

Quantitative Research of Class Teaching Skills Usage in Microteaching

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Abstract—To explore the inner relationship among every classroom teaching skill, data of micro-teaching targeted at students were analyzed by SPSS. The results showed: language, explanation and blackboard writing skills were basic ability, change and reinforcement skills were general ability, questioning, classroom management and demonstration skills were assistive ability, and introduction and ending skills were cohesive ability. In the aspect of skills usage, significant differences were noticed between the basic ability and the assistive and cohesive abilities, generic ability and assistive and cohesive abilities are partially correlated, and partial correlation existed between assistive ability and cohesive ability. Significant positive correlation was established by three tests conducted between questioning and changing skills and reinforcement and classroom management skills, between reinforcement skill and classroom management skill, and between blackboard writing skill and demonstration skill. Use of classroom skills in various periods, though not significantly different, was partially correlated. The conclusion on skills usage can help to define how to improve use of key skills.

Keywords—classroom teaching skills;classification; differences; correlation

I. INTRODUCTION

It is the consensus for modern teaching development to step into practice period from theory. American teachers' qualification examination system is changing, from static examination to concrete practice [1]. Microteaching is a method of training Normal School Students' teaching capability by using limited time, space and scene practice, where classroom teaching capabilities were decomposed into 10 single skills including introduction, language, blackboard writing, body language, demonstration, feedback in strengthening, explanation, questioning, ending and management, etc, which made trainers to exercise teaching skills under controllable situation[2]. Most researches are concentrated in the discussion of theory and method and fewer researches are concerning quantification, for instance, Experimental study of random controlling intervention (Elizabeth H. Morrison, etc). [3], Differences study of 5-dimensions from the aspect of effective teaching (Sheng Quan LUO) [4], Quantitative study of class teaching skills evaluation by using AHP (Li GAO) [5]. In this paper, from the angle of teaching skills usage, combined with the analysis methods of

Tamhne's T2, Dunnett's T3, Games-Howell and Pearson, differences and correlations among every period and every teaching skill were quantitative analyzed to disclose the inner relationship among teaching skills and provide scientific basis for using teaching skills rationally.

II. RESEARCH OBJECTS AND METHODS

A. Research objects

The 11grade students of horticulture major in SHAOGUAN University were observed from April to June in 2014 year. During their 4 times microteaching training, 127 valid videos were collected on April 21, April 28, May 5 and May 29. In posterior study, the 4 times training was regarded as 4 periods.

B. Methods

According to literature monographs related with teaching skills and practice, 10 teaching skills were analyzed quantitatively in this paper, that is, introduction, language, questioning, explanation, change, reinforcement, demonstration, blackboard writing, ending and class management. Through repeatedly observation, statistical method was used to distinguish every skill by taking signal 1 and 0 which represented usage and non-usage respectively (table 1).

Through using EXCEL to induct and summary original data, the data were analyzed by SPSS.

TABLE I. TEACHING SKILLS USAGE GENERAL SITUATION

Period		First time	Second time	Third time	Forth time
Video numbers		34	29	31	33
Usage numbers	introduction	25	19	19	20
	language	34	29	31	33
	questioning	32	25	26	29
	explanation	34	29	31	33
	change	31	28	31	33
	reinforcement	32	26	28	32
	demonstration	28	24	22	28
	blackboard writing	33	29	30	33
	ending	12	5	5	11
	class management	29	23	28	28

III. RESULTS AND ANALYSIS

A. Differences analysis of class skills usage

1) Overall differences

According to the results of figure 1a and b, language and explanation were the skills that were used by all students. In the left 8 skills, blackboard writing, change and reinforcement skills were used by 90% students, above 80% students used questioning, class management and demonstration skills, about 60% students used introduction skill and just 25% students used ending skill. From the aspect of differences analysis, there were significant differences among skills. Through analysis, there were 9 situations of significant differences, that is, between language, explanation and blackboard writing skills and questioning, class management, demonstration, introduction and ending skills; between introduction and ending skills and the left 8 skills; between language and explanation skills and questioning, class management, demonstration, introduction and ending skills; between blackboard writing skill and class management, demonstration, introduction and ending skills; between change skill and introduction and ending skills; between reinforcement skill and ending skill; between questioning skill and language, explanation and ending skills; between introduction skill and language, explanation, blackboard writing, change and ending skills; between ending skills and the left 9 skills.

By the analysis results of utilization rate and differences, the 10 skills were divided into 4 types, respectively basic ability, generic ability, assistive ability and cohesive ability.

The basic ability included language, explanation and blackboard writing skills that had high utilization rate and were the basic components of teaching, also were needed frequently in basic teaching with no significant differences among them. As the whole, there were significant differences between basic ability and assistive and cohesive abilities.

The generic ability included change and reinforcement skills that were common used with high frequency by most students but no significant differences between them. As the whole, there was significant difference between generic ability and cohesive ability.

The assistive ability included questioning, class management and demonstration skills whose utilization rates were in the middle. Appropriate use of the 3 skills could assist and enhance the teaching effect. There were no significant differences among the 3 skills, but partial significant differences existed between the 3 skills and the left skills.

The cohesive ability included introduction and ending skills whose utilization rates were the lowest and showed obvious period distribution, which linked up the whole class course, but was neglected easily by students. There were significant difference between the 2 skills mentioned above and the left 8 skills.

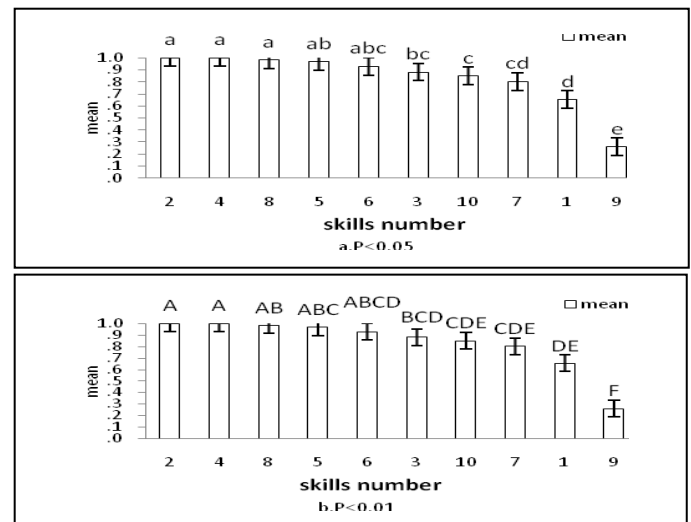


Fig. 1. dynamic changes in teaching skills usage of class

(note: In the same team, different lowercase letters represent significant difference in the level of 0.05, and different capital letters represent great significant difference in the level of 0.01. Skill number 1 represents introduction; skill number 2 represents language; skill number 3 represents questioning; skill number 4 represents explanation; skill number 5 represents change; skill number 6 represents reinforcement; skill number 7 represents demonstration; skill number 8 represents blackboard writing; skill number 9 represents ending; skill number 10 represents class management. So as the following figures)

2) Usage differences analysis of skills in various periods

According to the results of figure 2, there were significant differences among the utilization of every skill in the 4 periods training mentioned above, and a certain difference was displayed in general difference. There was obvious difference between the first time and the third time, overall similarity of difference existed between the second time and the third time, and there were similar difference performances between the fourth time and the population mean.

In the first time, there was significant difference between the ending skill and the left 9 skills, and no obvious difference existed in the left 9 skills.

In the second time, there were 2 situations that presented significant differences, that is, between language, explanation and blackboard writing skills and introduction and ending skills; between ending skill and questioning, strengthening, changing, class management, demonstration and introduction skills.

In the third time, significant differences were presented in 2 situations which included the differences between language, explanation, blackboard writing and change skills and introduction and ending skills, and those between the ending skill and questioning, strengthening, class management, demonstration and introduction skills.

In the fourth time, there were significant differences in the following situations that were between language, explanation, blackboard writing, reinforcement and change skills and introduction and ending skills, and between the ending skill and questioning, class management, demonstration and introduction skills.

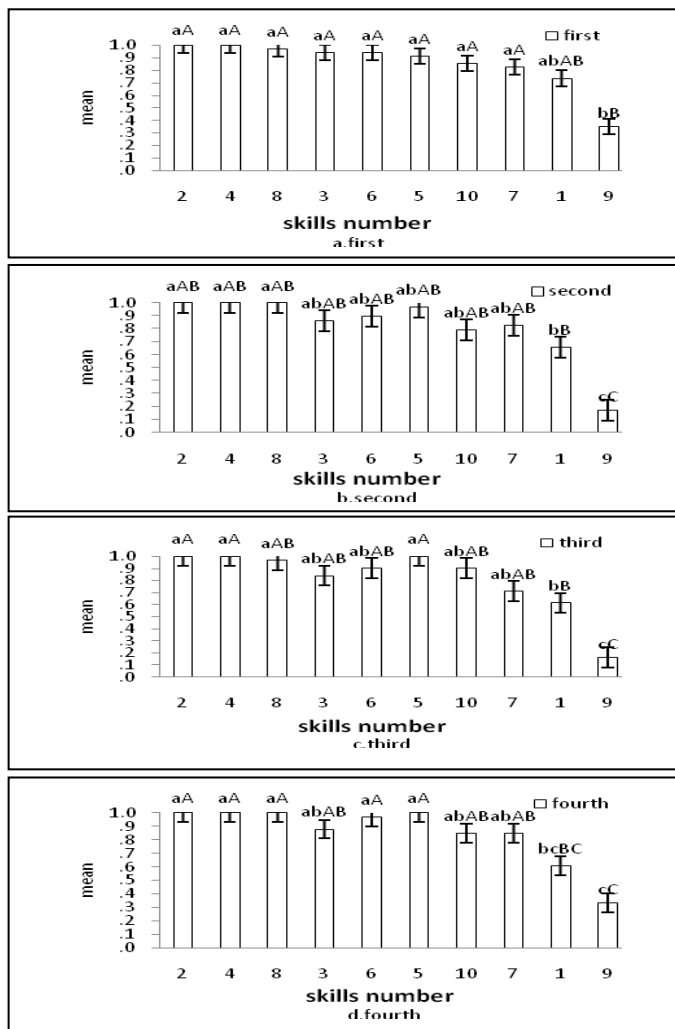


Fig. 2. dynamic changes of skills in various class and various periods

3) Usage differences of skills in various periods

In accordance with the results of figure 2, the highest mean in 4 periods was the first time, 0.8529; the following were the fourth time and the second time, respectively 0.8485 and 0.8172; the lowest mean was the third time, 0.809. There was no significant difference among the 4 periods. Therefore, it was impossible to enhance the comprehensiveness of skills usage in essence during the 4 times micro training in 2 months.

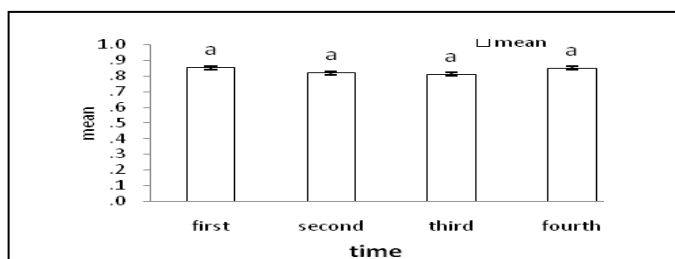


Fig. 3. differences analysis of skills usage in various periods

B. Correlation analysis of skills usage

1) Correlation analysis of every skill

Based on the results in table 2, except correlation among minority skills, most of skills had no correlation with each other.

There were correlation between questioning, changing, reinforcement and class management skills and demonstration and blackboard writing skills. Questioning and change skills were the preamble skills of reinforcement and class management skills so that there was significant positive correlation between the four skills. Because of the same preamble function in reinforcement and class management skills, it showed significant positive correlation in these two skills. There were so many common points in blackboard writing and demonstration skills that significant positive correlation was displayed.

TABLE II. CORRELATION OF TEACHING SKILLS USAGE

skills	correlation	Sig.(both sides)
Questioning-reinforcement	0.469	0.000**
Questioning-class management	0.599	0.000**
Change-reinforcement	0.302	0.001**
Change-class management	0.430	0.000**
reinforcement-class management	0.658	0.000**
Demonstration-blackboard writing	0.255	0.004**

Note: *P < 0.05, **P < 0.01; so as the following

2) Correlation analysis of skills usage in various periods

According to the results of table 3, there was no significant correlation between the first period and the second and third periods, but significant correlation existed between the first period and the fourth period. There were also 2 situations of positive correlation that were between the second period and the third and fourth periods, and between the third period and the fourth period.

From the aspect of correlation analysis results, the 4 periods was the course that students groped for the use of every skill for its so much random in the first period, then attempted in class teaching by using the new skills so that there was no significant correlation in the second and third period, and chose mature skills to reserve and immature skills to abandon in the last period when students finished the trial.

IV. CONCLUSIONS AND DISCUSSIONS

- In the 10 skills, the use of language, explanation and blackboard writing skills was close to 100%, changing and strengthening skills lied between 92%-96%, questioning, class management and demonstration skills lied between 80%-90%, and introduction and ending skills was below 70%, which were classified into 4 types, respectively basic ability, generic ability, assistive ability and cohesive ability.

TABLE III. USAGE DIFFERENCES OF SKILLS IN VARIOUS PERIODS

period	correlation	Sig. (both sides)
First - second	-0.066	0.265
First - third	0.103	0.069
First - fourth	0.142	0.010*
Second - third	0.160	0.006**
Second - fourth	0.121	0.039*
Third - fourth	0.127	0.026*

- Whether the 10 skills were analyzed in whole or from 4 periods, there were much significant even very significant differences among them. From the aspect of the whole differences, there were significant even very significant differences between basic ability and assistive and cohesive abilities, partial significant differences existed between generic ability and assistive and cohesive abilities, and part significant even very significant differences lied between assistive ability and cohesive ability. The significant differences were displayed between the ending skill and the left 9 skills. The differences of the 4 periods had certain diversity in whole. There was obvious difference in performance between the first period and the third one, similarity in performance existed between the second period and the third one, and similarity in performance lied between the fourth period and the general mean.
- In the aspect of the 10 skills usage, there was significant positive correlation among minority of skills. The correlation was displayed between questioning, changing, strengthening and class management skills and demonstration and blackboard writing skills. There was extremely significant positive correlation in the following conditions, that is, between change and questioning skills and reinforcement and class management skills, between reinforcement skill and class management skill, between blackboard writing skill and demonstration skill. Therefore, it was feasible to improve and enhance effect for reaching the target of optimal skills usage combination by grasping key skills but not priority in every skill in skills' usage.
- There were no significant differences in the aspect of skills usage, in 4 periods, on the other sides, there was no significant correlation between the first period and

the second and third periods, but there was obvious correlation with the fourth period. Significant positive correlation was showed in the conditions that were between the second and the third and fourth periods, between the third period and the fourth period. Therefore, the comprehensiveness of skills usage couldn't be interpreted in essence by differences analysis just in 4 times micro- training of 2 months, and groping and regression of skills usage could be explained by correlation for students in various periods.

- The grasping and using of every skill of students could be investigated overall by analyzing whether teaching skills were used or not. Whereas, advantages and disadvantages of single teaching skill couldn't be displayed in the analysis and the study would be further.

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REFERENCES

- [1] De Run YUAN, "Practice orientation of primary and secondary school teachers' qualification examination in contemporary," Primary & Secondary Schooling Abroad, CHN, pp. 12-14, April 2011
- [2] En Shan LIU, The Middle School Biology Teaching Theory, BEIJIN: HIGHER EDUCATION PRESS, 2003, pp. 10-94
- [3] Song Qing Lin, "Training Research of Normal School Students' Class Control Ability Based on Interaction Micro Platform," CHN: Educational Technology, 2013, pp. 119-122
- [4] Elizabeth H Morrison, Lloyd Rucker, John R Boker, et al. "The Effect of a 13-Hour Curriculum To Improve Residents Teaching Skills: a randomized trial" AMER: Annals of internal medicine, VOL, 141(4), PP. 257-263, 2004
- [5] R. Nicole, "Title of paper with only first word capitalized," J. Name Stand. Abbrev., in press. Li GAO, "Quantitative research of Class Skills Evaluation in Micro Teaching," CHN: e-Education Research, pp. 56-59, October 2005