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Keywords

Adult teaching, Andragogy Bloom's taxonomy, Confucianism, Lower order thinking skills, Higher order thinking skills

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Abstract

Drawing from Bloom's 1956 Taxonomy and Western theories on adult learning, the authors argue that adult teaching methods in China feature a teacher-centered, information-based and test-driven instructional format. An author-designed survey instrument called Lower-Order Thinking Skills and Higher-Order Thinking Skills (LOTSHOTS) was used to determine whether knowledge, comprehension and application drove adult teaching methods or analysis, synthesis and evaluation drove adult teaching methods in China. The results of the study showed that Chinese instructors of adults were used to teaching lower thinking skills associated with the first three levels of Bloom's Taxonomy, namely, knowledge, comprehension and application. The study proposes some possible reasons and implications of such practices, and suggests that teaching higher order thinking skills to Chinese adult students might widen their horizon in engaging more openly in learning.

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Introduction

For centuries, scholars from outside China have speculated that education in China, including the education of adults, typically featured a teacher-centered, information-based and test-driven instructional format. Furthermore, Western scholars (i.e., from North America and Western Europe) have asserted that the traditional Chinese educational model reflected the Chinese government's organization and culture (Wang & Kreysa, 2006, p. 1).

What are some ramifications of such educational practices? It is no secret that Chinese adult students turn out to be good test takers. Their scores in Tests of English as a Foreign Language (TOEFL) and Graduate Record Exam (GRE) amaze their American professors. However, the *Chronicle of Higher Education* featured an article about suspect GRE scores in China; students were found to be sharing test questions and answers that were used in subsequent GREs (Wheeler, 2002). With the opening of China to the West, particularly in light of the 2008 Olympic Games, the urge to learn English has become a fever. Training centers assert that students to do well in TOEFL and GRE are assured of continued employment and high salaries. As a result of such a philosophy, many students strive to memorize all the results from past tests so they could do better in their given tests (Li,

2005). Undisputedly, this method has worked for many Chinese scholars and adult students who are interested in furthering their advanced studies in Western industrialized countries, especially in the United States.

While the test scores amaze American professors, Chinese adult students' lack of communication skills, especially in speaking and writing worries their professors. How come students can achieve high scores in tests, yet lack skills in speaking and writing? Simply, Chinese teachers of adults may not have given their students opportunities to practice their speaking and writing as the bulk of their teaching is devoted to fostering students memorization skills. According to Paine (1992), teaching in China is characteristically text-based, subject-oriented and teacher-centered, which is not the typical pedagogical approach in current Western adult education (Wang, 2007). Paine's 1992 research found that Chinese teachers ultimately learn to be great performers, and Chinese students learn to expend great effort in memorizing and analysis of a text chosen by their teachers. Wang (2007) revealed that memorization of texts is more highly valued in China than in any other educational or cultural setting.

In recent years, Chinese teachers have become mindful of innovative approaches in teaching adults, such as andragogy. Introduced in 1975 by Malcolm Knowles, this teaching philosophy asserts that the instructor should partner with adult learners, building on students' prior experience and promoting student self-direction. As China strives to modernize its agriculture, industry, military, science and technology, will it attempt to modernize its teaching methodology? What remains under-researched is whether adult teaching methods in China are congruent with Bloom's lower three levels of cognitive taxonomy associated with knowledge, comprehension and application, or they are congruent with Bloom's higher three levels of taxonomy associated with analysis, synthesis and evaluation, as well as Anderson and Krathwohl's additional level of creation of knowledge.

Therefore, to investigate China's practices, the following research question emerged:

What teaching methods are used in adult teaching as practiced in China?

To identify these teaching methods, the study related Chinese adult education tasks and teaching strategies to Bloom's cognitive taxonomy.

This research has two areas of potential significance: teachers of adults in China could blend their teaching methodologies with Western innovative approaches; Western teachers could adjust their teaching methods as they help Chinese adults learn in ways that might differ from the way that they experienced in China.

Theoretical Framework

In the broadest sense, Chinese adult teaching methods and Western approaches represent two polarized points of view. Teaching in China has relied on conventional ideas and an orientation to knowledge, comprehension and application, which comprise the first three levels of Bloom's taxonomy (Chen, 1981). Chen further found that, in general, Chinese educators maintained that all education encompasses two goals: teaching books and teaching learners (as cited in Wang, 2007). To teach books, teachers of adults emphasize detailed analysis of textbooks. To teach learners, teachers expect learners to learn whatever the teachers and textbooks have to convey; the responsibility lies with the learner rather

than the teacher. Biggs' 1996 research found that Chinese adult educators prefer didactic teaching and rote learning to critical thinking. In contrast, many Westerners prefer student-centered teaching as it manifests andragogical philosophy (Jarvis, 2002; Knowles, Holton & Swanson, 1998, 2005).

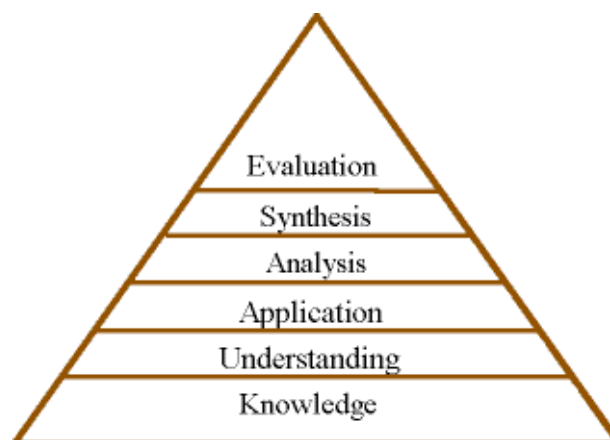
More recently research in the West found that scholars (Cranton, 1994; King, 2005; Mezirow, 1991, 2000) have been advocating the use of the theory of transformative learning in adult education. The key in transformative learning asserts that learners' critical reflection and critical reflection are closely related, which aligns with Bloom's higher levels of his taxonomy. It should be noted that for the remainder of this study, the term "American" will usually be used instead of "Western" because adult education practices can vary significantly across even Western cultures.

Review of the Literature

To examine the theory and underlying factors of Chinese adult teaching practices, the literature related to Bloom's 1956 Taxonomy, andragogy (Knowles, 1975), and Chinese teaching were reviewed.

Bloom's Cognitive Taxonomy

One of the prevailing mental constructs of thinking and learning processes used in United States education was developed by Benjamin Bloom and his associates starting in 1948. They identified three domains: cognitive, affective, and kinesthetic, and published their first handbook, focusing on the cognitive domain, in 1956.



Bloom's 1956 cognitive taxonomy contains six levels, the bottom three levels being considered lower levels that promote lower thinking skills, namely knowledge, comprehension and application. Generally, Chinese teaching has focused on these levels. The top three levels of Bloom's taxonomy – analysis, synthesis, evaluation – promote higher order thinking skills. Most American teachers of adults have been advised to teach higher order thinking skills; memorization skills are normally downgraded in America (Wang, 2007).

Gagne's (1985) and his colleagues' (Gagne et al., 2005) modified Bloom's 1956 taxonomy; their classification scheme assigned the six types of learning different names: verbal

information, concrete concepts, rule using, problem solving and cognitive strategy with verbal information being the least complex on the hierarchy and cognitive strategy being the most complex.

Anderson and Krathwohl's 2001 revisions of Bloom's 1956 taxonomy further accentuate higher order thinking as well as generative, original knowledge. Synthesis has been combined with analysis, and creating has assumed the top level of the pyramid. Furthermore, the knowledge dimension has been subdivided into four facets of knowledge: factual, conceptual, procedural, and metacognitive. Each facet has indicators at each level. The two-dimensional has become a three-dimensional pyramid. The following table provides a set of indicator verbs to describe associated knowledge.

Instructional Design: The Taxonomy Table (Fisher, 2007)

KNOWLEDGE DOMAIN	<i>Remember</i>	<i>Understand</i>	<i>Apply</i>	<i>Analyze</i>	<i>Evaluate</i>	<i>Create</i>
Factual Knowledge	List	Summarize	Classify	Order	Rank	Combine
Conceptual Knowledge	Describe	Interpret	Experiment	Explain	Assess	Plan
Procedural Knowledge	Tabulate	Predict	Calculate	Differentiate	Conclude	Compose
Metacognitive Knowledge	Appropriate Use	Execute	Construct	Achieve	Action	Actualize

Andragogy

As children have gained a separate identity from adults, pedagogy has developed methodologies targeted to that population. In response, Malcolm Knowles (1975) popularized the term "andragogy" to refer to those pedagogical practices that focused on adult learners. Knowles (1975) asserted that adults have a developed self-concept and are responsible for their own learning, so the relationship between learner and instructor resembles a partnership rather than a parent-child relationship. To that end, Knowles (1975) identified the following instructional design factors:

- *self-direction*, such that the learning environment enables adults to choose what and how to learn
- *experience* that adult learners can draw upon in their own lives
- *motivation* that builds on adults' personal and professional needs
- *readiness* that recognizes the power of just-in-time learning
- *need to know*, so that instructors should give the rationale for the content to be learned
- *timing* that recognizes adults' need to fit learning within their busy schedule
- *practicality* that facilitates close transfer of learning

- *socialization* that meets adults' social needs.

Andragogy is one indicator of education's growing sensitivity to developmental issues throughout the entire span of life. Erik Erikson (1980), for instance, identified key tasks at each stage of life. Young adults need to deal with love, adulthood need to focus on care, and old age needs to deal with age. Based on research on men's interaction between their inner life and external events, Levinson (1978) refined Erikson's 1980 stages, and asserted that each stage, or "season," includes both upheaval and change as well as resolution.

Nevertheless, andragogy does not necessarily cross cultural boundaries. In her synthesis of studies on culture and andragogy, Ziegahn (2001) identified a number of cultural dimensions that can impact adult learning:

- *Individualism versus collectivism*. In the United States workplace, individual initiative is rewarded, whereas that uniqueness might be discouraged in other cultures. Independent learning could be negatively construed.
- *Egalitarianism versus hierarchy*. Democratic societies tend to support equal opportunities, while collectivist cultures might respect hierarchy and set classes more.
- *Change versus tradition*. The United States encourages progress and a future-oriented perspective, while other cultures may value tradition and the status quo.

Adult education must acknowledge that culture shapes individuals' behaviors and attitudes, and that teaching itself reflects and fosters certain cultural beliefs.

When andragogy is mapped into Bloom's 1956 cognitive taxonomy, the higher levels of learning often come into play. For instance, because adults draw upon their prior experience when learning, they are exhibiting analytical and evaluative behaviors. Because adults want practical information that they can use immediately, they are apt to focus on application and creation. Even cultural factors can be integrated into Bloom's taxonomy relative to andragogy as adult learners differentiate teaching and learning in light of their cultural norms.

Chinese Adult Teaching

The mode of Chinese adult teaching methods can be traced back twenty-five centuries. The spirit of Confucianism was a major force in unifying China, and helped mould the mentality and temperament of the Chinese people (Chai & Chai, 1965). By placing greater emphasis on the lower levels of Bloom's taxonomy, Confucius shaped the thinking of Chinese teachers: "I transmit but I do not create; I have faith in, and a passion for, ancient studies" "I am not born with possession of knowledge, but, being fond of antiquity, I assiduously pursue it" "...to be able to acquire new knowledge while reviewing the old qualifies one as an instructor" (as cited in Chai & Chai, 1965, pp. 43-45). Explicit in the sayings by Confucius is the fact that Confucius emphasized the following:

- To teach students or books, teachers are transmitters of knowledge instead of learning facilitators as preferred by American teaching approaches.
- To pursue knowledge, teachers must have faith in ancient studies without evaluating or challenging fixed ancient thought.

- To obtain new knowledge, teachers need to review the old, and this review method emphasizes one's rote learning.

No doubt Confucianism has inspired generations of Chinese teachers. Teachers are fond of his view on mastery of knowledge. One of Confucius's cardinal principles was to let teachers be teachers and let students be students.

As Confucius saw growing disorder in his time (Cotterell, 1994), he concluded that teachers of adults, similarly to all other rulers in society, had to help maintain the *status quo* of society. Confucius's thinking has been to the liking of generations of rulers in China, including the current government in China. Prior to the establishment of the People's Republic of China in 1949, especially in the 1920s and 1930s in China, the party and government issued a series of decrees to restore the system of modern and formal education under the slogan "the mastery of knowledge" (Cheng & Manning, 2003).

After the Chinese communists came to power in 1949, the Chinese teachers began to follow Mao's teachings. Mao started to discard Confucianism, and, instead, claimed that true knowledge comes only from practice and that productive activity is the fundamental source for learning (Cheng & Manning, 2003). One of his cardinal policies was "walking on two legs" (i.e., uniting theory with practice) (Kaplan, Sobin, & Andors, 1979). What this educational policy meant was that there must be direct interaction of educational institutions with productive labor and the establishment of self-supported schools by factories and commune units. Students were encouraged to work with production tasks at hand. Towards this end, most schools in China, including universities, were closed.

Mao's educational policy lasted until the Cultural Revolution was put to an end in 1976 by other Chinese communists. Educators in the nation realized that emphasizing application without mastering knowledge first would not do any justice to students. Therefore, schools of all sorts were restored. College entrance examinations were introduced beginning in 1977 (Kaplan, Sobin, & Andors, 1979, p. 226).

As observed by international scholars (Cortazzi & Jin, 1996; Boyle, 2000), Chinese teachers clung to their traditional pedagogical outlook, tending to emphasize knowledge, content, teacher-centered classrooms, and exam results. As noted by Boyle (2000), Chinese teachers tend to stick to the textbook, which is often the same one throughout practically the whole country (p. 153). Some Chinese scholars have noted almost the same regarding teaching in China. According to Wang (2007), teaching in China is focused exclusively on transmitting orthodox subject knowledge; concepts such as flexibility, problem solving, critical thinking and independent learning are not recognized. In addition, Wang (2007) noted that Chinese teaching strictly prescribes acceptable teaching philosophies, teacher roles and roles of students. This hierarchical structure reinforces China's pedagogical approach to adult education (Wang, 2007). Because of this hierarchical structure in teaching, Chinese students are not allowed to challenge their teachers, and teachers are considered absolute authority figures in knowledge. Under such conditions, it may be hard to release the energy of students because they are expected to learn under a fixed pedagogical mode where analysis, synthesis, evaluation and creation are not encouraged.

Such teaching philosophies are manifested in approaches to examinations. For example, as early as in the Tang Dynasty, China began to offer a sophisticated imperial civil-service examination system whereby candidates for government office were selected on the basis of their performance in a battery of government-conducted examinations (Kaplan, Sobin, & Andors, 1979). Throughout the dynasties in China, the mastery of Confucian classics was an

important subject area for exams. Independent thought and inquiry were not widely encouraged (Kaplan, Sobin, & Andors, 1979). No one else can emphasize the importance of exams more in the Chinese educational system than teachers, which may be why Chinese students often prefer the exam-oriented approach of their Chinese teachers and are enthusiastic about courses which, by American standards, would be dull and geared simply towards achieving high scores on exams (Wang, 1999; Boyle, 2000).

In contrast, teaching critical thinking is popular in the West (i.e., North America and Western Europe). Critical thinking is a higher-order thinking skill that consists mainly of evaluating arguments, and it is a purposeful, self-regulatory judgment resulting in interpretation, analysis, evaluation, and inference, as well as explanations of the evidential, conceptual, methodological, or contextual considerations upon which the judgment is based (Astleitner, 2002). There is no evidence that such an approach in teaching is being used in China. There was no mention of such an approach in teaching in one of the most authoritative report titled *China's Education in 2003 from Growth to Reform* (Yang, 2005). In a hierarchical society like in China (Lee, 2004), one may wonder whether teaching Bloom's higher levels of taxonomy would thrive.

Methodology

No one is to underestimate the value of survey research simply because it can be used to generalize from a sample to a population so that inferences can be made about some characteristic, attitude or behavior of this population (Babbie, 1990). Creswell (2003) concurs with this school of thought and indicated further that a survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. Some general themes and patterns were needed to determine whether Chinese adult education teachers taught the lower thinking skills or higher order thinking skills in light of Bloom's taxonomy. Therefore, for the purpose of this study, a survey design was considered an appropriate method for gathering data

Sample

In the summer of 2007, a survey of 389 participants at departments of continuing education at different universities in the city of Beijing, Shanghai and Guangzhou were randomly polled (researchers distributed the questionnaire to those adult learners who happened to have classes on campus; those who opted not to participate in this survey were not asked to do so), and 359 (92%) participants completed and returned the survey to the researchers. According to Wang and Kreysa (2006), there are 15.8 million non-traditional learners and 4.2 million traditional learners in China and the national population is approximately 1.3 billion (China Internet Information Center, n,d.). The adult student population in these three universities is about 6000. Departments of continuing education at different universities in China were established in the early 1980s to model after similar departments in Western countries. Courses offered in these universities cover engineering, agriculture, forestry, teaching training, humanities, natural sciences, finance and economics, political science and law (Wang & Kreysa, 2006). Recently, vocational education and English were added to the list (Lee, 2004). Many teachers in these departments are adjunct professors whose full time jobs are with other universities. Although they have formed their own teaching preferences in their own universities, here at the departments of continuing education they have to follow their institutions' instructional norms. In other words, these adjunct professors are required to teach adult learners using approaches prescribed by these departments of continuing education. Usually, these adjunct professors are required

to lecture heavily to adult learners. Adult students are expected to be good listeners and note takers. Exams are administered extensively throughout the semesters.

Instrumentation

Benjamin Bloom's classic categorization of cognitive learning (Bloom, et al., 1956) was subdivided into six types of learning: knowledge, comprehension, application, analysis, synthesis, and evaluation. This categorization is considered hierarchical, with knowledge being the least complex type of objective on the hierarchy and evaluation being the most complex. The bottom three levels: knowledge, comprehension, and application, are sometimes referred to as lower-order learning skills, and the top three as higher-order learning skills. Performance of the lower-level skills of the hierarchy is usually prerequisite for performance at the higher levels. However, instructors in general seem to prefer either the cluster of lower level skills or the cluster of higher-level skills. Furthermore, American instructors and Chinese instructors do not seem to agree about which types of learning lead to students' transformation and emancipation (Cranton, 1994; King, 2005; Mezirow, 1991, 2000). A survey instrument was designed to dichotomize instructors' teaching in relation to students' learning outcomes in order to give researchers a quantitative tool to analyze teaching and learning in different cultures.

To that end, the researchers created a survey instrument entitled Lower-Order Thinking Skills and Higher-Order Thinking Skills (LOTSHOTS) to determine whether Chinese teachers of adults taught lower order thinking skills or higher order thinking skills in a given situation. The instrument was divided into six factors, which were the basic elements to indicate an instructor's general support or disapproval of a particular teaching mode. In creating the survey instrument, observable and measurable action verbs derived from Gagne's work (1985, 2005) were assigned to the six types of learning. High scores in each area represent support for the concept implied in the factor name (shown by action verbs). Low scores indicate support of other concepts. For example, a high score on the sixth factor indicates an instructor's emphasis on higher-order learning skills; a low score represents support of lower-order learning skills.

A group of five teachers of adults in a university in the United States, who were not included in the sample, were used in a pilot study to validate the instrument. Data gathered from the validation study were not included in the study but were used to determine whether revisions to the instrument were needed. The validation study was also used to test the clarity and comprehensibility of the questionnaire items. Validation study results indicated revisions to the instrument were not needed since the online instructors in the validation study understood the questions in the survey instrument. In sum, the questions used could be considered content valid. Further, the alpha reliability coefficient for the instrument was .92 (N of cases = 359, N of items = 36).

Data Analysis

For the survey instrument, the following values are assigned: Always = 5, Almost Always = 4, Often = 3, Seldom = 2, Almost Never = 1, and Never = 0. Missing Items: Omitted items are assigned a neutral value of 2.5.

SPSS 14.0 for Windows was used to analyze the data collected for this study. Analysis was conducted for each factor in the research question. For descriptive statistics, mean scores and standard deviations were reported for the participants' responses.

Findings

Tables 1-6 (n=359; N=389) summarize the mean scores for these teachers of adults on each of the six levels of Bloom's taxonomy. Each of the tables contains several items from the survey that determine and describe whether these instructors' teaching methods were driven by lower order thinking skills (associated with knowledge, comprehension and application) or by higher order thinking skills (associated with analysis, synthesis and evaluation). It should be noted that the revised taxonomy level of creation was not addressed.

Table 1. The First Level of Bloom's Taxonomy: Knowledge; Teaching Lower Order Thinking Skills

	M	SD
1. I allow students to define concepts in my class.	3.05	0.91
7. I allow students to memorize concepts in my class.	3.11	0.88
13. I allow students to repeat concepts in my class.	3.15	0.89
19. I allow students to name concepts in my class.	3.14	0.77
25. I allow students to recall concepts in my class.	3.35	0.77
31. I allow students to label concepts in my class.	2.77	0.82

Table 1 summarizes the responses for survey items pertaining to the first level of Bloom's taxonomy: knowledge. The high scores suggest that these instructors favored teaching knowledge to their students. When teaching, they tended to allow their students to "define, memorize, repeat, name, recall or label" concepts.

Table 2. The Second Level of Bloom's Taxonomy: Comprehension; Teaching Lower Order Thinking Skills

	M	SD
2. I encourage students to describe concrete concepts in my class.	3.22	0.78
8. I encourage students to discuss concrete concepts in my class.	3.01	0.99
14. I encourage students to explain concrete concepts in my class.	3.24	0.78
20. I encourage students to identify concrete concepts in my class.	2.99	1.23
26. I encourage students to recognize concrete concepts in my class.	3.44	0.89
32. I encourage students to locate concrete concepts in my class.	3.14	0.79

Table 2 summarizes responses to the survey items pertaining to Bloom's taxonomy: comprehension. The high scores on the six variables indicate that these instructors supported comprehension learning activities. When teaching, these instructors helped students "describe, discuss, explain, identify, recognize and locate" concrete concepts in their classes.

Table 3. The Third Level of Bloom's Taxonomy: Application; Teaching Lower Order Thinking Skills

	M	SD
3. I help students apply rules and principles in my class.	3.62	0.91
9. I help students demonstrate rules and principles in my class.	3.19	0.68
15. I help students translate rules and principles in my class.	3.06	0.85
21. I help students manipulate rules and principles in my class.	3.57	0.98
27. I help students practice rules and principles in my class.	3.48	0.76
33. I help students illustrate rules and principles in my class.	3.59	0.84

Table 3 summarizes responses to the survey items pertaining to Bloom's taxonomy: application. The high scores reveal that these instructors helped students "apply, demonstrate, translate, practice and illustrate" rules and principles in their classes.

Table 4. The Fourth Level of Bloom's Taxonomy: Analysis; Teaching Higher Order Thinking Skills

	M	SD
4. I let students distinguish rules and principles in my class.	2.33	1.02
10. I let students differentiate rules and principles in my class.	2.45	1.16
16. I let students compare rules and principles in my class.	2.15	0.84
22. I let students contrast rules and principles in my class.	2.61	1.14
28. I let students critique rules and principles in my class.	2.89	0.77
34. I let students examine rules and principles in my class.	2.17	0.87

Table 4 summarizes responses to the survey items pertaining to Bloom's taxonomy: analysis. These results suggest that these instructors did not let students "distinguish, differentiate, compare, contrast, critique or examine" rules and principles in their classes. In other words, higher order thinking skills were not often taught in their classes, although critical tasks appear to have occurred regularly.

Table 5. The Fifth Level of Bloom's Taxonomy: Synthesis; Teaching Higher Order Thinking Skills

	M	SD
5. I plan activities that will encourage students to plan problem solving in my class.	2.05	0.88
11. I plan activities that will encourage students to propose problem solving in my class.	2.17	0.68
17. I plan activities that will encourage students to design problem solving in my class.	2.44	0.76
23. I plan activities that will encourage students to arrange problem solving in my class.	2.57	1.02
29. I plan activities that will encourage students to organize problem solving in my class.	1.68	1.02
35. I plan activities that will encourage students to modify problem solving in my class.	2.97	0.79

Table 5 summarizes responses to the survey items pertaining to Bloom's taxonomy: synthesis. The low scores in the six variables indicate that these instructors seldom gave their their students opportunities to "plan, propose, design, arrange, organize or modify" problem solving in their classes. Higher order thinking skills were not generally taught in their classes, although students seem to have had opportunities to modify problem solving.

Table 6. The Sixth Level of Bloom's Taxonomy: Evaluation; Teaching Higher Order Thinking Skills

	M	SD
6. I create conditions within which students evaluate their cognitive strategy.	1.66	0.77
12. I create conditions within which students rate their cognitive strategy.	1.68	0.66
18. I create conditions within which students judge their cognitive strategy.	2.15	0.78
24. I create conditions within which students justify their cognitive strategy.	2.59	1.03
30. I create conditions within which students summarize their cognitive strategy.	3.01	0.87
36. I create conditions within which students appraise their cognitive strategy.	2.87	0.64

Table 6 summarizes responses to the survey items pertaining to Bloom's taxonomy: evaluation. The range of scores indicate that these instructors created conditions within which their students could sometimes practice some level six thinking skills: specifically "summarize" and "appraise" their cognitive strategy. On the other hand, students seldom "evaluated" or "rated" their cognitive strategy (which seems somewhat inconsistent).

Discussion

The purpose of this study was to determine whether adult teaching methods in China were driven by lower order thinking skills relative to the first three levels of Bloom's taxonomy characterized by knowledge, comprehension and application. The findings showed that Chinese teachers of adults were not accustomed to teaching higher order thinking skills associated with the next three higher levels of Bloom's original taxonomy as characterized by analysis, synthesis and evaluation. As shown in the findings from this quantitative analysis, Chinese teachers of adults almost unanimously taught lower order thinking skills, which are deeply rooted in Confucian culture (Biggs, 1996). Biggs' (1996) research found that Chinese teachers believe that creativity stems from one's mastery of knowledge. Without mastery of knowledge first, no one can proceed to creativity, which is designated as the highest cognitive level in Anderson and Krathwohl's 2001 revised taxonomy. This finding helps explain why most of Chinese teaching emphasizes the first three levels of Bloom's taxonomy.

Biggs (1996) further argued that in the Chinese tradition, teachers are regarded by their students as an unchallengeable authority. On their own part, teachers rely on lecture and focus on the best results in externally set exams. For centuries, teachers of adults in China have not deviated very much from this traditional instructional approach, which is seen as reflecting its governmental organization (Biggs, 1996). Emphasis on the mastery of knowledge goes back twenty-five centuries when one of the first educational philosophers, Confucius, put his faith in knowledge and in the status quo. Under Mao, more emphasis was placed on "application," which is still the lower level of Bloom's taxonomy. In the post-Mao era, however, teaching of Bloom's first three levels was re-emphasized and this study further confirmed this overall educational method in China.

Currently, the Ministry of Education's main role includes administration of university entrance exams and supervision over curriculum and structure of university programs. In addition, the preparation of standard textbooks including teaching methods for use throughout the country is overseen by the Ministry of Education (Kaplan, Sobin, & Andors, 1979). It is not surprising to Westerners (i.e., North America and Europe) that the content of any teachings, including teaching methodologies, are prescribed by higher authorities. Under China's government, this standardization of educational practice is more accentuated. When teaching any materials, teachers of adults are not supposed to go beyond their course objectives. If higher authorities want teachers to teach lower order thinking skills, instructors cannot teach higher order thinking skills as revealed in Bloom's taxonomy. To teach Bloom's higher order thinking skills would equal challenging higher authorities in China. Evidence to support the above observation exists in Wang and Bott's 2003-2004 research in that higher authorities (adult educators) preferred teaching lower order thinking skills which were characterized by pedagogical teaching instead of andragogical teaching. To challenge higher authorities would jeopardize teachers' employment in any institution (Boyle, 2000).

This study also confirms Wang and Bott's 2003-2004 research, which asserted that the American form of andragogy (student-centered teaching of adults) -- characterized by using learning contracts to structure coursework, negotiating the syllabus at the first class meeting, asking students to compile personal learning journals, and relying on open-ended discussion methods -- might meet resistance from both Chinese adult educators and students since compliance with authority is so highly valued in the Chinese culture. As early as 1995, Brookfield (2004, 2006) observed that the American democratic approach to teaching adults (andragogy) could be seen as evidence of teachers' laziness or lack of commitment by students from a different social and cultural background such as China. Chinese teachers' preference of teaching Bloom's lower order thinking skills has to do with their philosophy in education that views instructors as absolute authority over learners (Wang & Bott, 2003-2004). Concurrently, their educational philosophy reflects a belief that the Chinese government has absolute authority over teachers. Although Chinese universities do not have the similar tenure system that has been in existence in the United States, teachers in China are considered government positions. In a way, teachers' employment in any institutions rests in the hands of government officials. This mindset itself embodies lower thinking levels of Bloom's taxonomy. As such, Chinese comments such as American teacher laziness or the need for rote learning as a prerequisite for creativity might be interpreted as defensive rationales to combat conflicting educational theories that might seem to threaten the authoritarian stasis.

Implications for Further Research and Practice

Although the literature review, other studies and this study confirmed that adult teaching methods in China were driven by lower order thinking skills, some American scholars, along with some Chinese scholars and researchers, may still be skeptical about the overall result of this kind of research. Questions may arise when people realize that some of the first rate scholars/professors working for universities and research institutions in Western industrialized nations were educated and trained by Chinese universities, not by Western universities. This may challenge the validity and reliability of this research and other research regarding teaching methods in China in light of Bloom's taxonomy. On the other hand, such practice might actually underscore the validity of the research.

The study had several limitations. The data were generated from self-reported practice, which needs validation via direct observation, student surveys, and analysis of syllabi and lesson plans. The study was also limited in that the sampling consisted of Chinese teachers of adults from three areas of China, and that the sample participants were surveyed in their native country. A similar sample population (i.e., Chinese-born teachers of adults) affiliated with United States educational institutions might respond significantly differently. Three additional questions could provide data that might reveal important intervening factors:

- "To what extent do you feel comfortable about deviating from prescribed content and instructional methodology?"
- Under what circumstances – or for what reason – might you want to deviate from prescribed content and instructional methodology?"
- "What are the consequences to you professionally if you deviate from prescribed content and instructional methodology?"

These questions address the issue of authority within education, and also reflect attitudes about Bloom's higher thinking skills of critical evaluation and creativity.

Although Chinese teachers of adults in general enjoy Confucianism and teaching lower order thinking skills, this does not mean that Chinese students have to engage in learning lower order thinking skills. In other words, students can absolutely go beyond teachers' teaching objectives by engaging in learning higher order thinking skills in any classroom setting. The question becomes: what are the ramifications of such behavior in class? If students take the initiative in learning higher order thinking skills, they are not shaped by their teacher's mode of teaching that uses lower order thinking skills. Students, especially adult students, can become self-directed in learning after they become experienced with a subject matter. Can learning of higher order thinking skills result from self-directed learning? Or are these higher order thinking skills learned in informal educational settings such as home and in the workplace? Does formal schooling serve strictly as a foundation for beginning learning, with the intent that advanced thinking is experienced in other environments? While these questions are outside the scope of this study, they reflect important and sometimes conflicting social and cultural realities of China.

This research is only one sided in the sense it focused only on teaching methods of teachers of adults. Further research should focus on learning methods on the part of adult students themselves. How much do teaching methods affect student learning outcomes? How is adult education viewed by those adult students, and what part of their lives are prescribed by formal education?

As more and more Chinese students come to Western campuses, especially North American universities, to further their study, should instructors teach them only lower order thinking skills, a mode of teaching that Chinese students are so accustomed to? Or should instructors in Western countries challenge Chinese students' preferences, teaching higher order thinking skills, as this has been the norm in the Western countries?

Based on this research and other studies relative to adult teaching methods in China, it is appropriate to suggest that flexibility be the norm in helping Chinese adult students learn. Teaching higher order thinking skills to Chinese adult students might widen their horizon in engaging more openly in learning. Further research should involve qualitative study in order to enhance this kind of quantitative analysis.

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