

Teachers Investigating Adult Numeracy: Evidence of Impact Highlights from the Final Evaluation Report

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... The model “worked.” It brought about changes in teacher knowledge/understanding of the mathematics instructional practices, and attitudes toward mathematics. There is evidence from one state (Kansas) that students of TIAN-trained teachers exhibited greater achievement and better attendance than students of non-TIAN trained teachers. (Final Evaluation Report, p. 42)

The National Science Foundation - funded intensive professional development initiative, Teachers Investigating Adult Numeracy (TIAN) was piloted in two states (Massachusetts and Ohio), and subsequently revised and field-tested in four additional states (Arizona, Kansas, Louisiana, and Rhode Island). Approximately 20 teachers comprised each state’s cohort. Data collected and analyzed by internal and external evaluators during 2005-2009, showed clear evidence of change in four areas. For more information on the project, see adultnumeracy.terc.edu/TIAN background

1) ABE, pre-GED, and GED teachers’ repertoire of instructional practices expanded.

After TIAN participation, over 90% of the teachers reported that they were using specific TIAN instructional practices in their own classrooms, including:

- using math investigation or problem-solving with tools, hands-on materials, or documents (such as graphs) to explore new concepts (p. 26).
- providing opportunities for students to work together in small groups (p. 26).
- encouraging students to use different ways of expressing their mathematical thinking (such as drawing or writing about it) (p. 26).

In their own words, teachers described changes in their practice

“I now use more hands-on activities on a regular basis, have more group work, let students go to the board and demonstrate how they solved a problem, introduce a math topic with a question ... and feel more comfortable relating math to everyday living and jobs” (p. 33).

“The TIAN project was the best professional development I think I have ever had. I expanded the depth of my own understanding of math, especially in the relationships among math concepts. But, more importantly, I have dramatically changed how I teach math ... I now do less explaining of math ideas. Instead, I allow my students to explore concepts together and explain their ideas to each other ... I also put a lot of emphasis now on understanding math concepts and seeing patterns, rather than memorizing rules” (p. 36).

Telephone interviews with samples of both pilot test and field test teachers one year after their participation indicated that they were still using strategies and activities learned. (p. 42)



2) Teachers' mathematics content knowledge in the areas of data analysis and algebraic reasoning increased and deepened.

A pre- and post- mathematics content assessment showed increases in items related to data and to algebraic thinking. Post-test performance of 64 teachers for whom there were pre/post tests was significantly better (.05 level) on 83% of the items. Pre- and post-surveys asked teachers, "How comfortable are you with your level of mathematics knowledge?". On the post-survey, 48 of 52 teachers indicated increased comfort with their mathematics knowledge, rating themselves somewhat comfortable or very comfortable. As a group, respondents' post-survey ratings were significantly higher (p. 12).

"This is a wonderful project. ... As a high school math teacher for many years I wish I had known ... then [what I know now] because I know I would have been much more effective" (p. 34).

The data analysis and algebra activities we did together were very influential. They made it clear that it is easy to find real life material that will truly engage students. The texts we were given were like gold; they made a difference in that the activities captivated my students."

3) Teachers' knowledge and use of research-based adult education mathematics standards increased.

After participating in the first intensive year, teachers reported more knowledge of their state's mathematics standards, and dramatically increased their use of the standards to guide their math teaching. In the pre-survey 26.5% claimed no or very limited knowledge of standards, yet in the post-survey, 0% made that claim. In the pre-survey only 14% had used state standards to plan instruction, but 62.5% stated in the post survey that they were using the standards for instructional guidance. One year later, in follow up interviews of 20 pilot test teachers, 18 of 20 interviewees were using the standards, either explicitly or implicitly (p. 11-12).

4) Participating states developed capacity for providing high quality mathematics instruction through an effective and sustainable model for professional development.

The viability of the professional development model has been well established ... One state has adopted it for use in all professional development programs. Another state has integrated TIAN into a somewhat similar PD program already being offered (p. 42). All six participant states have expressed their regard for the model and are seeking to extend its use.

