is no significant difference in the preparedness levels between faculty who attended formal training and those who did not attended formal training.

H_1: There is a significant difference in the preparedness levels between faculty who attended formal training and those who did not attended formal training.

Result: Mann-Whitney U Statistic: 5585.0
P-value: 0.00523
Median Preparedness (Attended): 3.0
Median Preparedness (Not Attended): 3.0

Here, P-value< 0.05, i.e. we reject H_0. Therefore, there is a significant difference in the preparedness levels between faculty who attended formal training and those who did not attended formal training.

6. Ordered Model (Ordinal Logistic Regression):

An Ordered Model [3], often referred to as an Ordinal Logistic Regression model, is a type of regression used for predicting an ordinal dependent variable. Ordinal variables are categorical variables with a clear ordering of categories but where the differences between categories are not necessarily equal or known.

Variable selection:

Dependent (target) variable: How prepared do you feel to implement NEP 2020 in your teaching? (Preparedness)

Independent variables: Implementation Challenges, College name, Infrastructure, Assessment Practices, Understanding of OBE, Digital Tool Usage, NEP Core Focus, Institutional Context, Teaching Methodology, Information Channels, Management Support.

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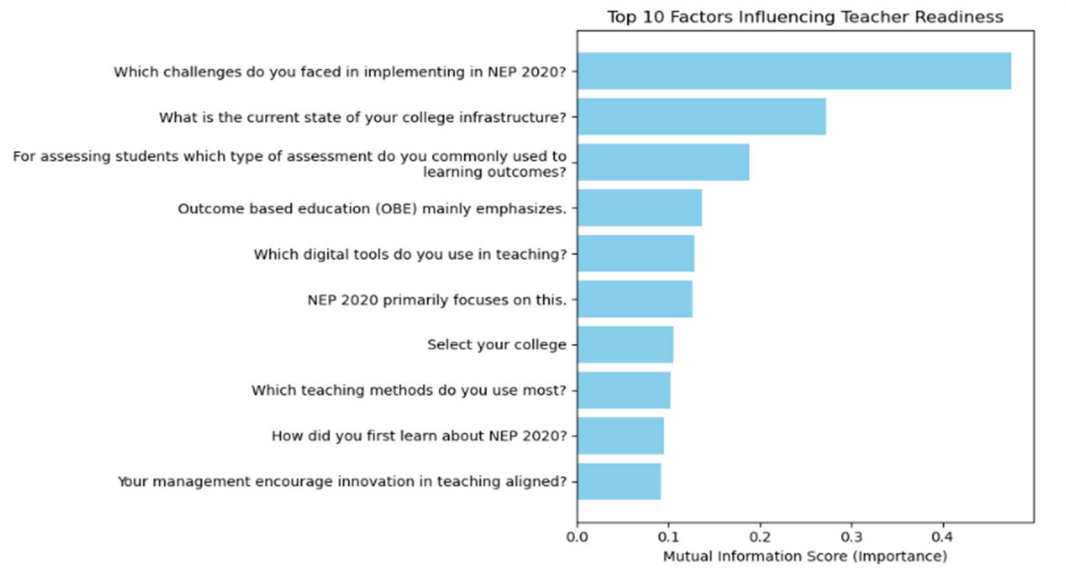

Model Accuracy: 0.7619

--- Confusion Matrix ---

	Predicted Low	Predicted Mod	Predicted Full
Actual Low	2	3	0
Actual Mod	2	28	0
Actual Full	0	5	2

Class	Sensitivity (Recall)	Specificity
Low(Not/Minimum)	0.4	0.9459
Moderate	0.9333	0.3333
Full	0.2857	1

Detailed Metrics per Readiness Level: The ordinal logistic regression model successfully predicts teacher preparedness with an overall accuracy of 76.19%. Teachers readiness is directly shaped by specific training interventions and institutional digital support.

VII. OVERALL CONCLUSION

Awareness Sources: Social media and news articles are the primary channels through which teachers first learned about the NEP 2020.Major Obstacles: Heavy workload stands out as the most significant challenge hindering teachers from implementing new policy changes. There is a positive association between training formality and teacher confidence, where formal training yields the highest comfort rate compared to informal or not attained training. Teachers who receive formal training show the highest levels of confidence, feeling comfortable. Data Distribution: Statistical testing reveals that the research data does not follow a normal distribution. Training Impact: There is a statistically significant relationship between attending training workshops and a teacher's level of understanding. Instructional Planning: Significant differences exist in how teachers approach through comfort with multidisciplinary teaching remains uniform across groups with various teaching method. Professional Background: A teacher's years of experience and educational background significantly dictate their likelihood of attending NEP workshops. Preparedness: Attending formal workshops and receiving ICT training are the most critical factors in making a teacher feel confident and prepared. The

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