Do the Math: the Difference Between Chinese and American Teachers（图）

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[摘要] 12/12/2006， For the past 20 years, studies of math achievement have shown that Chinese (and other East Asian) children consistently outperform their American counterparts in almost every area. Explanations have focused on differences ranging from number-word systems and parental expectations to student motivation and curriculum content.

[关键词] Math;Chinese;American

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For the past 20 years, studies of math achievement have shown that Chinese (and other East Asian) children consistently outperform their American counterparts in almost every area. Explanations have focused on differences ranging from number

-word systems and parental expectations to student motivation and curriculum content.

Now a study published in Contemporary Educational Psychology by Teachers College Professor Stephen Peverly and former TC students Zheng Zhou of St. John's University and Tao Xin of Beijing Normal University suggests that Asian teachers simply know more about math. In a comparison of 162 third

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grade mathematics teachers in the US and the People's Republic of China, the researchers found that while American teachers were more knowledgeable about general educational theories and classroom skills, Chinese teachers had stronger knowledge of the subject matter they were teaching, as well as a better understanding of the overall elementary curriculum that their students had covered and would cover in later years.

The difference was partly attributed to the fact that most U.S. teacher preparation programs focus on how to teach mathematics rather than on mathematics itself -

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and that once U.S. teachers become certified they do not often have the opportunity to improve their knowledge of the subject. The study's authors also suggest that many U.S. math teachers are not adequately prepared to teach their subject because they, themselves, were poorly educated in math in elementary and secondary school

The study focused on teachers' level of knowledge about concepts, computations and word problems involving fractions; their skills in teaching fractions in a way that ensures student comprehension; and their knowledge of more general issues such as child development, learning theories, and classroom management.

Researchers looked at both the content teachers said they would assign to their students and the way they presented the concepts. While both Chinese and American teachers used similar methods to teach fractions

-"'using hands-on learning tools, folding pieces of paper, coloring in geometric shapes.-

"'there was a big difference in the information each group presented. Most of the American teachers in the study, when asked to about their teaching methods, rarely mentioned content. Chinese teachers, on the other hand, spoke in great detail about the content they present to students, and that content demonstrated a deep understanding of the subject matter as well as knowledge of the entire elementary mathematics curriculum.

Overall, Chinese teachers had a better understanding of the mathematical concepts they were teaching than did their U.S. counterparts. The study confirmed findings of a previous study that found that U.S. teachers do not have "a profound understanding of fundamental mathematics." This, despite the fact that all the American teachers in the study held a bachelor's degree and more than half had obtained a master's degree, while most of the Chinese teachers v

-year teacher-

training school where they studied subjects equivalent to those offered in high school. American teachers also had taken more courses on teaching methods and general educational and psychological principles related to teaching than did Chinese teachers.

The researchers found that more experienced American teachers were better able to identify important points for teaching fraction concepts. For Chinese teachers, however, mastery of this skill did not depend on experience, with less experienced Chinese teachers demonstrating the same proficiency as their more experienced counterparts.

Chinese teachers also showed a better understanding than American teachers of their students' prior mathematics knowledge relating to fractions. The Chinese teachers reviewed concepts students had studied previously and found opportunities to lay the groundwork for what students would be learning later. American teachers rarely displayed the same understanding.

American teachers, on the other hand, were more knowledgeable than Chinese teachers about concepts covered in educational psychology texts.

Researchers summarized that while Chinese teachers were effective in providing instruction based on how well they knew the subject matter, their limited understanding of underlying psychological aspects of learning could be problematic. This limitation could possibly lead to problems related to student motivation, spontaneity, and creativity among other things. American teachers' comparative lack of understanding of the subject matter revealed that teacher

-service training should be improved.