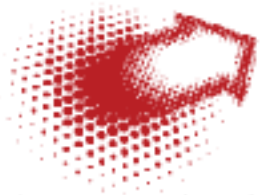

BREAKTHRU

E-mentoring for success in science, math, technology and engineering

BreakThru: E-Mentoring to Support Students with Disabilities in STEM

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Atlanta, Georgia

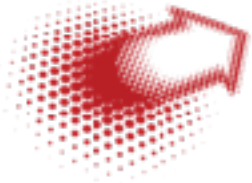
The University of Georgia

Georgia Institute of Technology

People with Disabilities and STEM

	Percent with disabilities	Number with disabilities
Students 6-17	11%	5,538,900
STEM undergraduates	10%	461,700
STEM graduate students	7%	49,400
STEM doctorate recipients	1%	355
Population 21-64	17%	28,145,000
US workforce 21-64	10%	12,836,000
STEM workforce	6%	306,000
STEM doctoral faculty	7%	11,700

SOURCES: Population and U.S. workforce—U.S. Census Bureau, Survey of Income and Program Participation, 2005; Students 6-17—U.S. Department of Education, Office of Special Education Programs, 2008; Undergraduate and graduate students—U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study, 2008; STEM doctorate recipients, NSF/SRS, Survey of Earned Doctorates 2008, Workforce and doctoral faculty—National Science Foundation, SESTAT data system, and Survey of Doctorate Recipients, 2006.



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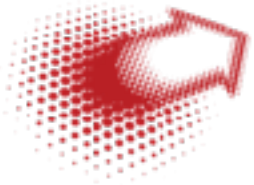
- NSF-sponsored Initiative of Georgia STEM Accessibility Alliance
- Collaboration between University of Georgia and Georgia Tech, with Partners at Georgia Perimeter College and Clarke, Greene, and Gwinnett County High Schools
- Online Learning Communities for Students with Disabilities
  - Second Life
  - Skype
  - Twitter
  - Online Discussion Groups



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E-Mentorship in BreakThru

- **The purpose:** Fostering a relationship in which experienced persons share knowledge and perspective and achieve the personal and educational growth of students through digital communication.

- **The focus:** Breaking down barriers to STEM learning for students with disabilities to promote access and persistence in pursuit of STEM degrees and careers.

- **Key components**:
  - Online learning and training practices based on universal design for STEM learning principles.
  - Access to virtual and social media tools to promote connections and community.
  - Linkage to local STEM resources to continue support of STEM ambitions.

Overview of Mentors

- Community of Mentors and Students to Provide Support, Guidance, Opportunities for Social/Academic Development, and Resources

- Mentors Include:
  - Secondary Science and Mathematics Teachers
  - Postsecondary STEM Faculty
  - STEM Graduate Students
  - Advanced BreakThru Participants
  - Project Staff

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E-Mentor Categories

- Primary E-Mentor
  - Lead mentor and is responsible for scheduling, goal setting, session preparation, and responding to all surveys.

- Visiting E-Mentor
  - Member of the BreakThru mentoring pool who is brought in by a Primary E-Mentor on a temporary basis to work with an individual mentee.

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E-Mentor Categories

- Resource E-Mentor
  - High school mentoring pool. Leads module discussions during class time and collaborates with the Primary mentor on student feedback.
- Master E-Mentor
  - Has expertise in one or more of the gateway STEM courses; Math, Chemistry, Physics, Engineering. Develops a supplemental web-based resource curriculum for the gateway STEM courses (GPC took lead).

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E-Mentorship Activities

MENTORS		
Stipend Benchmarks	**$500**	**$500**
2013-2015	**Semester 1 (Aug – Dec)**	**Semester 2 (Jan-May)**
	Mentor Survey (1 each semester)	Mentor Survey (1 each Semester)
	Mentor Monthly Survey (4)	Mentor Monthly Survey (5)
	Mentor Sessions (at least 10)	Mentor Sessions (at least 10)
	2 of the 4 critical modules*	2 of the 4 critical modules*
	Graduate Symposium **OR**	College Transition Academy
	SL Training (1 per year)	
	Mentor Kick-Off Training Event (1 per year)	
	2 Mentor Training Modules (One time only)	

***Modules to be completed with the student. Only 1 module will be required each year once the 4 critical modules are completed**

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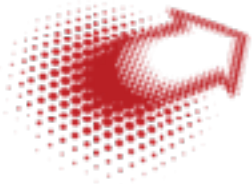
Definition of E-Mentorship Session

Based on Two Forms of Communication:

- Digital voice communication
  - Length of time in Second Life, phone, video chat, etc.
- Text-based communication
  - A progressive communication interchange addressing a relevant mentoring subject (i.e., dialogue sequence of emails or social media posts, SL chat posts, text message conversation threads).



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E-Mentorship Sessions

- 1,832 Mentor-Mentee meetings recorded 2012-2013.
- Most popular platforms: E-mail and Telephone.
- Most use a combination of communication media.
- An increase in the number of communication media correlated with higher mentoring quality among both mentors and mentees.
- Digital Voice meetings lasted longer on average than other mediums (Second Life).

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Learning Modules

- Approximately 25 learning modules:

- All participants complete the 4 critical modules:
  - Time Management
  - Self-Determination
  - Introduction to STEM
  - Classroom Accommodations

- Additional Modules:
  - 87% participants completed additional modules
  - Test Anxiety, STEM Study Skills, Taking Notes, Forming a Study Group most common
  - All relate to academic/classroom support.

Learning Module Completion, 2012-2013

2012-13 Module Completion	Number Mentees	Post-Secondary	Secondary
Test Anxiety	24	11	13
Introduction to STEM *	22	8	14
Classroom Accommodations*	21	9	12
Time Management for Post-Secondary Learners*	21	12	9
Self-Determination*	19	5	14
Self-Determination for Post-Secondary Students*	17	9	8
STEM Study Skills	16	10	6
Taking Quality Notes	15	7	8
Time Management II Making a Weekly Schedule That Works*	14	7	7
Access 101 Universal Design	10	6	4
Access 101 Low Vision & Blindness	7	3	4
Forming a Study Group	4	1	3
Procuring Financial Aid	4	3	1
Transitioning from High School to College	4	-	4


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E-mentoring for success in science, math, technology and engineering
Home | For Students | For Mentors | About Us | Contact Us | Log In | FAQs
Assistive Technology Accommodations
Assistive Technology Accommodations
Welcome
Home
Forums
Resources
What Accommodations do I Need?
Areas of Strengths & Weaknesses
Current Accommodations
Assistive Technology Accommodations
New Potential Accommodations
Classroom Accommodations
Examples of the Accommodation Process
Georgia Institute of Technology
Show mobile version

E-Mentoring Effects on Students

- Mentees are more positive about the quality of the communication and relationship than their mentors
- Most mentors and mentees use three or more different communication media.
- An increase in the number of communication media used is correlated with higher mentoring quality among both mentors and mentees.
- An increase in the number of communication media is positively correlated to increases in self advocacy.

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Quality of the E-Mentoring Relationship

Secondary and Postsecondary Students (All Years)

	Secondary		Post-Secondary	
	Mentees (n=11)	Mentors (n=11)	Mentees (n=11)	Mentors (n=11)
Communication Satisfaction	4.60	4.13	4.52	3.80
Relationship Satisfaction	4.42	4.34	4.64	4.30
Personal Responsibility	4.32*	3.86*	4.27	3.89

*Statistically significant differences between mentors and mentees at **p<.01, *p<.05, †p<.10 (approaching significance). Scale= 1, Strongly Disagree to 5, Strongly Agree*

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Mentor and Mentee Communications

Met in any of the venues	Secondary		Post-Secondary	
	N	%	N	%
Second Life	13	48%	11	29%
Email	24	89%	35	92%
Facebook	7	26%	12	32%
Twitter	0	0%	0	0%
Skype	9	33%	12	32%
Texting	14	52%	18	47%
Phone Call	19	70%	22	58%
In Person	3	11%	3	8%
Number of different types of meetings				
One	3	11%	7	18%
Two	5	19%	7	18%
Three	7	26%	10	26%
Four	6	22%	9	24%
Five	5	19%	4	11%
Six	1	4%	1	3%

E-Mentoring Effects on Persistence

- Intention to persist is correlated with increased self-advocacy and increased positive math affect.

- Concrete steps to persist have been documented by:
  - Academic success in courses (41% of comments)
  - Obtaining experience (e.g., internships, work, volunteering, etc.) (30% of comments)
  - Pursuing next steps (e.g., applications, preparing for GREs, interviews, seeking employment) (12% of comments)
  - Making career plans/choosing majors (11% of comments)

Extracted from 76 comments on Monthly Mentor Surveys for postsecondary students

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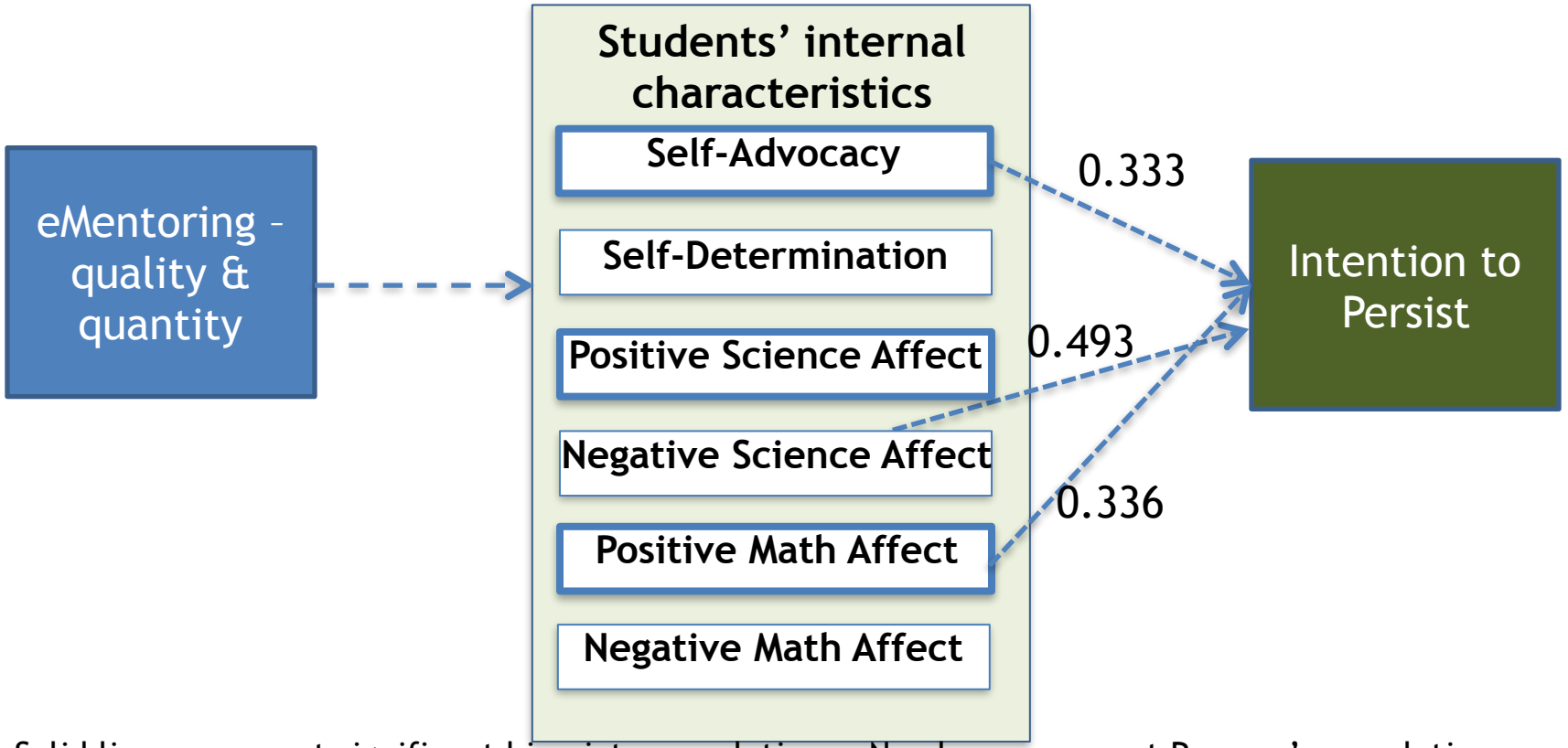
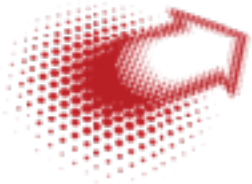
Factors in Intention to Persist among Postsecondary Participants

All Participants (n=46)



Solid lines represent significant bivariate correlations. Numbers represent Pearson's correlation coefficients.

Concrete Steps to Persist



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Conclusion

“The long-term prosperity of our Nation will increasingly rely on talented and motivated individuals who will comprise the vanguard of scientific and technological innovation.”

“Every student in America deserves the opportunity to achieve his or her full potential.”

- National Science Board, *Preparing the Next Generation of STEM Innovators*, 2010

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More Information

- Website: **http://www.georgiabreakthru.org**
- Blog: **http://blog.georgiabreakthru.org**
- YouTube channel: **http://www.youtube.com/user/BreakThruGSAA**
- Facebook page: **http://www.facebook.com/BreakThruGSAA**

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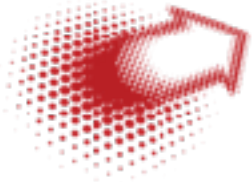

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