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# Toyota Gives Strength to the United States Thread

Posted on **December 1, 2003** by **Editor**



**By Mark Szymanski**

If you look at the academic performance of the world's children in the areas of math and science as a tapestry (thickly woven textile with a varied colored design), the thread that represents the United States is weak and fading. According to the U.S. Commissioner of Educational Statistics Pascal D. Forgione Jr., "U.S. fourth-graders are performing poorly, middle schoolers are worse, and high schoolers are near the bottom in comparison to students 41 other industrialized countries [1]. In fairness to the children of the United States, it's difficult to point to one reason why they are underperforming. Despite this, the tendency of the general public is to look for a simple answer to this complex problem. If there is any strong association, it is between school success and socioeconomic status. On average, U.S. students who are in a lower socioeconomic status score lower on math and science tests than kids from a higher socioeconomic status.

Because of the regional, cultural, socioeconomic differences among students in the United States, the blame is typically spread equally among curricula, teachers, and textbooks. In mathematics, the United States curricula tends to focus more on arithmetic in middle school while other countries are already teaching algebra and geometry to middle schoolers. The science curriculum follows a similar theme. The U.S. curriculum tends to focus on life science in the middle years while other countries are beginning to teach chemistry and physics. With this in mind, some critics argue that we should simply reposition our curricula to help our children bridge this gap.

Textbooks are also cited as a contributing factor to our students mediocre performances in math and science. The general criticism is that U.S. textbooks tend to contain too many topics with little time or focus for in-depth work. In mathematics, critics contend that U.S. textbooks focus too much on how to perform mathematical calculations rather than focusing on how to use math in a range of setting.

Finally, teachers receive their share of the blame as well. Traditionally U.S. science teachers are accused of being inadequately trained in the physical sciences. This assumption equates knowledge of physical science with student performance. Over 55% of high school science teachers lack a minor in physical science. [1]

While some experts continue to search for simple answers to these complex questions, other organizations are working together to create. With this in mind, the Toyota Corporation and The National Science Teachers Association have created The TAPESTRY grant program. [3]

The 2004 Toyota TAPESTRY program will award 50 grants of up to \$10,000 each and a minimum of 20 “mini-grants” of \$2,500 each to K-12 science teachers. The call for grants addresses the previously cited lack of depth and innovation in the U.S. curriculum. Teachers are invited to propose innovative science projects that can be implemented in their school or school district over a one-year period. So, the grants are targeted at practioners who can make real changes that will affect students immediately. These are not large grants designed to fund major studies. According to Toyota, “TAPESTRY projects must demonstrate creativity, involve risk-taking, possess a visionary quality, and model a novel way of presenting science.” [3]

One of the strengths of this program is Toyota’s continuing sustained commitment of the program. This partnership has been in place for the past 12 years and has awarded 552 grants totaling over \$5 million to teachers in the United States and U.S. Territories.

Another strength of the program is the flexible definition of a science teacher. As a consequence, elementary school teachers as well as more traditional middle school and high school teachers are eligible. According to their web site “Science teacher” is defined as anyone who spends at least 50% of his/her classroom time teaching science or teaches a minimum of two science classes per day and elementary teachers who teach science in a self-contained classroom setting or as teaching specialists are eligible. [4]

In addition to supporting a range of teachers and grade levels, Toyota TAPESTRY grants are awarded in three categories:

- 1) Environmental Science Education: The Environmental Science Education category funds projects that emphasize the efficient use of natural resources and protection of the environment.
- 2) Physical Science Applications: The Physical Science Applications category includes projects that relate the laws, principles, and concepts of science (physics and chemistry) to phenomena and events relevant to students’ lives.
- 3) Literacy and Science Education: The Literacy and Science Education category will focus on the development of literacy skills in the context of science teaching and learning.

To apply for a grant, a teacher must design and plan a one-year long project that centers on

either environmental science education, physical science applications (applied physics, chemistry, and technology), or science and literacy. [5] Projects should demonstrate creativity, involve risk-taking, possess a visionary quality, and model a novel way of presenting science. Projects should involve hands-on activities, have an interdisciplinary approach and relate science to students' lives.

Forums threads and posts about grants can be accessed for those who apply for grants. In addition, former judges are willing to read grant applications. [6]

The TAPESTRY grant program has a strong track record of giving direct support to creative and innovative teachers in the classroom. Educators know that giving support to the front line people is the quickest and most effective way to make fundamental improvements in any education program.

## References

[1] <http://nces.ed.gov/timss>

[2] <http://4brevard.com/choice/international-test-scores.htm>

[3] <http://www.nsta.org/programs/tapestry>

[4] <http://www.nsta.org/programs/tapestry/program.htm>

[5] <http://www.nsta.org/programs/tapestry/howtoapply.asp>

[6] <http://www.nsta.org/programs/tapestry/forum/forum.cgi?page=Forums>

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