One-Size-Won’t-Fit-All

The Unique Challenges of Women and Girls in Computing
OUR FOCUS

STEM: Computing

vs.

STEM: Non-Computing
Women’s Declining Presence in Computing

What Happened To Women in Computer Science?

% Of Women Majors, By Field

- Medical School
- Law School
- Physical Sciences
- Computer science

Source: National Science Foundation, American Bar Association, American Association of Medical Colleges
Credit: Quocrrung Bu/NPR
Women’s Declining Presence in Computing

What Happened To Women in Computer Science?
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Credit: Quoctrung Bu/NPR
Students Aspiring to Computing Careers

Males outnumber Females

"A" Students more common among Females

FEMALES

MALES

79% of aspirants are Males and 21% are Females.
NEEDED: Computer & IT Workers

**Expected Growth**
13% Between 2018 & 2018

**Expected New Jobs**
593,900

Source: https://www.bls.gov/emp/tables/emp-by-major-occupational-group.htm
STEM Confidence and Experience
Gender Gap in STEM Confidence: Computing Aspirants

(% Females - % Males Completely Confident)
Gender Gap in STEM Confidence: Computing Aspirants vs. Other STEM Aspirants

(% Females - % Males Completely Confident)
Computing Career Aspirants: Confidence of Fair Treatment in STEM Classes

(% Completely Confident)

- Females: 36%
- Males: 45%
Fair Treatment in STEM Classes: Female STEM Aspirants

(% Completely Confident)

- Computing: 36%
- Non-Computing: 49%
Computing: Make it Matter
### Computing Aspirants' Top Interests*

<table>
<thead>
<tr>
<th>Interest</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>eSports</td>
<td>39%</td>
</tr>
<tr>
<td>Paintball</td>
<td>24%</td>
</tr>
<tr>
<td>Basketball</td>
<td>16%</td>
</tr>
</tbody>
</table>

*Interests are assessed based on the following question: Which SPORTS or ACTIVITIES might you participate in during college?
Top Interests: Males*

- 45% eSports
- 26% Paintball
- 18% Basketball
Top Interests: Females vs. Males*

**FEMALE:**
- 51% ART
- 28% MUSIC
- 21% COMMUNITY SERVICE

**MALE:**
- 45% eSports
- 26% PAINTBALL
- 18% BASKETBALL

*Interests are assessed based on the following question. Which SPORTS or ACTIVITIES might you participate in during college?
Intend to Pursue Art as Extracurricular

(\% intend to pursue ART in college)

Computing Aspirants

51\%
Intend to Pursue Art as Extracurricular

(% intend to pursue ART in college)

Computing Aspirants: 51%
Non-Aspirants: 19%

What Matters?
Intend to Pursue Community Service as Extracurricular

(% intend to pursue COMMUNITY SERVICE in college)
Intend to Pursue Community Service as Extracurricular

(% intend to pursue COMMUNITY SERVICE in college)

- Computing Aspirants: 21%
- Non-Aspirants: 23%
Do New Pathways to Computing Require New Interventions?
Gender Gap in Positive Influence on STEM Interest Computing Aspirants

(% FEMALE - % MALE rating as positive influence on their STEM interest)

- Parents: 2
- Teachers: 3
- Other Adults: 3
Gender Gap in Positive Influence on STEM Interest Computing Aspirants

(% FEMALE - % MALE rating as positive influence on their STEM interest)

Pastimes  Out-of-School Activities  In-School Activities

-5
Gap in Positive Influence on STEM Interest

Female STEM Aspirants

(\% COMPUTING - \% NON-COMPUTING Aspirants)

- Parents: -9
- Teachers: -11
- Other Adults: -5
Gap in Positive Influence on STEM Interest

Female STEM Aspirants

(% COMPUTING - % NON-COMPUTING Aspirants)

Pastimes

Out-of-School Activities

In-School Activities
Teachers Rated Positive Influence on STEM Interest

STEM Aspirants

(%) rate as positive influence

- Computing: 50%
- Non-Computing: 61%
Teachers Rated Positive Influence on STEM Interest

STEM Aspirants

(%) rate as positive influence

- Computing + Art Interest: 42%
- Non-Computing: 61%
Teachers Rated Positive Influence on STEM Interest

STEM Aspirants (% rate as positive influence)

- Computing + Art Interest: 42%
- Computing NO Art Interest: 56%
- Non-Computing: 61%
Parents Rated Positive Influence on STEM Interest

STEM Aspirants

(% rate as positive influence)

Computing: 40%
Non-Computing: 48%
Parents Rated Positive Influence on STEM Interest

STEM Aspirants
(% rate as positive influence)

- Computing + Art Interest: 32%
- Non-Computing: 48%
Parents Rated Positive Influence on STEM Interest

STEM Aspirants (% rate as positive influence)

- Computing + Art Interest: 32%
- Computing NO Art Interest: 45%
- Non-Computing: 48%
School Activities Positive Influence on STEM Interest

STEM Aspirants
(% rate as positive influence)

- Computing: 51%
- Non-Computing: 59%
School Activities Positive Influence on STEM Interest

STEM Aspirants
(% rate as positive influence)

- Computing + Art Interest: 42%
- Non-Computing: 59%
School Activities Positive Influence on STEM Interest

STEM Aspirants

(\% rate as positive influence)

- Computing + Art Interest: 42\%
- Computing NO Art Interest: 58\%
- Non-Computing: 59\%
Pastimes Rated a Positive Influence on STEM Interest: Female STEM Aspirants

(\% rate as positive influence)

- Computing + Art Interest: 60\%
- Computing NO Art Interest: 58\%
- Non-Computing: 58\%
Pastimes Rated a Positive Influence on STEM Interest: STEM Aspirants

(%) rate as positive influence

- Computing + Art Interest: 60%
- Computing NO Art Interest: 58%
- Computing: 58%
Postsecondary Education Plans Uncertain

STEM Aspirants

(\% Uncertain)

Computing

22\%
Postsecondary Education Plans Uncertain

STEM Aspirants

(\% Uncertain)

- Computing: 22\%
- Non-Computing: 12\%
Postsecondary Education Plans Uncertain

STEM Aspirants
(% Uncertain)

- Computing + Art Interest: 26%
- Computing NO Art Interest: 16%
- Non-Computing Aspirants: 12%
Strategies Fueled by SRF Results

• Low confidence among computing aspirants
  • Argue for more diverse: role models, career examples, pathway discussions
  • Incentivize culture change w data on lack of confidence in career success and fair treatment
• High interest in art and social good
  • Elevate “CS+X” and integrated strategies; frame computing as a powerful tool
• Supportive adults and OST experiences
  • Focus on interventions within these flexible systems
  • Ensure an intersectional lens with respect to adult/family support structures
• Post-secondary uncertainty
  • Reduce uncertainty through exploration; resist the urge to narrow options in order to reduce uncertainty
• Remember: Computing engagement advocacy is relatively new compared to STEM more broadly (aka life sciences and engineering)
Questions?
Discussion
THANK YOU

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