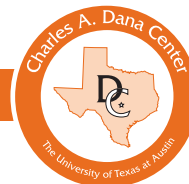


# Academic Youth Development

## Improving Achievement by Shaping the Culture of Algebra Classrooms

A project of the Charles A. Dana Center at  
The University of Texas at Austin  
in partnership with Agile Mind

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Mind



2009

### Overview

The immediate goal of Academic Youth Development is to support the successful transition of students into Algebra I, especially for those students who are also moving from middle school to high school mathematics. Research demonstrates that relatively modest interventions aimed at shaping the culture of classrooms can have powerful effects on student success. Research and our experience also demonstrate that to be effective, improvement efforts must address the students themselves *and* the overall culture of the learning environment.

AYD, then, is intended ultimately to serve your whole mathematics program and perhaps even your whole school. It does so by equipping one or more cohorts of *student allies* with surprisingly infectious information and skills to share with their peers, thus improving the learning culture—and outcomes—for all students and teachers who come in contact with them.

AYD melds best practices in supporting algebra-readiness skills with recent advances in developmental and social psychology concerning the factors that shape students' commitment to success in rigorous academic programs. A summer bridge experience, boosted by strategically timed school year experiences, shapes the way students think about themselves as learners, develops their commitment to high achievement, and creates a set of social supports that sustain their responsible and productive engagement in challenging courses.

A central feature of AYD is helping students understand that intelligence is *malleable*, not *fixed*. AYD incorporates ideas from social psychology regarding effective effort, attribution of effort, and the significance—in learning academic content—of interpersonal skills, sense of belonging, and motivation. AYD draws on neuroscience to show students how their brains actually change as they learn new things. The program provides students and teachers with an explicit set of tools and strategies for applying these ideas in the Algebra I classroom and in daily learning. AYD also provides mathematics content focused on problem solving, proportionality, and use of multiple representations—connecting the students' previous learning with what they will experience in their first year of algebra.

To develop and support a cohort of student allies and their algebra teachers, AYD uses online curriculum resources that include:

- Instructional support resources and tools to help students learn difficult content
- Interactive animations, simulations, and visualizations that deepen student understanding of key concepts
- Explorations and investigations that challenge students and show them the power of the mathematical and psychological concepts they are learning
- Embedded formative assessments that help teachers manage instructional improvement
- Program review materials for students to use as refreshers in summer and the school year, including during the periodic school year gatherings



## Summer Bridge Experience

Student participation in AYD begins with the 14-day summer bridge experience, taught by two AYD teachers with up to 30 students in a cohort. The relaxed context gives students and teachers the opportunity to experience teaching and learning that can promote strong gains in achievement. During the summer bridge, students:

- Build relationships with other students and with their future Algebra I teacher
- Learn and apply strategies for effective effort
- Develop effective two-way communication strategies
- Gain expertise in key problem-solving strategies they will need for Algebra I

## School Year Experiences

AYD's school year experiences are designed to

- Nurture crucial relationships between students and their teachers, administrators, and counselors
- Help AYD students and teachers continue to support each other as a learning community
- Guide students in activating and reflecting upon what they learned in the summer bridge experience
- And, most importantly, sustain student aspirations for high achievement

## Preparing for AYD Implementation in Your School

Successful implementation involves the following activities:

- Generate awareness and recruit staff and students (fall through spring)
- Send teachers to professional development to learn AYD strategies and content (spring)
- Plan (spring) and implement (summer) the summer bridge experience
- Plan (spring and summer) and implement (fall and spring) school year activities

## Evaluation Findings from Summer 2008

AYD is positively affecting the beliefs and behavior of both students and teachers. Students reported:

- Higher self-confidence and a higher level of support in mathematics from their peers and teachers
- Higher motivation and persistence—students were less likely to give up when frustrated or when working on particularly challenging math problems
- Increased use of metacognitive learning strategies—for example, purposeful selection of approaches when engaged in problem solving
- A greater understanding of theories of intelligence, especially the understanding that with hard work and effort, they could increase their intelligence and their capacity for academic success

Participating teachers pointed toward changes in classroom culture. That is, a majority of teachers talked about the emergence of a culture of respectful engagement (a key goal of the AYD initiative). They reported:

- Students taking more responsibility for their role in creating a positive academic learning environment
- Better student-to-student communication—for example, talking through ideas, solving problems together
- Higher levels of student engagement—for example, almost all students, even those who previously were disengaged in school, participated more in class
- Increased willingness of students to work with one another and to encourage and support one another in their learning

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