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## Revising Curricula Through the Use of Lesson Study

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## Revising Curricula Through the Use of Lesson Study

### Abstract

The lesson study methodology allows Extension educators to reflect on instructional practices and gather formative data that can be used to refine curricula. We trained Extension educators and formed a community of practice (CoP) of agents who used the lesson study method to inform improvements of a 4-H coding curriculum. The CoP planned and set goals, implemented the lesson, shared formative data, and strategized on how to improve subsequent lessons. They found the lesson study method to be an effective tool for engaging the specialist, other agents, and youths in meaningful dialogue so that curriculum goals could be met.

**Keywords:** [lesson study](#), [formative evaluation](#), [community of practice](#)

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## Introduction

Lesson study, an approach to teacher professional development used extensively in Japan to improve formal classroom instruction and student learning, was introduced to the United States in 1999 (Lewis, Perry, Hurd, & O'Connell, 2006; Takahashi & Yoshida, 2004). It involves the use of communities of practice (CoPs), wherein teachers work together to reflect on their instructional practices (Rock & Wilson, 2005). Research examining lesson study has shown improved student outcomes (e.g., achievement test scores), increased teacher professional confidence, and strengthened relationships among teachers (Lewis et al., 2006; Rock & Wilson, 2005).

Lesson study use in Extension has been limited. The use of lesson study as an approach to professional development for 4-H volunteers was proposed in 2008, and the first reported lesson study in Extension involved 4-H volunteers (Smith, 2008, 2013). Results of Smith's 2013 study indicated that the volunteers increased their knowledge and use of inquiry-based teaching strategies and improved their subject content knowledge. Schmitt-McQuitty, Worker, and Smith (2019) examined lesson study in 4-H across different geographic regions, content areas, and types of educators (Extension professionals and adult and teen volunteers). The educators reported enhanced development in content knowledge, confidence, lesson planning and implementation skills, relationships with other educators, attentiveness to students, and data-driven decision making (Schmitt-McQuitty et al., 2019).

Along with its relevance as an educator professional development tool, lesson study is useful when a curriculum is being developed or is under review for revisions (Lee & Ling, 2013; Rock & Wilson, 2005). The

technique may be particularly valuable in Extension when developers of a curriculum, such as Extension specialists, need direction on revisions or improvements from Extension educators who are responsible for implementing the curriculum. In this article, we describe the use of lesson study by our team of Mississippi State University (MSU) Extension specialists and agents to inform the revision of a newly developed 4-H curriculum for teaching coding skills to youths aged 5–7.

## Method

### Preparing for the Lesson Study

We conducted an in-service training on lesson study for Extension agents and specialists who were interested in using the lesson study process to inform 4-H curriculum implementation or revision. Participants were presented with background information on lesson study so that they could become familiar with terms and steps used in the process. Participants were trained on two formative evaluation tools used in the Schmitt-McQuitty et al. (2019) research on lesson study. The Facilitator Plus/Delta Reflection Tool and the Youth Clover Reflection Tool centered on the four main elements of 4-H (see Table 1). Participants worked in teams to present brief educational lessons to their peers. After each lesson, the educators completed the Plus/Delta reflection tool, and the participants who role-played as youths completed the clover reflection tool. Each participant gained experience as both a reflective practitioner conducting a lesson study and as a youth completing the clover reflection tool.

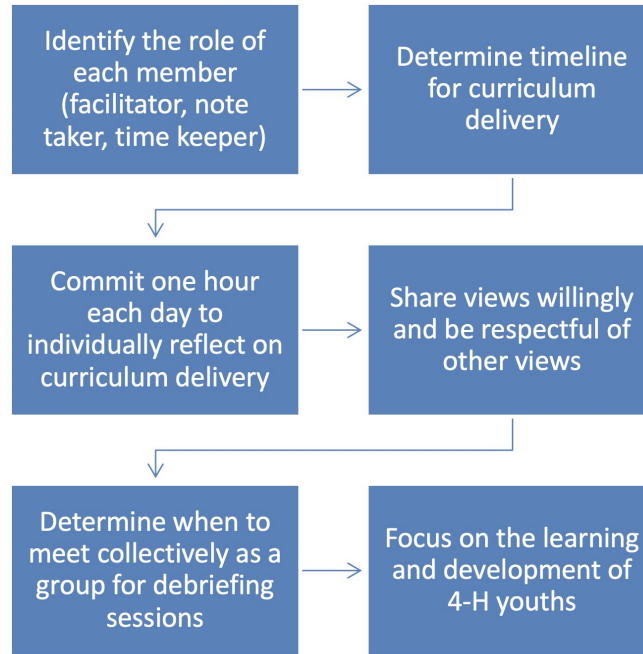
**Table 1.**  
Formative Evaluation Tools for Use in Lesson Study

4-H focus area	Facilitator (Agent) Plus/Delta	
	Reflection Tool	Youth Cloverleaf Reflection Tool
Head	Content goals for youths: What worked well? What needs improvement? What contributed to what happened? What could I do next time?	Describe what you learned in today's activity.
Heart	Intrapersonal goals for youths: What worked well? What needs improvement? What contributed to what happened? What could I do next time?	Describe how you felt while doing today's activity.
Hands	Applied skill goals for youths: What worked well? What needs improvement? What contributed to what happened? What could I do next time?	Describe something you got better at doing in today's activity.
Health	Interpersonal goals for youths: What worked well? What needs improvement? What contributed to what happened? What could I do next time?	Describe how you helped others in today's activity.

# Planning the Lesson Study

After the in-service training, three agents self-selected to become a CoP for the 4-H coding curriculum lesson study. The CoP members first established group norms (see Figure 1) that would guide the lesson study. Then they worked with the specialist to implement the lesson study.

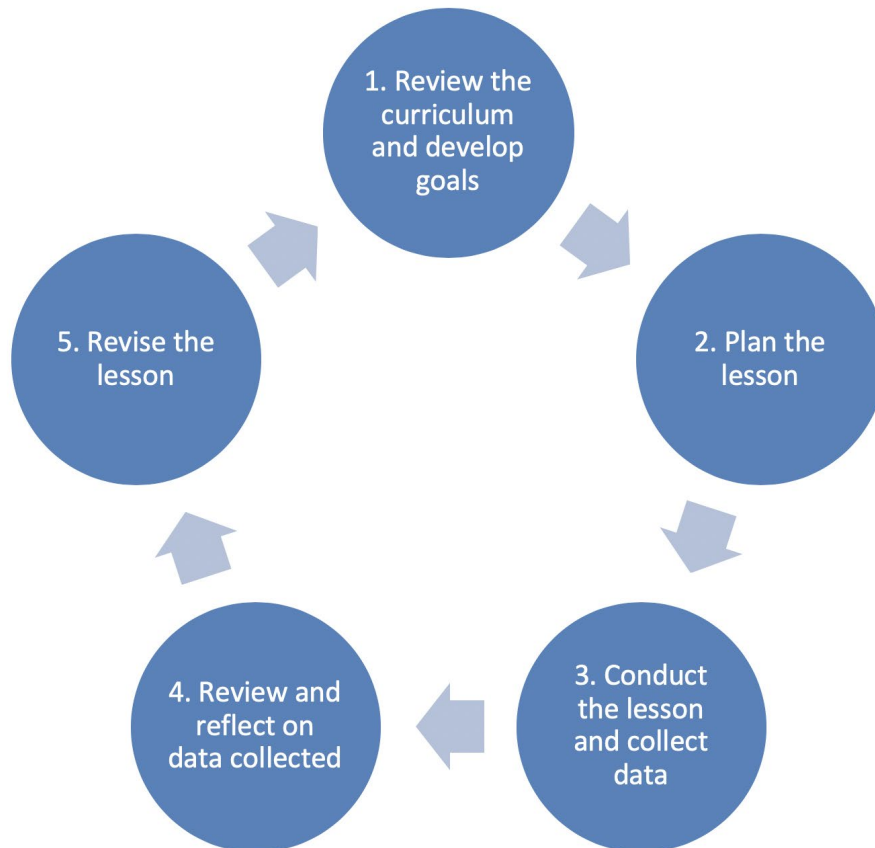
**Figure 1.**  
Lesson Study Community of Practice Group Norms



## Implementing the Lesson Study

To implement the lesson study, our team followed the five-step approach used by Schmitt-McQuitty et al. (2019). Figure 2 depicts the approach, and explanations of the five steps follow the figure.

**Figure 2.**  
Steps in the Lesson Study Process



*Step 1.* Before curriculum implementation, the CoP members reviewed the curriculum together in person to increase their knowledge and skills in the subject area. They also developed specific goals for implementation, such as to engage youths in age-appropriate coding activities.

*Step 2.* The agents planned to deliver individual lessons on the same day in each county to ensure that they could reflect on and discuss each lesson. The agents then worked to prepare the lesson and materials needed to conduct each lesson in their respective counties.

*Step 3.* Five lessons were implemented during a 3-day camp in each agent's county. Together, the three agents worked with 18 youths, ranging in age from 5 to 7 years old. After each lesson, the agents completed the facilitator reflection tool and collected the youth reflection tool from participants.

*Step 4.* The CoP met daily to reflect on youths' learning and lesson delivery. Each agent discussed the facilitator reflection tool and shared what youths wrote on the youth reflection tool. The agents discussed how they individualized instruction to help youths who found certain aspects of the curriculum difficult. The CoP discussed methods for improving on lesson delivery for the following day.

*Step 5.* To begin the curriculum revision, the specialist reviewed the formative evaluation tools and CoP meeting notes to determine needed revisions. Some of the changes identified through lesson study included reallocating time in the lesson for evaluation, offering youths more freestyle coding options (less directed), and including more opportunities for youths to work together. After curriculum revisions, the CoP will review the final version before statewide dissemination.

## Implications

Lesson study provides a step-by-step model that can be used by any Extension educator in any program area for curriculum revision. The CoP members' response to using lesson study for curriculum improvement was overwhelmingly positive. The lesson study steps reflect what many educators already do when implementing programs—review material and set goals, plan and implement lessons, collect evaluation data, and consider what to repeat or do differently in the future. However, through lesson study, agents reported having a voice in each lesson's construction that was responsive to the identified needs of their youths. They were able to take ownership of the material, even offering to implement suggested changes from other agents in upcoming workshops where the curriculum would be delivered.

The formative data led to a more sustainable and engaging youth-focused curriculum. It provided a bridge between the expertise and expectations of specialists and the reality of delivering the curriculum at the local level to diverse audiences. Promoting lesson study as a way to improve curricula through a CoP may lead to greater buy-in, which will ultimately lead to better programs and enhanced participant outcomes.

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