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Effects of reflection scale application on professional development of college english teacher

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ABSTRACT

Reflection Scale plays a crucial role in the professional development of college English teacher by means of a questionnaire-based data statistics on reflection behaviors of teachers. Furthermore, data-based construction of a corresponding assumption model and scientific analysis on composing factors can define the ways to construct Refection Scale and make college English teaching meet the fundamental needs of students even firmly support the professional development of teachers and improvement of teaching efficiency. The paper deeply explores the reflection behaviors of teachers from different dimensions to ensure more advanced and scientific construction of Reflection Scale, which relies on the scientific research on exploratory factor and confirmatory factor through a questionnaire on college English teacher from cities, provinces, autonomous regions and municipalities directly under the Central Government.

KEYWORDS

Reflection scale; College english teacher; Professional development; Model construction.

INTRODUCTION

The constructing core of Reflection Scale lies in proving external conditions for effective reflection on teaching behaviors of college English teacher, which leads teachers to draw conclusion on teaching process through the perspective of students development, makes teachers do a in-depth exploration on different reflection dimensions, supplies adequate power for sustaining fine class atmosphere and firm foundation for improving classroom instructing efficiency of college English teaching.

The paper aggregates the data from the questionnaires on 344 college English teachers with different tiles and on different levels and does scientific computation and statistics on these date to ensure the research process more persuasive. At the same time,this paper does relevant exploration on the definition of ' reflection '-a step of teaching process, to make the definition more sophisticated, giving the construction of Reflection Scale corresponding theoretical basis. Besides, the assumption model on refection process and the scientific construction of its structure factors and samples can provide foundation for the professional development of college English teacher. And the detailed analysis on exploratory factor and reliability and the systematic analysis on confirmatory factor leads to the scientific construction of RS and consistently perfectionize its ways of constructing. In addition, combined with the rationality of measuring tool structure during the construction and the validity and reliability in the choice of constructing tools, to powerfully support the construction of RS.

SPECIFIC DEFINITIONS ON REFLECTION PROCESS AND ASSUMPTION MODEL

Specific definitions on reflection process

In today's society, reflection cannot be precisely and comprehensively defined, reason for which is that the profound influence by teaching thought of multiple academic schools makes the definition on 'reflection' itself is not clear, and the main content contained in reflection process varies from each other. Famous American educator John Dewey is the first educator who introduced the concept of 'reflection'. His ideas were mainly embodied in that for anything or hypothesis, the process of continuous, thorough and active thinking according to its basis is reflection[1].Reflection is one of expression forms of professional development of education, which possesses open mind, wholehearted service will to education receivers, good sense of responsibility and dedication. On the basis of 3 factors mentioned above, by close observation on things and effective inference, to form the corresponding reflection process, and this process can be called effective. Dewey also held the view that reflective teacher should see his practical activities with a critical eye to form new ways and ideas for more effective practical activities and drive the improvement of own teaching level and ability. This view is also Schoen's important opinion on professional ability development of teacher. However, Schoen thought that the process of reflection by teacher is personal and irrational and that teachers who engender new ideas and methods through specific teaching process possesses certain thinking set which drives teachers to have reflection automatically is the specific definition on the process of reflection by teacher. Schoen thought that reflection is the inevitable result of the process of practice, which functions as the effective supplement to Dewey's definition on 'reflection '. This is the early definition of process of reflection given by Dewey and Schoen which provides a solid theoretical basis for the teachers growth in the process of practice. In the later stage of exploration, Zeichner and Wriston gave further expansion and research on connotation of ' reflection '. They thought that the reflection of teachers includes factors related to their beliefs, attitudes, behavior, which overturned past connotation of 'reflection' by taking into consideration social, moral and political factors in addition to own knowledge level and external behaviors and thinking.

Assumption model in reflection process

Akbari declared in February 15, 2010, that construction of assumption model of English teachers' reflection should reach a broad criteria as far as possible and make the connotation of the reflection more abundant, revealing the comprehensiveness of construction of assumption model of College English teachers' reflection. Furthermore, to rich the definition on its structure factors as well as its samples can drive the reflection assumption model to positively effect on the process of reflection by teacher. The specific structure factors and samples are showed in TABLE 1 as follow.

TABLE 1 : Sample of definition on factors in reflection model

Factors	Definition	Sample
Practical	Refection practice through journals and communication with colleagues	Recording successes and flaws
Cognitive	Self-efforts on personal professional development	Doing mini research in lecture to deintergrate teaching and learning process
Affective	Understandings of students' emotional and cognitive state	Communicating with students to their learning styles and favors
Meta Cognitive	Understandings concerning teacher's faith, personality, teaching cognition	Finding the effects on my definition of teachers by personal education background
Critical	Reflection on social or political aspects of teaching	Discussing the social injustice cases
Moral	Reflection on value, empathy, fair	Caring students as my duty

DATE COLLECTION OF REFLECTION SCALE SUBJECTS AND MEASURING TOOLS

Subject options in construction of reflection scale

In the research and exploration of this paper, extensive studies on College English teachers had been conducted, with a total of 334 college English teachers who received the test. 98 of them were male teachers, and 236 of them were female teachers. Besides, the number of ones with senior tile was 58, with intermediate title was 222, with primary title was 54. These tested teachers from cities, provinces, autonomous regions and municipalities directly under the Central Government feature in wide source. Quite few of them were from the first-group undergraduate schools, and some of them were from second-group or third-group undergraduate schools. The fairly wide Scale of schools selected contains comprehensive, science and engineering, teacher-training colleges, which provided comprehensive data for construction of Reflection Scale for College English teacher, solid guarantee for consistently improving scientificity of Reflection Scale, prompting Reflection Scale to effect extensively on College English teacher development.

Subject data collection process

In the course of this study, test questions were put into the questionnaires to give away to the subjects. In a total of 280 copies of questionnaires issued, 278 questionnaires were valid with a rate up to 99.3%. Among 100 questionnaires all issued by e-mail, 56 questionnaires were valid with a rate up to 56%. The rate of total valid questionnaires is 87.9%. In the process of subject data collection, firstly do analysis on collected data and valid exploration on teacher reflection factors combined with exploratory factor. Secondly, do research on confirmatory factor, and construct teacher reflection model through the internal relations between the factors to give scientific evaluation on fitness of model. In exploratory factor analysis, the GUI-driven Statistical software was adopted, however, in confirmatory factor

analysis, SEM modeling tool was adopted, in order to provide theoretical support for making reflection scale. The results of analysis on exploratory factors is shown as TABLE 2.

TABLE 2 : Results of analysis on exploratory factors

	PR	MO	CM	CO	AF	MC	CR
30-encourage students to fight discrimination on sex and poverty							.757
29-reflect on social injustice cases and discuss it during classroom instruction							.741
31-cover aging population, gender discrimination, race discrimination and wealth gap in my lecture							.736
32-reveal my political view and its influence on student's political view							.725
33-promote value of democracy and forgiveness							.676
34-influence by gender, family background and region on my students							.655
35-social events that can affect my students							.654
26-my advantages and disadvantages as a teacher						.784	
25-find satisfactory in my teaching						.732	
27-recall the positive and negative cases in my student time and their influences						.674	
24-the meaning of teaching as a profession						.655	
28-the flaws in my lecture						.623	
23-the influence on my definition of teacher by my experience and background						.618	
22-the influence on my teaching methods by my teaching idea						.605	
19-communicate with students to know their learning styles and favors					.710		
18-ask students to express their feeling about the lecture to know which part they like or dislike					.641		
20-talk with students to know their family background, hobby, interest and ability					.632		
21-to see whether students like certain activity					.607		
16-comfort students when they seem depressed					.517		
14-see the problems emerged in class as potential research topic				.756			
11-writing paper based on my teaching				.713			
9-read books and essays about eduction				.625			
8-try out new methods of teaching				.568			
40-give request on attendance and term final test				.519			
41-ask all students to participate in the instruction			.839				
42-make out class regulation			.740				
37-see myself as the example for students and play a exemplary role			.738				
36-care about students as duty		.811					
38-believe in justice and show it in instruction		.733					
1-record my teaching status in notebook		.627					
4-record successes and flaws after class	.721						
2-do a teaching record by documents on teaching status	.690						
	.625						
	PR	MO	CM	CO	AF	MC	CR
characteristic value	1.10	1.27	1.39	2.00	2.22	2.65	8.77
variance percentage	3.32	3.85	4.22	6.06	6.74	8.02	26.57
factor internal consistency coefficient α	.601	.788	.767	.734	.787	.850	.863

(questionnaire internal consistency $\alpha = .905$)

The selection of survey tools

In the research and exploration of this paper, model of 'foreign language teacher reflection theory' was employed in the assumption-making that proposed by Akbari et al. in 2010. The assumption included the relevant model assumption of 6 factors, 42 behavior-description items, and this paper used the the scoring system with five levels from 'never' to 'always'[3]. The Reflection Sale covered 2 main parts. The first part was the basic information of teachers, the age, sex, teaching practice duration, teaching object, school category, professional title and academic degree etc. The second part was primary items of evaluation on reflection.

ANALYSIS ON RESULTS AND FACTORS IN REFLECTION SCALE APPLICATION

Detailed analysis on exploratory factor and reliability

The first-round analysis on exploratory factor by principal component analysis (PCA) fully revealed 'Test Statistics' = 0.888 > 0.8, with a notable result of Barlett ball type test, which fully demonstrated that the exploratory factor is suitable for factor analysis. However, after the third-round analysis on exploratory factor ref17 took fully account of the students feelings before and after classroom instruction to achieve correct analysis on whether the students really liked the instruction. The factor loading was less than 0.4. However, this item had no inevitable links with the other questionnaires on both sides of reflection, so delete it. While ref39,ref10, ref12, ref15 four questionnaire items possessed factor loading beyond 0.4 on two factors, and the the gap between each other was not large, which fully showed that the relationship between the four questionnaire items and 2 factors of was quite close. But these items had negative effects on model fit index, so delete them. Besides, REF3, REF5, REF6 and REF7 aggregated on two independent factors also should be removed because number of factor subordinate questionnaire items was less than 3, then to discuss this part and deeply analyze four questionnaire items. The results of fourth exploratory factor analysis showed that Test Statistic = 0.891 > 0.8, and result of Barlett ball type test was significant (chi square test = 4337.866, DF = 528, = 0 < 0.05). After 6 iterations, combined with variance contribution rate to engender 7 factors, all with eigenvalue over 1, the cumulative variance contribution rate reached 58.777%, fully summarizing the characteristics of the data (shown in TABLE 3 as follow). In the process of exploratory factor analysis, a total of 9 questionnaire items was deleted, forming a local college English teacher reflection scale composed by 33 questionnaire items. In this study, the subjects were representative, as a result to name the reflection scale Chinese Colleges English Teacher Reflection Scale. Exploratory factor analysis engendered 7 factors. According to the measuring-content of subordinate questionnaire items,the first, the second, the third, the fourth and the fifth factors respectively confirmed 5 factors, criticism, meta cognition, emotion, cognition, practice, in Akbari's foreign language teacher reflection model. So 5 factors were named after the 5 factors of Aebari's foreign language teacher reflection model in turn. The fifth and the sixth factors respectively covered ref40, ref41, ref42 and ref36, ref37, ref38. Ref36, ref37, ref38 focused on their own reflection of ethical aspects, while ref40, ref41, ref42 payed more attention to the reflection of students' classroom discipline and classroom behavior standard. This two factors were named as the moral factor and classroom regulation factor. The extension of this research results gave a 6-factors teacher reflection theory model. TABLE 3 lists the factor classification of every questionnaire items, its factor loading and the internal consistency coefficient of factors, and factor classification standard is that factor loading is over 0.4.

TABLE 3 : The results of analysis on confirmatory factors

absolute fitness index	relative fitness index

Chi-square/df	GFI	AGFI	RMSEA	CFI	TLI	IFI
866.583/474=1.828	0862	.837	.050	.901	.890	.902

Systematic analysis on confirmatory factor

In the process of confirmatory factor analysis, to do confirmatory factor analysis on the model base on exploratory factor research. In this study, after 10 iterative convergences, the results are shown in TABLE 3. By the conventional parallel evaluation index and standards, each index were in the reasonable range, which can fully prove that the construction of this model is more reasonable. Although the very few (e18-e19) of modified index (MI) reached 27.849, the corresponding model modification process were not required, because of the analysis of the verification. However, these fit indices exactly proved the scientificity of construction of confirmatory analysis model[5], which also fully demonstrated the higher validity of the self-structure of College English Teacher Reflection Scale. The route of reflection scale is shown in Figure 1 as follow.
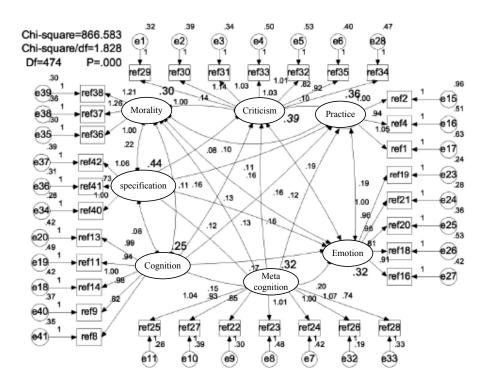

Figure 1 : The route of reflection scale

NEW REQUIREMENTS ON MEASURING TOOLS, RELIABILITY AND VALIDITY DURING REFLECTION SCALE FORMULATION

Structure of measuring tools should possess high rationality

Akbari's theory model, which covers 6 fundamental dimensions, forms the final structural equation by means of analysis on exploratory factor and confirmatory factor. Furthermore, there will be only five dimensions left in the model, with moral factor deleted. In the course of this study, the College English teacher reflection model was built to fully verified 6 dimensions in the original theory model, and the class regulation factor was also introduced.

From the perspective of inheritance and development of Chinese traditional culture, college English teacher reflection contains moral dimension. Besides, China's traditional education ideas, such as 'respect for teachers' or 'be a model for others', are the best explanation for moral dimension in traditional culture. However, from the modern educator Tao Xingzhi's educational thoughts, one of

which is 'all the teaching for seeking truth, all the learning for being true man', moral reasoning education has become a mainstream of our national education development. Many teachers are able to fully realize the importance of being a teacher and have clear sense of responsibility. However, many foreign educators and scholars believe that teachers teaching reflection should take into account the social, moral and political sides. The College English classroom teaching behavior is influenced by the factors of teachers themselves, and also plays a positive role in providing a good teaching environment for the students. Ward Rip and Fisher think that good protection on students' learning environment can have a positive effect on academic achievement for students. While, in this college foreign language teaching environment, classroom instruction is the inevitable approach to foreign language teaching. Education experts Rodgers think that meaningful learning means that students are voluntarily receive the study content. Naturally, the teacher needs relevant evaluation process in addition to strengthening their own ability constantly to control the positive transformation of the atmosphere of the classroom instruction, to create a good learning environment for students, to make effective incentive for the students' classroom participation. From this, it is believed that the five dimensions includes cognition and judgment are the foundation of the teacher reflection model formulation, with strong rationality, in which the cognitive factor is the basis of teacher professional development[6]. Finally, by the beginning of reflection, the formulation of reflection roots in the appearance of problems. To rethink and record the emerged problems in classroom instruction is a common behavior by college English teacher. While teaching journals is to provide favorable conditions for teachers' teaching reflection through the systematic description of reflection. The detailed records on the teaching process can enable teachers to avoid problems prospectively and then help them form new thoughts and new methods to improve the rationality of classroom instructing innovation. In the foreign language teaching in Colleges, with the fact that students' dependence on classroom teaching has been continuously strengthened, classroom instructing activities will have a far-reaching impact on students. During classroom instruction, teachers' language, way of questioning, interactive communication with students will produce corresponding influence on knowledge acceptance of students. while, teachers' reflection on practice is the foundation for construction of teacher reflection model. To sum up, the 7 dimensions, class management, cognitive, moral, critical, meta cognitive, affective and practical, in English teachers' reflection are an essential part for effective reflection on professional development of English teacher.

Validity and reliability should be highly specific in the choice of measuring tools

To examine the validity of the measuring tool is to judge how much which the structure model fits the data. Usually, the judgment on the GOF (goodness of fit) of structure model is based on chi square value, fit index and root mean square error of approximation (RMSEA value). For each fit indices, different Statisticians proposed different acceptance criteria. Generally speaking, when Chi-square / DF value is less than 2 or 3, fit index (including CFI, IFI, TLI, GFI) is over 0.90 and the AGFI is greater than 0.85, the model fitting is good. When root mean square error of approximation (RMSEA) is less than 0.05, it means model fitting is very good, and when between 0.05 and 0.08, it means model fitting is fine. For the above reasons, this paper adopted Chi-square / DF, CFI, IFI, TLI, GFI and RMSEA, these several indexes, to test the GOF of model. On the whole, model and data reached a good fitting, which indicated that the questionnaires had acceptable structure validity. The general reliability of final questionnaire is very high(α＝0.905), reliability of every factors except practical factor(α＝0.601)is more than 0.7(see it in TABLE 2). The reason why reliability of practical factor is low is that this factor questionnaire items for this factor are less. Crobach alpha coefficient is easily influenced by the number of items in scale, so when the items are not plenty, coefficient may not be high. On the fact that questionnaire items of practical factor are less, the author thinks that it is necessary to give brief explanation here. Practical factor in Akebali final scale retained 6 questionnaire items, but in this study only 3 items were retained. The questionnaires whose practical factors were removed were ref3, ref5, ref6 and ref7, and ref6 and ref7 are about the reflection on the teachers' attendance to other

colleagues' lectures. There are 2 reasons for items removing. On one hand, college English teachers with heavy teaching task and large workload have no time to attend other colleagues' lectures. On another hand, there is an invisible tradition in Chinese Education System: the nature of colleague's attendance to one's lecture is usually aimed at evaluation, such as senior teachers will evaluate young teachers in terms of their professional level, teaching ability, etc[7].

CONCLUSION

Construction of college foreign language teacher reflection scale model, from the perspective of discipline development, plays a positive role on professional development of teacher. By the definition of structural factors of assumption model and samples, it is easily believed that it also has positive influence on the comprehensiveness of construction of reflection model. In the process of analysis on exploratory factor and confirmatory factors, the scientific analysis on data provides corresponding data and theoretical basis for the construction of reflection scale model. Blending the exploration on both of its validity and reliability in tool selection and rationality of measuring tool structure, the approaches to build scale model are made more clear to provide a solid foundation for growth and professional development of teacher.

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