**Write this commentary focusing on your lesson planning process.**

**1. Central Focus**

a. Describe the central concepts and focus for the unit.

Identifying, extending and describing geometric and number patterns.

b. Explain how your instructional plans **build on each other** to support the central concepts and focus of the unit.

The lesson starts by connecting to children’s prior experiences with repeating patterns. The task of identifying and describing a pattern is first practiced in the more familiar context of repeating patterns, and then in the new context of growing and shrinking patterns. By doing the same tasks of identifying, extending and describing first with repeating and then with growing patterns, children will see those same tasks in two different situations and be able to build more connections in their understanding of patterns.

The discussions and practice of extending growing patterns, and showing the number pattern for how many blocks are in each step also prepare children to learn about growing patterns with numbers in the next lesson.

**2. Knowledge of Children to Inform Teaching**

a. Describe any students with special needs that should be accommodated in the lessons (IEPs etc).

There are no children with IEPs in this class, but Reilly has difficulty in math with number sense and identifying patterns, so she may need extra support in the lesson.

b. Describe children’s prior learning and prerequisite skills related to mathematical development —Cite evidence of what the children know, what they can do, and what they are learning to do related to their mathematical development.

Children in this class as a whole have a strong background in number work, which will help them describe and analyze the number of shapes in growing patterns. They have also done work with repeating patterns in previous grades, so they will be familiar with how repeating patterns are shown and named.

c. Describe the range of understanding and skills that you have observed about the children’s mathematical development. For each of the 2 focus children that you have observed, describe their individual development and learning needs.

Child A likes to go beyond the lesson and create new and more difficult examples. She does well when she has a chance to apply her imagination to problems and new ideas.

Child B has a hard time recognizing patterns both in numbers and shapes, and will need extra support in this lesson. She sometimes makes errors in subtracting, and will often guess rather than trying to figure out how to solve a problem. She may need easier problems, and it helps if I or another teacher can listen to her during work time to ask what she’s thinking (to make sure she’s figuring out and not just guessing).

**3. Supporting Children’s Development and Learning**

a. Justify how your understanding of the children’s development and prior learning guided your choice or adaptation of learning experiences and materials. Be explicit about the connections between the learning tasks and children’s prior learning, assets, and research/developmental theory.

Because this class has a strong background, I chose to start with the repeating pattern question: “how much of a pattern do you have to show for someone else to figure it out?” rather than a more basic discussion of what a repeating pattern is. This gives them a chance to recall their prior knowledge while thinking about a new question of how to show a pattern to a partner.

The main class activities are based in showing patterns with physical manipulatives and then extending from those to prediction questions using both patterns and numbers. This provides both a more concrete and a more abstract way of looking at patterns, and it gives children a chance to build on concrete experiences when investigating new questions. The physical manipulatives and numerical patterns also provide different ways of understanding patterns (perceptual variability) so that children build a more connected understanding of growing patterns.

\*Check out the Piaget and Diens references!

b. Describe and justify why your instructional strategies and planned supports are appropriate for all of the children who participate in your learning segment, including individuals with specific learning needs.

Address the needs of children with IEPs or 504 plans, English language learners, and children at different points in the developmental continuum.

Provide at least one specific example of an activity or assignment that is differentiated to meet the needs of students at different levels within the class, and explain the differentiation strategy.

In the activities, I provide sample patterns that children can copy who are not as confident with making their own patterns, and I plan to suggest to some students (including Reilly) that they start with the example patterns to make sure they are starting with some things that are really patterns and aren’t too complicated.

I also let students who want to be creative and like a challenge make their own patterns. I’ll plan to group these children with others who will enjoy the challenge.

c. Describe common developmental approximations or misunderstandings that pertain to the learning experiences you are planning for the children and how you plan to address them.

Most children understand repeating patterns, but they may have difficulty with making predictions, so we’ll look at a few strategies for predicting hidden blocks. Some children have trouble figuring out the number growing patterns, so I’m going to share a way to use a table to help figure it out.

4. **Monitoring Children’s Learning**

Describe how your planned formal and informal assessments will provide evidence of children's understanding of the concepts and skills in the learning objectives throughout the learning segment**.** Describe how your assessments provide multiple ways for children to demonstrate their understanding.

By assigning individual written work where I can see how children extend growing patterns, I can see what each student is able to do. By walking around and observing while they are building patterns using manipulatives, I’ll be able to see if there are things that students know when they are able to more concrete tools that maybe they can’t show on paper. I’ll also be able to ask questions if I see something that looks wrong in their manipulative work, so I can find out what children are thinking when they choose how to build a pattern.

**5. Making Content Meaningful**. Identify examples from your lessons where students interact with the content in a multimodal and/or multi representational way**. Explain how these experiences help students to build meaningful mental models for or connections with the central concepts of the unit.**

By physically building patterns using pattern blocks, children will be able to connect to the geometric patterns in a very concrete way. By following a progression from concrete (manipulative) to abstract (pictures and numbers) in representing patterns, children will be able to connect the abstract ideas of repeating and growing patterns to concrete ways of showing and thinking about patterns.

**6. Inquiry.** Identify an activity in one of the lessons where students engage in active inquiry: investigating and sharing their ideas about the content. Explain in what way this activity is inquiry, and how the activity supports understanding for the central concepts and learning objectives.

In the activities, children are figuring out for specific examples how a pattern continues. By figuring out how to extend patterns, and talking about patterns with their partners, children can investigate and explore at their own level. Children also have the option of creating their own patterns, so they can explore how patterns continue by creating a pattern that they understand. By talking to their partners, they will be practicing how to describe a pattern in a way that would make sense to someone else.

**7. Supportive collaboration**. Identify examples from your lessons where students work together and/or share ideas to help build meaning and understanding for the content. Provide specific examples of strategies you will use to create positive supportive relationships between students in collaborative work.

In the activity, children take turns making patterns and asking questions of their partners. By asking children to take turns with the two jobs, I can make sure that each child has a turn to create patterns and to try to figure out patterns. I also have prepared sample patterns so that if someone in a group is making patterns in a way that doesn’t work well with their partner, I can ask that group to use the sample patterns before making up their own so that they have a chance to work with patterns I know are at an appropriate developmental level.

I’m also going to pair up children so that children who need more support can work with supportive peers, and children who want to invent patterns can work together.

**8. Technology** Discuss a place where you will use a technology tool to help you teach a lesson. If you did not have appropriate technology capability to use during lessons you taught, discuss a technology tool that would be appropriate to use. Give specific examples of how the technology tool is helpful for communicating the important ideas in the lesson.

In this lesson the Smart board was used to show examples of patterns to the whole class. By having prepared patterns, I can show an example of a pattern with parts covered to show what the prediction activity will look like. I also have several pages with virtual pattern blocks so that children can show the whole class on the Smart board what they invented or liked best.

**9. Citations** Provide citations for the source of all materials that you did not create (e.g., published texts, websites, and material from other educators). Label each citation with the number of the lesson that it was used in.

Math Expressions Grade 3, volume 1. Project director and author Karen C Fusion. Houghton Mifflin.