Working Toward an Ongoing Climate Teacher Professional Learning Community: Survey Results on How Teachers Fund Their Climate Professional Development

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STEM Education for Tomorrow’s Workforce

Vision
Communities and citizens prepared to address the environmental and technological challenges of tomorrow.

Mission
Engaging teachers as a key leverage to enable their students to develop an understanding of and ability to address the impacts of climate change, make evidence based decisions, and develop civic and business engagement skills to prepare them for college and the workforce.
What if.....

• High school students simultaneously could

  • Contribute to solving the societal and economic impacts of climate change and energy challenges
    • *Renewable energy to reduce greenhouse gas emissions*
    • *Infrastructure that can withstand sea level rise and extreme precipitation events*
    • *Health infrastructure that can help citizens who are vulnerable to extreme temperature and precipitation events which contribute to the spread of disease*

  • Develop their skills as the workforce of tomorrow
    • *Critical Thinking Skills and Science Literacy*
    • *Civic Engagement*
    • *Business Development*
Strategy Using Teachers as a Key Leverage

• **Climate Teacher Professional Learning Community**
  - *Teacher peer support with input from and in collaboration with cross-sector experts*

  • **Ongoing development of Teachers knowledge of and abilities in**
    - *Climate and Energy Science*
    - *Evidence Based Decision Making & Data Analysis Skills*
    - *Social Impacts of climate change*
    - *Partnership Development*
STEM Education for Tomorrow’s Workforce

Leadership Team

- Teachers
- Teacher Leaders
- Schools and Students
- Scientists, Engineers
- Government Leaders, Businesses, Organizations

Supporting Expertise

Teacher Blended Professional Learning Community

City / Region / Community

- Teachers
- Teacher Leaders
- Schools and Students
- Scientists, Engineers
- Government Leaders, Businesses, Organizations
Climate Teacher Professional Learning Community (Climate TPLC) Activities and Content

• Guidance and Collaboration on
  • Use of climate and energy educational resources: CLEAN Collection  ■  EarthLabs  ■  National Climate Assessment  ■  Trusted online data and information sources (e.g. NASA, NOAA, USGS, etc)
  • Building investigation using reviewed and tested resources that address the Next Generation Science Standards or your State Science Standards

• Ongoing online and face-to-face collaboration with peers to help address teaching challenges and obstacles

• Engagement with civic leaders to involve students in addressing local climate & energy challenges

• Support of relevant external expertise: Scientists, Engineers, Professionals from Businesses, Organizations, & Government

This had been fleshed out to a much larger extend – Sept 2019
STEM Education for Tomorrow’s Workforce Leadership Team

Community of Communities - Overarching Coordination

Vision for the Future
How Can an Ongoing Climate TPLC be Financially Sustained?

• Multiple Lines of Revenue will be Required
  • Philanthropic Grants
  • Government Grants
  • Business and Organizational Sponsorships
  • Individual Sponsorships
  • Professional Development Funds
  • Teachers Personal Funding of Professional Development
How Can an Ongoing Climate TPLC be Financially Sustained?

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Survey Conducted of Classroom Teachers in the United States, September – October 2019

• Areas Explored
  • Extent climate change is covered in their curriculum
  • Current climate change education professional development
  • Funding for professional development
  • Demographics

• 39 Teachers provided substantive input
States of Responding Teachers

States Where Respondent Teachers are From
(Total # Responding Teachers = 27)
Grade Levels Taught by Responding Teachers

Grade Levels Taught by all Responding Teachers
(Total = 40, Select all that apply)

- Preschool / PreK
- Lower Elementary (K-2)
- Upper Elementary (3-5)
- Middle School (6-8)
- High School (9-12)
- College
- Other - Yoga

Number of Respondants

Number of Respondants

0 5 10 15 20 25 30
Subjects Taught by Responding Teachers

(Total # Teachers=39, Select all that apply)

- Mathematics
- Language Arts
- Science
- Social Studies/Social Sciences
- Foreign Language
- Arts
- Other

Science Discipline Taught by Responding Teachers (Total # Teachers = 38, Select all that apply)

- None
- Other
- Integrated Science
- Career & Technical Education
- Environmental Science
- Biology
- Climate Science
- Earth/Environmental Science
- Chemistry
- Physics
Is Climate Change Part of the Curriculum?

Number of Respondants (58 total)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>40</td>
<td>15</td>
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Time Allocated in Curriculum to Climate Change

Number of Respondants (42 indicated climate change as part of their curriculum)

- 1 day: 1
- 1 week: 12
- 1 month: 15
- Multiple Months: 8
- Other: 9 responses included
  - A few days
  - A few weeks
  - Integrated through the year
Challenges to Incorporating Climate Change into Classes

• Time
• Funding or technology materials not available
• State refuses to accept that climate change is real
• Not a priority at school
• Teach another subject
• Difficulting incorporating climate content into other classes
How Often Did Teachers Participate in Professional Development in the Last Year?

Number of Required and Voluntary Teacher Professional Development Activities Per Year

- Red = Required PD
- Green-Blue = Voluntary PD

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Required PD (42 respondents)</th>
<th>Voluntary PD (27 respondents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>1-2 times</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>3-5 times</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>6+ times</td>
<td>14</td>
<td>8</td>
</tr>
</tbody>
</table>
Satisfaction with Climate Professional Development Teachers Received

Satisfaction with Climate Professional Development When Climate Change Is or Isn't Included in Curriculum

- Red = Climate Change NOT in Curriculum
- Green-Blue = Climate Change Included in Curriculum
Reasons for Satisfaction or Dissatisfaction with Climate Professional Development (Total Respondents = 58)

- PD needs to be relevant to the local context
- Quality of PD needs to be increased
- Need more PD
- PD had Quality Materials and Instructors
- PD had an impact on teaching
- PD run by Scientific/Professional Organizations
- Was able to engage in climate change PD
- Included Hands-on Activities
- Included Investigations
- Lack of Follow up
- Lack of Teaching Resources
- PD Not available in school or not local
- Lack of Funding
- Time for PD
- Time to Teach

Green-Blue = Satisfied
Brown = Somewhat Satisfied
Red = Somewhat Dissatisfied
Orange = Dissatisfied

Note: Color indicates overall satisfaction, while reasons could be a mix of what was satisfying or dissatisfying.
Criteria for Selecting Professional Development

Number of Respondants Indicating Criteria for Selecting PD

Text responses contained multiple criteria

- Not have to purchase something else to use.
- Time Required
- Benefit - salary increase, promotion, other perks Also - Graduate credits or Professional development points
- Quality
- Recommendation
- Mechanism - email from specific org (professional Organizations)/ school district
- Alignment with NGSS and/or state standards
- Content/ Relevance/ Personal Interest/ Improve teaching/ Benefit Students
- Local/Distance
- Weekend/ Summer OR Timing
- Funding Available
- Offer Stipend
- Free/Cheap

Number of Respondants Indicating Criteria for Selecting PD

0         5         10      15        20       25        30      35
Funding of Teacher Professional Development

How Are Fees for Professional Development Paid?
Checked All That Apply, Total 67 responses

- Pay for it myself
- Request funds from school administrator
- Apply for grant outside school/school district
- Request school district funds
- Request school professional development funds

Bar chart showing frequencies of responses (0 to 35) for each method of paying for professional development.
Funding of Teacher Professional Development  
(Total = 39 Respondants)

- Other
- Apply for
  - $0 or don’t know
- Pay Personally
  - Getting Graduate Degree
  - Travel
  - Won’t pay anything
Do Teachers Depend on Receiving a Stipend?  
(Total = 22 Respondants)

- If Yes, what level of stipend:
  - Enough to cover expenses
  - $2000. / $600 + travel / $300-$500
  - $250/day – Pay the teacher receives
Frequency Teachers Supplement Teacher Professional Development Costs

(Total = 39 Respondants)
Would Teachers Be Interested in an Ongoing Climate Professional Development Program?

Responding Teachers Interest in Participating in a Climate TPLC?

- Yes: 35
- No: 5

Interest in Ongoing Climate Professional Development by Whether Climate Change is in Curriculum

- Climate Change NOT in Curriculum & NOT Interested in Ongoing PD: 30
- Climate Change Not in Curriculum & Interested in Ongoing PD: 20
- Climate Change In Curriculum & NOT Interested in Ongoing PD: 10
- Climate Change In Curriculum & Interested in Ongoing PD: 0
Would Teachers Be Interested in an Ongoing Professional Development Program?

**Teachers Interested in Participating in an Ongoing Professional Development Program**

- **Dissatisfied**: 14 respondents
- **Somewhat Dissatisfied**: 12 respondents
- **Somewhat Satisfied**: 8 respondents
- **Satisfied**: 14 respondents
Take Aways

• Most teachers participated in multiple required & voluntary professional development activities a year – more than 3-5 event/year for each

• Top criteria for selecting PD
  • Content/Relevance
  • Cheap/Free
  • Offered by Scientific or Professional Organizations
  • Local
  • Timing

• Teachers often pay for PD themselves

• Teachers are willing to pay ~$300 for quality PD and most teachers often or always supplement the cost of PD

• Teachers are interested in an ongoing climate professional development program
Thank You!

Questions?

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