

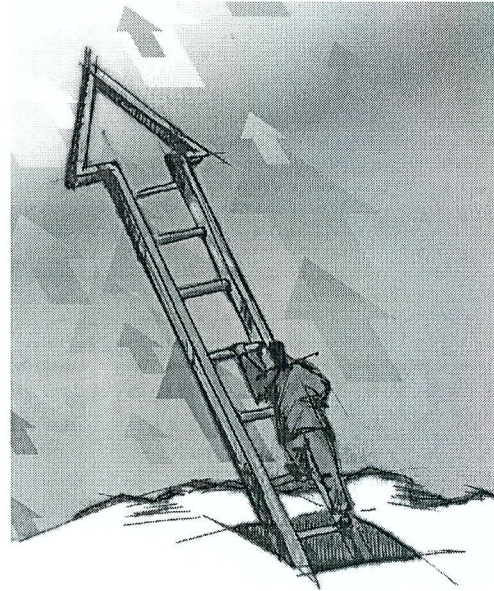
The Keystone Method of Instruction in Basic Mathematics: Theory, Practice, Results, and Implementation

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City Colleges of Chicago

Friday, October 9
10 a.m.–3 p.m.
Lunch will be served
Room 50 Milton Hall

The Keystone method is a synergistic system of assessing students' learning and adjusting of teaching practices. It provides a medium for dialogue between the teacher and the students. This medium is represented by carefully designed quizzes that are frequent, cumulative, time restricted, and homework based. The quizzes are performance based and address students' learning difficulties. They are followed by the teacher providing immediate and constructive feedback on all the problems. The difficult topics are re-taught until an appropriate level of mastery is attained. Statistical analysis of the quizzes, such as item analysis on each question, average time spent on each question, as well as the mean and standard deviation of the entire quiz, provide valuable information about the class performance. This in turn helps the teacher to plan the next lesson and construct the next quiz. The past results have shown dramatic improvements in student performance and retention in Keystone classes. A concomitant result has been improved concentration skills, and a better persistence of students in mathematics courses and at the college.

We are now incorporating the Keystone methodology with state-of-the-art computer technology to perform in-class computer quizzing and assessment, providing instant diagnostics and feed back to all students. Technological support will reduce the time spent on construction of quizzes and tests and will also provide assistance to students with their homework and other related assignments. Additionally, in-class cooperative group work is used to deepen students' knowledge and improve their problem solving skills.



Vali Siadat earned a Ph.D. in pure mathematics and a D.A. in mathematics education at the University of Illinois at Chicago. Dr. Siadat has taught at several institutions of higher learning, including California State University at Dominguez Hills, University of Southern California, Chicago State University, Loyola University Chicago and the City Colleges of Chicago where he is currently professor of mathematics at its Richard J. Daley campus. He was the director/co-principal investigator of a \$.75 million grant from NASA to conduct the Project Access/Chicago PREP program. He was also the director/co-principal investigator of a \$100,000 grant from the Gabriella and Paul Rosenbaum Foundation to expand the Keystone Project. Dr. Siadat has published in mathematics and mathematics education journals and has had numerous presentations at local, state-wide and national mathematics meetings.

Dr. Siadat is the recipient of several teaching awards, including the Carnegie Foundation for the Advancement of Teaching Illinois Professor of the Year Award in 2005, and most recently, the 2009 Mathematical Association of America's Deborah and Franklin Tepper Haimo Award in distinguished teaching of mathematics.

Cyrill Oseledets, Ph.D., earned his undergraduate degrees in mathematics from Moscow State University and his Ph.D. in mathematics from the University of California, Riverside. He is currently an assistant professor of mathematics at Richard J. Daley College. He is also a co-principal investigator in the award-winning Keystone project.