Data Activism Curriculum team

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Open Data
@ MIT
Data Activism Curriculum: Enabling Students to Mitigate Systemic Oppression Through Data Science

By Raechel Walker
Data activism involves using open data and data science to challenge power inequalities, such as racism.

We developed a 6 week data activism curriculum about utilizing data science to challenge power inequalities and how AI can amplify different forms of oppression.
Problem: Lack of Diversity in Computing

- We can not expect a more diverse computing workforce while underrepresented students fail to feel a sense of belonging.
- Today, less than 4% of computer science Bachelor's degrees are awarded to Black or African American students.

Table B3. Bachelor's Degrees Awarded by Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonresident Alien</td>
<td>3,307</td>
</tr>
<tr>
<td>Amer Indian or Alaska Native</td>
<td>51</td>
</tr>
<tr>
<td>Asian</td>
<td>6,128</td>
</tr>
<tr>
<td>Black or African-American</td>
<td>755</td>
</tr>
<tr>
<td>Native Hawaiian/Pac Islander</td>
<td>36</td>
</tr>
<tr>
<td>White</td>
<td>9,939</td>
</tr>
<tr>
<td>Multiracial, not Hispanic</td>
<td>715</td>
</tr>
<tr>
<td>Hispanic, any race</td>
<td>1,800</td>
</tr>
<tr>
<td>Total Residency &amp; Ethnicity Known</td>
<td>22,731</td>
</tr>
</tbody>
</table>

Computer Science Bachelor's Degrees Awarded by Ethnicity (Zweben, 2020)
Problem: Computing Curricula Often Presents Computing As A Neutral Field

- A vast amount of African Americans are not taught how tech is utilized to surveil, police, and incarcerate their communities.

- Robert Williams was wrongfully arrested after facial recognition technology had mistaken him for someone else.

*Wrongfully Accused by an Algorithm* (Hill, 2020)
Problem: Algorithmic Bias in Society

- It’s frightening to see how a technology that research has proven misidentifies people of color at higher rates is utilized more often on people of color.

MIT 6.S191: AI Bias and Fairness
(Amini, 2022)
Liberatory Computing

● Liberatory computing is a framework that ensures African American students acquire five pillars of the liberation:
  1. sound racial identity
  2. critical consciousness
  3. collective obligation
  4. liberation centered academic identity
  5. the activism skills to use computing to transform a multi-layered system of barriers in which racism persists
Open Data Capstone Project Objectives

- The objectives of this curriculum consist of students:
  1. conducting background research about a systemic problem
  2. finding an open data set
  3. implementing an intersectional data analysis
  4. creating a data drawing

Photo: Katherine Ouellette
Open Data Capstone Project Results

- Every project successfully discussed how racism contributes to harmful effects on African Americans in different sectors such as
  - housing
  - healthcare
  - gun violence
  - algorithmic bias
  - education

Photo: Katherine Ouellette
Student 1’s Open Data Capstone Project

- Student 1 described how racism contributes to low birth weights in African American women.
- Also, Student 1 found a data set that highlighted this issue that they were passionate about mitigating, and produced meaningful data visualizations and data drawings to represent the low birth weight in African American students.
Future Work: Collaborate with Community Organizations on Data Activism Projects

- We plan to teach students from the MSYEP and the Cambridge Rindge and Latin School (CRLS) how to collaborate with community organizations and local government offices to use their data activism skills to create policies that mitigate systemic oppression.
Future Work: Online Data Activism Teaching Tools

• Make the curriculum available online for teachers and students
• Create video tutorials for every activity

Artist: B. Mike
Enabling Students to Mitigate Systemic Oppression Through Data Activism

Raechel Walker

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Conclusion:

- Students were able to:
  - identify a problem based on their unique lived experience
  - use open data, data science, and their knowledge of systemic oppression to analyze contemporary issues

Artist: B. Mike
If you’re interested in learning more about data activism …

Data and Society (Williams et al., 2022)
Thank you