

Training Need of Rural Teachers in Primary Schools: Basis for Professional Development

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Abstract: Rural education is an important component of China's education industry, and the professional development of weak rural schools and their teachers directly affects the quality of basic education in China. This article adopts a combination of qualitative and quantitative research methods to randomly select 95 rural primary school teachers in Guizhou Province. The focus is on the training needs of rural primary school teachers, meeting the needs of teaching development, scientific development, personal development, technological development, and organizational development. The findings and conclusions of the post service training needs of rural primary school teachers are summarized and analyzed. In the comprehensive development stage of teachers, under the guidance of the theory of teacher reflection, with the support of constructivist theory and other related theories, and referring to typical experiences of in-service teacher training at home and abroad, specific training needs and suggestions were proposed, which promoted the professional development of rural primary school teachers in Guizhou Province and provided strong reference for the post service training of rural primary school teachers in western China.

Keywords: Rural teachers; Primary school; Training needs; Professional development

1. Introduction

The research aims to focus on exploring the training needs of rural primary school teachers, to cultivate a group of outstanding primary school teachers who love primary school education, who are positive and optimistic, have the courage to challenge, have extensive knowledge, and have comprehensive abilities, and can meet the needs of primary school multi-science education and teaching by improving the ability of rural teachers to deal with adversity. Based on the study on the professional needs of rural primary school teachers in Guizhou Province, specific training needs according are proposed to the results of the survey, which is to improve the training mode of rural primary school teachers and accelerate the training of basic education teachers in all aspects.

The research is based on the theory of teacher professional development stage, teacher belief theory, teacher reflection theory and other relevant teacher education theories, drawing on the practical experience of post-service training of rural teachers at home and abroad, deeply investigating the training status of front-line teachers in rural primary schools in Guizhou Province, and trying to explore the post-service teacher training program of rural primary schools, to provide theoretical support for post-service teacher training, and some theoretical basis and practical experience for the reform of rural basic education.

The training of general subject teachers in rural primary schools is determined by our country's basic national conditions. The economic development of various regions in my country is not balanced in the primary stage of socialism. In economically underdeveloped areas, especially remote rural areas, the lack of teachers has always been a constraint on my country's rural foundation. (Zhang Mingming,2018)Many rural teachers have to teach different subjects or even subjects that are not related to their expertise, such as music and sports, without getting enough training before they start working. This makes rural elementary school teachers feel very stressed and limits the quality of education in rural areas.”^[1]

Rural students need, and deserve, effective teachers—well-prepared teachers who understand and value the important role of schools in the life of rural places. (Huang Juan,&Guo Minglan,2019) With these aforementioned challenges, the researcher realized that finding the right teacher training is crucial for improving the teachers' skills and the students' achievements. Therefore, the researcher decided to conduct this research.^[2]

2. Research Method

This study combines quantitative and qualitative methods, using literature research, investigation, and comparative research methods. Rural teachers from Xieba Central Primary School in Zheng'an County, Zunyi City, Guizhou Province were selected as the survey subjects. A random sampling survey was conducted on 95 teachers to explore the current situation and problems of post service training for general subject teachers in rural primary schools, and in-depth analysis and excavation were conducted to explore "versatile" primary school teachers. Based on the reasons and circumstances of "scientific orientation", effective ways to promote post service training for general subject teachers in rural primary schools in Guizhou Province have been proposed to promote the professional development of teachers.

Factor analysis is a statistical analysis method that uses an indicator system to analyze or measure the direction and degree of the impact of changes in various influencing factors on the overall changes in objective phenomena. In comparative analysis, in order to subdivide differences, it is necessary to divide the indicator composition of teachers' professional needs into four factors, namely teaching development, scientific field development, personal development, and organizational development, and replace and analyze several factors one by one.

The main focus of this study is to identify and explore a possible framework to develop factors that contribute to teacher training and determine its analytical structure. In order to achieve the main purpose of the study, which is to define a set of factors Varimax through exploratory factor analysis, this is an orthogonal rotation method. To determine the number of factors, several criteria were used, including the difference between adjacent feature values, screen images, and the difference in percentage variance. The purpose is to consider adjacent factors and, more importantly, the structure of the factors.

3. Results and Analysis

Table 1 KMO. Bartlett's Test

Kaiser – Meyer-Olkin Measure of Sampling Adequacy		.840
Bartlett's Test	Approx. Chi Square	3064.874
Of Sphericity	df	630
	Sig.	.000

As shown in table 1, Criteria for determining factor adequacy were established a priori, as such the KMO and Bartlett's of Sphericity was used . The KMO test measures the degree of coherence between variables and the Bartlett's test tests the null hypothesis that the correlation matrix is an identity matrix . High values of KMO(close to 1), overall KMO values $\geq .70$ are desired (Hoelzle& Meyer, 2013) and low p values of Bartlett's test (< 0.05) indicates that factor analysis is appropriate for the data. A significance which is < 0.05 means that the variables in the correlation matrix are interrelated that they could be used for factor analysis.

Based from the result it can be seen that Bartlett's Sphericity is significant (.000) that is , the significant level is small enough to reject the null hypothesis. Moreover, the result of the Bartlett's test of sphericity indicated that the correlation matrix was not random . The test produced a statistically significant Chi Square value, $X^2 = (207) p = .000$ and KMO statistic was .840 which is above the minimum standard for conducting factor analysis . Therefore , it was determined that the correlation matrix was appropriate for factor analysis.

After confirming that the correlation factorable matrix, Exploratory Factor Analysis was utilized. For this particular analysis, 207 cases were analyzed, and 36 variables were included within the data set.

As shown in Figure 1, A graphical method called the scree plot was developed by Cattell (1966) which entails plotting the magnitude of the component eigenvalues against all factors. The graph is useful in determining how many factors to retain (A Practical Introduction to Fcator Analysis)

The scree plot shows the bend in the curve occurring at factor 4 this is the point where the curve of the plot bends sharply and flattens out . Consequently 4 factors was extracted . Those four factors explain most of the variance in the data additional factors do not explain much more . Eigenvalues > 1 are used to retain the factor.

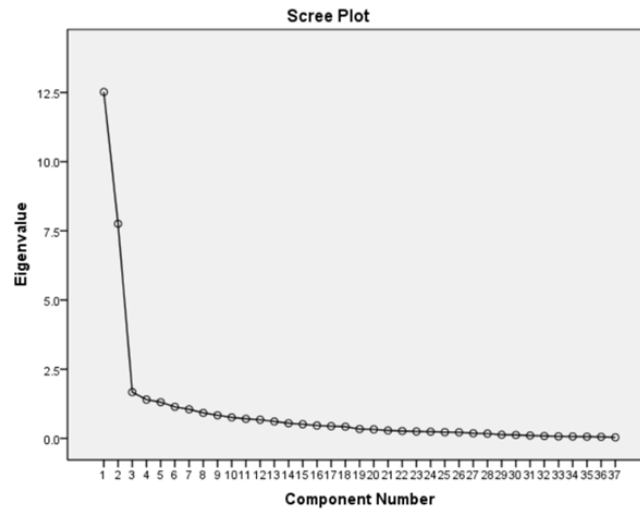


Figure1 A Practical Introduction to Fcator Analysis

Table 2 Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.518	33.833	33.833	11.725	31.689	31.689
2	7.756	20.963	54.797	7.674	20.739	52.429
3	1.673	4.523	59.319	1.996	5.394	57.823
4	1.402	3.790	63.110	1.956	5.287	63.110
5	1.310	3.539	66.649			
6	1.140	3.081	69.730			
7	1.051	2.841	72.571			
8	.921	2.489	75.060			
9	.837	2.262	77.322			
10	.759	2.052	79.374			
11	.705	1.907	81.280			
12	.675	1.825	83.105			
13	.611	1.652	84.758			
14	.547	1.479	86.237			
15	.512	1.385	87.621			
16	.465	1.256	88.877			
17	.440	1.190	90.068			
18	.423	1.144	91.211			
19	.339	.917	92.128			
20	.326	.882	93.010			
21	.285	.769	93.779			
22	.267	.722	94.502			
23	.250	.677	95.178			
24	.241	.653	95.831			
25	.227	.612	96.443			
26	.222	.599	97.042			
27	.185	.501	97.543			
28	.173	.467	98.010			
29	.132	.355	98.365			
30	.122	.329	98.694			
31	.104	.281	98.975			
32	.086	.232	99.207			
33	.073	.197	99.404			
34	.069	.186	99.590			
35	.060	.163	99.753			
36	.056	.151	99.903			
37	.036	.097	100.000			

Extraction Method: Principal Component Analysis.

As shown in table 2, The table of variance explained in factor analysis shows how much of the

variability in the data is accounted for by each factor . The eigenvalues represent the amount of variance explained by each factor(An Empirical Kaiser criterion – APA Psycnet)

The percentage of variance shows the sum of the percentage of variance up to the factor . Usually factors with eigenvalues greater than 1 are considered significant (Statistical Methods and Data Analysis..

The leftmost section of the table shows the variance explained by the initial solution . Seven factors in the initial solutions have eigenvalues greater than 1. However , given that eigenvalues are sample statistics and have a sampling error , judgement was used whether to use the eigenvalue – greater than – 1 rule . the researcher did not adhere strictly but used theory and used other factor analysis research to direct factor retention decision making., the researcher decided to override the default SPSS Extraction by extracting 7 number of factors first to observe the pattern since there are 7 factors that have eigenvalue > 1 in the initial solution. After examining the factor loadings of the 5th and 6th and 7th constructs in the final rotated matrix, it was observed that the factor loadings are < 0.2, the rule here is factor loadings to be acceptable should be ≥ 0.2 (Interpret the Key Results for Factor Analysis). Clearly, the eigenvalue > than 1.0 rule is not the recommended factor retention rule in this case, because it overestimated the number of retainable factors. So for the 2nd Phase the researcher decided to override the default SPSS Extraction by extracting four number of factors .

The rightmost section of the table shows the variance explained by the extracted factors after rotation. The cumulative variability explained by these 4 factors in the extracted solution is about 63%.The most important information on this table are interpreted as follows: Four factors have been saved . That is , the analysis assume that the 36 original variables was reduced to 4 underlying factors . The four components explain 63 % of the variance in the data. That is , when it is assumed that there rare 4 components , we can predict 63% of the information of the 36 variables .

Table 3 Factors for Teaching Competence

27.I would like to take support about career planning and time management	.889
33.I need information about organizational structure and operations	.881
11.I feel the need to improve myself in preparing lesson plans in accordance with the curriculum.	.841
9.I feel the need to develop myself in preparing appropriate learning environments	.814
31.I think I need to have knowledge about verbal and nonverbal communication skills.	.802
15.I need to learn how to build a classroom management system that is appropriate for different student groups.	.786
4.I follow the innovations in information and communication technologies and apply them in my lessons	.782
21.I need knowledge about how to provide appropriate learning environments for students with special needs(such as hyperactive,specific learning difficulties.	.748
3.I need knowledge about using technology for teaching purposes	.746
17.I would like to learn different teaching methods to motivate students and to encourage them participate in classroom activities	.674
35.I feel the need to improve myself about teamwork activities for the school needs.	.672
23.I want to learn the research methods and statistical research techniques related to my scientific field.	.656
25.knowledge on how to take part in national and international projects and activities related to my scientific field	.652
1.I need knowledge about designing and using instructional materials	.630
5.I think I need training about different teaching methods and techniques	.590
8.I can easily improve my students thinking abilities.	.501

As shown from the table 3, there are 16 factors under “ Teachers Competence “construct This construct reflects the training needs of teachers for knowledge, skills, and attitudes of a teacher or a prospective teacher. The following variables are the dimensions to be highlighted for the training needs under this construct . For example: School culture and school work: This dimension measures the teacher’s awareness and adaptation to the norms, values, and expectations of the school environment. Career planning and time management: This dimension measures the teacher’s ability to set goals, prioritize tasks, and balance personal and professional responsibilities. Lesson plan preparation: This dimension measures the teacher’s ability to design effective and engaging learning activities that align with the curriculum outcomes. Teaching gifted children or children with learning disability: This dimension measures the teacher’s ability to differentiate instruction, accommodate diverse needs, and

foster inclusion in the classroom. All students have different learning needs so it is important that teachers will be trained how to apply different strategies to foster different strengths of students and also foster a culture of diversity inside the classroom (Using a Variety of Learning Strategies) Scientific research methods: This dimension measure the teacher's ability to conduct, interpret, and apply research findings to improve their practice and research skills, such as interpreting research findings, analyzing and interpreting data using various statistical tools (Analyzing and interpreting Findings)

Table 4 Factors For Effective Teaching Strategies For Diverse Learners In Education

34.I have enough information about school culture and school work.	.892
28.I am good at career planning and time management.	.881
12.I do not have any problems in preparing lesson plans in accordance with learning outcomes in the curriculum	.800
22.I do not have difficulty in teaching gifted children or children with learning disability.	.791
24.I have enough knowledge about scientific research methods? ?	.778
14.I do not have difficulty in preventing student interventions that negatively affect the lesson.	.730
6.I can easily use various teaching strategies in my lessons.	.730
26.I know how to take part in projects and activities related to my field or to benefit from research funds	.689
10.Successful in teaching environment and classroom preparation activities.	.680
36.I consider myself adequate about the team work in the institution	.670
7.I do not feel qualified enough to make my students think critically and creatively.	.616

Table 4 shows the 11 factors of the developed scale for "Effective teaching strategies for diverse learners in education". This cover topics such as school culture, school work, career planning, time management, lesson planning, learning outcomes, gifted children and children with learning disability.

Through project based learning, design thinking, creative thinking tools and feedback, creativity and the ability to solve problems is developed (Strategies for teaching driven learners)

Table 5 Factors for Emotional Intelligence and Student Engagement in the Classroom

30.I do not have any problems in controlling my anger.	.852
18.I can always motivate my students and encourage them participate in the classroom activities.	.740
16.The differences in the proficiency levels of the students do not affect my classroom management skills.	.587
2.I don't have any problems in preparing and using teaching materials.	.489

As shown in table 5, factors were determined after rotation. The results shows the factors of the developed scale for "Emotional intelligence and student engagement in the classroom". This theme covers topics for teachers trainings such as: anger management, student motivation, student participation, proficiency levels, classroom management, teaching materials and emotional intelligence.

4. Research Conclusions And Recommendations

4.1 Conclusions

The following conclusions were drawn from the findings of the study

Based From the result of the factor analysis .the following constructs will be utilized in the development of the professional training needs of teachers in the rural school of China: Teaching Competence, Effective teaching Strategies for Diverse Learners and Emotional Intelligence and Student Engagement in the Classroom.

The developed scale is reliable. It can be utilized in the development of training needs of teachers in the rural schools in.Participants who were interviewed did not find the current training useful in improving their teaching practices. teachers desired training in pedagogy, interdisciplinary subjects, and curriculum. Rural teachers particularly expressed the need for training in technology, Knowledge about provision of appropriate learning environments for students with special needs(such as hyperactive, specific learning difficulties and classroom management skills).and this is supported from the result of the factor analysis done for teacher's training need priorities.

4.2 Recommendations

Based on the conclusions drawn from the research, we will take effective suggestions to implement the key teacher training needs identified through factor analysis. The developed scale must be tested on a larger scale of respondents to further verify its reliability. A comparative study between the developed scale and the existing scale must be conducted among rural primary school teachers, which will help to gain a deeper understanding of the effectiveness of teacher training needs in rural areas.

(Chen Peng,&Zhang Lili,2020)China-ASEAN Teacher Professional Development Forum is an initiative that aims to empower rural teachers and strengthen the collaboration in teacher capacity building among ASEAN and China. Another source describes a remote co-teaching intervention program using ICTs for rural classes in China, which forms a unique “co-teaching classroom” .^[3] (Li Na,2021) A third source suggests that enhancing part-time in-service teacher training programs can improve the quality of rural teachers in China. ^[4]

After one year, it is necessary to evaluate the scale. If improvement is necessary, further research must be conducted to enrich the developed scales for the professional development or training of rural teachers. Through the implementation of more sophisticated and accurate alternatives, researchers will be able to more often summarize data accurately and validate the constructs implicit within measured variable.

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