

MSUS Culminating Experience Final Report Requirements

Final Report Outline

Christina Schmitt

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Paving the Road for Community Engagement in a Garden Based Learning Program

Martin Luther King Elementary

The Farm at South Mountain

Abstract

This project focuses on building capacity for the long-term viability of the garden based learning program at Martin Luther King Early Childhood Center through cultivating relationships with local organizations and businesses. Building upon Matthew Waldman's 2018 MSUS project work with this school and The Farm at South Mountain, this project's purpose was to explore ways to integrate the greater school community and allow them to share their vision for an outdoor community space.

The intervention tool used to engineer this collaborative mindset was individual square foot garden boxes that each child in the 2019 student body was able to decorate and take home.

As a tangible piece of this Culminating Experience, I have installed a pollinator garden that has been registered with Monarch Waystation Program. This space serves as a celebration of the school's mascot and provides a totem for the collective action of the community.

With the onset of COVID-19 and the implementation of local, state and federal guidelines, the school has been closed since March and has curtailed the anticipated deliverables.

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1. Introduction and Background

One in five children have hunger related issues in Arizona as reported by the Feeding America organization. This fact is further complicated if a child resides in a food desert where access to nutritional food is limited or non-existent. During important growing years, when establishing nutritional food habits is a necessity not a preference, these impacted children suffer malnutrition, obesity and face chronic illnesses, such as Type II diabetes, later in life (Chen, 2016). In addition to the physical effects of living with food insecurity, studies prove it impacts a child's learning capacity, development of social skills and stunts self-acceptance (Frndak, 2014). By increasing the exposure to vegetables through a school gardening program, children are more inclined to eat vegetables and continue to do so through their lifetime.

Martin Luther King Elementary, the location for this project, is located in South Phoenix and is approximately 2 miles away from the closest grocery store. The school is in a well-defined food desert according to the Arizona Department of Health. Food options are limited to an array of unhealthy processed foods; fast-food restaurants, small corner convenience stores and liquor stores, often referred to as fringe foods. When the only nearby choice for meal options is a fast-food restaurant, rather than a grocery store, access and selection is unbalanced. The convenience store or available products in a gas station are not convenient if looking to include fruits and vegetables in meals.

Along with the low to no food choices in the neighborhood, residents in food desert areas are at risk for food insecurity, meaning they are not sure where their next meal will come from or be. The median household annual income for the ML King Elementary is at or below \$40,600, with almost 38% of residents receiving food stamps (Statistical Atlas, 2010).

South Phoenix has a rich agricultural history that is not visible in ML King Elementary neighborhood surrounded by vacant lots and industrial buildings. The ecology has been deteriorated to barren dirt with patches of grass and no longer resembles the burgeoning farming community of former generations. Without care or consideration, natural desert foliage is trimmed away leaving the area impacted by monsoon rains and dry winds.

Providing the school children of ML King Elementary a connection to that history and the environment around them is the ultimate vision of this project. Cultivating food knowledge, especially in young children, can help support healthy dietary choices and decrease negative consequences of a highly processed diet (Weatherspoon, 2015). But a garden can be more than a food resource, it can provide a sense of place, a connection to local and culturally relevant recipes, and provide much needed land regeneration.

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While school gardens have proven physical and social benefits (Barker, 2018), they do create another set of problems that will need to be managed. These issues surround garden maintenance, delegation of responsibility and unforeseen possible complications. In order to ensure the long-term sustainability of the vision of this project, I have established and fostered a collaborative partnership between staff, parents and community members. Tucson Unified School District is a great example of what a similar collaborative effort, once fully realized can have, since it was also a single project that started in one elementary school. Now it has evolved to encompass 19 functional school gardens, supports a partnership with the University of Arizona and is demonstrating a unique perspective on what an average school day can look like when aligned with garden based learning (Star, 2019).

MSUS student Matthew Waldman worked with The Farm at South Mountain and Martin Luther King Elementary for his 2018 project which focused on identifying strategic partnerships that would help facilitate their shared goal of having children garden. His work has inspired this project's overall vision. For this project, I undertook a triple approach engagement that encompassed the school staff, students, parent organization, and community leadership. A school garden is dependent upon the labor and volunteer hours of staff, parents and community members. It was the focus of this project to invite as many of the parents into the early phase of the school initiative, so that they felt a sense of ownership and pride as garden expanded. The school principal was extremely engaged and motivated throughout this project, as I provided a supplemental resource for the school that would not have been able to afford the dedicated time or expense required to support the ideas introduced into the school in 2018.

The completion of this project is part of a longer-term collaboration with the partnerships I have made during this journey. Understanding that the end vision of this project is at least a five year timeline, I have started the process of creating a non-profit in collaboration with The Farm at South Mountain, in which our work can continue to serve the community of South Phoenix.

2. Literature Review

School gardens can be an effective intervention tool to increase children's exposure and willingness to eat healthier food options (Weatherspoon, 2015). But introduction of a garden-based learning environment requires a significant amount of effort by the staff and administration, increased demand on available funds and ensuring adequate space for garden viability. In order to strengthen the capacity and resiliency of a recently introduced program, communicating and involving the parents and greater community in the program can be of vital importance (Burt, 2018).

Program managers and school administration need selective and purposeful criteria to ensure that the community's perception of the program is appropriate and thoughtful. To increase the impact of the lesson plans and to ensure that the practices established in the

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classroom continue in the home, the program should seek ways of connecting with the families, such as hosting food nights highlighting the vegetables being grown in the classroom (Knapp, 2019).

Facing increased urbanization and limited access to safe green spaces, school gardens can function as a center for community gatherings and events, provide shaded areas for play and allow for reconnection to nature (Rilla, 2013). In order to be able to reap those benefits, a garden must be maintained to ensure crop viability but to also evolve to meet the needs of the community it is there to serve (Burt, 2018). Garden-based learning programs can make students ambassadors of healthy food options to their family and neighborhood community galvanizing interest in participation, support and increase value perception (Knapp, 2019).

Inequality in food access and transportation options increases the burden parents may face in providing healthier food access to their families and limit their time availability to participate in school garden functions. Supporting a collaboration between classroom lessons and using this knowledge at home has shown an increase in food and vegetable consumption for both the child and family members (Heim, 2011).

3. Project Approach and Intervention Methods

The project approach was focused upon expanding the pieces of garden based learning being put in place for the 2019-2020 school year and to take the lessons from the school gardens into their homes. The literature shows that children can become advocates within the household for healthier dietary choices and for engaging in sustainable activities. Through this project, I expected to increase community resilience in the social and environmental areas, and develop a program that would provide either surplus food or an economic opportunity for the community. In addition to these changes, I intended to improve food education of the children currently enrolled in Martin Luther King and discover intervention methods to increase their food access at home. In addition to these changes to food habits, I believe two aspects of my project, square foot garden boxes and pollinator garden, developed a sense of place within the community that can be used to increase community engagement in a larger scale garden project.

The process used to develop and implement my culminating experience project began with ensuring the children were gardening in the classroom and that those lessons were incorporated with home based individual square foot garden. We utilized ASU interns from The Farm at South Mountain to serve as instructional leaders every other week. This had a two-part objective in that the ASU interns demonstrated to the teachers both the process and the outcome of garden-based learning, as well as alleviated the teachers from having to change their lesson plans for the current year. We were lucky enough to have one of the interns return from the fall semester to teach again this spring and I participated in the sessions as we moved into the life cycle of the butterfly for the remaining weeks of the semester.

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To encourage the development of healthy eating habits, each child was provided 4 seedlings, such as carrots, peas and lettuce, to plant in their square foot garden once they got home. These 240 boxes were built with the volunteers I was able to secure from the American Legion and South Mountain Academy High. Lowe's agreed to cover the cost of materials after my meeting with the regional office and reaching out to the corporate office. Since the students were not able to participate in the box construction, they were able to paint and personalize the boxes in art class. At this point, we had completed a full semester of garden lessons with each grade surrounding the journey a seed takes to becoming a plant and felt confident in sending them to the student's home. To build up momentum and energy for the spring semester, we elected to distribute the boxes during their Winter Celebration event at the end of the semester. It was great opportunity to introduce some of the project initiatives to the students' families and explain my role.

For those who were unable to take their box home, we conducted two home delivery trips in January. We used this time to conduct our first home interviews and follow up on any volunteer interest. During our home visits, the children were quick to share their boxes and discuss how excited they were to eat the vegetables once it was time to harvest. In particular, this aspect of the project provided an entryway conversation between myself and the parents on how to replicate classroom activities at home, as well as what behavior differences the parents were seeing carry over. Given the feedback from the parents, we introduced an Instagram contest in which students would post a photo of their garden over their spring break recess.

A school survey was sent out prior to the spring semester that included questions pertaining to the school garden program. There was a second survey sent out the first week of March with follow up questions on the garden program and requesting input for the planned visioning workshop, but those results were not collected due to the school temporarily shutting down.

The secondary initiative for my project was to work with the PTO coordinator to establish a long-range plan that involved the parents in the garden-based learning. This initiative aspired to create future parent-teacher collaborative options in the garden space located behind the school. Community engagement and support is vital for the success of this program and to ensure its continuation beyond this project and the tenure of the current principal. It will require the volunteer hours of parents, organizations and businesses, as well monetary contributions. Gardens require planning and manual labor that the school is not financially equipped to sustain. By increasing participation for the greater community and encouraging them to express their interests and visions, the garden plot can be enriched through their contributions and insight.

To this end, I conducted several meetings with organizations that have established similar community-based gardens in South Phoenix, such as Spaces of Opportunity and First Things First. These organizations are successful examples of what could be possible at ML King Elementary given the right level of community interest. In addition, I successfully conducted one of three planned tours with members of the Parent-Teacher Organization (PTO) and other interested parties to showcase the properties and provide fodder for the

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planned back casting sessions. While not based in a school setting, given their proximity to the neighborhood and school, they provided a relatable setting and context. Through these events, I sought to align interest and opportunities with the parent community, with the understanding that community gardening is not the only activity the space can provide.

It was brought to our attention that a focus on culturally specific and indigenous plants was of high interest in the community and proved to be a valuable talking point in our meetings and home visits. To this end, I collaborated with two local desert foragers. They agreed to adopt an available garden box and utilized plants that tell a narrative specific to the region and history.

The third initiative for my project was to design, complete and register a Monarch Butterfly Waystation at the school. In addition to being a tangible totem in engaging with students and drawing in the community, the monarch butterfly is the school's mascot. During the spring semester, each homeroom was provided a kit that contained 10 caterpillars, in which the students were able to witness and document the metamorphous process. The butterflies were then released into the garden space the final Friday of class before spring break.

The intention of this aspect of the project was the increase of social connectivity and pride and as a means to expand the biological diversity of the school garden, increase the monarch butterfly and pollinator population, and decrease the surface and air temperature of the school courtyard. While representing the collaborative interaction of the school, business partners and myself, the feature increased the visual beauty of the area and highlights how urban blight can be mitigated with similar physical structures.

For the project work, I used three frameworks to ensure that sustainability impact remains the center focus of the project.

Gibson's Sustainability Principles (Appendix A, Fig. 1) was used to design the project's overarching initiatives, actions and goals to ensure sustainability outcomes, both current and potential. The project's vision was rooted in the Gibson's assessment of a functioning socio-ecological relationship, in which a student gained increased perspective of how their activities impacted the world around them. The long range goals of both the school and The Farm at South Mountain expanded beyond my project deliverables to envision a collaborative space in which multiple generations gathered and grew produce either for consumption or for sale. During my community interactions and meetings, I ensured that the agenda addressed today's needs but focused on this achieving this end. Interwoven in the weekly class lessons and in my presentations to community members, I instilled the following principles: socio-ecological civility and governance, resource maintenance and efficiency, and intra/inter-generational equity.

To increase the sustainability outcomes of my project deliverables, I utilized the ICOR Resilient Community Framework (Appendix A, Figure 2) as a model to increase the access and agency of the community engagement aspect of the project. The fundamental spirit of the stakeholders' vision and the genesis of this project was the belief that this school community could build and sustain a support hub centered in the outdoor garden space. By gathering together the members and organizations on a regular basis, there would be a

recognition of the assets and skills already imbedded in the community. Identifying those strengths first would empower the members to view vulnerable areas from a positive position. For this project I focused on building resilience and capacity in the prepared system portion of this framework. To achieve this end, I focused my networking project deliverables on local community organizations, such as Unlimited Potential and First Things First, that are active in South Phoenix but do not currently have a presence at the school.

To facilitate the visioning sessions with the PTO, I relied upon Robert Newell and Rosaline Canessa's framework, Sense of Place (Appendix A, Figure 3). This method was effective at setting the stage for planned workshop at the end of March and helped direct the agenda and questioning prompts during the early meetings. As mentioned earlier in this paper, I conducted tours of nearby examples and had a planned meeting with TUSD to discuss how their gardening project evolved with school very similar to Martin Luther King to encompass over two dozen schools.

4. Outcomes/Findings

When I first was introduced to the garden space at Martin Luther King elementary, I was impressed by the available acreage, current garden box infrastructure and the desire of the school principal to expand her students' perspective, as well as increase the emotional and physical support they greatly needed. As with any first perception, my understanding did not include all of the factors that had kept this program from being functional. As I grew to understand the political landscape and the impracticality of volunteer reliance, I had a better sense for the challenges being faced by a single person trying to implement a new learning program tool that might be viewed by others as extracurricular or academic fluff.

At the onset of presenting this project to the stakeholders, I wanted to ensure two things: that there was something physically tangible at the end and that community awareness and support was in place moving into the next school year.

The project was successful in bringing a wide variety of outside support into the school program. Given their current staffing, there was limited resources the principal could utilize to bring these factions together. My work with the PTO made them feel included and excited to talk about the potential of the space, which increased participation and input. Through my networking with community organizations, I was able to determine where agendas and resources overlapped. By highlighting our mutual mission statement points, I provided incentive for these organizations to either increase or establish a footprint at the school. I was able to use the time dedicated to this project to secure funding and volunteer hours that might not have uncovered due to limited resources.

I do feel the most important aspect of this project was having the students physically garden and we made tremendous strides in supporting that initiative. With the irrigation for the smaller homeroom boxes complete, that will be an exciting new feature for the next school year. As the children were actively gardening, the entire school staff was engaged with the objectives of the bi-weekly lessons and shown interest in the next step of the plan. It was exciting to know, that despite the school being closed, students were able to

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continue to garden and learn in their square foot gardens. This addition to the original scope of the project has proved to be a tremendous asset for the program as a whole.

There was significant implementation of foundational parts dedicated to expanding the garden infrastructure. Through my networking, H&M Landscaping donated time and materials to install the irrigation system for the outdoor homeroom garden boxes. Those boxes will be installed over the summer break and will be put into use next school year.

There was significant progress in the overall flow of the school lessons over the course of the year and we found ways in which the students could duplicate the activities in the square foot garden boxes. It was rewarding for everyone involved in this project to find out that the pilot students from Spring 2019, who are now 4th graders at Percy Julian Middle School across the street, requested their own recreational garden club.

There was great traction in building partnerships with organizations that are supportive of garden based learning and the project deliverables implemented at the school. I conducted several meetings with the PTO that have also included Percy Julian Middle School staff in which we were able to envision ways of expanding the garden program to include both schools. I have expanded my network to include First Things First, Unlimited Potential and Promise Arizona. Unlimited Potential has the greatest opportunity of impact within the school, as they have community members trained in ethical engagement and are already conducting home visits in the community surrounding issues of healthcare and infant development. They agreed to partner with the square foot garden box interviews and data collection.

After an array of operational setbacks surrounding the milkweed plants, the pollinator garden was successfully registered and is a flourishing garden that is visible from the parking lot. The butterfly release that was held before what became the final day of school for the year was filmed and I created a video highlighting the event.

Due to the implemented actions by local, state and federal agencies to decrease the spread of the COVID-19 virus, the majority of my project outcomes are paused. I had hoped to expand the project to supplement this lost interaction with a variety of online lessons, interactive content and increase interactions through social media tools. With schools now closed for the duration of my project timeline, along with the increased stress levels being experienced by school administrators, teachers and the community as a whole during this unique time, I determined the best course of action was to allow the project to fail and determine what I could have done differently and where I can improve moving forward.

Unfortunately, a significant portion of my project was scheduled in March, falling in line with the school schedule. We had planned a dedication ceremony planned at the first week of April to introduce the registration of the Monarch WayStation, complete with an official plaque. This time period also encompassed the final two back casting sessions, which were intended to design and complete the community vision report for the principal. There was a planned meeting and online tour with Tucson Unified School District and the University of Arizona, and the finalization of the Instagram photo contest.

5. Recommendations

The successful delivery of the square foot gardens was an energizing factor of this whole project. During the time we were out delivering the remaining square foot gardens, the children were excited to see their principal driving down their street and those we spoke to were thrilled to show us their garden boxes. I know that when I was a child, the last thing I would have expected was a visit from my principal. I believe that type of energy does not dissipate with an early close of the school year. I am willing to continue to invest my time in moving this program forward.

With that in mind, I am recommending that we proceed with the delayed sequence of events, but sync them with the start of the school year. I have completed a video of the school butterfly release that we can use during the event introducing the registration of the butterfly garden, tying those two events together. I have established funding from the American Legion for another round of caterpillars as well.

Due to our success with the square foot gardens, I am currently having conversations with Lowe's executive office to sponsor and build another round of square foot gardens for the incoming kindergarteners, with a surplus for new or transfer students. The ability of the students to continue to garden at home during the school closure was a positive outcome of their direct sponsorship. Continuing to expand upon this program with online user guides, mini-lessons and the ability of studen

First Things First is the original grant funder that installed the unused 16 garden boxes located in the back of the school. Their original grant had included a part time teacher/gardener that was responsible for running the garden learning program. During our meetings, while they understood that funding had been pulled for that position, they were surprised that the space was not being used as an outdoor classroom. I believe there is an opportunity to increase the engagement with this organization and obtain future grant funding to get that position filled again. They were planning on attending the meeting with Tucson Unified School District and the University of Arizona, and are motivated to be a part of this program as an intervention tool.

Through our home visits and various meetings, there is a palpable energy in the community to support and engage in the school's initiatives. There is a space for a non-profit or organization to serve as a foundational umbrella to unite the organizations, and decrease the need for the school to fund any administrative position. I will continue to work with The Farm at South Mountain to establish a non-profit, which will expand our grant funding options.

6. Conclusions

Since the project had to be discontinued due to school closure and social distancing practice, I am lacking a true conclusion to the project. I do feel that there was real traction made in moving the stakeholders' long range vision into reality but I am left bereft of

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complete answers. I recognize that there was significant progress made on the infrastructure of the garden boxes, but that is only a slight improvement from the original state. School gardens are more than boxes, as previously stated. Many of the project social elements were in midstream when the disruption occurred, so while the preliminary actions netted the responses the project team was aiming for, without another round of follow through, the overall support network will fall back to its original state. I believe that if the project team is able to implement my recommended actions, we can continue to move forward in our mission/vision.

Community interest and energy was uncovered and throughout this project, the parents were eager and willing to help out where they can. The one thing holding them back was a lack of direction and guidance on where they could participate or volunteer. It highlighted the need for a dedicated part time garden teacher that could guide the classes and coordinate with parent volunteers on a calendar schedule.

While the school has made great strides, there is an opportunity for another student to move this project forward. This could occur in the physical garden, lesson incorporation or community networking.

7. Appendices and Acknowledgements

Box 1. Core generic criteria for sustainability assessments

Socio-ecological system integrity

the requirement:

Build human–ecological relations to establish and maintain the long-term integrity of socio-biophysical systems and protect the irreplaceable life support functions upon which human and ecological well-being depends.

illustrative implications:

- need to understand better the complex systemic implications of our own activities;
- need to reduce indirect and overall as well as direct and specific human threats to system integrity and life support viability.

Livelihood sufficiency and opportunity

the requirement:

Ensure that everyone and every community has enough for a decent life and that everyone has opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity.

illustrative implications:

- need to ensure provision of key prerequisites for a decent life (which, typically, are not now enjoyed by those who have little or no access to basic resources and essential services, who have few if any satisfactory employment opportunities, who are especially vulnerable to disease, or who face physical or economic insecurity);
- need to appreciate the diversity, and ensure the involvement, of those whose needs are being addressed.

Intragenerational equity

the requirement:

Ensure that sufficiency and effective choices for all are pursued in ways that reduce dangerous gaps in sufficiency and opportunity (and health, security, social recognition, political influence, and so on) between the rich and the poor.

illustrative implications:

- need to build sustainable livelihoods for all, including practically available livelihood choices and the power to choose;
- need to emphasize less materially- and energy-intensive approaches to personal satisfactions among the advantaged, to permit material and energy sufficiency for all.

Intergenerational equity

the requirement:

Favour present options and actions that are most likely to preserve or enhance the opportunities and capabilities of future generations to live sustainably.

illustrative implications:

- need to return current resource exploitation and other pressures on ecological systems and their functions to levels that are safely within the perpetual capacity of those systems to provide resources and services likely to be needed by future generations;
- need to build the integrity of socio-ecological systems, maintaining the diversity, accountability, broad engagement and other qualities required for long-term adaptive adjustment.

Resource maintenance and efficiency

the requirement:

Provide a larger base for ensuring sustainable livelihoods for all, while reducing threats to the long-term integrity of socio-ecological systems by reducing extractive damage, avoiding waste and cutting overall material and energy use per unit of benefit.

illustrative implications:

- need to do more with less (optimize production through decreasing material and energy inputs and cutting waste

outputs through product and process redesign throughout product lifecycles), to permit continued economic expansion where it is needed, with associated employment and wealth generation, while reducing demands on resource stocks and pressures on ecosystems;

- need to consider purposes and end uses, recognizing that efficiency gains are of no great value if the savings go to more advantages and more consumption by the already affluent.

Socio-ecological civility and democratic governance

the requirement:

Build the capacity, motivation and habitual inclination of individuals, communities and other collective decision-making bodies to apply sustainability requirements through more open and better informed deliberations, greater attention to fostering reciprocal awareness and collective responsibility, and more integrated use of administrative, market, customary and personal decision-making practices.

illustrative implications:

- need governance structures capable of integrated responses to complex, intertwined and dynamic conditions;
- need to mobilize more participants, mechanisms and motivations, including producers, consumers, investors, lenders, insurers, employees, auditors, reporters
- need to strengthen individual and collective understanding of ecology and community, foster customary civility and ecological responsibility, and build civil capacity for effective involvement in collective decision-making.

Precaution and adaptation

the requirement:

Respect uncertainty, avoid even poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise, and manage for adaptation.

illustrative implications:

- need to act on incomplete but suggestive information where social and ecological systems that are crucial for sustainability are at risk;
- need to design for surprise and adaptation, favouring diversity, flexibility and reversibility;
- need to prefer safe fail over fail-safe technologies;
- need to seek broadly comprehensible options rather than those that are dependent on specialized expertise;
- need to ensure the availability and practicality of back-up alternatives;
- need to establish mechanisms for effective monitoring and response.

Immediate and long term integration

the requirement:

Apply all principles of sustainability at once, seeking mutually supportive benefits and multiple gains.

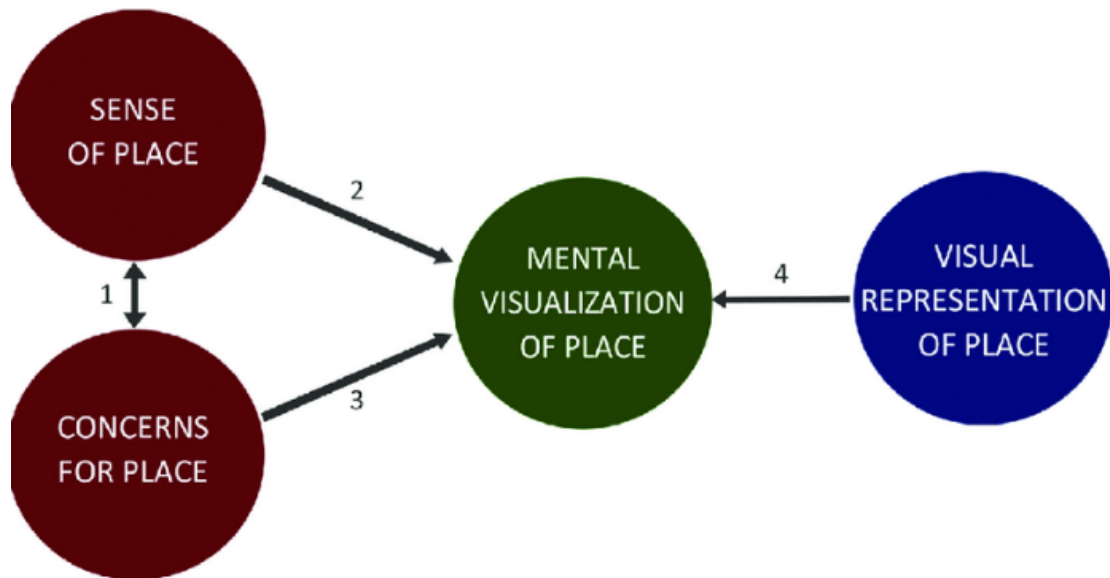
considerations:

- integration is not the same as balancing;
- because greater efficiency, equity, ecological integrity and civility are all necessary for sustainability, then positive gains in all areas must be achieved;
- what happens in any one area affects what happens in all of the others;
- it is reasonable to expect, but not safe to assume, that positive steps in different areas will be mutually reinforcing.

illustrative implications:

- need positive steps in all areas, at least in general and at least in the long term;
- need to resist convenient immediate compromises unless they clearly promise an eventual gain.

Source: Gibson *et al* (2005)



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