Applying Role-Switch Model in College Information Technology Course

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Abstract—China's regional imbalance in terms of education resources gives rise to the wide discrepancy of pre-acquired computer knowledge amongst first-year college students, posing a huge challenge to present college information technology teaching. To deal with problems of high student-teacher ratio and tight teaching schedule, we have constructed a new teaching model with switched student-teacher roles. Inspired by Carl Rogers' non-directive teaching theory, this model shifts the priority of teaching from the teacher to students, doubled with group discussion, catering to the situation of first-year students and college information technology curriculum. The experiment results show that this model has acquired better effects and enhanced teaching quality.

Keywords-Teaching Model, Role-Switch, Teaching Effect

I. STATUS QUO OF COLLEGE INFORMATION TECHNOLOGY COURSES

The advancement of Information Technology (IT) makes computer available in every corner of daily life [1] and scientific research [2]. Colleges offer computer/IT related courses so as to entitle students to a profound understanding and acquisition of computer sciences, modern information technology and practical operating skills [3]. However, common problems still arise in the teaching of this course:

A. Wide and Noticeable Discrepancy of Pre-acquired Knowledge

The IT-related courses which used to be carried out at the college level are now moved forward to primary and elementary schools curricula [4]. The regional imbalance, doubled with lack of proficiency tests before entering college, college first-year students demonstrate a wide discrepancy regarding their computer level. Students from wealthy and advanced regions are moderately skillful in computer operation while those from poor and rural regions have never laid hands on a computer.

B. High Student-Teacher Ratio

College IT Course is taught to students from various major backgrounds in which a teacher usually has a combined class of no less than eighty students, such a high ratio posing enormous difficulties to effective teaching.

C. Tight Teaching Schedule

Being open for only one semester, this course aims at supplementing those underachieving students with basic computer knowledge and operating skills of widely-used software, while lifting those students with good computer proficiency to a higher level.

Confronting a class of average eighty students with great varieties, the teacher should have a sophisticated control over the course difficulty and experiment progress to benefit all the students, who are expected to pass a standardized proficiency test.

II. CARL ROGERS’ NON-DIRECTIVE TEACHING

Carl Rogers had an uncommon view of human nature, which led him to originate a unique psychotherapy and gave him a different view of education.

He stated a set of conditions in education [5]. These were that significant learning can occur only to the degree that the student is working on problems that are real to him; that significant learning can be facilitated only to the degree that the teacher is genuine and congruent. In addition, ‘the teacher who can warmly accept, who can provide unconditional positive regard, and can empathize with the feelings of fear, anticipation and discouragement which are involved in meeting new materials, will have done a great deal toward setting the conditions for learning.’

Instead of being taught, non-directive teaching theory emphasized the process of seeking knowledge [6]. Rogers said that, because of the continually changing atmosphere in which we live, we are faced with an entirely new situation in education where the goal of education, if we are to survive, is the facilitation of change and learning [7]. The only man
who is educated is the man who has learned how to adapt and change; the man who has realized that no knowledge is secure, that only the process of seeking knowledge gives a basis for security [8]. Changing, reliance on process rather than upon static knowledge is the only thing that makes any sense as a goal for education in the modern world.

III. EXPLORING ROLE-SWITCH MODEL IN CLASS TEACHING

To provide a new approach to the problems and difficulties in college IT course [9], we have tentatively constructed a student-teacher Role-Switch Model (RSM) based on Carl Rogers’ non-directive teaching theory. This model shifts the core of teaching all the way around and sheds new light on inherent problems in traditional “teacher-centered” model. By introducing concepts of modern management and group work, the RSM is intended to organize and monitor each student’s learning progress and results by constructing a pyramid-shaped framework and a set of auxiliary awarding measures.

In the construction of the new framework, the whole semester is divided into three phases, in which the student-teacher roles have been “switched” to optimize the control over the learning center and development. Aside from the realization of the basic learning progress, it is expected to stimulate each student’s learning enthusiasm to achieve progress of their own. The RSM framework (as shown in Figure 1) is illustrated as follows:

A. Phase I: Building Bonds of Affection

We do not consent to the practice of throwing students at the center of learning at the very beginning of the course. Immersed in the traditional teaching model of over ten years, students are likely to be unfamiliar with this student-centered model if without good learning approaches and methods. Non-directive teaching should lay solid foundation on high degree of students’ trust in the teacher [10]. As a result, the initial phase of RSM still takes the traditional form of class lecturing, in which the teacher has a dominant control over the course, and introduces students to the fundamental IT knowledge. Through this phase the teacher plays the role of a master showing the basics to his apprentices, where students are led into the field of computer sciences. Moreover, the teacher has a more important task of establishing a favorable student-teacher relationship. The teacher’s authority does not necessarily mean an awe-inspiring distance away from the students but should be built in the hope that students are willing to discuss with the teacher about problem-solving when confronted with difficulties.

B. Phase II: Acquisition and Reinforcement

This phase breaks the conventional order of class lecturing followed by hands-on practice, namely, putting the practice prior to class lecturing.

Absolute free learning is not intended in this phase, but learning with definite direction and tasks, where the teacher plays the role of progress supervisor. He would assign each student what to do at the start of hands-on practice class, providing related references and controlling difficulty to arouse the students’ enthusiasm to complete their tasks by studying the references and extracurricular learning.

Group discussion is involved to guarantee the time and progress of each student’s extracurricular learning. Accordingly, each class is divided into four groups. Reciprocal assistance within group is expected which will encourage the high-achieving students to help and cheer those underachievers.

This setup of teaching and experiment offers an effective solution to problem of high student-teacher ratio. Group leaders and representatives are selected from each group as shown in Figure 2.
The group leader takes charge of arranging and organizing the study and experiment of each group while the group representative is responsible for gathering and exhibiting the group’s achievements. This group framework draws on the concepts of modern management stratification, in which the teacher can monitor the progress of each student in a context of high student-teacher ratio.

The class teaching proceeded by hands-on practice requires the group representative to exhibit their achievements and unsolved problems alike. An extra bonus will be granted to the group if any group member helps present or solve a problem so as to stimulate active participation from group members. As to the problems still unsolvable after the group discussion in class, the teacher plays the role of “solution provider”, giving out correct answers to the whole class.

C. Phase III: Summary and Test

When the course has nearly come to the end with main learning goals accomplished, the progress rate still varies amongst students. Besides, the second phase emphasizes students’ individual interests, so even those high-achieving students are unable to meet the entire course requirements. Consequently, the teacher would take the dominant position and draw the course to a conclusion to ensure its successful accomplishment, mainly by focusing on summary and test of the course so as to attain the goals as follow:

1) To sort out and sum up key points to complete the entire course as planned in curriculum.

2) To estimate the progress through comprehensive tests.

IV. Teaching Feedback and Evaluation

In this student-teacher role-switch model, each phrase has its own objective, with a significant index being collected in each phase for assessment, namely, teachers’ authority in Phase I, students’ interest in Phase II, and knowledge acquisition and gratification of learning methods in Phase III.

According to the statistics, we make a sampling in four parallel classes, among which Class A and Class B take traditional teaching model while Class C and Class D take RSM. The data (as shown in Table 1) are collected in the form of online anonymous questionnaire. The assessment of knowledge acquisition and evaluation of the teacher uses final scores as the original data.

![Figure 2. Framework of Group Discussion](image)

<table>
<thead>
<tr>
<th>TABLE I. STATISTICS OF THE FOUR CLASSES WITH RMS AND OTHERWISE</th>
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<tbody>
<tr>
<td>Factors</td>
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<tr>
<td>-------------------------------------</td>
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<tr>
<td>Teacher’s Authority I</td>
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<tr>
<td>Students’ Enthusiasm II</td>
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<tr>
<td>Knowledge Acquisition (Teacher’s Evaluation) III</td>
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<td>Gratification of Learning Methods (Students’ Self-Evaluation) III</td>
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An analysis of the data in Table 1 reveals that the statistics of the two classes using RSM are superior to the traditional classes and receive higher assessment of teaching from both students and the teacher.

As shown in Figure 3, the analysis of the statistics in the three different phases presents a prominent improvement in students’ assessment and knowledge acquisition in addition to the other teaching results as follow:

1) Students’ self-evaluation is even higher than the teacher’s. In this new teaching model, students’ learning enthusiasm and initiative have been fully aroused. So as to complete the tasks assigned in computer practice class, they are motivated to learn various task-related knowledge outside class in groups while the teacher’s evaluation of the course is based on the requirement of traditional teaching.
model. Apparently students taught in RSM have a wider scope of knowledge than those who are not.

Figure 3. Evaluation of Knowledge Acquisition and Learning Methodology

2) With regard to learning interest, students in non-directive teaching model have a more remarkable enthusiasm and a higher degree of knowledge acquisition.

3) Students’ enthusiasm maintains in direct proportion to their self-evaluation.

V. SUMMARY

The student-teacher role-switch model (RSM) owes greatly to Carl Rogers’ non-directive teaching theory. The RSM provides an effective solution to problems commonly found in college IT course, i.e., noticeable discrepancy amongst students and high student-teacher ratio. Consequently it witnesses favorable teaching results, as quoted from a student’s remarks, “Tell me and I’ll forget, show me and I may remember, involve me and I’ll understand.”

Students involved in the RSM demonstrate a sharper interest in the course and have a wider scope of knowledge, which lays a solid foundation for their further self-learning and to meet the ever-increasing challenge. In the RSM teaching, students have not only learnt “how to operate” but also tasted the pleasure of “how to learn” and “how to cooperate”, ultimately leading to “how to be”.

Taking the teaching feedbacks into account, we find a small number of student fail to catch up in the second phase of the course as a partially unsatisfactory teaching outcome, which triggers us to take further experiment and exploration.

ACKNOWLEDGMENT

Project supported by the Natural Science Foundation of Ningbo City, China (Grant No 2009A610006).

REFERENCES


