

# Grapple and Grow: Professional Learning on Encouraging Productive Struggle

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## PURPOSE

How can leaders organize professional learning around encouraging productive struggle, especially including a focus on advanced learners?

- Define sources and signs of productive struggle for advanced learners
- Analyze and evaluate distinctions between supporting productive struggle and providing “too much help”
- Outline potential professional learning experiences on session topics for teachers with whom they work

## BACKGROUND & CONTEXT

**Project LIFT:** teachers (grades K-3) implemented lessons designed to encourage demonstration of critical and creative thinking behaviors that may indicate high potential.

- Teacher reflections initially showed negative perceptions of students’ experience of challenge
- Productive struggle added as a focus to summer professional learning and reflection form
- 20 teachers implemented ELA and Math project lessons with written reflection following every lesson implementation.
- Researchers analyzed and coded 173 reflections on productive struggle.

### What is Productive Struggle?

→ An “effort to make sense of mathematics to figure something out that is not immediately apparent” (Hiebert & Grouws, 2007, p. 287).

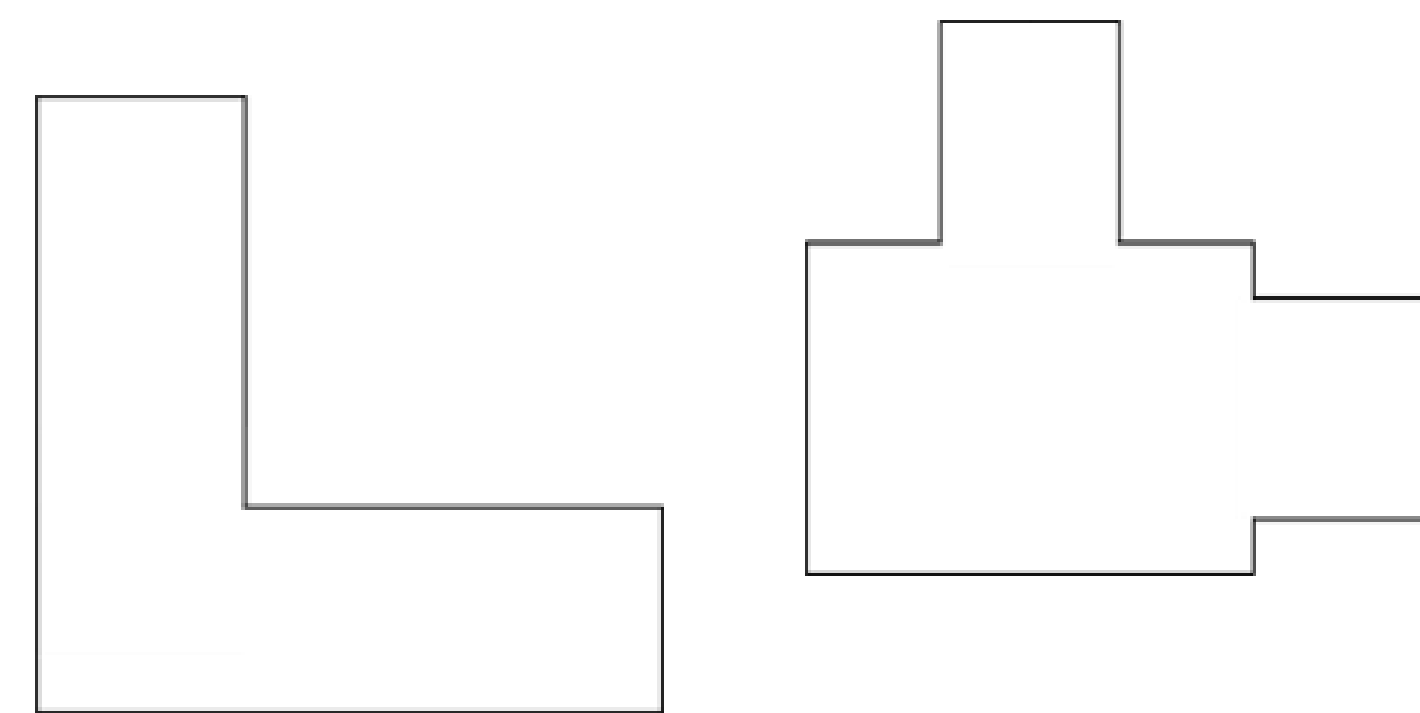
→ Warshauer (2015) noted that these struggles should be “challenging but fall within students’ reasonable capabilities” (p. 377).

## SOURCES & RESPONSES TO STRUGGLE

### Professional Learning Plan

- Explore sources of student struggle
- How do teachers recognize signs of struggle?

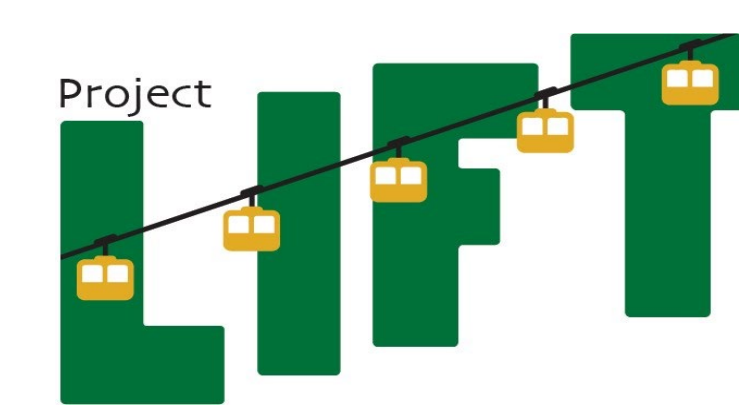
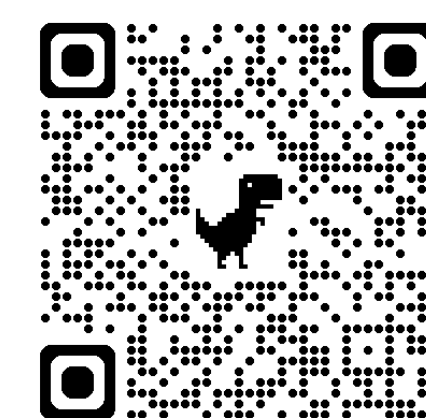
“Some students were quick to draw a line down the middle of the shape, however, **when asked to prove to me that it was split up equally, it provided them with a challenge.** They had to think about the task a little bit differently.” (Teacher 46, math lesson, April 2022)



### Professional Learning Plan Cont.

- What are the different response types to student struggle or lack of challenge?
- Analyze appropriate levels of help.
- Discuss what productive struggle can look like in the classroom.

Use the link or QR code to access more info and sample lessons from Project LIFT. <https://lift.uconn.edu/lift-conference-presentations/>



## SOURCES OF STRUGGLE

### TASK MANAGEMENT

Managing getting started/task details, language demands, and some advanced standards

*During the representation part, some had a hard time understanding what I was asking and where to begin. Some had a hard time thinking of how to show different combinations of the number.* (Teacher 52, math lesson, October 2022)

### APPLYING & EXPLAINING UNDERSTANDING OF A CONCEPT

Given some foundational knowledge, applying and explaining a concept in a new context or process

*A lot of my students could get the correct answer but being able to [explain] that they saw 10 and then subtracted 3 to get 7 was harder for them to communicate.* (Teacher 30, Math lesson, November 2021)

### IDEA GENERATION, ORIGINALITY, & FLUENCY

Producing multiple ideas, generating an original idea, or adding detail and elaborating on ideas; also included difficulty with flexible thinking and approaches to problem solving.

*[Students] were engaged in productive struggle, as they had to find multiple ways to solve the problem. One student stated, “I don’t know how to do this!” (music to my ears!)*(Teacher 51, Math lesson, December 2022)

### PATTERNS & PERSPECTIVES

Recognizing relationships, analyzing information for patterns, making comparisons to identify similarities and differences

*Some students had a hard time thinking outside of the box when creating their own pattern ...Some recognized that they could use a basic pattern but start at a random number to try to make it a little trickier to solve. Some also took time to figure out the exit ticket, where others could quickly determine the relationship between the numbers.* (Teacher 46, Math Lesson, May 2023).

## TEACHER RESPONSE FRAMEWORKS

### Teacher Response Continuum (Warshauer, 2015)

Affordance	Probing Guidance	Directed Guidance	Telling
Cognitive demand maintained or raised	Cognitive demand maintained	Cognitive demand lowered or maintained	Cognitive demand lowered

### Increasing Levels of Help (Rodgers et al., 2016)

Prompting	Prompting with Information	Directing	Demonstrating	Telling
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## QUESTIONS TO EXPLORE

### How Much Is Too Much Help?

→ “I was trying to get them to think about what they were doing or what to use rather than guide them too much. For some, they had difficulty moving forward from that and needed more scaffolding.” (Teacher 48, math lesson, November 2021)

→ “I told them to close their eyes as I read the problem. I stopped on the word on the action card that told the students to add or subtract and I would ask ‘does this action seem like it would make your pile of cupcakes get bigger or smaller?’ And then would follow up with does getting bigger mean we are adding or subtracting?” (Teacher 30, math lesson, May 2021)

→ *What do you think?*

### More Questions

- How can teachers encourage productive struggle just by being present? When do students just need to stand up and take a break?
- How can teachers help students develop a mindset to embrace productive struggle?
- How can teachers help alleviate frustration in students without reducing cognitive demand? Cue or hint without telling?

### Professional Learning Discussion Questions

- How can teachers avoid giving too much help?
- How can teachers work to press students’ thinking?
- How can teachers focus on making struggle productive instead of alleviating struggle?

## REFERENCES

- Hiebert, J., & Grouws, D. A. (2007). The effects of classroom mathematics teaching on students’ learning. In F. K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 371–404). Information Age.
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