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A Study on Innovative Practices for Quality Enhancement in Mentor-Mentee System of Higher Education Institutions in Bengaluru

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***Abstract* - A Mentorship program is said to be a systematic and well-organized initiative that starts with the matching of more experienced individuals (mentors) with less experienced individuals (mentees to provide guidance, support, and knowledge transfer). It is an ongoing process wherein Faculty members of HEI help and mentor the mentees, enhancing the mentee's caliber in Higher Educational Institutions. The purpose of this study was to assess the efficacy of the mentorship program by implementing a few selected innovative practices and the impact of these methods in improving the quality of outcomes concerning the individual's holistic development. The paper examines the effectiveness of the selected four innovative practices. Also, it helps to know the combination of the factors that may lead to quality excellence in implementing the mentor system in the Higher Education System.**

Keywords: **Flipped Classroom, Peer Tutoring, Project-based Learning, Case Study & Holistic Development**

I. INTRODUCTION

History has shown us that human beings tend to grow in the presence of their elders which symbolizes that they need the support and experience of their elders in framing their path (Allen et al., 1999). The concept of mentorship is said to have originated with the Homeric figure Mentor. This ancient Greek epic poem tells the story of Odysseus leaving his infant son Telemachus in the care of his trusted companion Mentor while he departs to fight in the Trojan War.

Mentoring refers to a premeditated process of fostering the development of the dependent toward his full potential (www.open.edu). Mentoring is a perceptive process in which the recipient absorbs and applies the mentor's wisdom.

In the modern-day world, mentors have been extremely important in the holistic development of individuals in education and work life (Arasu et al., 2024). Gerald P. Koocher, PhD, the American Psychological Association's (APA) president, organized a presidential mentoring task force in 2006 to create a range of mentorship relationships between graduate students in psychology, junior psychologists, and more experienced senior psychologists (American Psychological Association, 2006). That transcends boundaries of professional and scientific interest.

India, a country well-known for its vivacious culture and multicultural populace, is also becoming more and more recognized for another quality: the power of mentoring (timesofindia, 2024). The rapport between an instructor and pupil, or Guru-shishya, has been fundamental in forming people and societies from ancient times. But as a result of modernization and globalization, this age-old method of instruction has changed into a variety of mentorship programs, where mentors from many walks of life help the next generation of learners reach their objectives.

The idea of mentorship is highly valued and beneficial for personal as well as professional growth. A mentor can offer someone a plethora of knowledge and expertise, aiding them in conquering obstacles and handling barriers (Kintu et al., 2017). The cornerstone of the mentor-mentee relationship is mutual respect, trust, and a shared dedication to personal development. Mentors can be excellent sources of inspiration and guidance as well as models of behavior.

The State of Mentorship in India Today

For decades, mentoring has been an essential aspect of both professional and personal growth (Szabo et al., 2019). The idea of mentorship has evolved significantly in India in the last many years (Inzer, 2005). Formal mentorship programs, which prioritize education and skill acquisition, are becoming increasingly common across various industries (Llopiz-Guerra et al., 2024). These programs can aid in the acquisition of the required abilities and information as well as offer guidance and direction for careers.

Statement of the Problem

There is an assortment of factors that influence and contribute to the smooth mentor relationship between Mentor and Mentee. It is challenging to select the accurate methods that can give the best outcome. Determining the standards for the

outcome is also a brainstorming activity as the outcome can be measured with various parameters such as behavioral changes, communication, examination scores, reaction to a situation, etc. The researcher of the study has identified a few factors based on a pilot study conducted during the period 2023-24 in HEI with 90 as the sample size. The study revealed that factors such as frequency of mentor-mentee meetings, flipped classrooms, peer tutoring, and project-based learning, a case study can have a positive impact on outcome-based education.

The Objectives of the Study

- To examine the selected innovative procedures used by mentors in Higher Education Institutions (Mathur et al., 2024).
- To investigate the quality and outcome of innovative methods adopted in the mentor system of Higher Education Institutions.

II. Review of the Literature

Sallieann Brown Hoffer in his paper "By comparing the results to a comparison group for the academic years 2008 and 2009, a formal mentoring program and its relationship to academic success and retention rates has examined differences achieved in retention rates for students participating in the program (Bearman et al., 2007). At WWU, statistical analysis revealed a connection between faculty mentoring and retention (Chun et al., 2012).

Heidrun Stoeger, Daniel Patrick Balestrini, and Albert's "Important concerns in professionalizing mentoring practices "have demonstrated the beneficial effects of mentoring on a person's development across all spheres and about numerous outcomes throughout their lifetime.

Susan Galamay, Ma. Cristeta M. Aduca and Federica C. Calauagan in their research paper, recommended giving cooperating teachers more time for post-conferences and providing them with ongoing professional education to improve their ability to mentor student teachers (Agung et al., 2024).

Ridwanah Gurjee in his research paper titled "An Examination of Students' Mentoring Relationships in community settings in Higher Education, the present study has yielded several findings that will contribute to the growing body of knowledge (Ronald et al., 2024). Among these is the recommendation that mentoring relationships should have an average duration of 6.5 months to optimize benefits and achieve desired results.

Nelky Rodriguez If all higher education institutions concentrated on offering mentoring programs that paired staff with leaders within the institution, the desired succession/career advancement would result in long-term staff retention and employment satisfaction, according to Nelky Rodriguez's research paper, "Understanding Mentoring Relationships and Career Advancement in Higher Education." The participants built successful mentoring relationships by demonstrating their competence within their field, developing trust with their mentor, setting goals, and staying connected throughout every move made (Shankar Subramanian Iyer, 2021).

III. Research Methodology

The study is descriptive and aims to identify and describe the factors to be considered in the effective implementation of the Mentor-Mentee Policy (Khader, 2016).

Primary Data: Data is collected through a structured questionnaire and was posted through Google forms.

Secondary Data: was gathered from pertinent sources such as government publications, newspapers, magazines, journals, and published articles.

Respondents: The teaching fraternity who are playing the role of mentors in HEI were selected as respondents and the data was collected from 44 respondents.

Statistical Tools Used

The data analysis was done using statistical tools like Measurement Model Factor Analysis, Co-relation matrix, KMO, Bartlett's Test, and the measurement of averages.

Questionnaire's Design and Scoring

Based on experts' suggestions, the final questionnaires were remodified and the number of items was reduced accordingly to a 5-point Likert scale. The questionnaire framed for the employees of HEI had 20 questions apart from the demographic profile. All the questions were measured on a 5-point rating scale with '1 denotes 'Strongly Disagree, '2 - Disagree', '3 - Can't Say', '4 - Agree', and '5 denotes 'Strongly Agree'.

IV. Limitations of the Study

- The study is restricted to assess only the aspects relating to the mentor-mentee system.
- The study focuses on the Mentor-Mentee System in HEI in Bengaluru only.
- The percentage of error is expected to be only 5%.

Hypotheses

For Objective 1

To examine the selected innovative practices adopted by mentors in Higher Education Institutions

H0: There is no relationship between the flipped classroom and its impact on the effectiveness of the mentee learning process.

H1: There is a Direct and Significant relationship between the flipped classroom and its impact on the effectiveness of the mentee learning process.

For Objective 2

To investigate the quality and outcome of innovative methods adopted in the mentor system of Higher Education Institutions.

H0: The use of multiple innovative methods will not inflate the performance of the students in HEI

H1: The use of multiple innovative methods will have a significant and positive impact on the performance of the students in HEI

V. Analysis and Interpretation

Objective 1: To examine the selected innovative practices adopted by mentors in Higher Education Institutions

H0: There is no relationship between the flipped classroom and its impact on the effectiveness of the mentee learning process.

H1: There is a direct and significant relationship between the flipped classroom and its impact on the effectiveness of the mentee learning process.

TABLE I TABLE DEPICTING THE STANDARD DEVIATION AND VARIANCE OF THE VARIABLE FLIPPED CLASSROOM AND ITS EFFECTIVENESS ON THE LEARNING PROCESS

		The flipped classroom is a better way of learning method	mentees' involvement in a flipped classroom	flipped classroom improves the effectiveness of mentees' learning	flipped classroom improves academic excellence in HEI
N	Valid	42	42	42	42
	Missing	2	2	2	2
Mean		4.19	4.17	4.29	4.19
Standard. Error of Mean		.133	.122	.104	.114
Median		4.00	4.00	4.00	4.00
Mode		4	4	4	4
Standard. Deviation		.862	.794	.673	.740
Variance		.743	.630	.453	.548
Range		4	3	2	3
Minimum		1	2	3	2
Maximum		5	5	5	5
Sum		176	175	180	176
Percentiles	25	4.00	4.00	4.00	4.00
	50	4.00	4.00	4.00	4.00
	75	5.00	5.00	5.00	5.00

Source: primary data.

SPSS output.

Inference: Concerning the above table I the respondents think that flipped classrooms are a better way of learning method as the standard deviation is 0.862 which depicts that the effectiveness of learning can be enhanced through this method, followed by the Standard Deviation for mentees' involvement in a flipped classroom is 0.794 suggesting that the mentees are more involved during these sessions. It also improves the academic excellence in HEI with a standard deviation score being 0.740.

TABLE II TABLE DEPICTING THE OPINION OF THE RESPONDENTS ON LIKERT'S FIVE-POINT SCALE THE FLIPPED CLASSROOM IS A BETTER WAY OF LEARNING METHOD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	1	2.3	2.4	2.4
	disagree	1	2.3	2.4	4.8
	neutral	3	6.8	7.1	11.9
	agree	21	47.7	50.0	61.9
	strongly agree	16	36.4	38.1	100.0
	Total	42	95.5	100.0	
Missing	System	2	4.5		
Total		44	100.0		

Inference: It is observed above the table II the respondents have given a positive remark towards accepting the flipped classroom as a better way of learning. 84.1% of the respondents are paving the way towards the use of flipped classrooms. Around 7% of the respondents are yet to decide on their choice and a small percentage of 4% of respondents are against the use of flipped classrooms. The study on using the flipped classroom as a better way of learning can be concluded stating that the opinion of the respondents from HEI is coinciding with the alternate hypothesis of the study.

TABLE III TABLE DEPICTING THE STUDY OF THE VARIABLES USING FACTOR ANALYSIS CORRELATION MATRIX

Variables		does peer tutorial encourage critical thinking	PBL prepares mentees for employability	case study helps students to practically apply their skills	flipped classroom improves the effectiveness of mentees' learning
Correlation	does peer tutorial encourage critical thinking	1.000	.150	.834	-.238
	PBL prepares mentees for employability	.150	1.000	.033	.095
	case study helps students to practically apply their skills	.834	.033	1.000	-.264
	flipped classroom improves the effectiveness of mentees' learning	-.238	.095	-.264	1.000
Sig. (1-tailed)	does peer tutorial encourage critical thinking		.172	.000	.064
	PBL prepares mentees for employability	.172		.418	.275
	case study helps students to practically apply their skills	.000	.418		.046
	flipped classroom improves the effectiveness of mentees' learning	.064	.275	.046	

Determinant = .265

Source: primary data.

SPSS output.

Inference: From the above table III, it is observed that there is a positive correlation among variables such as peer tutorial and project-based learning, peer tutorial and case study method depicting that these methods can be used simultaneously to achieve better results depending upon the nature of the HEI. There is a negative correlation observed between the variables peer tutorials and flipped classrooms, indicating that peer tutorials or flipped classrooms both used at a time may not give the desired results. It is very obvious that peer tutorial requires personal attention and flipped classrooms may not focus on this aspect the nature of flip classroom and peer tutorial are completely different hence use of both these methods simultaneously may not be possible.

TABLE IV TABLE DEPICTING THE STUDY OF KMO AND BARTLETT'S TEST

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.520
Bartlett's Test of Sphericity	Approx. Chi-Square	51.513
	Df.	6
	Sig.	.000

Inference: Collinearity indicates how strongly a single variable is correlated with other variables. Hence the variables under study indicate that there is a strong correlation among them in table IV.

TABLE V TABLE DEPICTING THE IMAGE MATRICES

Anti-image Matrices					
		Does peer tutorial encourage critical thinking?	PBL prepares mentees for employability	case study helps students to practically apply their skills	flipped classroom improves the effectiveness of mentees' learning
Anti-image Covariance	does peer tutorial encourage critical thinking	.289	-.118	-.241	.031
	PBL prepares mentees for employability	-.118	.936	.081	-.109
	The case study helps students to practically apply their skills.	-.241	.081	.293	.052
	flipped classroom improves the effectiveness of mentees' learning	.031	-.109	.052	.916
Anti-image Correlation	does peer tutorial encourage critical thinking	.512[a]	-.227	-.827	.061
	PBL prepares mentees for employability	-.227	.267[a]	.155	-.118
	The case study helps students to practically apply their skills.	-.827	.155	.516[a]	.100
	flipped classroom improves the effectiveness of mentees' learning	.061	-.118	.100	.830[a]
a. Measures of Sampling Adequacy (MSA)					

Inference: In table V, According to the rule of thumb the anti-image correlation matrix A is a matrix of the negatives of the partial correlations among variables the study depicts to what extent the variables are negatively correlated suggesting to choose the right variables under study.

TABLE VI TABLE DEPICTING THE COMMUNALITIES

	Initial	Extraction
does peer tutorial encourage critical thinking	1.000	.890
PBL prepares mentees for employability	1.000	.781
case study helps students to practically apply their skills	1.000	.867
flipped classroom improves the effectiveness of mentees' learning	1.000	.519
Extraction Method: Principal Component Analysis.		

Inference: Communalities explain the proportion of each variable's variance that can be explained by the factors. It can be observed that the communalities for all the factors are positive in table VI.

TABLE VII TABLE DEPICTING THE TOTAL VARIANCE

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.973	49.315	49.315	1.973	49.315	49.315
2	1.084	27.095	76.411	1.084	27.095	76.411
3	.786	19.639	96.049			
4	.158	3.951	100.000			

Extraction Method: Principal Component Analysis.

Inference: from the above table VII the Eigenvalues depict that the 1st component value is 1.973>1, 2nd component is 1.084> 1, 3rd component value is .786 < 1 and 4th component is 0.158< 1 thus the first 2 components have more weightage in the consideration of factors under the current study.

TABLE VIII TABLE DEPICTING THE REPRODUCED CORRELATIONS

		Does peer tutorial encourage critical thinking?	PBL prepares mentees for employability	case study helps students to practically apply their skills	flipped classroom improves the effectiveness of mentees' learning
Reproduced Correlation	does peer tutorial encourage critical thinking	.890[a]	.243	.870	-.360
	PBL prepares mentees for employability	.243	.781[a]	.132	.418
	case study helps students to practically apply their skills	.870	.132	.867[a]	-.429
	flipped classroom improves the effectiveness of mentees' learning	-.360	.418	-.429	.519[a]
Residual	does peer tutorial encourage critical thinking		-.093	-.036	.122
	PBL prepares mentees for employability	-.093		-.100	-.323
	case study helps students to practically apply their skills	-.036	-.100		.165
	flipped classroom improves the effectiveness of mentees' learning	.122	-.323	.165	

Extraction Method: Principal Component Analysis.
a. Reproduced commonalities
b. Residuals are computed between observed and reproduced correlations. There are 5 (83.0%) no redundant residuals with absolute values greater than 0.05.

Inference: from the above table VIII it can be observed that the variables under the study have reproduced the correlation matrix which is very close to the original correlation matrix depicting that the variables under the study are reliable and are contributing towards the outcome of the study.

TABLE IX TABLE DEPICTING THE CUMULATIVE PERCENTAGE OF THE MENTOR-MENTEE MEETING

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	4.5	4.5	4.5
	weekly once	11	25.0	25.0	29.5
	15 days once	17	38.6	38.6	68.2
	monthly once	14	31.8	31.8	100.0
	Total	44	100.0	100.0	

Inference: In table IX, It is observed that most of the mentors think that the frequency of Mentor-Mentee Meetings is once a fortnight which can be one of the drawbacks of the effectiveness of the implementation of the Mentor-Mentee policy. If the Mentor-Mentee meeting could be held once a week it would contribute to the wellbeing of the mentee and support the holistic development of the individual.

VI. FINDINGS OF THE STUDY

- The standard deviation of choosing a flipped classroom as a methodology of study is 0.862.
- The Standard Deviation for mentees' involvement in flipped classrooms is 0.794.

- 84.1% of the respondents are paving the way towards the use of flipped classrooms.
- Correlation between peer tutorial and case study method is .824.
- There is a negative correlation of .238 observed between the variables peer tutorials and flipped classrooms.
- variables under study indicate that there is a strong co-relation among them using KMO and Bartlett's Test.
- The commonalities for all the factors under study are positive.
- The first 2 components have more weightage in the consideration of factors under the current study.
- Variables under the study have reproduced correlation matrix which is very close to the original correlation matrix.
- Mentors think that the frequency of Mentor-Mentee Meetings is once a fortnight

VII. SUGGESTIONS

- A flipped classroom can be used as an alternative methodology**.**
- Peer tutorial and case study methods can be used in combination.
- All the variables under study apply to HEI based on the other influencing factors such as infrastructure, mentor-mentee ratio, quality of student intake, etc.
- Peer tutorial and project-based learning can be easily implemented by most of the HEI.
- The mentor-mentee meeting conducted regularly can have a better impact on the working of the system in HEI.

VIII. CONCLUSION

The study discusses the selected innovative practices such as the frequency of mentor-mentee meetings, flipped classrooms, peer tutoring, project-based learning, case study, and their application in HEI. No single mentoring technique is appropriate in every circumstance. However, different practices may emerge across the academic scenario that may result in best mentoring practices over some time. However, the current study concluded that the above-mentioned practices if used in combination would result in the holistic development of the individual thereby enhancing the quality of the implementation mentor-mentee system.

IX. SCOPE FOR FURTHER RESEARCH

The study of mentor-mentee systems can be conducted in various other fields with different variables and different geographical locations.

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