

Ο αναστοχασμός του Alan Schoenfeld's σε θέματα σχετικά με την επίλυση προβλημάτων

Biography: Alan Schoenfeld is a Professor of Education and Affiliated Professor of Mathematics at the University of California, Berkeley. A former mathematics lecturer, he was awarded the Mathematical Association of America's Mary P. Dolciani Award, given to a pure or applied mathematician for distinguished contributions to the mathematical education of students.

I love mathematics. I started out as a mathematician, and then became a mathematics educator because I wanted to help as many students as possible experience mathematics the way I had – to become powerful thinkers and problem solvers and, equally important, to love mathematics.

What's a "problem?" It's not any particular task – because what's a problem for me may be an exercise for you, and vice versa. What makes a task a problem is that an individual is interested in figuring it out, and doesn't immediately have a solution method at hand. My goal in teaching problem solving has always been to teach my students to solve problems I haven't taught them how to solve. That is, I want them to be resourceful mathematical thinkers who have a number of techniques, and the perseverance, to make progress on new and challenging tasks – rather than throwing their hands up in the air and saying "I wasn't taught how to solve this!"

What's a good problem, for purposes of teaching? For one thing, it ought to deal with important mathematics. If students spend their time working on something, they ought to learn from working on it. It shouldn't have a clever "aha!" solution, but rather, be solvable by good mathematical thinking. It ought to have different entry points, so that different approaches might yield a solution. It's much easier to enter a house that has more than one door. More importantly, if there are multiple solutions, students can compare and contrast their solutions. And, the problem shouldn't be an end in itself. Good problems lead to thinking about deeper mathematics ("What if...?").

Παρακάτω ο Schoenfeld περιγράφει τον τρόπο εξέλιξης της διδακτικής του εστίασης (ως Teacher Educator) στην επίλυση προβλημάτων στους φοιτητές του από τη δεκαετία του '70:

Στα πρώτα μου μαθήματα επίλυσης προβλημάτων επικεντρώθηκα σε προβλήματα που μπορούν να επιλυθούν με ευρηκτικές μεθόδους τύπου Polya: σχεδίαση διαγράμματος, εξέταση ειδικών περιπτώσεων ή αναλογιών, εξειδίκευση, γενίκευση κ.ο.κ. Με την πάροδο των ετών η εστίασή μου επικεντρώθηκε λιγότερο στην παρακολούθηση των στρατηγικών αλλά περισσότερο στην εισαγωγή των φοιτητών μου σε θεμελιώδεις ιδέες όπως για παράδειγμα τη σπουδαιότητα του μαθηματικού συλλογισμού και της αποδεικτικής διαδικασίας ... τώρα με ενδιαφέρει τι είδους προβλήματα να θέσω στους μαθητές ώστε να τους οδηγήσω σε δράσεις μαθηματικής διερεύνησης.