

# The Degree of Collaboration Abacus Tool

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## Abstract

Community-engaged scholars, practitioners, and community partners often find the language of community engagement challenging. Words like *participate*, *collaborate*, *partner*, or *engage* fail to convey who in a community-university partnership has voice and authority in decision-making and responsibility for actions. The Degree of Collaboration Abacus Tool was developed as a visual to address this challenge. The authors provide two case studies to demonstrate how this tool can be used to name steps in community-engaged projects, clarify voice and decision-making authority, and represent collaboration responsibilities at multiple project stages. *The Matter of Origins* evaluation example illustrates how the tool can be used in a community-engaged research setting. The GRAND Learning Network example demonstrates how the tool can be used in a more complex community-engaged teaching and learning context. In the conclusion, the authors acknowledge the tool's potential limitations and imagine possible adaptations of the tool for other community-university partnership contexts.

*Keywords: stakeholder participation, community partner voice, community-engaged research, community-engaged teaching and learning, visualization tool, degree of engagement*



For decades, community-engaged scholars, practitioners, and community partners have struggled to find meaningful language to describe the nature of their relationships. Common outreach and engagement terms like *participate*, *collaborate*, *partner*, *involve*, *engage*, and *cocreate* convey a sense of partnership but fail to explain exactly how community and university partners shared voice or authority in decision-making throughout their collaborative community engagement activities.

Multiple scholars have explored the nature of *participation* and sought to define it through visuals, typologies, and conceptual frameworks. For example, in 1969, Arnstein put forward the eight-rung Ladder of Participation as a visual to show a range of participation starting with *manipulation* at the bottom of the ladder and moving upward to *citizen control* at the top of the ladder (Arnstein, 1969). Hart later adapted Arnstein's ladder for youth participation to include two broad categories—nonpar-

ticipation (including Arnstein's bottom three rungs) and degrees of participation (including Arnstein's top five rungs; Hart, 1997). Both Arnstein and Hart made a distinction between the lower rungs, where, in reality, the partner's voice was not considered in decision-making, and the upper rungs, where partners had voice in decision-making.

Taking a similar tack, decades later, the International Association for Public Participation put forward its public participation spectrum, which focuses on defining the public's role in participation by clarifying the goals of participation and the promise to the public. This internationally popular spectrum ranges from *inform* through *consult*, *involve*, and *collaborate* to *empower* as potential goals of public participation (International Association for Public Participation, 2014). The International Association for Public Participation further developed their typology by matching public participation processes to the different places on their spectrum. For example, some

collaboration processes are more appropriate for *inform* or *consult*, whereas other processes are more appropriate for *collaborate* or *empower*. Other scholars, particularly those from agriculture and natural resource fields, have proposed additional continuums for public participation with collaboration or engagement processes matched to particular places on the continuum (Hage, Leroy, & Petersen, 2010; Kessler, 2004; Pretty, 1995; Reed et al., 2009).

Other scholars who have turned their attention to stakeholder involvement, collaboration, and engagement have focused more on the underlying motivations, frames, or paradigms that shape the rationale for participation (Reed, 2008). For example, Cornwall (2008) examined who participates, in what aspect or in which activities, and to what end. Fraser (2005) put forward four approaches: anti- or reluctant communitarians and economic conservatism, technical-functional communitarians and managerialism, progressive communitarians and empowerment, and radical/activist communitarians and transformation. Hage et al. (2010) examined the purposes of stakeholder participation in knowledge production by linking the approach to the nature of the problem (i.e., degrees of certainty) and norms/values consensus.

With a focus on community-engaged research, Herr and Anderson (2015) developed a six-place continuum of positionality in action research, with places on the continuum ranging from insider (1) to outsider (6). Their work illuminates the relationship between research and the partners in the research and describes validity criteria, knowledge contributions, and research traditions for each of the six places on the continuum. Also from the field of community engagement, Barker (2004) identified a taxonomy of engaged scholarship practices that frames engagement practice in terms of three parameters: theory, problems addressed, and methods.

With decades of participation definitions, typologies, frameworks, continua, and typologies, our theoretical understandings of participation and voice have deepened, but our ability to articulate how those understandings are translated into practice has lagged behind. Misunderstandings, miscommunications, and misrepresentations between university and community partners remain commonplace (Flicker, Savan,

McGrath, Kolenda, & Mildenberger, 2007). These misunderstandings contribute to a variety of university-community partnership challenges, from delays in reaching project goals (at the minimum) to disrespect and broken trust (at the maximum). To address the need for practical tools to use in our own work with community partners and with our undergraduate and graduate students, the authors developed the Degree of Collaboration Abacus Tool, an adaptation and expansion of the Degree of Collaborative Processes in Engaged Research figure developed by The Research University Community Engagement Network (TRUCEN) and published by Stanton (2008, p. 26).

### Degree of Collaboration Abacus Tool: How the Tool Works

Originally developed as a counting or calculating tool, the abacus has been found in ancient Mesopotamia, Egypt, Persia, Greece, and China. All variations rely on pebbles, beads, or stones being moved to the left and right (or up and down) along a rod or beam—to connote more or less value visually. Strengths of the abacus are how abstract numbers are represented tangibly through concrete items such as beads and how the movement of the beads shows changes.

The Degree of Collaboration Abacus Tool is not a tool for literally *counting* the amount of voice in decision-making or collaboration. Instead, the abacus tool is a visual or metaphorical tool used to account for the valence of the relationship between two collaborating entities—community and university partners. In other words, the abacus tool can visually represent whether, during each step of a shared project, the community or university partner has more voice in project decision-making or whether both partners share the work equally. Just like the original abacus, our abacus tool is composed of three parts: sides, rungs, and beads, each of which plays an important role in visualization.

**Sides:** The abacus tool has two vertical sides. One side represents the community partner voice and authority; the other side represents the university partner voice and authority.

**Rungs:** The abacus tool has multiple horizontal rungs connected to each of the sides. Abacus beads slide smoothly along

## CE Research Abacus

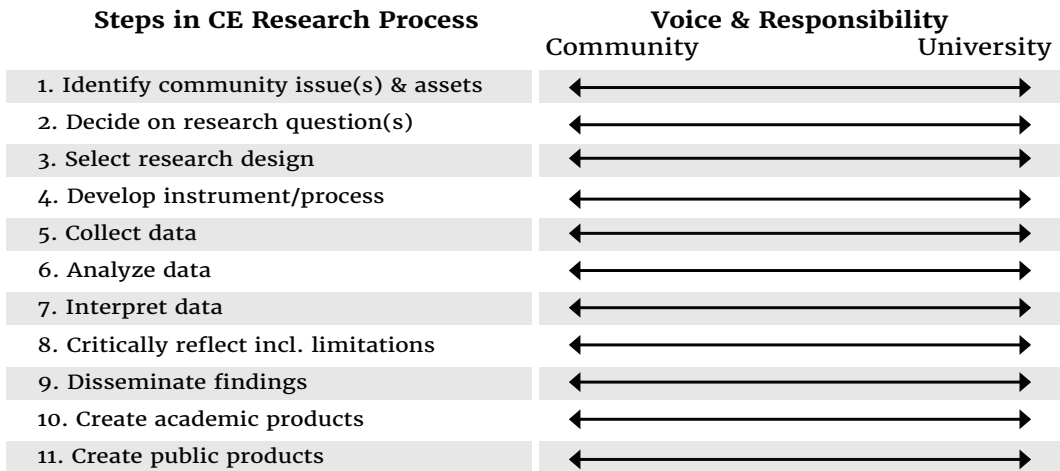


Figure 1. Template for degree of collaboration abacus for community-engaged research.

the rungs. Rungs represent the steps in the community-engaged scholarship process. The names of the rungs vary depending on the type of community-engaged scholarship (Doberneck, Glass, & Schweitzer, 2010). For example, a community-engaged research project may include the following rungs: (1) identify community issues and assets, (2) decide on research question(s), (3) select an appropriate research design, (4) develop research instruments or processes, (5) collect data, (6) analyze data, (7) interpret data, (8) critically reflect on research, (9) disseminate findings to partners and participants, (10) create scholarly products for academic audiences, and (11) create scholarly products for public audiences (see Figure 1).

In contrast, a community-engaged teaching and learning project may include these rungs: (1) identify community issues and assets, (2) identify context for learning—time and setting, (3) understand learners' needs, (4) identify learning objectives, (5) develop learning experiences, (6) identify evaluation questions, (7) design evaluation methods, (8) gather and analyze evaluation data, (9) critically reflect on experiences, (10) revise the programming, (11) create academic products, and (12) create academic products (see Figure 2).

**Beads:** The abacus tool has multiple beads on each rung. Beads are used to account for voice and authority in the decision-making process and collaboration responsibilities. The side with more beads has more voice

in the decision-making process and more collaboration responsibilities. The side with fewer beads has less of a voice in the process and fewer collaboration responsibilities. Beads perfectly centered between the two sides represent a collaboration where both community and university partners have relatively equal voice in the process.

### Examples of the Degree of Collaboration Tool in Practice

#### In a Community-Engaged Research and Evaluation Context

*The Matter of Origins* evaluation was a short-term, community-engaged research project, designed to evaluate the impact of a contemporary dance performance on audience members. Liz Lerman, a contemporary dance choreographer, and the Dance Exchange artists received funding through the National Science Foundation's Informal Science Education/Early-Concept Grants for Exploratory Research program area to support the implementation and evaluation of an art/science/engagement performance, with a focus on beginnings, matter, mystery, and math. After 3 years of consultations and collaboration with physicists from around the world, Liz Lerman and her fellow dancers choreographed *The Matter of Origins* as a "two-act contemporary dance performance exploring stories, images, and movement related to spiritual and scientific explanations of the origins of the universe" (Lerman, 2011). As a condition

## CE Teaching & Learning Abacus

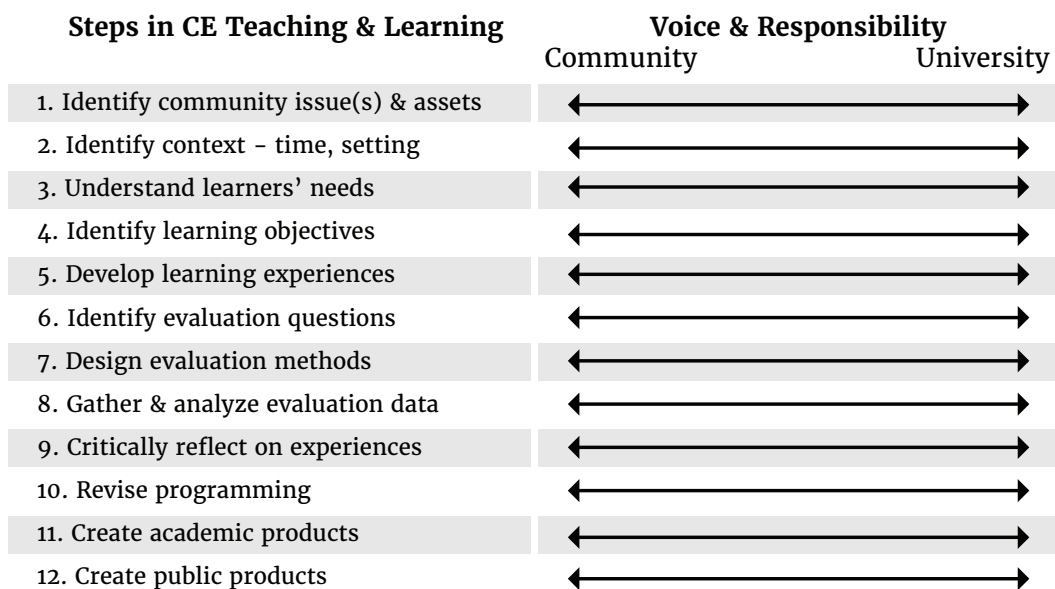


Figure 2. Template for degree of collaboration abacus for community-engaged teaching and learning.

of the grant funding, the National Science Foundation required an evaluation.

For this community-engaged evaluation, the university partners included a community engagement scholar, a statistician, a Ph.D. student in sociology, and an advisory board composed of theater, dance, physics, and information science educators—all of whom were associated with Michigan State University. The main community partners included Liz Lerman (choreographer), John Borstel (humanities director of the Dance Exchange), Amelia Cox (production manager), and multiple Dance Exchange professional dancers. With performances at five sites across the United States, site-specific community partners also included performing art center directors, local faculty and community leaders, and local dancers. In addition, the National Science Foundation, through its program officer, provided feedback at various stages of this community-engaged evaluation project.

Because of its interdisciplinary nature, *The Matter of Origins* evaluation project was guided by literature from multiple domains, including physics, history, religion, movement, informal science education, authentic assessment, emotional intelligence, creativity, reflection, and mixed research methods (Doberneck, Miller, & Schweitzer, 2011a,

2011b; Miller, Doberneck, & Schweitzer, 2011; Doberneck, Miller, & Schweitzer, 2012a). In addition, all community partners, including the National Science Foundation, were interested in understanding whether audience members from traditionally underrepresented groups were influenced more than other audience members.

The collaboration between Liz Lerman, the Dance Exchange artists, the Michigan State University evaluation research team, and the site-specific community partners was a challenging and rewarding partnership (see Doberneck, Miller, & Schweitzer, 2012b for a more thorough discussion of the relationship among partners). *The Matter of Origins* community-engaged evaluation project unfolded through dialogue, experimentation, and trust among the partners. After the project was mostly wrapped up, the university and the community partners were able to document the back-and-forth steps of the collaboration using the Degree of Engagement Abacus Tool (see Figure 3).

For the first step (identify community issues and assets), Liz Lerman and the Dance Exchange identified the grant opportunity to help fund the development, performance, and evaluation of an upcoming work, *The Matter of Origins*. They were entirely in the lead for this step, with university partners

## The Matter of Origins Evaluation/Research Abacus

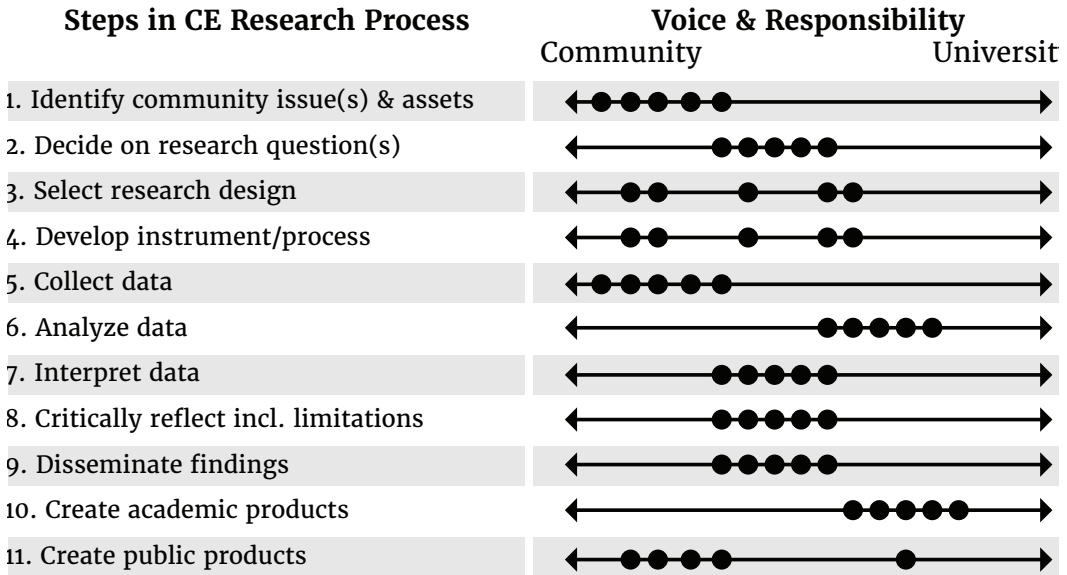


Figure 3. Degree of collaboration abacus for The Matter of Origins community-engaged research project.

engaged as the grant contract was in the final stages.

For the second step (decide on research questions), the National Science Foundation’s Informal Science Education framework guided this step by defining changes in attitude, interest, knowledge, and behavior as areas for the evaluation’s focus. Liz Lerman, Dance Exchange artists, and the university partners had multiple exchanges, in person, by phone, and by e-mail to further refine the research questions.

For the third step (select a research design), the university research team followed the National Science Foundation’s advice about rigorous research design but also honored Liz Lerman and the Dance Exchange’s commitment to the performance. In other words, the research design could not intrude into the audience members’ experience of *The Matter of Origins*. Research designs were proposed and rejected multiple times. Through multiple iterations, rejections, and revisions, all partners agreed to conduct printed surveys preperformance, during intermission, and near the end of the second act. (Because Act 2 is a tea hosted by performers and incorporating conversation with the audience, the surveys were not a disruptive element.)

For the fourth step (develop instrument/process), Liz Lerman and Dance Exchange artists contributed ideas, edited instrument questions for accessible language (often translating academic-ese into language friendly for the general public), and influenced the size, shape, color, texture, and format of the instruments. For example, at one of the performance sites, the survey was printed on thick cardstock and shaped like a teacup. Three site-specific partners requested specific questions related to their campuses or performance venues. The university partners ensured the instrument questions mapped over to broader research questions and would generate data that could be compared across performance sites.

For the fifth step (collect data), the Dance Exchange and its local artists were fully responsible for data collection. Dance Exchange artists and local dancers at each of the five performance sites were oriented and trained on how to collect the data pre-performance and at intermission. The Dance Exchange also trained local university and community leaders (called provocateurs) on how to collect second-act data. They then turned all of the data over to the university partners for analysis.

For the sixth step (data analysis), the university partners received boxes of surveys,

cleaned responses, and entered all of the data into Statistical Package for the Social Sciences software. Qualitative data were entered into Excel and coded.

For the seventh step (interpret data), the university partners initially interpreted the data. Drafts of the data analysis and interpretation were shared with the Dance Exchange and discussed through phone calls. Through these conversations, key findings and themes were identified. In addition, site-specific evaluation reports were generated with slightly different emphasis depending on what each performance site had requested in the instrument development step. For example, one performance site was a university campus with a significant proportion of first-generation college students. Through this community-engaged evaluation, we added specific questions to understand the experience of first-generation audience members and included summaries in that site-specific evaluation report.

For the eighth step (critically reflect, including on limitations), Liz Lerman, humanities director John Borstel, Dance Exchange artists, and the university partners critically reflected on the evaluation process and the findings after each performance. Together, we discussed how the overall data collection process was working and made improvements after our experience each time. We also discussed how well the questions on the instruments were working, then made modifications. Some questions were revised. Over time, some questions were dropped entirely. These critical and reflective conversations became the glue that held the collaboration together.

For the ninth step (disseminate findings), Liz Lerman, the Dance Exchange, the National Science Foundation, and the university partners disseminated findings to their respective constituents, in their respective ways. In other words, all partners took responsibility for this step.

For the tenth step (create academic products), the university partners took the lead on developing multiple conference poster and paper presentations at the National Outreach Scholarship Conference and the International Association for Research on Service-Learning and Community Engagement. In addition, Dance Exchange artists choreographed a conference workshop, inspired by *The Matter of Origins* and

the evaluation findings, for the annual Imagining America conference (Doberneck Miller, Borstel & Schweitzer, 2011). All academic products were reviewed by the Dance Exchange in advance of their presentation or publication.

For the final step (create public products), Liz Lerman and Dance Exchange artists used the evaluation findings in their keynote speeches, podcasts, press releases, and other dissemination to the art/science community. The university partners developed a practitioner-oriented idea book to help art/science practitioners evaluate their own projects in creative but rigorous ways (Doberneck, Miller, Schweitzer, & Borstel, 2011).

Because *The Matter of Origins* evaluation study was an organic, iterative, and emergent process, the partners did not use this tool as a planning tool. Instead, the Degree of Collaboration Abacus Tool was used as a reflection and storytelling tool, to explain who had voice and authority at different steps of the engagement process. Without taking the time to carefully think through and document who had the most influence on decision-making and when, much of the richness of this community-engaged research project would have been lost.

### **In a Community-Engaged Teaching and Learning Context**

The GRAND Learning Network (GLN) is a long-term, community-engaged teaching and learning project; it is designed to foster place-based stewardship education among Michigan State University, K-8 public schools, and community partner organizations within mid-Michigan. The GRAND Learning Network focuses on water stewardship in seven school districts ranging from well-resourced suburban districts to underresourced urban and rural districts. The Great Lakes Stewardship Initiative (GLSI) has funded the GRAND Learning Network, along with eight other place-based stewardship education hubs throughout Michigan (Great Lakes Stewardship Initiative, n.d.).

The GRAND Learning Network is informed by place-based education (PBE), a field that has grown in its reach and empirical rigor in recent years. PBE is a means by which communities and learners partner to address local, real-world challenges and enhance local assets through direct experiences with

local places (Gruenewald & Smith, 2008; McInerney, Smyth, & Down, 2011; Smith & Sobel, 2014; Sobol, 2008; Yoder, 2012). Like the other eight GLSI hubs, the GRAND Learning Network adheres to the principles and tenets of place-based stewardship education developed by the GLSI collaborators who promote “the pedagogy of place-based education to teach about the environment and to develop capacity for stewardship” (GLSI, 2016, p. 2). The GLSI principles further emphasize the importance of local environments; human-natural environment interaction; strong school-community partnerships; multiple ways of knowing; hands-on, experiential learning; student voice in democratic and deliberative processes; and tangible benefits to local environments (see GLSI, 2016).

The GRAND Learning Network has a complex network of relationships between Michigan State University, local K-8 schools, and local community partners, as well as regional and state partners. The GRAND Learning Network’s hub has two distinct layers of collaboration and partnership that guide the community-engaged teaching and learning activities. Within the first layer, the Michigan State University partner brings schools, teachers, school administrators, and conservation partners together to identify opportunities and resources for teacher professional development (PD) around environmental stewardship and the Great Lakes. Teachers in grades K-8 who are interested in advancing education for their students in innovative ways help to plan and then attend professional development workshops where they interact with key partners, including state government agencies, local government officials, state-wide nonprofit organizations, local nonprofit organizations, and businesses.

In the second layer, teams of teachers who have participated in professional development activities in the first layer develop ongoing community partnerships with local community partners associated with their individual schools. The teachers and schools reach out to local community partners with technical knowledge of watershed characteristics and potential stewardship opportunities and resources. This layer of collaboration and partnership is developed on a school-by-school basis, so that local assets are identified and mobilized to address the learning needs of the youth in each school. The focus is on developing

and implementing experiential learning activities about stewardship for the youth at the school. At individual schools, teachers collaborate with their own community partners to involve students in watershed stewardship projects and learning in the community. Michigan State University faculty and staff play a supportive role, with the ultimate goal of building capacity at the school level so that teachers and schools maintain their own local community partnerships.

The Degree of Collaboration Abacus has served to explain collaboration at various steps of the engagement processes—at both layers of collaboration. The following section demonstrates how the abacus tool can be used to describe the collaboration at each layer.

*First layer: GRAND’s hub layer abacus.* The first layer of the GRAND Learning Network includes Michigan State University’s Department of Community Sustainability, representative teachers from the seven mid-Michigan K-8 school districts, and a wide array of community partner organizations. On the right side of the abacus, the university partners include a tenure-track faculty member and an educator who regularly works with teachers and is a former classroom teacher (Figure 4). On the left side of the abacus, teacher leaders, teachers, and community partner organizations represent the community partner perspective at this layer of collaboration (Danielson, 2006).

For Steps 1 and 2, the university and community partners shared equal responsibility. For example, in one program year, the content of teacher PD was identified when the teachers expressed interest in constructing rain gardens to manage stormwater runoff and to benefit local watersheds. At the same time, the university’s Institute of Water Research was collaborating with GRAND Learning Network staff and wished to reach teachers about stormwater issues and water quality. Finally, the university and the county drain commissioner had talked about collaborating to bring table-top models of stormwater runoff into the classroom. The result of these joint discussions was to develop a Summer Institute professional development focused on these issues and assets.

During Steps 3 and 4, the GLN staff at the university took the heaviest load of making

## GRAND's First Layer Abacus

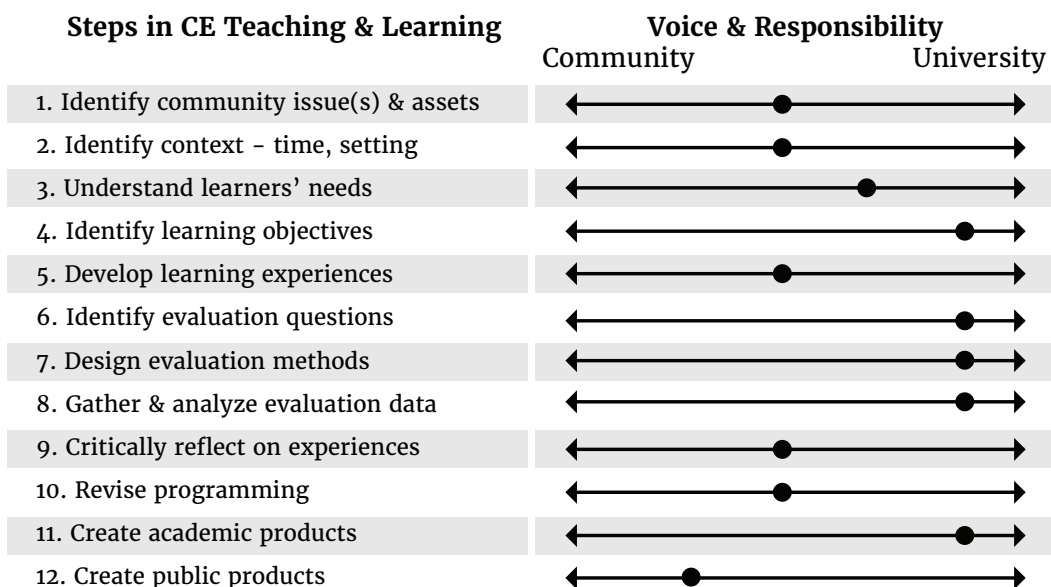


Figure 4. Degree of collaboration abacus for GRAND Learning Network's first layer of community-engaged teaching and learning

contacts with teachers to understand their needs as learners and to develop outcome objectives specific for professional development sessions. At the same time, the conversations among participating teachers and community conservation partners continued regarding Step 5—what the specific learning experiences of the professional development would entail. During these conversations, nonuniversity partners identified additional resources, including ready-made K-12 curricula regarding rain garden lessons integrating math and English/language arts. Being open to these emerging, collaborative conversations during these steps allowed university partners to listen clearly to school and community conservation partners.

During Steps 6–9, as might be expected, these nonuniversity partners were less interested in and had little time for designing and implementing evaluations of the professional development. Instead, the university partners took the lead on these steps, with support from the Great Lakes Stewardship Initiative for evaluation protocols. Evaluation took the form of qualitative feedback from participants who responded to open-ended post-professional development questions. In addition, in Step 9, participants and GRAND Learning Network

staff critically reflected upon teachers' responses and convened small-group meetings of experienced teachers to inform decisions about future Summer Institutes and about follow-up support to help teachers implement watershed stewardship within their classrooms. The insights from this critical reflection were in turn used in Step 10, particularly for each newly funded 2-year programming cycle.

In Step 11, the university partners played the primary role in developing academic outputs such as conference presentations at the North American Association for Environmental Education and white papers related to the evaluation of place-based education (Doberneck, 2010a, 2010b). In Step 12, some of the teachers presented about their professional development experiences and subsequent stewardship work in their own classrooms as practical, public products at the Great Lakes Stewardship Initiative-sponsored Place-Based Education Conference in 2015.

**Second layer: GRAND's individual school layer abacus.** The second layer of engagement for the GRAND Learning Network consists of the collaboration between teachers and their respective community partners, with the university playing a supporting role.



## CE Teaching & Learning Abacus

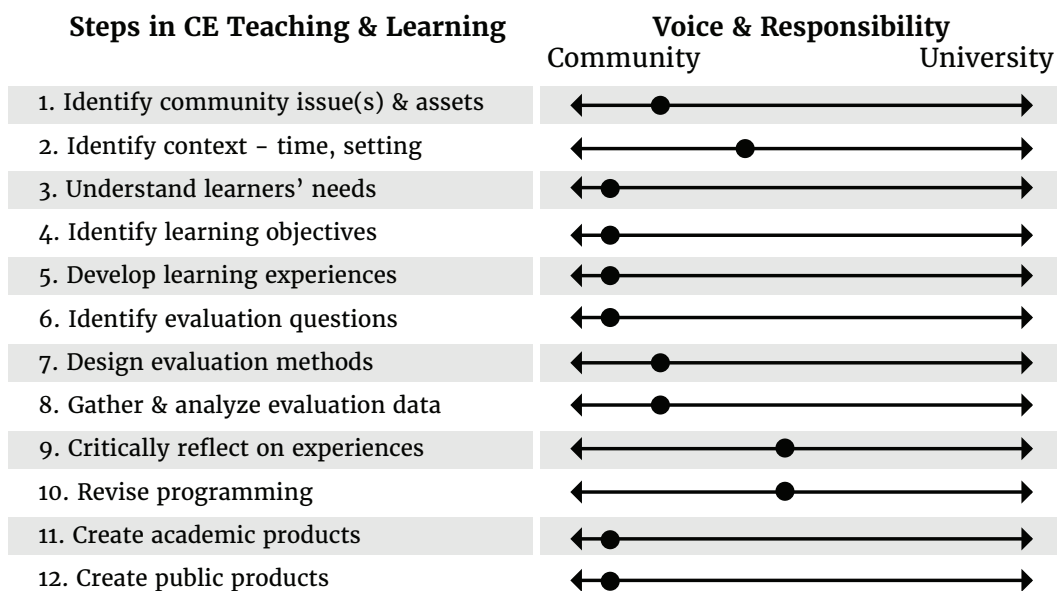


Figure 5. Degree of collaboration abacus for GRAND Learning Network's second layer of community-engaged teaching and learning

Teachers make the major decisions on how to partner with community and involve their students in place-based stewardship education. A few examples illustrate the diverse ways in which the teachers and community take the lead in this level of engagement (Figure 5).

One teacher at Holt Public School's Dimondale Elementary has used her water stewardship regarding stormwater runoff in various ways. Lisa Weise worked with community assets from the PD session (Step 1) to bring resources of the Ingham County Drain Commissioner's office to her classrooms; the commissioner's staff members prepared specific, very localized maps of the waterways closest to the school and weaving throughout the community, eventually connecting with the Grand River. Lisa and her colleagues worked tirelessly on Steps 2–10, relating this academic learning to core science requirements and other subjects. Students studied the local maps intensely. They conducted stewardship projects to plant native plants in the uplands near valuable wetlands in the Dimondale Outdoor Discovery Center bordering the school. Finally, high school students and elementary students alike spent days studying the watershed through River Days programming. Partners that worked

together to plan these learning experiences and their assessments (Steps 1–8) included volunteers with native plant conservation organizations, anglers' organizations, and other Dimondale community members. Lisa and others reflect each year on the River Days program, and she has now developed capacity in other teachers and partners to continue this program, revising it (Step 10) as needed each year, as new community partners step forward. For one academic product, see Weise (2009).

Similar stories, where teachers in the community take the lead on all the steps of community engagement, include work at a rural school (Bath Community Schools), at two suburban schools (in DeWitt and Haslett, MI), and at an urban school (Lansing). In Bath, teachers used their PD experience to work with diverse partners and their students to enhance an existing wetland and to build a rain garden as a place for potentially polluting rainwater to runoff the school parking lot and into an area deliberately designed to absorb the water and provide plants for pollinators and other small life (Derksen, Knapp, Wood, Hartland, & Rich, n.d.).

At Haslett Public Schools' Murphy Elementary, Zsa Mahon and many other

teachers worked with the Greater Lansing Regional Committee for stormwater management and labeled storm drains around the school. Students also reached out to community members with informational materials (printed flyer left hanging on doorknob or personal conversation with the materials) about the importance of keeping pollutants away from storm drains (Mahon, 2011).

DeWitt schoolteacher Cammie Jones, at Scott Elementary, developed working relationships with community members representing a different drain commissioner's office, the city Department of Public Works, a native plant grower, and more. Her students and community partners worked to remediate a problematic area that was eroding soil into a local drain (stream). This project had multiple cycles, as Cammie worked with community partners and her students to reflect critically on initial project calamities and to revise their stewardship work to improve a stream along the school property (Jones, Dann, Holtschlag, & Stephens 2016).

Finally, Wexford Montessori Academy teacher Kristan Small, in the highly urbanized Lansing School District, worked with her colleagues to plan a playground naturalization project. This involved the local Optimists Club, parent volunteers and the Parent Teacher Organization, Michigan State University student volunteers, the drain commissioner, and a local native plant grower. Students improved the playground, developed trails around a wetland, and communicated with neighbors about the importance of the school greenspace (Small, Dann, Holtschlag & Stephens, 2017).

In all of these second-layer engagement examples, the university partners played a minor role. The only steps that were, in part, shared with GLN university partners occurred when the collaborators were considering contextual and technical specifics of each school's stewardship site (Step 2) and helping teachers critically reflect on and revise programming (Steps 9 and 10). This critical reflection occurred both one-on-one with teachers and their colleagues, and during the collective gatherings that occur throughout the year at GLN PD sessions.

In terms of products from this engagement work, teachers took the lead role (with university partner support) in generating peer-reviewed, academic yet practical

case studies (Steps 11 and 12). For example, Weise (2012) published an academic article in *Science and Children*. Four other teachers used artifacts from their teaching (photos, student work, assessments) and crafted case studies that are electronically published on the GLSI website (Derksen et al., n.d.; Jones, Dann, Holtschlag, Marckini-Polk, & Whitmore, 2016; Mahon, 2011; Small et al., 2017). Other public products prepared by teachers, their students, and community partners included presentations to school board meetings, letters and articles written by students with help of parents and teachers, and school website and newsletter articles.

### Using the Abacus Tool at Different Project Stages

The Degree of Collaboration Abacus Tool may be used in multiple ways, at different stages of community engagement projects. In the early stages, partners may use the tool to name the abacus rungs as a way of establishing a shared understanding of the different steps in the community-engaged research or teaching and learning projects. A clear visual with named steps is especially important for community partners who may be unfamiliar with basic steps in research or in processes of aligning teaching goals with activities and assessment. The placement of the beads on each rung reflects whose voice carries more weight and who is responsible for collaboration activities at each step of the process. Once the partners come to a shared understanding, the division of responsibilities may be formalized in a partnership agreement (i.e., memorandum of understanding, contract, partnership agreement) or described in a community engagement grant.

Midway through a project, the abacus tool may be used as a prompt for formative assessment and critical reflection. Partners may examine whether previously made decisions and commitments have been kept and decide whether adjustments in the remaining steps need to be made before the completion of the project.

At a project's conclusion, partners may revisit the abacus to consider whether it represents how the collaboration actually unfolded. If necessary, revisions may update the tool so that it depicts the actual decision-making and collaboration commitments. The abacus visual may be

included in final reports and academic articles focused on the collaboration and partnerships. For example, in providing advice about publishing community-engaged scholarship, Smith, Rosenzweig, and Schmidt (2010) note “explaining the roles of all participant researchers to provide a clear picture of *who did what and when* is helpful and important, especially since roles of the various researchers may shift over time” (p. 1126). “Manuscripts should describe which community partners were involved and the specific roles they played. . . . Authors should also describe how partners’ involvement influenced the research design, data collection, and data analysis and interpretation” (Bordeaux, Wiley, Tandon, & Horowitz, 2007, p. 284). The Degree of Collaboration Abacus Tool could be used to address these common challenges in publishing about community-engaged scholarship.

Finally, the abacus tool may be used as a teaching and learning tool to help undergraduate and graduate students understand different degrees of collaboration in community-engagement projects. Students often find it difficult to understand when and how community partners may have a voice in the community engagement process up front or to articulate how their community collaboration unfolded after the project has wrapped up. The Degree of Collaboration Abacus Tool can help them articulate their community engagement experiences, with more detail allowing for more accuracy and transparency.

### Limitations and Potential Adaptations

Despite its strength as a visualization tool for community-engaged scholarship, the Degree of Collaboration Abacus Tool has several limitations that can be addressed through adaptations. First, community-engaged scholarship, particularly community-based participatory research, is

intentionally iterative or cyclical in design, with certain steps repeating themselves before the project is complete (Fals Borda & Rahman, 1991). To address this, researchers may increase the number of rungs in the abacus to accommodate additional, iterative steps in the process. If needed, researchers may also label the sides of the abacus to identify and differentiate the different phases or iterative cycles.

Second, many community-engaged partnerships involve more than two partners. This is especially true for community-engaged teaching and learning, which frequently includes university administrators (at multiple levels), faculty members, students, community organizations (both leaders and staff), and the organization’s clients or community residents (Bringle, Clayton, & Price, 2009 p. 16; Littlepage & Gazley, 2013). The traditional abacus tool, which shows two partners, may be adapted by replacing the beads with a stacked bar chart with different bar sections representing different partners’ voice proportionally.

Third, community-engaged scholarship may involve different community partners at different steps of the collaboration processes. For example, one set of partners may be involved in the early framing steps and different partners in later dissemination steps. In such cases, the abacus sides may be sectioned and labeled with partner names that correspond to their associated steps.

Despite these potential limitations, the Degree of Collaboration Abacus Tool remains a powerful tool for clarifying steps in community-engagement projects, representing community partner voice and authority in decision-making, and reflecting collaboration responsibilities at different stages of community-engaged scholarship and practice.



### Acknowledgments

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