A Survey on the Pedagogical Content Knowledge System of Chinese Volunteers for Chinese Teachers*

Yang Quan
Beijing Normal University, Beijing, China

On the basis of pedagogical content knowledge (PCK), this paper puts forward four elements of “pedagogical content knowing” (PCKg) in the field of Chinese international education in combination with the standards for teachers of Chinese as an international language, and conducts a three-year follow-up survey on these elements, and studies the construction and development process of the subject teaching cognitive system of international Chinese teachers with different educational backgrounds. It provides methodological and data support for better volunteer training.

Keywords: pedagogical content knowledge, pedagogical content knowing, international Chinese teacher, Chinese international education.

Research Status and Significance

“Pedagogical content knowledge” (PCK) was first proposed by Professor Shulman (1986) of Stanford University in the United States. It refers to a new knowledge form that integrates specific subject content with educational knowledge, and is the organic integration of disciplinary knowledge and pedagogical knowledge. From the perspective of constructivism, Cochran (1991) and others put forward a more comprehensive concept, namely, “pedagogical content knowing” (PCKg). Feng and Qu (2006) thought that pedagogical content knowing emphasizes the dynamic and constructive nature of the formation process of pedagogical content knowledge at a higher level. It means that pedagogical content knowledge will not be formed naturally with the acquisition of subject knowledge and general teaching method knowledge. On the contrary, it has obvious characteristics of individuality, situation and construction. Li and Xu (2013) divided foreign research on teacher PCK into preparation period, start-up period, expansion period, and deepening period. In the deepening period of research, PCK has been widely valued in various disciplines of education, and has made a lot of research results in English, chemistry, language, mathematics, and other disciplines. Many scholars generally believe that the main difference among novice teachers, excellent teachers, and expert teachers lies in whether they have PCK. In the field of Chinese international education, only Guo (2015) theoretically discussed the pedagogical content knowledge system of Chinese teachers.

Chinese volunteer training for international teachers is a kind of pre-service training for international Chinese teachers. The training objective is to enable students to have better teaching skills, classroom management skills, Chinese culture communication skills, and cross-cultural communication skills of teaching.

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Yang Quan, Ph.D., associate professor, Chinese Language and Culture College, Beijing Normal University.
Chinese as a second language, and be able to quickly adapt to the life in the country, they are going to work in and be competent for volunteer service. The background of the volunteers participating in the training varies greatly, some have no professional background, some have no teaching experience, but after the training, most of them can complete the overseas Chinese teaching well, and many will continue to engage in the international Chinese education after the volunteer work. The process from unfamiliar to competent in the field of international Chinese language education is the development process of international Chinese teachers’ pedagogical content knowing. Therefore, taking volunteers as the research object, we can finally explore the construction rules of various types of international Chinese teachers’ PCK system and provide empirical support for the theoretical development of PCKg of international Chinese teachers. The construction can provide a feasible scheme and a reference for the training of Chinese teachers and volunteers.

Research Ideas and Methods

Investigation Process

We conducted a three-year (2010-2012) follow-up survey of 3,682 volunteers from 13 volunteer training units across the country.

Stage 1: Before the training of Chinese teacher volunteers. Before the training, many students have never been on the stage. They have only perceptual knowledge of international Chinese teachers. They are in the pre-service teacher stage. We call them preparatory teachers.

Stage 2: After the training of Chinese teacher volunteers. After several months of training, the trainees have a certain rational understanding of international Chinese teachers, but they still lack practical experience. We call them prospective teachers.

Stage 3: After 1-2 years of overseas Chinese teaching. After 1-2 years of volunteer work, they have both rational knowledge and practical experience. We call them teachers.

Respondents

Zhu and Qian (2015) found that 3,682 volunteers from 2010 to 2012 had different identities and professional backgrounds. In terms of identity, only 7% of the teachers are teachers and the rest are students. From the professional point of view, 42.71% of the volunteers are majoring in Chinese international education, and the other majors are foreign language, Chinese, sociology, etc. Finally, we divided the respondents into four groups according to whether they are Chinese international education major or not and whether they have teaching experience.

Group 1 (Group AC): Non-Chinese international education major with no teaching experience;
Group 2 (Group AD): Chinese international education major, but no teaching experience;
Group 3 (Group BC): Non-Chinese international education major with teaching experience;
Group 4 (Group BD): Chinese international education major with teaching experience.

Investigation Contents

The PCKg proposed by Cochrane and DeRuiter (1993) mainly includes four aspects: (a) knowledge of subject matter; (b) knowledge of pedagogy; (c) knowledge of students; and (d) knowledge of environmental contexts. After combining PCKg with the field of Chinese international education, we first get four aspects of knowledge: (a) Chinese international education subject knowledge; (b) Chinese international education and

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1 Refer to Volunteer Training Outline for Chinese Teachers (600 hours) issued by Hanban.
teaching knowledge; (c) Chinese learners’ knowledge; and (d) Chinese teaching situation knowledge (see Figure 1). Then, the four aspects of knowledge are compared with *Standards for international Chinese teachers* (2012) and other relevant documents, and the basic framework system of PCKg for international Chinese teachers is concluded.

![Figure 1. PCKg framework of international Chinese teachers.](image)

### Data Processing: Spearman Test

A total of 7,784 valid questionnaires are obtained in this survey. We selected 158 samples from AC, AD, BC, and BD group according to the proportion of different groups in the total questionnaire. The correlation between PCKg elements in each stage of AC group is verified. In the first stage, the four aspects of correlation test results are in Table 1.

#### Table 1

|                          | (1) sub | (1) stu | (1) tea | (1) sit |
|--------------------------|---------|---------|---------|---------|
| Correlation coefficient  | 1.000   | 0.082   | 0.107   | -0.561**|
| Sig. (bilateral)         | 0.000   | 0.511   | 0.389   | 0.000   |
| N                        | 67      | 67      | 67      | 67      |
| Correlation coefficient  | 0.082   | 1.000   | -0.332**| -0.162  |
| Sig. (bilateral)         | 0.511   | 0.000   | 0.006   | 0.190   |
| N                        | 67      | 67      | 67      | 67      |

Spearman’s rho

| (1) tea                  | 0.107   | -0.332**| 1.000   | 0.132   |
| Correlation coefficient  | 0.389   | 0.006   | 0.000   | 0.289   |
| Sig. (bilateral)         | 0.67    | 67      | 67      | 67      |
| Correlation coefficient  | -0.561**| -0.162  | 0.132   | 1.000   |
| Sig. (bilateral)         | 0.000   | 0.190   | 0.289   | 0.000   |
| N                        | 67      | 67      | 67      | 67      |

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2 Subject knowledge of Chinese international education is called “discipline” for short, teaching knowledge of Chinese international education is called “teaching,” knowledge of Chinese learners is called “students,” and knowledge of Chinese teaching situation is called “situation.”

3 In Table 1, (1), (2), and (3) respectively represent Stages 1-3, sub is subject, stu is students, tea is teaching, and sit is situation, the same below.
The results show that in Stage 1, when the significance level is 0.01, there is a significant correlation between “subject” and “situation,” and between “students” and “teaching.” Combined with the background of this group, it can be seen that for the volunteers who are not majoring in international Chinese education and have no teaching experience, they are still lack of understanding of international Chinese language education in the first stage. Therefore, there is no further difference between “discipline” and “situation,” “students” and “teaching,” and there is a certain correlation between scores.

The correlation test of the four items in Stage 2 of the AC group show that when the significant level is 0.01, there is a significant correlation between “subject” and “situation,” and between “students” and “teaching.” But in Stage 3, there is no significant correlation between any two of four aspects. This shows that after training, the level of significance of the related items decreases with the increase of their knowledge of the field. The original relevance disappears, which shows that volunteers have a more in-depth understanding and understanding of this field after working practice. It also shows that the four aspects of PCKg that we have determined represent different capability elements and cannot be replaced by each other. The education background of AD and BD groups is similar. The correlation between PCKg elements in each stage is tested by Spearman method, and there is no significant correlation among PCKg elements in three stages.

The correlation between PCKg elements in BC group is verified. In Stage 1, the correlation between “subject” and “situation” is 0.01; in Stage 2, the correlation between “subject” and “situation” remains unchanged; and in Stage 3, the correlation between “subject” and “situation” remains unchanged, while the correlation between “student” and “situation” is 0.01. The results show that the previous teaching experience of different disciplines will have an important impact on the relationship between the PCKg elements of volunteers.

All in all, although the AD and BD groups have different teaching experience, they have received the professional education of Chinese international education. The process of forming the relationship between PCKg elements of the two groups is relatively similar. After Stage 3, the results of AC group are similar to those of AD and BD groups. The subjects of group BC who have experience in other aspects of teaching will be influenced by PCKg in other fields when they form the relationship between PCKg elements in international Chinese education. The statistical results show that the PCKg elements are independent of each other and can well reflect the level of international Chinese teachers’ volunteers. The results also show that the PCKg elements of Chinese international education are significantly different from those of other disciplines.

Analysis of Statistical Results

**Analysis of the Change Process of Each Group’s Performance in Different Stages**

The results of the previous data processing show that the results of the three stages are normal distribution, and the average value of each stage can be used to represent the overall level of the stage. Therefore, we will test the three stages of performance with equal mean value, to study the change of PCKg score in each stage, and analyze the formation process of PCKg. The results are in Table 2.

**Comparative analysis of three-stage PCKg scores in AC group.** The test results show that the significance level of Stages 1, 2, and 3 is equal to 0.000. Therefore, the original hypothesis is rejected and the results are considered to be significant difference, and the average value of Stages 2 and 3 is significantly higher than that of Stage 1. The significance level of the Stages 2 and 3 is 0.694, so accept the original
hypothesis, there is no significant difference between Stage 2 and Stage 3. The results showed that PCKg is formed in Stage 2 and consolidated in Stage 3.

**Comparative analysis of three-stage PCKg scores in AD group.** The results show that there is no significant difference in the mean values of three stages in AD group, indicating that PCKg has been formed in Stage 1.

**Comparative analysis of three-stage PCKg scores in BC group.** The formation process of PCKg in this group is the same as that in AC group. The significance level of Stages 2 and 3 mean is 0.132, so accept the original hypothesis, there is no significant difference between the two stages.

**Comparative analysis of three-stage PCKg scores in BD group.** The results show that there is no significant difference in the mean values of 3 stages in BD group, indicating that the formation process of PCKg in BD group is the same as that in AD group, and PCKg is formed in Stage 1.

The above results indicate that the construction process of PCKg in group AC and BC is basically the same, which is formed in Stage 2 and consolidated in Stage 3. The construction process of AD group and BD group is basically the same; both of them have been formed in Stage 1. Therefore, the construction process of Chinese teacher volunteers’ PCKg is closely related to whether they have received the professional education of Chinese international education, but not to whether they have teaching experience.

### Table 2

**Stage Test of Each Group**

| Group | Pair | Stage sum | Mean value | Standard deviation | Standard error of mean | Paired difference | 95% confidence interval of difference | t-test | df | Sig. bilateral |
|-------|------|-----------|------------|-------------------|-----------------------|-------------------|-------------------------------------|--------|----|---------------|
| AC    | 1    | 1-2       | -1.313     | 1.979             | 0.242                 | -1.796            | -5.433                              | -0.831  | 66 | 0.000         |
|       | 2    | 1-3       | -1.433     | 1.987             | 0.243                 | -1.917            | -5.904                              | -0.948  | 66 | 0.000         |
|       | 3    | 2-3       | -0.119     | 2.471             | 0.302                 | -0.722            | -0.396                              | 0.483   | 66 | 0.694         |
|       | 1    | 1-2       | -0.857     | 2.268             | 0.857                 | -2.955            | 1.240                               | -1.000  | 6  | 0.356         |
| AD    | 2    | 1-3       | -0.571     | 2.225             | 0.841                 | -2.630            | 1.487                               | -0.679  | 6  | 0.522         |
|       | 3    | 2-3       | 0.286      | 1.254             | 0.474                 | -0.874            | 1.445                               | 0.603   | 6  | 0.569         |
|       | 1    | 1-2       | -1.041     | 2.118             | 0.248                 | -1.535            | -4.200                              | -0.547  | 72 | 0.000         |
| BC    | 2    | 1-3       | -1.370     | 2.245             | 0.263                 | -1.894            | -5.212                              | -0.846  | 72 | 0.000         |
|       | 3    | 2-3       | -0.329     | 1.841             | 0.216                 | -0.758            | 1.011                               | -1.526  | 72 | 0.132         |
|       | 1    | 1-2       | 0.000      | 2.280             | 0.688                 | -1.532            | 1.536                               | 0.000   | 10 | 1.000         |
| BD    | 2    | 1-3       | -1.00      | 2.098             | 0.632                 | -2.409            | 0.409                               | -1.581  | 10 | 0.145         |
|       | 3    | 2-3       | -1.00      | 1.789             | 0.539                 | -2.202            | 0.202                               | -1.854  | 10 | 0.093         |

**Comparative Analysis of the Results of Different Groups at the Same Stage**

In order to study the difference of PCKg scores among volunteers with different backgrounds at the same stage, we conducted a *t*-test on the hypothesis that the average PCKg of different groups in the same stage is the same, so as to study the influence of different educational background and practical experience on PCKg in each stage. In Table 3, the values corresponding to different groups are the *P*-values at the time of test, and the position corresponding to the same group, i.e., the diagonal position, is the mean value of the group. Due to the symmetry of the data, we only list the upper triangular part of the comparison matrix.

**Stage 1:** The test shows that in the pre training stage, the PCKg levels of each group from high to low are BD, AD, BC, and AC. At the significant level of 0.05, there is significant difference between BD and AC, BD
and BC, but there is no significant difference between BD and AD, and there is no significant difference between AD and the other two groups. This shows that in the training process of Chinese teacher volunteers, professional education and teaching practice are of great significance to the cultivation of PCKg. Teaching experience in other professional fields has no significant effect on the cultivation of PCKg.

**Stage 2:** The test shows that after training, at the 0.05 significance level, there is no significant difference in PCKg scores among volunteers from different backgrounds.

**Stage 3:** The test shows that after practice, at the significance level of 0.05, there is no significant difference in PCKg scores among volunteers with different backgrounds.

The above test results show that no matter what professional background the volunteers come from and whether they have teaching experience or not, as long as they are willing to work hard, after training and practice, they can become qualified volunteers of Chinese teachers, and their final scores have no significant difference.

| Group | Stage 1 | Stage 2 | Stage 3 |
|-------|---------|---------|---------|
|       | AC      | AD      | BC      | BD      | AC    | AD    | BC    | BD    | AC    | AD    | BC    | BD    |
| AC    | 14.433  | 0.754   | 0.364   | 0.014   | 15.743 | 0.747  | 0.942  | 0.853  | 15.866 | 0.362  | 0.464  | 0.110  |
| AD    | -       | 14.714  | 0.974   | 0.345   | -      | 15.571 | 0.772  | 0.930  | -      | 15.286 | 0.233  | 0.077  |
| BC    | -       | -       | 14.684  | 0.043   | -      | -      | 15.726 | 0.879  | -      | -      | 16.055 | 0.213  |
| BD    | -       | -       | -       | 15.636  | -      | -      | -      | 15.636 | -      | -      | -      | 16.636 |

**Conclusion**

Through the investigation, statistics, and analysis of this paper, we can draw the following conclusions:

1. From the statistical results of PCKg scores of four subjects at the same stage, the trainees with different professional backgrounds can finally complete the construction of PCKg and become a qualified volunteer of Chinese teachers. In the process of training, first of all, we should establish the awareness of PCKg and remind them that the process of PCKg construction is dynamic. Because everyone has different subject background and teaching experience, although they receive training at the same time, everyone may be in different construction stages of PCKg. Therefore, we should not be too confident, nor should we blindly feel inferior. We should find out our own advantages and disadvantages in time and adjust our mentality and knowledge structure in time, so that we can grow into qualified volunteers of Chinese teachers.

2. From the perspective of the change process of the self-evaluation level of subjects with the same background in different stages, the construction process of PCKg of subjects with Chinese international education background has been completed in Stage 1, while the construction of PCKg of subjects without Chinese international education background is completed in Stage 2. In the process of volunteer training for Chinese teachers, we should teach students different backgrounds according to their backgrounds. For the students without professional background, we should pay more attention to the distinction of four concepts of PCKg, and establish their cognitive system of subject teaching as soon as possible. For students with professional background, we should pay more attention to deepening the theory based on the concept of PCKg, and then combine theory with practice to improve the students’ application ability.
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