ROLE OF PROFESSIONAL DEVELOPMENT PROGRAMS IN QUALITY ENHANCEMENT IN HIGHER EDUCATION INSTITUTIONS – A COMPREHENSIVE STUDY OF HIGHER EDUCATION INSTITUTIONS.

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ABSTRACT

Effective professional development is on-going, includes training, practice and feedback, and provides adequate time and follow-up support. Successful programs involve teachers in learning activities that are similar to ones they will use with their students, and encourage the development of teachers' learning communities. There is growinginterest in developing schools as learning organizations, and in ways for   teachers to share their expertise and experience more systematically. In this Paper a Survey has been made to analyze the professional development of teachers of various Institutes of Haryana and other states. A Comparative analysis is also done to analyze the professional development of teachers of different states using different python libraries like NumPy, Pandas and Matplotlib. Dataset of professional Development has been taken from survey posted through the google form and has been extracted through Pandas. In which data regarding the professional development of 99 teachers have been collected. [1]Pictorial View of Data has been shown with the help of Line Charts and Bar charts that provides a clear-cut image of professional development of teachers. These libraries provide integrated, accurate ways to generate common data manipulation and analysis in those data sets.

KEYWORDS: Professional Development ,Python, Data Science, Pandas, NumPy, Matplotlib, Scipy, Keras.

INTRODUCTION:

Today it is the age of collaboration rather than competition and individual working. Team work, sharing of resources and networking enhance the capacity of individuals rather than grappling alone with problems. CPD also implies that teachers gain the ability and the attitude for cooperation and collaboration. Hence the ability for technology mediated networking for sharing information, ideas, and experiences, collaboration on projects, and so on is required. Professional

Networking is needed not only for educational benefits but also for discussing and reflecting collectively on professional issues.[2] Python could be an interpreted object orientated programming language that gaining quality in field of information science and analytics by making complicated software system applications. Python has terribly large and sturdy commonplace libraries that area unit used for analyzing and visualizing the information. Information scientists ought to subsume large quantity of information called massive data. With straightforward usage and an outsized collection of data analyses python libraries, Python a preferred choice to control massive information. Python constructs systematic tools which may facilitate information soul in forming machine learning models, net services, data processing, classification etc.

OBJECTIVE OF STUDY

- How much does the amount and profile of teachers' professional development vary within and among states? [3]

- How well are teachers' professional development needs being met?

  The chapter first examines teachers' participation in professional development and compares the intensity of that participation. The focus in this section is on more structured activities, such as attendance at courses and workshops, conferences and seminars, etc. The volume (or intensity) of professional development can be influenced by the types of development activities that teachers engage.

LEVEL AND INTENSITY OF PARTICIPATION IN PROFESSIONAL DEVELOPMENT

This paper examines the participation of teachers in various activities like workshops, seminars, conferences Refresher Course and Orientation Course etc. Overall levels of participation are measured in terms of teacher participation rates and intensity of participation in terms of the average number of teachers' days of development during the 18-month period prior to the survey

MATERIALS AND METHODS: ANALYSIS OF PROFESSIONAL DEVELOPMENT OF TEACHERS

Data Collection

[4] The data set used here is collected from Survey. For the data analytics, we have used Jupyter notebook in anaconda because it is an open-source web application in which we can run the code step by step. Moreover, it took lesser time as compared to the other platforms in Python library such as PyCharm and jupyter lab.[5] The following procedures were used in the research: Data Cleaning, Data Selection, Data Transformation and Data Mining.

DataSet Used for Analysis is as Follows:

	Timestamp	Salutation	First Name	Last Name	Gender	Designation	Qualification	Teaching Experience(In Years)	Institution Name	Type of Institution	...	Faculty's individual effort towards Professional Development [I regularly visit library and read to improve my knowledge]	Faculty's individual effort towards Professional Development [I read literature online to upgrade my knowledge]
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN
1	2/25/2022 21:43	Mr.	Shakti	Kumar	Male	Assistant Prof.	Post Graduation	10	Govt PG College Ambala Cantt	Government	...	Strongly agree	Strongly agree
2	2/25/2022 22:03	Mr.	Sumit	Chhibber	Male	Assistant Prof.	Post Graduation	14	Sanatan Dharma College, Ambala Cantt	Aided	...	Strongly agree	Agree
3	2/25/2022 22:04	Prof.	Parveen	Kaur	Female	Assistant Prof.	Post Graduation	7 year	SGHS, Khalsa College Panjokhra Sahib Ambala	Others	...	Agree	Agree
4	2/25/2022 22:07	Dr.	Deepak Kumar	Manocha	Male	Assistant Prof.	Ph.D	10	Sanatan Dharma College Ambala Cantt	Aided	...	Strongly agree	Strongly agree
...	...	...	...	...	...	...	...	...	...	...	...	...	...
93	3/3/2022 9:58	Dr.	Mahesh	Kumar	Male	Assistant Prof.	Ph.D	10 years	MLN College Yamuna Nagar	Aided	...	Agree	Agree
94	3/3/2022 22:19	Ms.	Deepika	Sharma	Female	Assistant Prof.	M.Phil	10	Guru Nanak girl's College Yamunanagar	Aided	...	Neutral	Agree
95	3/4/2022 14:49	Dr.	Swati	Sharma	Female	Assistant Prof.	Ph.D	3	MDU Rohtak	Government	...	Neutral	Disagree
96	3/7/2022 16:46	Dr.	Mamata	Aswal	Female	Assistant Prof.	Ph.D	5	Government Post graduate college gopeshwar Cha...	Government	...	Agree	Strongly agree
97	3/9/2022 16:10	Dr.	Renu	Sharma	Female	Assistant Prof.	Ph.D	17	Sanatan Dharma College Ambala Cantt	Aided	...	Strongly agree	Strongly agree

98 rows × 50 columns

Faculty's individual effort towards Professional Development [I regularly visit library and read to improve my knowledge]	Faculty's individual effort towards Professional Development [I read literature online to upgrade my knowledge]	Faculty's individual effort towards Professional Development [I attend online tutorial/workshops/courses to learn latest in my subject / teaching methodologies/soft skills]	Faculty's individual effort towards Professional Development [I collaborate with colleagues to learn new things]	Faculty's individual effort towards Professional Development [I collaborate with my colleagues to design course/exam papers/lesson plans etc]	Kindly Suggest any innovative activity to enhance Professional development(Other than mentioned in the Survey form)	Kindly suggest any innovative practice to increase faculty participation in PDPs	Email ID	Contact No	Email A
NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
Strongly agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree		mandatory from govt for contractual employees	NaN	9729711424	shaktikumarbajpai@gm
Strongly agree	Agree	Strongly agree	Agree	Agree	Group discussion in the department	Seek response of participants more often durin...	NaN	9813610531	schhibber2014@gm
Agree	Agree	Agree	Agree	Agree	No suggestions	No suggestions	NaN	9041482774	parveenkaurkoura@gm
Strongly agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree	Creating a MOOC based course	Skill Enhancement Courses	NaN	9991656587	deepaksdcollege@gm
...	...	...	...	...	...	...		...	
Agree	Agree	Strongly agree	Strongly agree	Agree	Students and teachers should be trained bfor f...	Program should be organised during vacations. ...	NaN	9050053078	mailtoatri@gm
Neutral	Agree	Agree	Agree	Agree	Offline practical Workshops to upgrade knowledge	Motivation by the institute along with financi...	NaN	9416326943	deepikaashwani27@gm
Neutral	Disagree	Agree	Neutral	Neutral	Group Discussion weekly & availability of indi...	Meditation & Motivation lectures	NaN	9896150197	swati.bioscience@gm
Agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree			NaN	9627920642	aswalmamata5@gm
Strongly agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree	...	...	NaN	9466070790	drrenugaur@gm

Fig 1: Data Set Used for Analysis

Data Cleaning

Here, a compatible layout for the data model was developed in which NAN and duplicate data is obtained and removal of worst data is done. [6]Then cleaned data were transformed into a format acceptable for data mining.

Data Selection

During this stage, data applicable to the analysis was done on and fetched from the dataset.

Data Transformation

This is also known as data consolidation. In this stage the selected data is transformed into forms which is suitable for data mining. [7]The data frames were saved in Commas Separated Value (.CVS) file format and the datasets were scales as it can be accepted by the model.
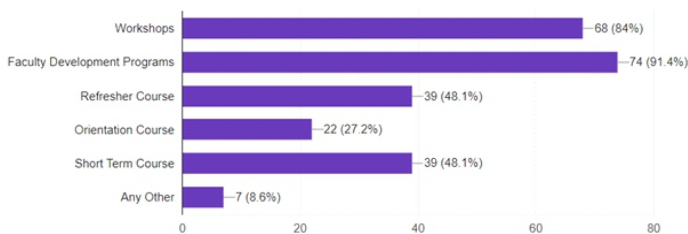
Analysis Results

Fig 2: Percentage of Teachers attended various activities

Above Bar Chart Shows the Analysis of Various activities attended by the Teachers like It can be seen Workshop has been attended by the 84% Teachers, FDP is attended by 91.4%,Refresher Course 48.1%, Orientation Course 27.2%, Short Term Courses 48.1% and other activities have been attended by 8.6% of Teachers.
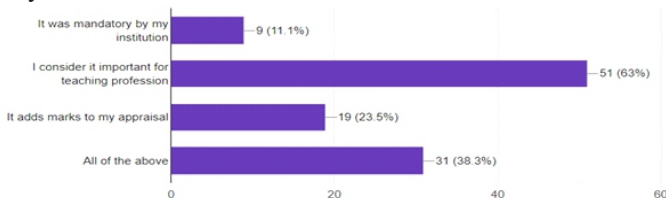

Fig 3: Why the Professional Activities are Important

Figure 3: Gives us the idea about the views of teachers that why the Professional Activities are Important to them. As11.1% teachers said that it is mandatory by their Institution and 51% think it as an important part for their teaching Profession and 23.5% have been added that it adds marked to their appraisal rest of the teachers have remarked all of above .
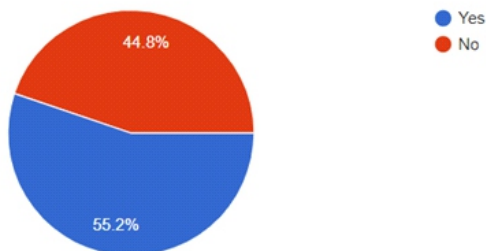

Fig 4:Does your Institution provide financial assistance to attend PDP?

44.8%Teachers said that no Financial Assistance has been provided to attend the professional Development Programs. Rest of the teachers have mentioned that they get the financial support from their Respective Institute

CONCLUSION AND FUTURE SCOPE

Teaching profession is perceived as one of the most challenging professions. Offsite workshops for teachers are important, especially when offline seminars/conferences have taken the shape of online mode. This Data can be a work in progress by obtaining systematic information based on Data Analysis tools and machine learning languages that provide advanced process and technological options. [8] In this work the Basics Python Libraries are used to show the results of PDP (Professional Development Programs. Various Suggestions have been given by the teachers like Creating a MOOC based course, Web of science and Scopus latest articles, Data Analysis using SPSS these all are should also be conducted whether in online or offline mode to enhance the professional development of teachers. We can also conduct PDPs that should be based on live practical sessions rather than only theoretical sessions. In the future Database Comparison can be done using other libraries such as TensorFlow, Scikit Learn and Keras etc. in order to use machine learning in it and thus the scope of the future to find comparisons of the PDP's activities of different states or countries by separating and training a set of data. Python Tools is the best choice for Big Data Analytics applications because of its ease of use.

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