Do sustainability projects make sustainable schools? Integrating K-12 campuses in communities to create sustainable schools

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What is a sustainable school? Theoretically...

In a sustainable school, students, teachers, administrators, and staff are guided by these principles which are derived from sustainability science (Kates et al., 2001).

1. Interconnectedness: View the world as interconnected and human systems as a component of and dependent on ecological systems.
4. Change Agents: Assume an active role as sustainability change agents.

So, to be sustainable, a school must be integrated into its community to allow students to develop solutions to problems across scales.

We, at the NSF-GK12 sponsored Sustainability Science for Sustainable Schools Program at Arizona State University, devised the Sustainable Schools framework to put theory into action and provide a structure to create sustainable schools. We propose that sustainable K-12 schools must implement sustainability projects that cross scales and disciplines, as seen in the framework. It consists of three layers: (1) the sustainability foundation; (2) the focus and scope of participation; and (3) the learning approach.

The Three C's (scale)
• Curriculum: Teaching and Learning Classroom, Teacher, Student Actions, Programming, Professional Development
• Campus: Values and Ways of Working Staff, Administration, Facilities, Grounds, Maintenance, District
• Community: Widder Influence & Partnerships Parents, Business, Government, Non-profits, Neighborhood citizens and Global interests

In reality...

I analyzed certification applications, sustainability reports, interview transcripts, and case studies from 63 sustainable schools in the U.S.A. (the same documents I used to create the 'word' above). The title of 'Sustainable School' was given to each K-12 school by one of the following certification programs:
- the USGBC’s LEED for Schools Program (www.usgbc.org/LEED/SCHOOLS/)
- the NSF-GK12 funded Sustainability Science for Sustainable Schools Program http://sustainableschools.asu.edu

I used our framework to analyze and code each school's sustainability efforts (as seen in the figure below). I categorized and labeled every sustainability project at each school. I conceptualized different projects at each school as having been initiated in one of the nine scale/focus categories (seen in the yellow squares below). Next, I determined if, and how each project promoted efforts in any of the remaining eight scale/focus categories. Using this coding system, I counted the number of sustainability projects at each of the 63 schools (300 in total across all schools), and the level of integration of each project. A project's integration across scales and sustainability focuses is considered crucial for sustainable schools, as described previously. In the modified framework below, I provide a hypothetical example of how I coded information from each sustainable school.

<table>
<thead>
<tr>
<th>Sustainability focus of projects</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Curriculum</td>
</tr>
<tr>
<td>Society</td>
<td>Campus</td>
</tr>
<tr>
<td>Economy</td>
<td>Community</td>
</tr>
</tbody>
</table>

Example Case: Hypothetical High School, USA

Distribution of Integration Ratios

How many of the 300 sustainability projects are in each of the 9 categories?

On which aspects of sustainability do projects focus?

Lessons learned - strategies to apply K-12 sustainability projects across a campus, and into curriculum and the community

The following points are a summary of my sustainable schools case study analysis. They include results, recommendations, and next steps.

1. The 15 to 20 schools whose sustainability projects were most integrated across my nine sustainability categories seemed to fall into one of two general groups. These schools were either (1) newly constructed and designed with a 'vision' of sustainability, and they were typically promoted as a 'flagship' of the local school district, or were (2) small private schools with strong leadership. This begs the following question - how can existing public schools, especially those that are underfunded, implement sustainability projects that promote problem-solving to improve student, school, community, and global well-being? In the next phase of my research I will look for strategies to aid in the sustainability of underfunded public schools.

2. The types of projects that were most successfully integrated across sustainability categories within my case-studies focused on either curriculum changes or student health. Most schools that initiated sustainability education programs relied on resources from the surrounding campuses and communities. This reliance, combined with the problem solving nature of sustainability, often led schools to initiate service projects where students would engage with their community to both learn and to improve their community's well-being. Student health initiatives typically involved the construction of outdoor learning environments; many of these projects also promoted the interaction between schools and communities to source local, organic produce.

3. In the next phase of my research, I will select a subset of my case study schools and interview teachers, administrators, and students to understand successes, opportunities, and barriers to the development and integration of sustainability projects at their schools.


Are our sustainable schools integrating projects across campuses and into communities?

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