Communicating Opportunities for Social Impact in Computing to Broaden Participation

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Link to slides:
https://tinyurl.com/cs-impact

Motivating Question

Can we help all students perceive that CS can benefit society?

- **Perceiving that CS can benefit society predicts a higher sense of belonging in computing (Isenegger et al., 2023)**

Research Questions

RQ1 - Can we change students' perceptions of whether CS can help society?

RQ2 - Can we increase students' motivation to pursue CS?

Methods

- **Prior work:** We are replicating a prior work by Brown et al. in CS

- **Sample**: 144 undergraduate non-CS majors

- **Intervention:** Essay that emphasizes social benefit (or not)

- **Measures:**

  - Perceptions of the social benefit of CS

  - Positivity to CS research

  - CS career motivation

Requested Feedback

- **Evidence**: What would motivate you to try this intervention?

- **Challenges:** What implementation challenges might arise?

- **Collaboration:** Would you like to pilot this?

Thank you!

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Intervention Text

<u>FarmBeats makes high-tech eats</u>

Ranveer Chandra is a principal researcher at Microsoft Research, and he's best known for research on battery life and internet connectivity. Chandra decided to put his professional expertise to use designing tools for farmers that are better for the environment. The UN's Food and Agriculture Organization has argued that one key way to prevent hunger and malnutrition is to create more sustainable agricultural systems. Chandra's work employs solar-powered sensors that record soil temperature and moisture levels and tracks them with cloud-based computing models to help feed more people. Chandra's first revelation was that many rural farmers lacked wireless Internet connectivity, but he could use existing TV frequencies to address that need. Then he realized the devices could use solar power to be more environmentally friendly. Finally, he designed weather-resistant devices to automatically gather data, which helps farmers avoid harsh weather conditions. He's also using drones to survey the land and send video back to the farmer. This helps better monitor crops to be able to improve output and feed more people. In the end, he hopes projects like his will help spur the next green revolution. Chandra is excited to use computer science to prevent hunger and malnutrition.

Control Text

FarmBeats makes high-tech eats

Ranveer Chandra is a principal researcher at Microsoft Research, and he's best known for research on battery life and internet connectivity. Chandra decided to put his professional expertise to use designing tools for farmers that are lower cost. Chandra found that there were plenty of farmers who were interested in bringing some high-tech solutions to their farm. Chandra's work employs solar-powered sensors that record soil temperature and moisture levels and tracks them with cloud-based computing models to make farms more efficient. Chandra's first revelation was that farmers could use TV frequencies that aren't being used in rural areas and can be accessed for wireless Internet connectivity. Then he realized the devices could use solar power to save money. Finally, he designed weather-resistant devices to automatically gather data, which helps prevent device failures and added costs. He's also using drones to survey the land and send video back to the farmer. This helps better monitor crops to be able to improve output and reduce costs. In the end, he hopes that large agricultural companies will adopt his research. Chandra is excited to use computer science to drive the next wave of farming.

Differences

Beginning of sentence	Intervention ending	Control ending
Chandra decided to put his professional expertise to use designing tools for farmers that are	better for the environment.	lower cost.
	The UN's Food and Agriculture Organization has argued that one key way to prevent hunger and malnutrition is to create more sustainable agricultural systems.	Chandra found that there were plenty of farmers who were interested in bringing some high-tech solutions to their farm.

Differences

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Chandra's work employs solar-powered sensors that record soil temperature and moisture levels and tracks them with cloud-based computing models to	help feed more people.	make farms more efficient.
Chandra's first revelation was that	many rural farmers lacked wireless Internet connectivity, but he could use existing TV frequencies to address that need.	farmers could use TV frequencies that aren't being used in rural areas and can be accessed for wireless Internet connectivity.

Differences

Beginning of sentence	Intervention ending	Control ending
Then he realized the devices could use solar power to	be more environmentally friendly.	save money.
Finally, he designed weather-resistant devices to automatically gather data, which helps	farmers avoid harsh weather conditions.	prevent device failures and added costs.
This helps better monitor crops to be able to improve output and	feed more people.	reduce costs.

Differences

Beginning of sentence	Intervention ending	Control ending
In the end, he hopes	projects like his will help spur the next green revolution.	that large agricultural companies will adopt his research.
Chandra is excited to use computer science to	prevent hunger and malnutrition.	drive the next wave of farming.