

# Encouraging CS Students to Compute for Social Good Through Collaborative, Community-Engaged Projects

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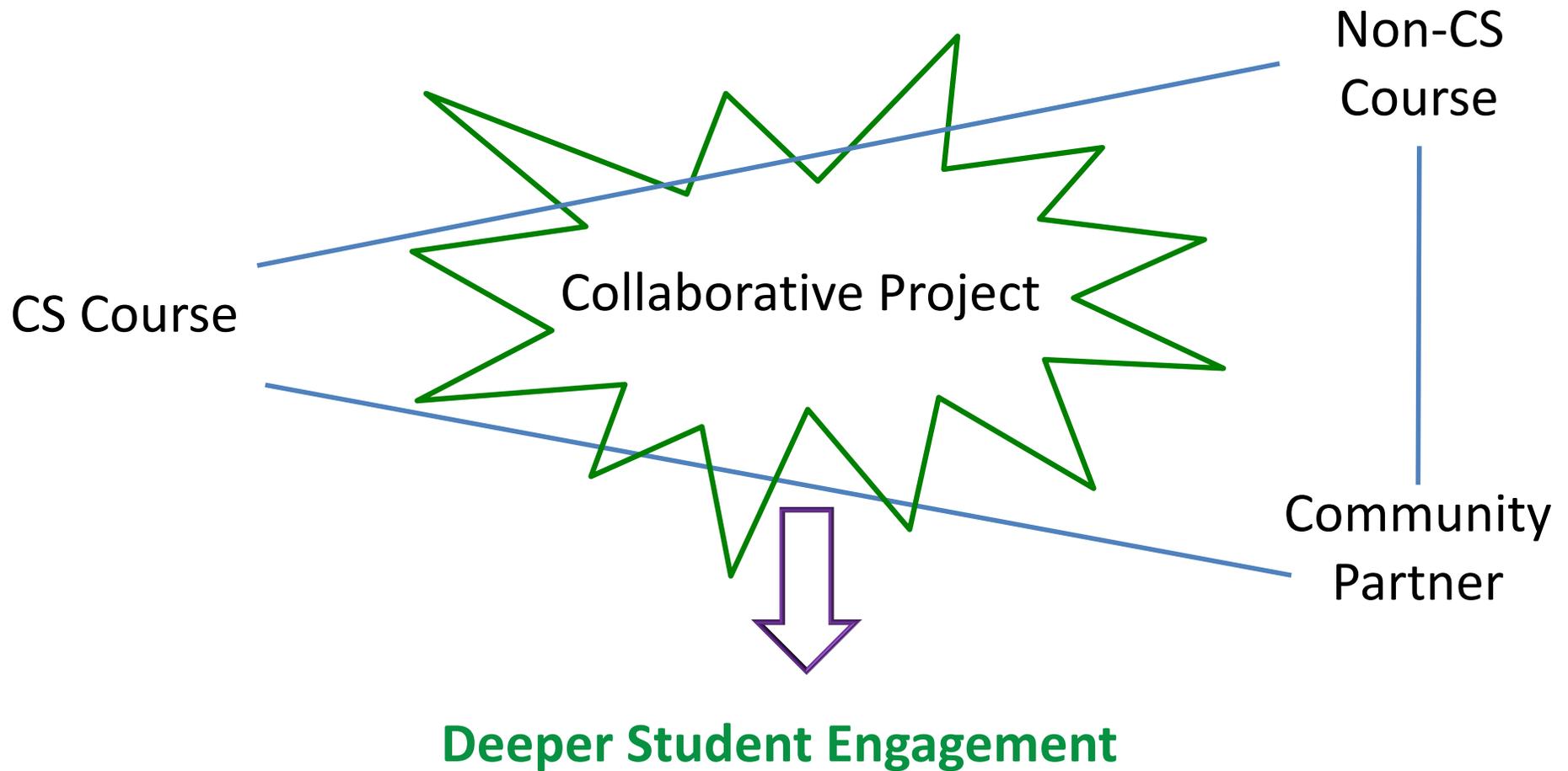
The College of New Jersey

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*Computing for the Social Good in CS Ed, 20019*



# The CABECT Model



# Courses for this Study

Semester	Computer Science	Journalism/IMM
Spring 2013	Software Engineering	Blogging and Social Media
<b>Fall 2013</b>	<b>Database Systems</b>	<b>Health and Environmental Journalism</b>
	<b>Software Engineering</b>	<b>News Games</b>
<b>Spring 2014</b>	<b>Software Engineering</b>	<b>Future of the News</b>
Fall 2014	Software Engineering	Health and Environmental Journalism
N	98	55
N in Fall 2013/Spring 2014	54	26
<b>N (Complete for CSG)</b>	<b>42</b>	<b>14</b>
<b>Percent Complete (for CSG)</b>	<b>77.78%</b>	<b>53.85%</b>

# The Study

CS Course  
(Software  
Engineering)

Journalism  
Course



Habitat for  
Humanity



Deeper Student Engagement

# The Pilot Project

- Habitat for Humanity, Trenton Area, NJ (HH) acquires properties to build houses. Often these sites are brownfields – underused and likely contaminated sites that must be cleaned up prior to construction.
- Computer science students collaborated with journalism students and HH to develop an online system called SOAP (Students Organizing Against Pollution) that would estimate the likelihood of contamination on any given plot of land, prior to expensive environmental testing.

# The Pilot Project

- Collaborating class sessions were held in the same timeslot but independently.
- Classes met 4 times during the semester to brainstorm, share progress reports, plan next steps.
- Student outcomes were measured through self-assessments in pre- and post-tests in five paired classes over four semesters.

# Pre and Post Test Items

*Social Responsibility: 5 point agreement scales; pretest  $\alpha = .886$ ; post-test  $\alpha = .922$*

- ❑ Adults should give some time for the good of the community;
- ❑ People, regardless of whether they've been successful or not, ought to help others;
- ❑ Individuals have a responsibility to help solve our social problems;
- ❑ It is important to help others even if you don't get paid;
- ❑ It is important to help to reduce hunger and poverty in the world;
- ❑ It is important to help to make sure all people are treated fairly;
- ❑ It is important to help to make the world a better place to live in;
- ❑ It is important to help other people;
- ❑ It is important to speak up for equality.

# Pre and Post Test Items

*Global Efficacy: 5 point agreement scale*

- ❑ I feel that I can make a difference in the world.

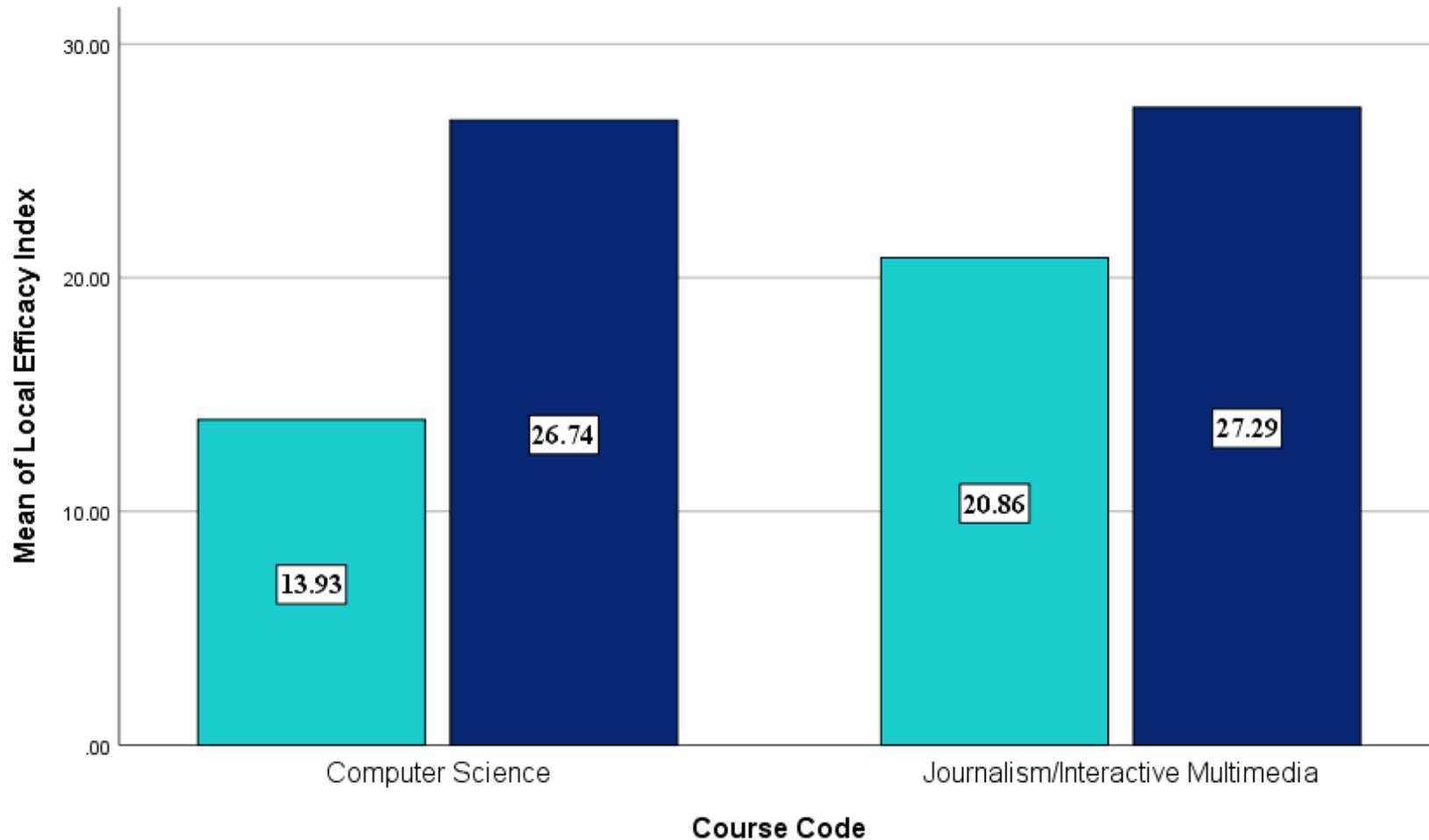
*Local Efficacy: 5 point agreement scale; pretest  $\alpha = .918$ ; post-test  $\alpha = .768$*

- ❑ It's not really my problem if my neighbors are in trouble and need help (reverse coded);
- ❑ I believe I can make a difference in my community;
- ❑ When I see someone being taken advantage of, I want to help them;
- ❑ I often think about doing things so that people in the future can have things better;
- ❑ When I see someone being treated unfairly, I don't feel sorry for them (reverse coded);
- ❑ I feel sorry for people who don't have what I have; It is important to me to contribute to my community and society.

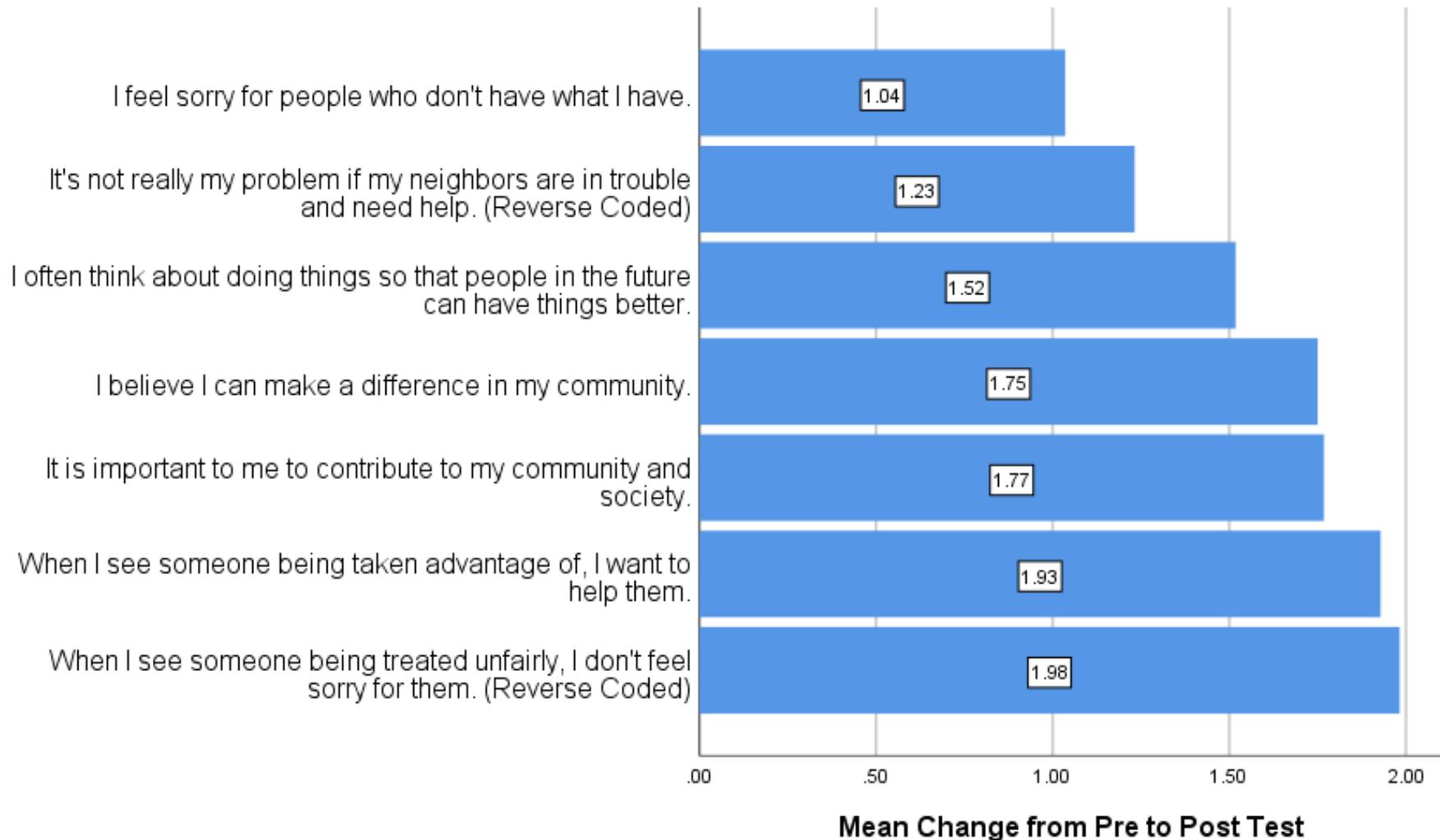
# Mean Changes from Pretest to Post-test

Index/Item	Computer Science	Journalism / IMM	Total
Social Responsibility	+0.05	+0.07	+0.03
Global Efficacy	-0.05	-0.29	-0.10
<b>Local Efficacy</b>	<b>+12.81</b>	<b>+5.88</b>	<b>+11.22</b>

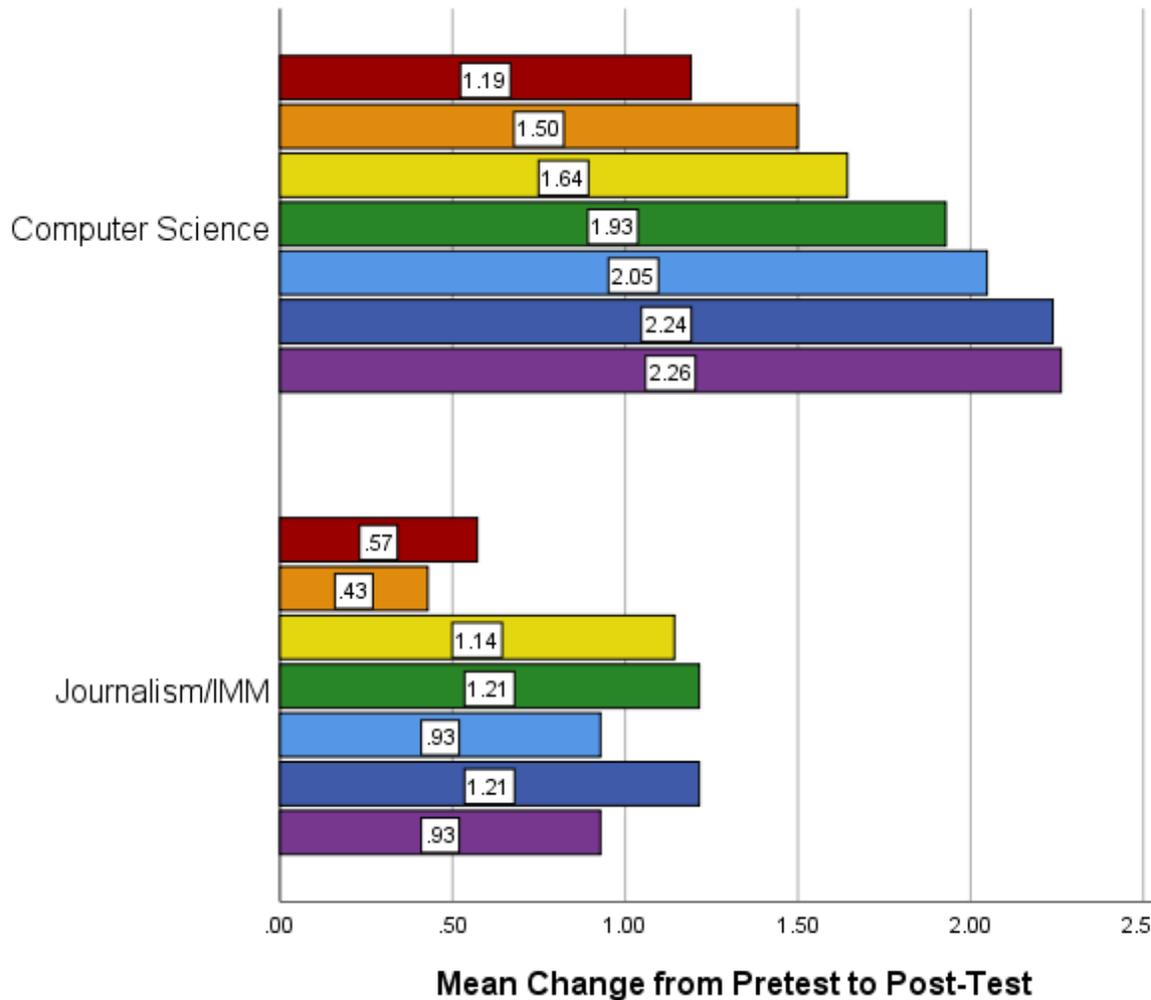
# Local Efficacy Index, Pre and Post Test Means



# Mean Change for Local Efficacy Index Items



# Change in Local Efficacy Items by Discipline

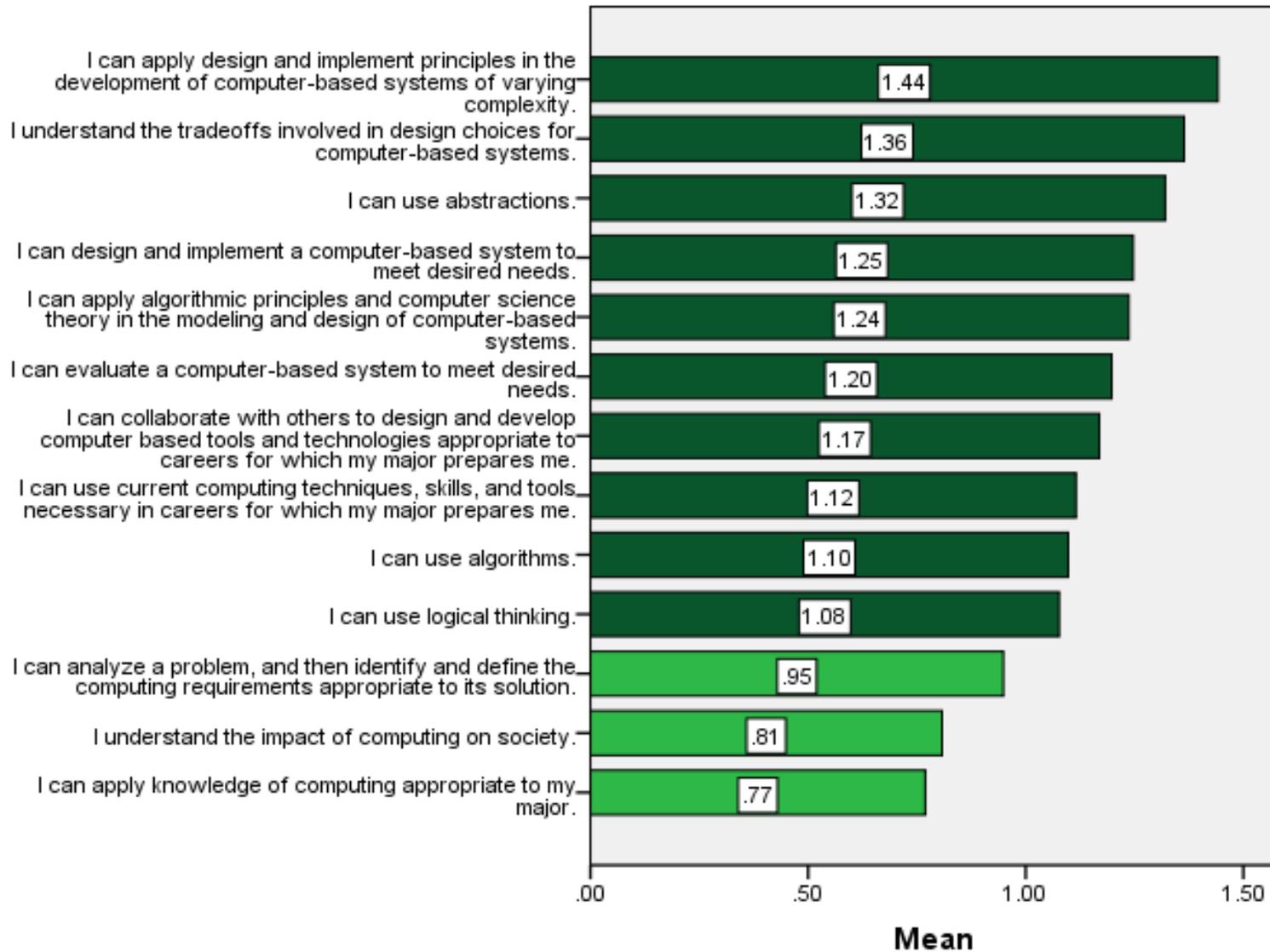


- When I see someone being taken advantage of, I want to help them.
- When I see someone being treated unfairly, I don't feel sorry for them. (Reverse Coded)
- It is important to me to contribute to my community and society.
- I believe I can make a difference in my community.
- I often think about doing things so that people in the future can have things better.
- It's not really my problem if my neighbors are in trouble and need help. (Reverse Coded)
- I feel sorry for people who don't have what I have.

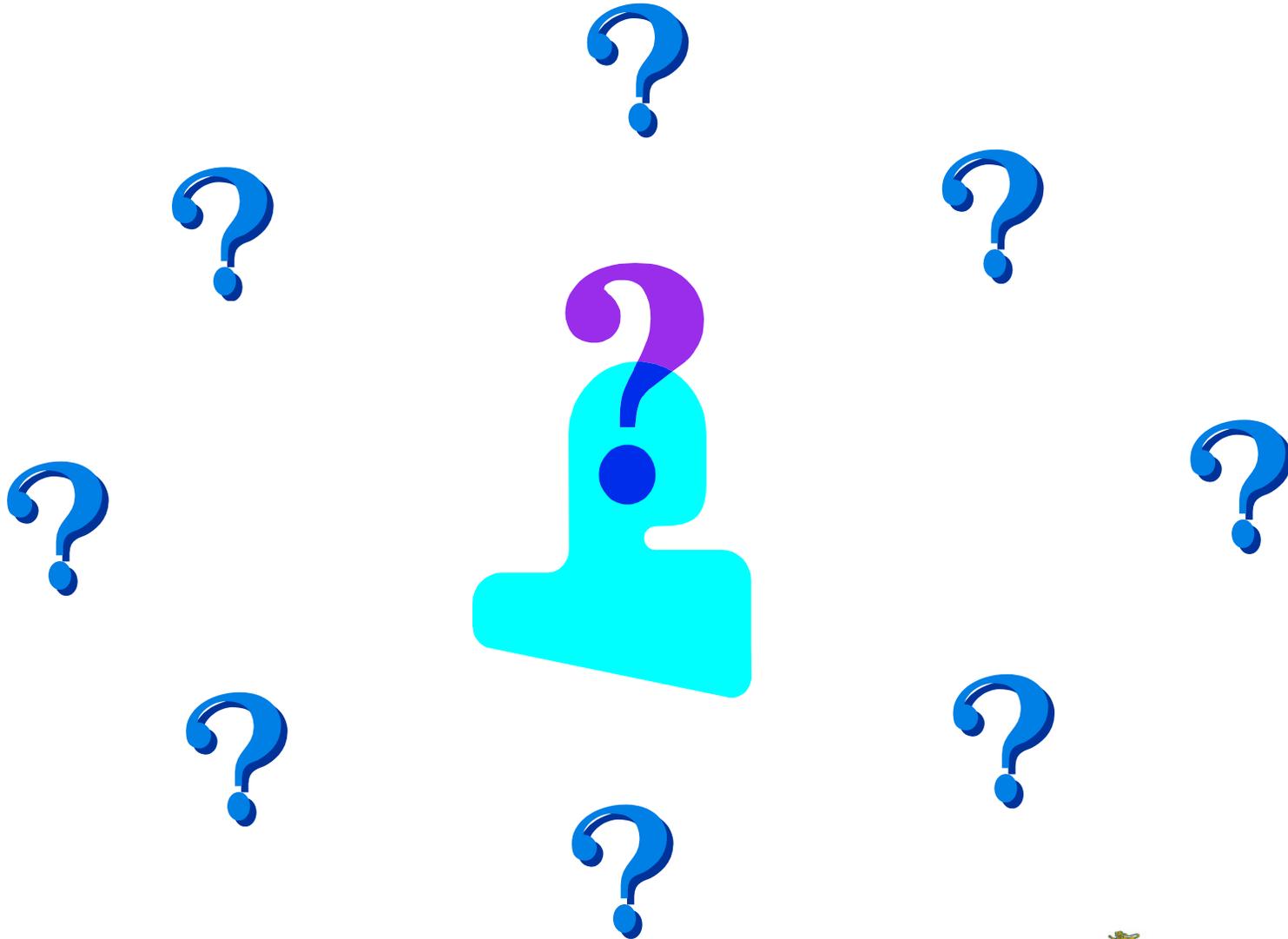
# Conclusions

- Students develop a deeper sense of personal social responsibility.
  - Community-engaged learning may have limited effect on abstract ideas about social and global responsibility but when CS students participate in these activities, they develop a stronger sense of their own abilities to make positive changes in their communities.
- In addition:
  - Students develop a strong foundation in applying disciplinary knowledge to solve real-world problems.
  - Students develop the ability to recognize and articulate the interconnectedness of different disciplines.

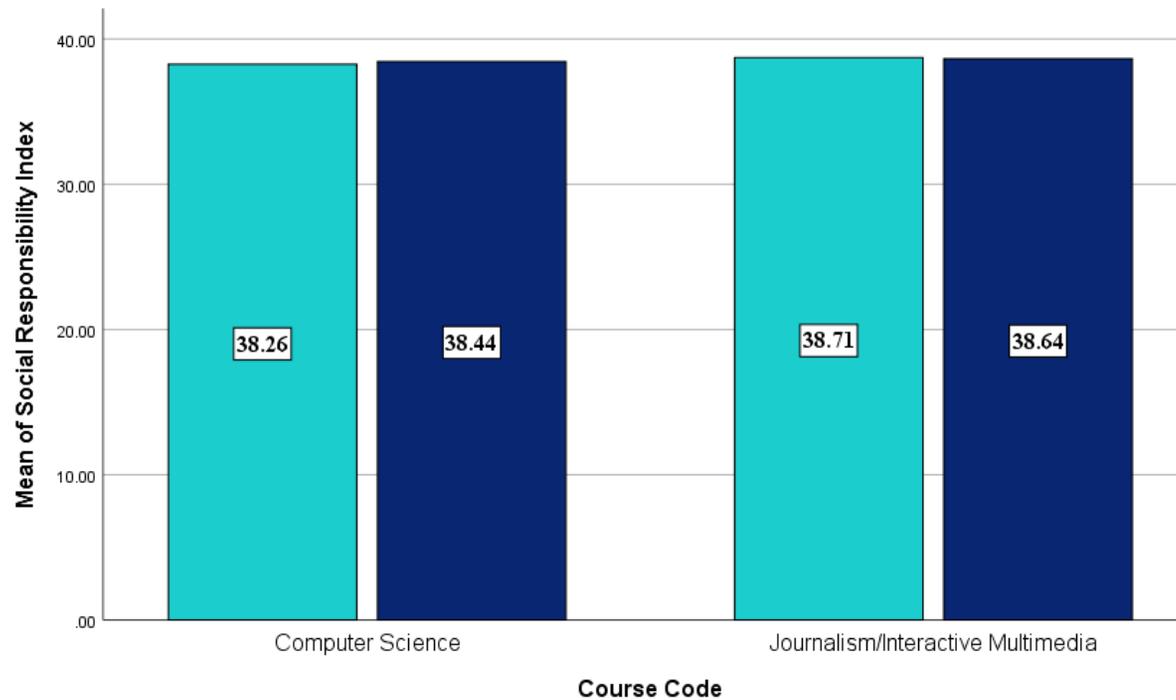
# Change in Computational Thinking Items in Computer Science Classes



# Q & A



# Social Responsibility Index, Pre and Post Test Means



# Global Efficacy, Pre and Post Test Means

