

Discovering and Developing Mathematical Talent, Part I
Chair: Zvezdelina Stankova
12/16/04 10:15-11:00 AM

Speakers: Wade Ellis, Bob Megginson, Tim Sanders

Wade Ellis:

West Valley College:

Putnam Exam: community college, but gives Putnam exam, despite the idea that their students can't do Putnam. There is an idea that some people can do mathematics but some people can't. Have had 2 students in top 150 on Putnam.

AMATYC League Exam: West Valley College has done well.

Non-traditional students: There are non-traditional older students that we should also reach out to.

Young Scholars Program at The Ohio St. Univ.

For about 400 students from Ohio to do mathematics. There were some very talented students, and it was a very diverse group.

-ADC (aid to dependent children only, and no one in your family could have gone to college)

There are students who have mathematical talent despite lack of experience. It is important we only teach things outside of curriculum, because students get punished, by peers and sometimes teacher for knowing too much.

-Teachers: this program also had great results for the perception of what teachers can do.

IMO 2001, Inc.

A lot of money was spent, but it didn't go very far. They should have sought more money. Rural America wasn't reached at all. There wasn't money for that, even though there was money for a \$300,000 dinner at the IMO. It is reasonable to spend money on top students, but we shouldn't forget about everybody else. We need to look more broadly than where we are looking to search for mathematical talent. There are attitudes that some "kinds" of people can't do mathematics, and we need to work against this.

Executive Board of the IMO

Canadian Mathematical Society

Bob Megginson:

Discovering and Developing Mathematical Talent: Cultural Considerations

-Underrepresented minorities are 27.1% of population, but they get only 13.8% of mathematics bachelors

-We can't afford to throw away this segment of the population.

-Math circles and Olympiads can help with location and development of the talent in these populations, but are their design flaws that prevent this?

-Not asking to abandon models proven to work for majority.

-Problems with a math circle in Native American community: an emphasis on bringing along all students instead of just the exceptional—this is best dealt with by meeting both needs; competition is de-emphasized—need a capstone experience that relies less on competition; many well-meaning teachers feel threatened by these programs because they

are well-meaning but not prepared to do much mathematics—work to make sure teachers are involved and brought along by these programs; traditional measures of mathematical promise may not identify some students—need to find those students early; parents may not trust the program—need to draw in parents and convince them.

--Native Americans in grades 5-8 do not understand the concept of a problem, but high school students who get this experience start to do well after many years.

Tim Sanders:

--Working with students in underprivileged communities. Has worked in Africa and India.

--Program in Africa run by Center for Excellence in Education involved not only students but also the teachers. This is very important so that the teachers don't feel threatened. The teachers may not have had good access to mathematical education. Teachers were always invited to participate.

--There is a problem with teaching to teachers because they are your peers, but we can use our expert status to have a claim to teaching teachers.

--Going back to Africa, Tim saw that the students and teachers involved in his program had spread the mathematics to more people in their communities.

--Work in the Midwest: There was no ARML (www.arml.com) team in Missouri. Tim got together with local teachers to recruit students for ARML, so he looked for students who had been involved in MathCounts and in the AMC program. The Mathcounts students found the ARML problems too advanced. The AMC students had not ever traveled for a competition. He organized the Great Plains Math League (mathleague.org) as a stepping stone from Mathcounts and AMC to ARML. The problems were of a level between Mathcounts and ARML, and students only had to travel to somewhere else in their city. This helped funnel students from MathCounts and AMC into ARML by providing a transition. Participation in Missouri ARML has been very good, and Missouri ARML placed in top 10 recently. Missouri AMC scores have gone up, as well as number of USAMO competitors. The key here is that GPML is not just targeted at top students. There are many different levels of competition.

--There are a lot of other states that don't have statewide math competitions, that don't have math teams. We need to use our resources to help those states. The challenge to us is to get involved in areas that are underrepresented in math competitions. Even if we don't live in these areas, we probably have professional contacts in those areas that we can use to start getting grassroots organization of math programs there.