GOAL I

To create learning experiences that **bridge** and/or connect across conventionally **distinct disciplines**.

GOAL II

To find, support, empower, and connect **champions** with and in the community.

The champions can be (but are not limited to) librarians, parents, industry professionals, teachers, STEAM experts in a community, public intellectuals, etc.

GOAL III

To create learning experiences that bridge/connect across **learning contexts**.

The contexts can be home, school, libraries, after-school, virtual, etc., resulting in a stronger dialogue/connection between informal and formal STEAM learning.

GOAL IV

To create **novel, playful learning experiences** that empower learners and mediate tensions between unstructured and structured STEAM learning experiences.

Playfulness is also about allowing youth to take risks and not be afraid of failure ("playing" with data; "playing" with known facts to invent new things; etc).

GOAL V

To promote and study the development of **youth orientation** toward STEAM learning and technology.

Steering youth to see themselves or identify as scientists or computational do-ers, so that they feel that they belong to the communities of scientists, civic-minded citizens, etc.

ACTIVITY CLUSTERS ⟶ OUTCOMES ⟶ GOAL

Develop a "pipeline" or mechanism to partner with local schools and neighborhood youth centers for play-testing and implementing the cross-discipline curricula. This pipeline should be integrated as seamlessly as possible with existing "feeder" programs for schools and afterschool programs (rather than being developed apart and outside of existing constraints).

Conduct literature review of existing research on problem-based learning (typically interdisciplinary learning approach).

Design a prototypical Data literacy + sports "curriculum" or series of lesson plans, including pre-/post-assessment and formative assessment throughout the curriculum.

Design a prototypical math/CS + art "curriculum" or series of lesson plans, including pre-/post-assessment and formative assessment throughout the curriculum.

Design a prototypical environmental science + landscape/sustainable architecture and urban planning "curriculum" or series of lesson plans, including pre-/post-assessment and formative assessment throughout the curriculum.

Investigate and apply for grants whose research goals will drive toward the Outcomes.

Establish cross-walk of learning outcomes for various disciplines/subjects. For example, comparing the skill of argumentation in science and how it relates to language arts and literacy frameworks.

Establish partnerships with local school administrators, teachers, and policy leaders with the goal of developing policies that support cross-disciplinary projects and learning outcomes in their schools.

RESOURCE NETWORK

A sustainable recruitment pipeline/process for partnering with local schools and neighborhoods (e.g., process for meeting with administrators/teachers, parents and community members for presentations, etc).

DESIGN

Prototypical interdisciplinary curricula to demonstrate the viability of a process of developing interdisciplinary learning experiences in the future.

ASSESSMENT

Pre-/post-assessments for the interdisciplinary curricula. Best practices of assessing learning across distinct disciplines - determining how alternate assessments can be used to inform college admission.

POLICY

Process for developing cross-disciplinary learning experiences.

To create learning experiences that **bridge** and/or connect across conventionally **distinct disciplines**.

ACTIVITY CLUSTERS ⟶ OUTCOMES ⟶ GOAL

Develop a community asset map using participatory design methods with champions in PG County that are already working with various units at UMD.

Conduct literature review of existing research on problem-based learning (typically interdisciplinary learning approach).

Develop a roadmap to capacity building and identify where capacities can be shared, leveraged, and what needs to be added.

Bring researchers who facilitate informal learning (such as learning scientists, library researchers, museum researchers, youth development, technology experts) to train PG community champions on facilitation and mentoring.

Develop customizable facilitation guide for PG community champions, which can be used an adapted by other communities nationwide.

Investigate and apply for grants whose research goals will drive toward the Outcomes.

Develop policy briefs that are based on community mapping and capacity building that informs county, school district policy, but later can be expanded to national policy.

RESOURCE NETWORK
A co-designed community asset map that identifies the champions in the community and their roles, and what was needed to help them become a champion in our community.

RESOURCE NETWORK
A map of community capacity and challenges that can be offered by various champions (e.g. partnerships, technology acquisition, technology use, space, staffing, etc.).

DESIGN
A facilitation or mentoring guide that will help champions in the community to serve as STEAM mentors to young people that is based on the Resource Network Outcomes above.

ASSESSMENT
Evaluation measures for the facilitation/mentoring guide that can help champions to assess the impact of their (and their community's) mentoring activities on young people.

POLICY
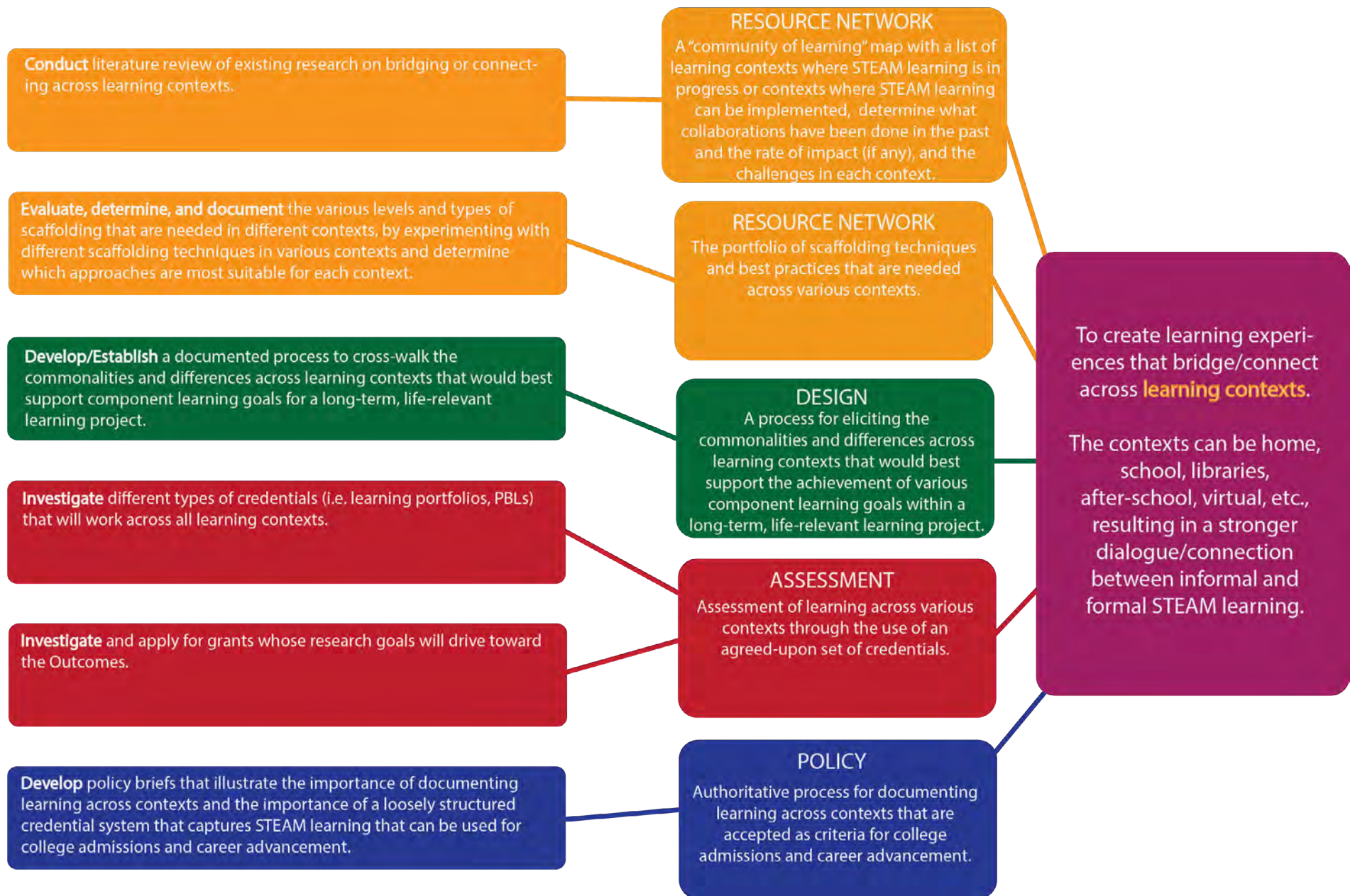A best practice framework for gaining buy-in and sustaining champions in the community which includes community partners, families, school administration, and teachers/librarians.

To find, support, empower, and connect **champions** with and in the community.

The champions can be (but are not limited to) librarians, parents, industry professionals, teachers, STEAM experts in a community, public intellectuals, etc.

ACTIVITY CLUSTERS ————————————————→ OUTCOMES ——————————————→ GOAL

Conduct literature review of existing research on bridging or connecting across learning contexts.

Evaluate, determine, and document the various levels and types of scaffolding that are needed in different contexts, by experimenting with different scaffolding techniques in various contexts and determine which approaches are most suitable for each context.

Develop/Establish a documented process to cross-walk the commonalities and differences across learning contexts that would best support component learning goals for a long-term, life-relevant learning project.

Investigate different types of credentials (i.e. learning portfolios, PBLs) that will work across all learning contexts.

Investigate and apply for grants whose research goals will drive toward the Outcomes.

Develop policy briefs that illustrate the importance of documenting learning across contexts and the importance of a loosely structured credential system that captures STEAM learning that can be used for college admissions and career advancement.

RESOURCE NETWORK
A "community of learning" map with a list of learning contexts where STEAM learning is in progress or contexts where STEAM learning can be implemented, determine what collaborations have been done in the past and the rate of impact (if any), and the challenges in each context.

RESOURCE NETWORK
The portfolio of scaffolding techniques and best practices that are needed across various contexts.

DESIGN
A process for eliciting the commonalities and differences across learning contexts that would best support the achievement of various component learning goals within a long-term, life-relevant learning project.

ASSESSMENT
Assessment of learning across various contexts through the use of an agreed-upon set of credentials.

POLICY
Authoritative process for documenting learning across contexts that are accepted as criteria for college admissions and career advancement.

To create learning experiences that bridge/connect across **learning contexts**.

The contexts can be home, school, libraries, after-school, virtual, etc., resulting in a stronger dialogue/connection between informal and formal STEAM learning.

ACTIVITY CLUSTERS ⟶ OUTCOMES ⟶ GOAL

RESOURCE NETWORK

An understanding of how young people learn in playful learning experiences that can move seamlessly across both structured and unstructured learning environments.

Conduct literature review of existing research in novel, playful learning experiences across structured and unstructured STEAM learning contexts.

Observe, evaluate, and describe different types and aspects of playful learning that can occur across structured and unstructured contexts by experimenting and innovating with known and unknown elements and relationships between learning and play.

DESIGN

A process or theoretical framework for defining "playful learning" determining which aspects of a learning experience/environment are playful.

Investigate and apply for grants whose research goals will drive toward the Outcomes.

ASSESSMENT

A suite of tools that assesses the types of learning that result from "playful" learning experiences (e.g., practices like "designing experiments" are a skill or type of learning that require a level of comfort in "playing" with data, asking questions, etc).

Build/customize tools that assess the types of "playful" learning experiences that happen in both structured and unstructured environments by examining existing tools that assess STEAM learning (i.e. look at the work that has been done by Activation Lab).

POLICY

Research providing evidence of the importance of play in structured and unstructured learning environments.

Develop policy briefs that illustrate the importance of understanding the role that a playful balance between structured and unstructured learning experiences holds in promoting the learning goals of all children.

To create **novel, playful learning experiences** that empower learners and mediate tensions between unstructured and structured STEAM learning experiences.

Playfulness is also about allowing youth to take risks and not be afraid of failure ("playing" with data; "playing" with known facts to invent new things; etc).

ACTIVITY CLUSTERS ⟶ OUTCOMES ⟶ GOAL

Conduct literature review of existing research on youth orientation toward STEAM learning and technology (including identity development, learning pathways, etc.).

RESOURCE NETWORK

An understanding of how young people see themselves or identify as scientists or computational do-ers, and feel that they belong to the communities of scientists, civic-minded citizens.

Observe, describe, and evaluate how different types of youth identify (or do not identify) themselves as scientists or computational do-ers, and the reasons why it is as such.

DESIGN

A process or theoretical framework for promoting and advancing positive youth orientations toward STEAM learning and technologies (i.e. learning pathways).

Investigate and apply for grants whose research goals will drive toward the Outcomes.

ASSESSMENT

A suite of tools that assesses the various types, roles, motivations, etc., that students have/show when they face different types of learning experiences/environments (that give us insight on their perspectives and interests).

Build, customize, reliably test and implement existing and new tools that assess various types, roles, motivations, etc., that students have/show when they face different types of learning experiences/environments.

To promote and study the development of **youth orientation** toward STEAM learning and technology.

Steering youth to see themselves or identify as scientists or computational do-ers, and feel that they belong to the communities of scientists, civic-minded citizens, etc.

Develop policy briefs that document the various types of orientations that youth have toward STEAM learning experiences and careers.

POLICY

Research on the importance of STEAM learning experiences that encourage youth orientation towards STEAM, including publications of case studies and datasets that may influence policy and further research in this area , etc.