Planning for Co-design: Mapping ‘Know Who’ and ‘Know How’

William R. Penuel

University of Colorado Boulder

This material is based upon work supported by the National Science Foundation under Grant Numbers DRL-0822314 and 1238253. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
The Importance of Know Who

• A collaborative design team is only as strong as:
  – the expertise of people sitting at the table
  – The strength of the ties among those people
  – The interactions that take place that surface and make use of varied forms of expertise.
The Importance of Know Who

• A collaborative design team is only as strong as:
  – the expertise of people sitting at the table
  – The strength of the ties among those people
  – The interactions that take place that surface and make use of varied forms of expertise.

Implication 1: You may need to expand your own network and learn more about your existing network, in terms of who is good at what, and what groups or teams (e.g., at schools) can work together effectively.
The Importance of Know Who

• A collaborative design team is only as strong as:
  – the expertise of people sitting at the table
  – The strength of the ties among those people
  – The interactions that take place that surface and make use of varied forms of expertise.

Implication 2: A key form of expertise needed is in organizing and adapting design processes.
• Additional forms of expertise are needed to co-design three-dimensional curriculum and assessments:
  – Science
  – Research on how students learn science
  – Assessment development
  – Curriculum design
  – Teaching and its contexts

Implication 3: Co-design teams must be diverse and employ strategies for surfacing and making use of relevant expertise
## Network Composition: Initial iHub Team

### Initial Network Members

<table>
<thead>
<tr>
<th>Initial Network Members</th>
<th>Domains of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU Researchers</td>
<td>Computer Science, Science Education, Assessment and Evaluation, User-Centered and Participatory Design</td>
</tr>
<tr>
<td>BSCS</td>
<td>Curriculum development</td>
</tr>
<tr>
<td>UCAR</td>
<td>Technology development</td>
</tr>
<tr>
<td>District leadership</td>
<td>District instructional guidance infrastructure (e.g., standards, pacing guides, interim assessments)</td>
</tr>
</tbody>
</table>
## Expanding the Network

<table>
<thead>
<tr>
<th>Initial Network Members</th>
<th>Domains of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU Researchers</td>
<td>Computer Science, Science Education, Assessment and Evaluation, User-Centered and Participatory Design</td>
</tr>
<tr>
<td>BSCS</td>
<td>Curriculum development</td>
</tr>
<tr>
<td>UCAR</td>
<td>Technology development</td>
</tr>
<tr>
<td>District leadership</td>
<td>District instructional guidance infrastructure (e.g., standards, pacing guides, interim assessments)</td>
</tr>
<tr>
<td>Teacher leaders</td>
<td>Existing curriculum, students, local school contexts</td>
</tr>
<tr>
<td>Experts in Framework and NGSS</td>
<td>Biology, coherent curriculum design</td>
</tr>
<tr>
<td>Ecologists</td>
<td>Forestry, Ecological monitoring</td>
</tr>
<tr>
<td>Community partners</td>
<td>Forestry, City Policies and Ordinances</td>
</tr>
</tbody>
</table>
Key Lessons

• You can seek out partners who are not necessarily close by, if you can target your ask in a way that appeals to their aims and motives.

• The evolution of the work itself can lead you to seek out new partners purposefully (with much benefit to the team).

• The process of network expansion can’t happen all at once, and will likely hit some bumps.
Qualifying New Partners

Clear Aim and Congruent Motives

Common Understanding of Core Problems

Shared Values about Space of Possible Solutions
Mapping ‘Know Who’

• Map your own networks and identify both resources (know-how) and key needs for collaborative design

• Make a plan for asking partners to map their networks to identify location and access of relevant expertise
Questions