

Communities that Make a Difference

The STEM Student Perspective

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The Importance of Community (The Academic Perspective)

“What is at stake is not merely warm, cuddly feelings or frissions of community pride... our schools and neighborhoods don’ t work so well when community bonds slacken ... our economy, our democracy, and even our health and happiness depend on adequate stocks of social capital”

Robert Putnam, *Bowling Alone: The Collapse and Revival of American Community* (Simon and Schuster, 2000)

“... human beings have a pervasive drive to form and maintain a minimum quantity of lasting, positive, and significant interpersonal relationships ... a great deal of human behavior, emotion, and thought is caused by this fundamental interpersonal motive.”

Baumeister and Leary, *The Need to Belong: Desire for Interpersonal Attachments as Fundamental Human Motivation*, *Psychological Bulletin*, 1995



The Importance of Community (The Societal Perspective)

“While the spirit of neighborliness was important on the frontier because neighbors were so few, it is even more important now because our neighbors are so many”

Lady Bird Johnson

“What should young people do with their lives today? Many things, obviously. But the most daring thing is to create stable communities in which the terrible disease of loneliness can be cured.”

Kurt Vonnegut



The Importance of Community

STEM Students are humans too
And have comparable community needs

But..
They spend more time in studies
Due to the nature of the curriculum



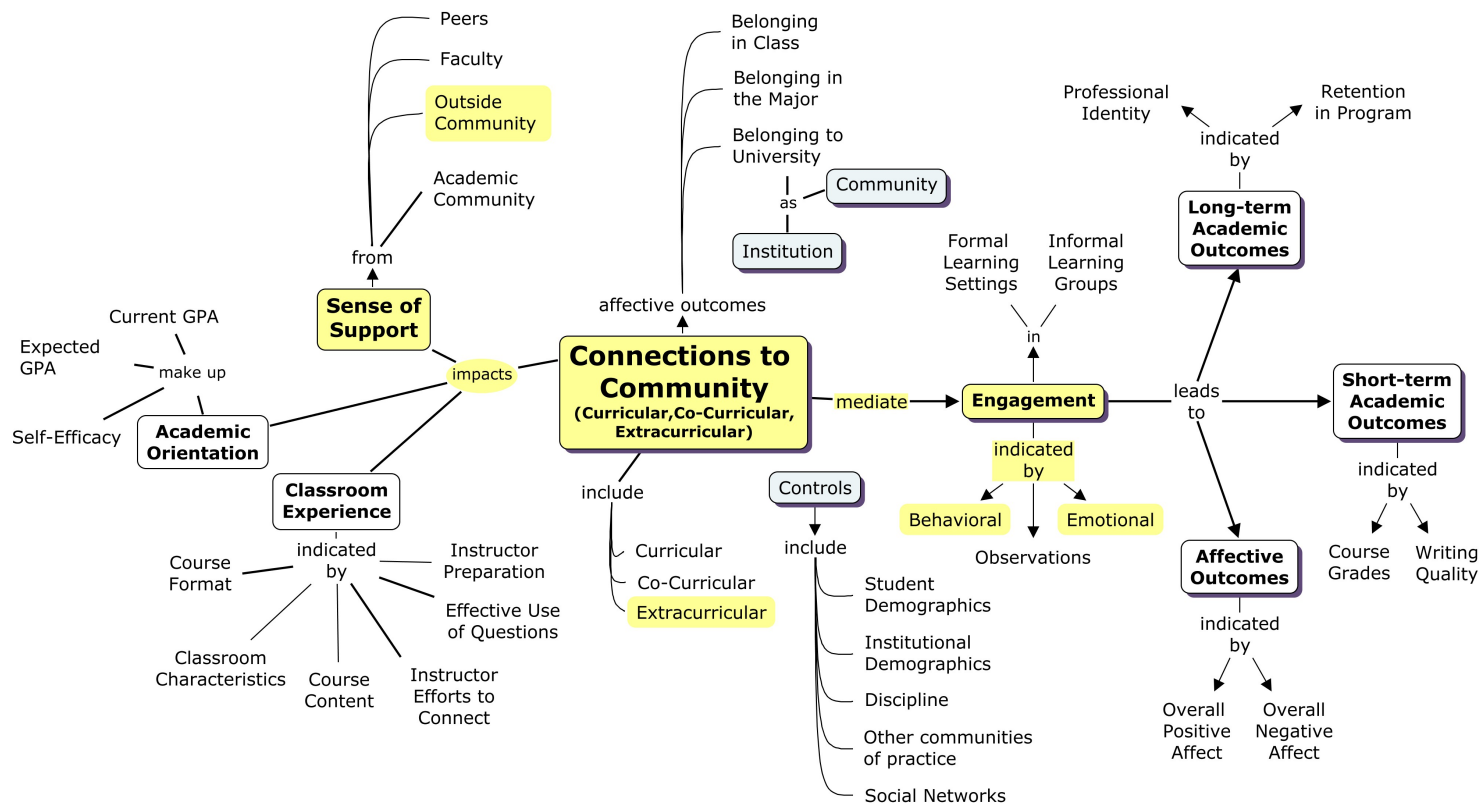
Therefore
Community may play an especially important role in
offsetting the intensity and stress of STEM classes.



This study is part of a Research and Evaluation on Education in Science and Engineering (REESE) project funded by the National Science Foundation to investigate the links among connections to community, belonging, and engagement among undergraduate STEM students.



Contextual Framework (for our overall study)



Communities that Matter

Existing Research:

The National Survey on Student Engagement (NSSE) and other smaller studies have evaluated “How much?” and “Which ones?” with regard to extracurricular/co-curricular communities.

However

Relatively little information is available regarding the influence of these communities on students’ lives.

This Study

This research seeks to understand which communities are having the most impact on students’ lives.

Did you know? Engineering students spend an average of six hours per week on outside activities, which is higher than students in many other fields.



Research Methods

Our Overall Study

Quantitative Data & Methods (Students)

Surveys (Core Data):

Demographics, Belonging (4 levels), Engagement (6 levels)

Surveys (Supplemental Data):

Self-Efficacy, Task Value, Affect, Faculty Support, etc.

Surveys (Community Data):

Amount, Level, and Strength of Involvement

Qualitative Data & Methods (Students)

Focus Groups & Interviews

Evaluation of Writing Samples

Qualitative Data & Methods (Faculty)

Interviews



Research Methods

This Study

Open-Ended Question #1:

To which communities in your life (such as family, religious organization, class, extracurricular organization) do you feel most connected?

Open-Ended Question #2:

On average, how many hours do you spend per week in extracurricular activities (religious organization, book club, fraternity, professional societies, etc.)?

Data Analysis:

Most data were analyzed in terms of frequency; thus, no claims of statistical significance are made, but larger sample sizes are suggestive of institutional and gender differences.



The Venues:

**Large, Public Research Institution
STEM Sophomores, Juniors, Seniors**

$N = 455$

**Mid-Size Public Teaching Institution
STEM Sophomores, Juniors, Seniors**

$N = 189$

**Small Private Faith-Based Institution
STEM Sophomores, Juniors, Seniors**

$N = 74$

**Small Private Women's College
STEM Sophomores, Juniors, Seniors**

$N = 87$

**Small HBCU
STEM Sophomores, Juniors, Seniors**

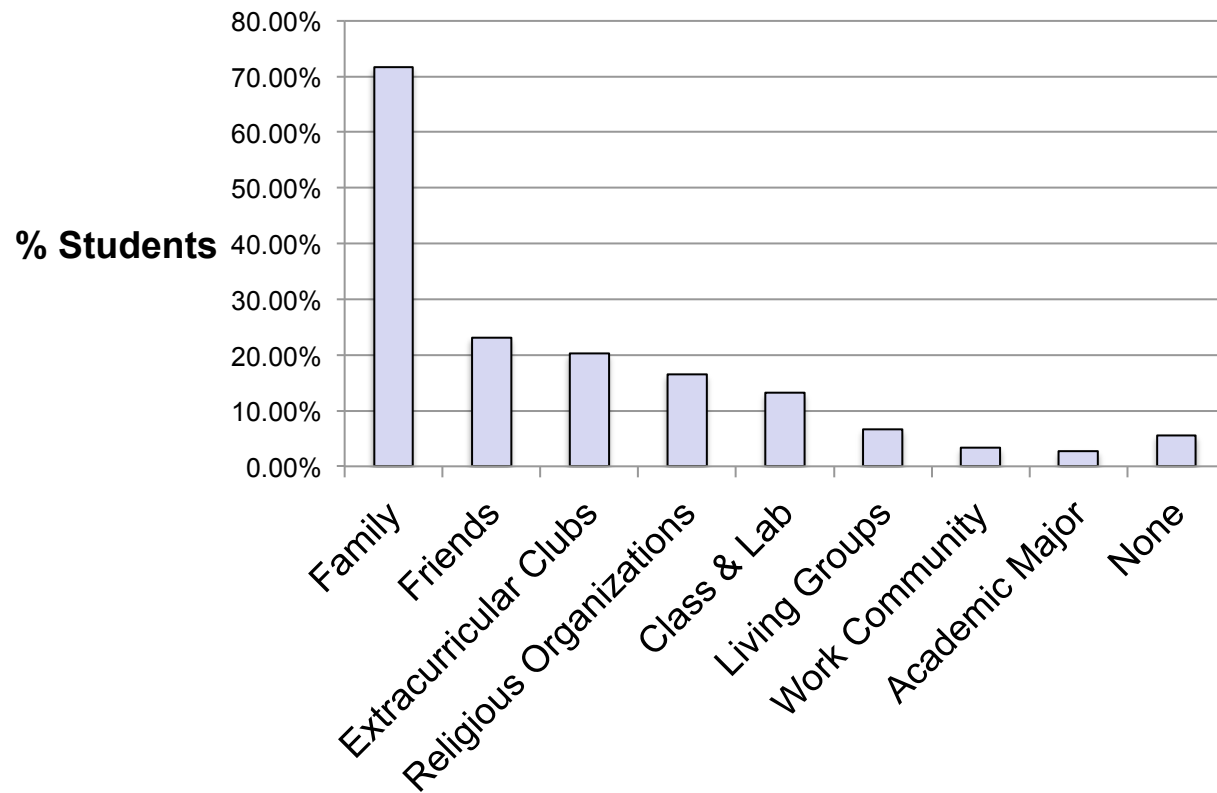
$N = 139$

Surveys were administered either electronically or in-class



Overall, Across Institutions

Communities that Matter

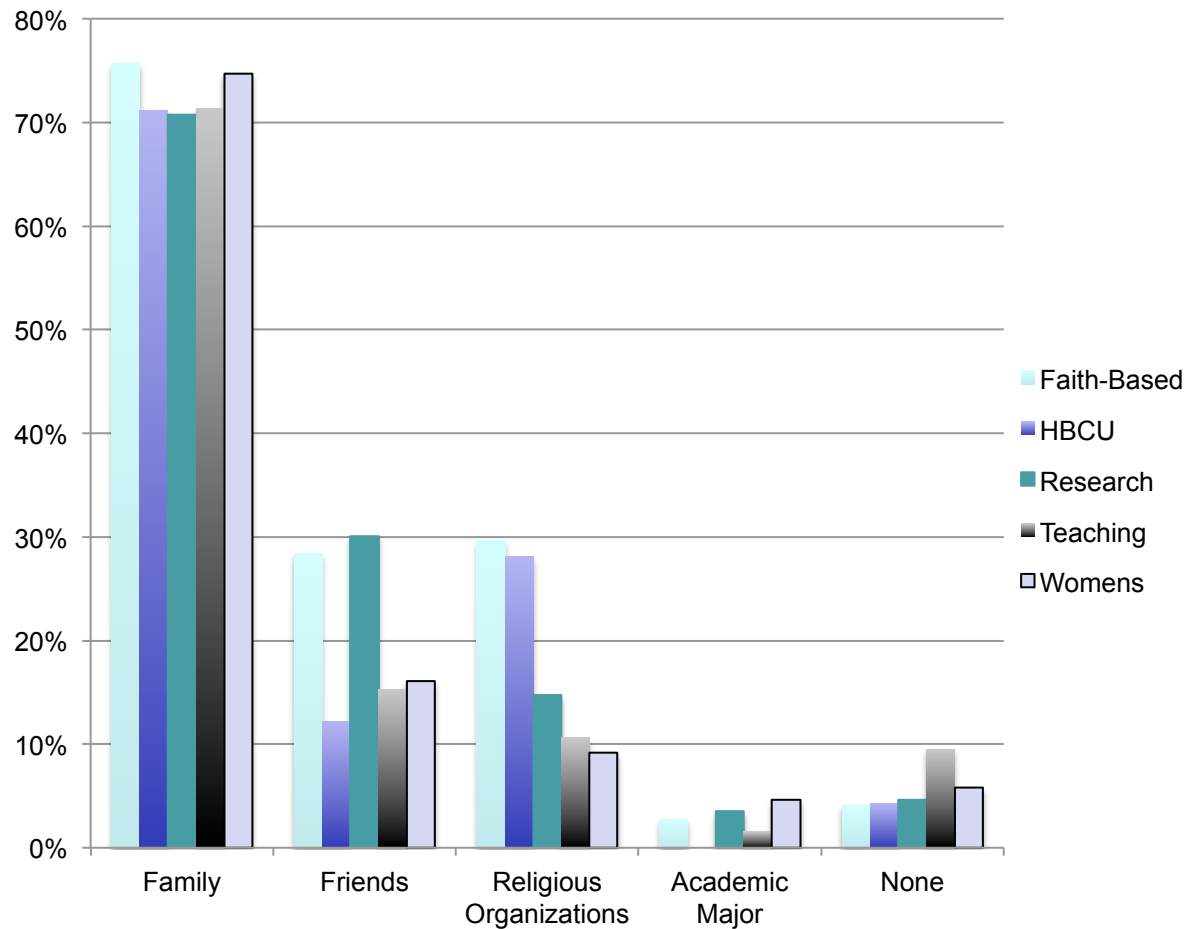


By an overwhelming majority, students feel most strongly connected to family. On the other end of the spectrum, however, almost 6% of students report no strong connections to community (None)



Interesting Institutional Differences

Communities that Matter

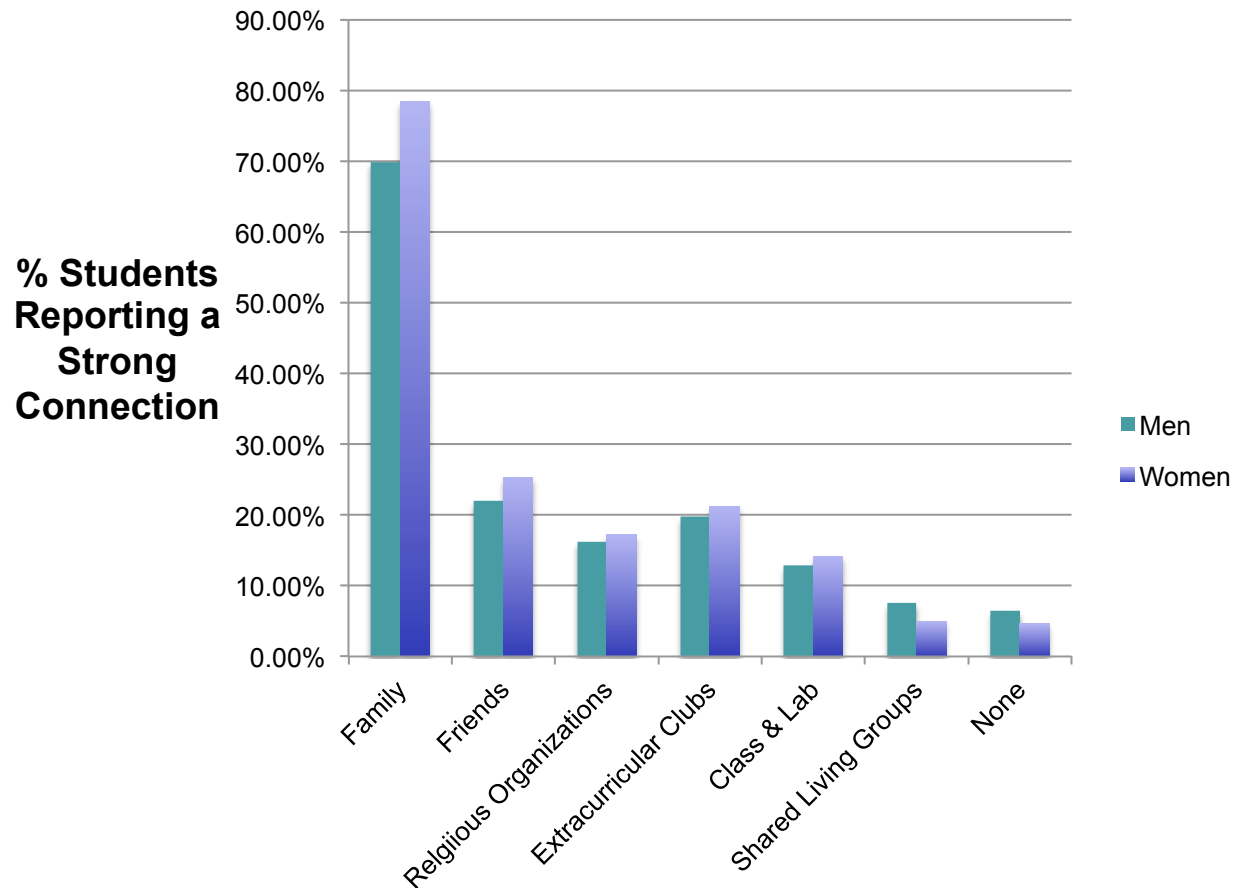


While family connections are relatively consistent across institutions, lower tier communities fluctuate widely across institutions in terms of the % of students who feel most connected (y-axis) to those communities



Interesting Gender Differences

Communities that Matter



Not surprisingly, women are consistently reporting more frequent strong connections to community than men, with the exception of shared living groups. More than 6% of men report they feel no strong connection to any community compared to only 4.5% of women.



Communities that Make a Difference

The STEM Student Perspective

Although we know that engineering (and STEM) students spent more time in extracurricular activities (an average of 6 hours per week) and in their studies (an average of 18 hours per week), we don't know much about which of these activities make a difference to them.

Understanding which communities have the most influence (by evaluating which communities students report strong connections to) can help practitioners in two ways:

- to understand which community participation to support from inside the classroom; and
- to identify which communities to model in creating our own internal (academic) communities for students.



Communities that Make a Difference

The STEM Student Perspective

Everyone

Reports most frequently being strongly connected to family

Institutionally

After friends and family, the Faith-Based and HBCU institutions frequently report strong connections to religious organizations (unlike the remaining institutions). The HBCU reports unusually strong connections to extracurricular clubs, while the teaching institution has an unusually high number of disconnected students.

Women

Report stronger connections to community overall compared to men (with the exception of shared living groups)

Of Concern

Over 5% of our STEM students report feeling no strong connections to any communities at all. This population may be at risk for drop-out or compromised academic achievement.



Communities that Make a Difference

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Implications:

From Inside the Classroom:

Support time with Family and Friends.

While Inside the Classroom:

Emphasize friendship as well as expertise in setting up study, lab, and project teams.

From Inside the Academic Environment:

Seek to develop and value relationships and connections within co-curricular academic activities (professional organizations, design teams, etc...).



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Implications:

Attitudes:

Refrain from one-size-fits-all approaches to teams, communities, and relationships.

Example:

Studying Alone is TROUBLE ...
rather

Studying alone is trouble for some and not for others....

More on that in just a moment. STAY Tuned!!

As we value individual cognitive abilities and academic performance in the classroom, we must also support and speak to the importance of relationships and model various pathways toward strong connections to community for our students.



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THANK YOU!

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Questions?

