# Implementation of Pedagogical Knowledge and STEM Resources in Lessons, Classes, and Projects

Throughout the first year of the Arizona STEM Acceleration Program (ASAP) Fellowship, ASAP leveraged partnerships with approximately **30** community-based organizations, which collectively offered **hundreds of in-person and virtual professional development opportunities** for Arizona educators. Professional development opportunities encompass a broad spectrum of content areas, pedagogical repertoires, and lesson plan development strategies designed to help teachers expand and enrich their curricula and infuse engaging STEM-related content in their lesson plans and classroom activities. As a component of the fellowship, ASAP fellows were assigned to develop four new lesson plans applying the knowledge and skills acquired through the professional development training. Upon completion of the first project year, evaluators from the University Office of Evaluation and Educational Effectiveness (UOEEE) at Arizona State University together with ASAP leadership launched a post-program survey in which fellows were asked to recount and reflect upon whether, and how, they had applied new knowledge and skills garnered from the professional development sessions.

The purpose of this report is to examine the extent to which ASAP Fellows implemented pedagogical knowledge, resources, and/or materials garnered from their professional development experiences throughout the ASAP Fellowship.

## To What Extent Have Teachers Implemented Pedagogical Knowledge in Their Classrooms?

- Findings support the conclusion that fellows successfully implemented new and revised pedagogical knowledge and used the four lesson plans they created as part of ASAP.
  - » **94% of fellows** report that ASAP participation enabled them to implement new STEM-related pedagogical knowledge
  - » **91% of fellows** report that ASAP participation enabled them to implement revised STEM-related pedagogical knowledge.
  - » Nearly **80% of fellows** used at least three of the four lesson plans they developed in a classroom. **92%** used at least one of the lesson plans.

- » **Over 70%** of fellows reported using their lesson plan(s) in a class at least four times.

## To What Extent and in What Ways Have Teachers Implemented STEM Resources in Classrooms?

- Findings support the conclusion that fellows successfully implemented STEM resources covered in the PD workshops or provided by ASAP in their classrooms.
  - » **96% of fellows** agreed they implemented activities they learned about in PD workshops.
  - » **97% of fellows** agreed they utilized new methods of teaching they learned in the PD workshops.
  - » **64% of fellows** agreed they created additional lesson plans using the ASAP lesson plan template.
  - » **92% of fellows** incorporated what they learned in their PD workshops in their lesson plans; 84% in their projects.
- Fellows who **did** implement what they learned in their lesson plans and/or projects explained how they applied specific concepts or materials from the PD workshops and added new activities. Fellows shared how PDs inspired them to develop new lesson plans and expand their curriculum, helped refine their course and projects, and provided insights into developing STEM lessons and applying what they learned between and across disciplines.
- Fellows who **did not** implement what they learned, the activities, and/or the methods in their lesson plans, classes, and/or projects cited reasons such as the timing, accessibility, and applicability of the PD workshops, as well as time constraints, and lack of flexibility to modify pre-established curriculum.

## To What Extent has ASAP Provided Time and Materials to Design or Redesign STEM Lesson Plans, Projects, and/or Activities?

- Findings support the conclusion that ASAP provided time and materials to design or redesign STEM lesson plans, projects, and/or activities.
  - » **92% of respondents** agreed that ASAP had provided the materials needed to update their STEM lesson plans; 88% to update their projects, 85% to update other activities.
  - » **90% of respondents** agreed that ASAP had provided sufficient time and opportunity for them to design or redesign their STEM lesson plans; 87% to design or redesign their projects; 84% to design or redesign other activities.

The findings presented in this brief indicate that the objective was met among Y1 ASAP fellows in regard to fellows' implementation. Fellows largely affirmed having implemented a broad variety of pedagogical methods, activities, materials, and other information acquired through the professional development sessions, and having utilized these learnings in diverse academic contexts.