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Planning Learning Experiences in the Inclusive Classroom: Implementing the Three Core UDL Principles to Motivate, Challenge and Engage All Learners

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Abstract

In 2010, Vermette, Jones, Jones, Werner, Kline & D'Angelo published a lesson planning format, the PLE (planned learning experience) designed to help teachers meet the demands of the ever diversifying, ever demanding American secondary classroom (Vermette et al., 2010). This model helps teachers do more than simply create a "lesson plan" (a list of maneuvers for the teacher), but provides a framework for crafting authentic, meaningful and engaging learning experiences for all students. Given this great challenge, this article deconstructs the PLE in light of the three core principles of UDL (Universal Design for Learning) and considers the ramifications of each on student achievement. Specific recommendations in the area of curricular design and lesson implementation in the inclusive classroom will be explored.

Planning Learning Experiences in the Inclusive Classroom: Implementing the Three Core UDL Principles to Motivate, Challenge and Engage all Learners

Based on the assumption that curricular and instructional decisions must allow all students opportunities to experience educational success, both the PLE and UDL frameworks begin with an understanding that successful educational environments are those which enable students to grow cognitively and affectively. As Vermette et al. recognize, these setting do not develop accidently, rather

they are carefully and intentionally built and sustained around student strengths, interests and diversities. In the PLE, Vermette et al. (2010) have created a four-part structure to help teachers think through differentiation on a daily basis. They are (1) the lesson's learning target, (2) the exploratory activities, (3) the discovery tasks (4) the requirements for implementation. Each component of the PLE is written as a series of questions (12 in all) to be answered by the teacher. They are designed to help teachers thoughtfully and completely anticipate the diverse misconceptions, needs and interests of students. The PLE (figure 1) intentionally scaffolds thinking about intended student learning outcomes, interventions and assessments at various points throughout the learning experience.

What is Universal Design for Learning?

According to the National Center on Universal Design for Learning, universally designed instruction are "instructional goals, methods, materials, and assessments that work for everyone--not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs" (Universal Design for Learning, 2010). Universal Design for Learning (UDL) is not about changing curriculum for certain learners but about inventing and implementing curriculum that proactively accounts for diversities. The UDL framework has three interrelated parts based on student ranges in skill, need and interest. They are to:

(1) Provide multiple means of representation

(2) Provide multiple means of action and expression

(3) Provide multiple means of engagement

Below these frameworks will be synthesized to provide a useful, integrated UDL supported lesson planning model.

Synthesizing the PLE and UDL frameworks

Principle #1: Multiple Means of Representation

The first tenet of the UDL framework describes the "what" of learning. According to the National Center on Universal Design for Learning, this principle states that effective curriculum design allows for the intentional inclusion of multiple ways for students to negotiate conceptual meaning. By recognizing the process of learning is dynamic and active, this principle calls for lessons that help all students construct usable and transferable bodies of knowledge by their design.

In the PLE model, this is accomplished through a two-part format for conceptualizing learning experiences called "the two-step" (Flynn, Mesibov, Vermette & Smith, 2004). In the first part, "the exploratory phase" teachers implement a series of carefully crafted activities intended to "(1) grab the learner's attention (2) elicit prior knowledge, and (3) help students generate the basic understandings required during the lesson." (Vermette et al, 2010). Fitting with UDL principle 1, the exploratory phase is not a simple "hook" (a brief task meant to engage all learners for the rest of the lesson) but is a series of activities that reduce educational barriers and provide for multiple, diverse lesson entry points into instruction.

The second part of the "two-step" is called the "discovery phase." This phase of the lesson begins after all students have had the opportunity to access their prior knowledge and have had experiences though multiple, varied exploratory activities. In the discovery phase students are required to produce evidence of their understanding via an authentic task. According to Vermette et al (2010), though discovery tasks can take many forms, they must (1) enable students to actively construct new knowledge about the day's objectives and (2) provide tangible evidence of student thinking. As promoted in the first UDL principle, during the discovery phase, students must be given multiple avenues for assessment, each which accomplish the same objectives (because they meet the same

learning target). The goal of UDL, and planning with the PLE, is not to change conceptual objectives but provide multiple opportunities for students to reach the required standard.

Principle #2: Multiple Means of Actions and Expression

Implementing UDL principle #2 means that all students, regardless of ability, are given multiple ways to express their academic competency. The national UDL guidelines state that "in reality, there is no one means of expression that will be optimal for all students; providing options for expression is therefore essential" (Universal Design for Learning, 2010). In the classroom this translates into multiple assessment options that provide multiple, equally legitimate ways to demonstrate understanding.

The PLE lesson-planning model helps facilitate this UDL principle through its twin focus on assessments *for* learning and assessments *of* learning. Through out both the exploratory and discovery phases the PLE asks teachers to consider how both formative and summative assessment data will be collected and how it will be used. As advocated by Stiggins (2008) teachers should not be collecting data simply for grading purposes but to guide instruction and interventions as needed. By focusing on different types of assessments throughout the lesson, the PLE helps teachers insert or delete exploratory activities as needed, leading to greater levels of student understanding and cognitive growth.

The PLE also helps facilitate student choice and multiple assessment measures through it deliberate focus on the Six Facets of Understanding during the discovery phase of each lesson. Designed by Wiggins & McTighe (2005), the Six Facets of Understanding are six equally legitimate, diverse ways to demonstrate conceptual understanding. According to this model, students can explain, interpret, apply, demonstrate perspective, emphasize or demonstrate self-knowledge as evidence of their knowledge. Question #7 of the PLE asks teachers, "How does the discovery work align with the Six Facets of Understanding (Wiggins & McTighe, 2005)? By deliberating asking educators to reflect on students'

discovery work through the lens of the Six Facets of Understanding, teachers are empowered to design authentic assessment tasks that are better able to meet the needs of all learners.

Principle #3: Multiple Means of Engagement

The principles of Universal Design for Learning state that all students need to be engaged in lessons that motivate them to do the think work associated with cognitive gains. While a great deal of UDL focuses on designing instruction to grasp at extrinsic motivators, decades of research have shown that it is possible to strengthen students' intrinsic motivation to engage with schoolwork if curriculum is designed with an emphasis towards students' affective competencies (CASEL, 2002). Therefore, using multiple means of engagement to reach all students implies that teachers are planning with this dual objective in mind.

Kline and Vermette (2009) have a dual objective model for reaching all learners cognitively by concentrating on their affective abilities. This 'dual objective' approach is reflected in the PLE, beginning with the learning targets at the onset of the plan. Noting that there is both a cognitive and an affective learning objective that must be stated and woven throughout the lesson, the PLE explicitly calls for a multifaceted approach for engaging students. With this affective focus being as important as the cognitive objective, the PLE gives teachers the unique opportunity to improve cognition while helping children develop the fundamental skills needed for life effectiveness. The National Center on Universal Design for Learning explicitly calls for teachers to provide student options for developing persistence (guideline 8) and self-regulation (guideline 9). This is already included in a lesson planned with the PLE.

Question #4 in the exploratory phase of the PLE also helps teachers to plan with this dual objective in mind. In calling for specific ways the lesson will motivate cognitively (by developing student interest, and utilizing prior knowledge) and affectively (by building classroom community and fostering positive relationships with every student during instruction), the PLE ensures that there are multiple means of engagement embedded in the lesson. These multiple entry points, not only hook more

students initially, but it allows them to make the meaningful connections necessary for application and meaningful transfer of ideas.

The PLE in action: A case study in 7th grade mathematics

After considering the alignment of the PLE and the UDL three core principles, the remainder of this piece will consider a case study of the PLE in action. Designed to highlight how a synthesis of these two models can benefit instruction in the inclusive classroom, this PLE (figure 2) is a 7th grade mathematics lesson adapted from the Connected Mathematics Series (Lappan, 1998). This lesson took place during a statistics unit- the first unit of the school year. The table below shows how the elements of this lesson align to the PLE and UDL frameworks.

	Component of the PLE	Actualized in the case study
Principle #1: Multiple Means of Representation	- (3) How will the learning experience begin in a way that engages each student and forces connections to prior knowledge? - (4) How will you ensure that all students are ready to meet this learning target by: (a) Developing interest in this lesson (b) Using prior knowledge (c) Building classroom community	- This investigation is based on student data about travel times to school. It is the same data students considered in an early investigation about stem and leaf plot. - The mathematics is presented in multiple modes (both a coordinate graph and table). - Students begin this

	(d) Fostering positive relationships with every student during instruction?	investigation by considering the advantages and disadvantages of each distribution. This is a task with multiple right answers and based heavily in students prior knowledge of graphical representations.
Principle #2: Multiple Means of Actions and Expression	- (5) What formative assessment data will you collect during the exploratory phase to guide instruction during this lesson? - (6) How will you use the formative assessment learning data to guide the rest of this lesson? What specific interventions will be planned to differentiate instruction? - (7) What authentic assessments *of* learning (discovery work) will students produce to demonstrate their	Evidence of student understanding in the exploratory phase is collected: - As students identify whether statements are true or false and work to create their own. - As students write their own set of five true statements about the coordinate graph or table. Evidence of student understanding in the discovery phase is collected:

	new understanding of the lesson's learning target? How does this align with the Six Facets of Understanding (Wiggins & McTighe, 2005)?	- As students describe how two different coordinate graphs can be used to compare relevant statistical information. - As students use statistics (mode, median and range) to describe each set of student data.
Principle #3: Multiple Means of Engagement	- (1) How will students show their understanding of both cognitively and affective learning target(s)? Why is it important? - (2) What state standards (performance indicators or relevant curriculum guide) will this learning target(s) address?	- During both the exploratory and discovery phases students work flexibly alone, in small groups and as a whole group using a "think-pair-share" cooperative learning model. - Formative assessment data about students' work in teams is collected through teacher observation and

		student reflections on their group work. This assessment data is directly tied to the affective learning target, "*I can work in collaboration with others to solve problems."*

Students bring a wide variety of interests, skills, experiences and needs to the classroom each day. Successful teachers are those who understand the range and sources of variance in human learning and can adapt classroom instruction to meet this diversity. Implementing the UDL framework as embedded in the PLE format is a promising way to make that happen, giving educators a framework to design cognitively rich, meaningful learning experiences for all. With focused and deliberate attention on designing curriculum to meet the needs of all learners, educators can use student diversity as a strength, and plan lessons that engage all learners.

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Figure 1

Planned Learning Experience (PLE) Format

Cognitive and affective learning target(s):_____

(1) How will students show their understanding of the above learning target(s)? Why is it important?

(2) What state standards (performance indicators or relevant curriculum guide) will this learning target(s) address?

Exploratory Phase:

(3) How will the learning experience begin in a way that engages each student and forces connections to prior knowledge?

(4) How will you ensure that all students are ready to meet this learning target by:

(a) Developing interest in this lesson

(b) Using prior knowledge

(c) Building classroom community

(d) Fostering positive relationships with every student during instruction?

(5) What formative assessment data will you collect during the exploratory phase to guide instruction during this lesson?

(6) How will you use the formative assessment learning data to guide the rest of this lesson? What specific interventions will be planned to differentiate instruction?

Discovery Phase:

(7) What authentic assessments *of* learning (discovery work) will students produce to demonstrate their new understanding of the lesson's learning target? How does this align with the Six Facets of Understanding (Wiggins & McTighe, 2005)?

(8) What spontaneous and planned interventions will you have available to assist students in developing their authentic assessments *of* learning (discovery work)?

(9) How will you provide closure to the lesson in a way that allows students to reflect on the lesson's learning target(s)?

(10) What future opportunities will ensure that students who have not yet met the learning target(s) are able to do so?

Implementation:

(11) What materials, technological equipment and/or human resources are required to successfully implement this lesson?

(12) What is the essential and non-essential content vocabulary required to successfully implement this lesson?

Figure 2

The PLE in action: A case study in 7th grade mathematics

Learning Target(s)*:*

I can read and interpret information from a coordinate graph.

I can use mode, range and median to compare sets of data.

I can work in collaboration with others to solve problems.

(1) How will students show their understanding of the above learning target? Why is it important?

In math class, students are working on their first unit "Data About Us". This lesson is a review of coordinate graphing- a skill students will need as they progress to the next unit "Variables and Patterns." This investigation helps students both describe information and make reasonable inferences. Students will show their understanding of the above learning target through successful completion of this investigation. This investigation will be graded based on a five-point teacher-student negotiated rubric designed in the beginning of the school year.

(2) What state standards will this learning target address?

- 6.S.7 Read and interpret graphs
- 6.S.8 Justify predictions from data
- 6.S.7 Read and interpret graphs
- 7.S.4 Calculate the range for a given set of data
- 7.S.5 Select the appropriate measure of central tendency
- 7.PS.11 Work in collaboration with others to solve problems
- 7.CM.5 Answer clarifying questions from others
- 7.CN.6 Recognize and provide examples of the presence of mathematics in their daily lives

Exploratory Phase:

(3) How will the learning experience begin in a way that engages each student and forces connections to prior knowledge?

To begin this learning experience, students consider a seemingly complex coordinate graph of student distance and travel times to school. This coordinate graph along with the table provided will serve as the basis for the investigation and their exploration of how to graphically represent two variables. Being that this lesson shows familiar data (this same data set was represented with a stem and leaf plot in an earlier investigation) students will begin by considering the advantages and disadvantages of each distribution. This will serve as the foundation for today's work.

(4) How will you ensure that all students are ready to meet this learning target by:

(a) Developing interest in this lesson

(b) Building classroom community

(c) Fostering positive relationships with every student during instruction?

After briefly previewing the coordinate graph and its components, students will consider a series of true and false statements about the distribution. They were carefully and thoughtfully crafted to present common student misconceptions and promote discussion among base group members. Students will participate in a think-pair-share cooperative learning structure with the eight questions. Whole group debrief of this activity will focus students on question #1 and #4. In question #1, students will be asked to think deeply about the mistake of mixing up x and y variables. In question #4, students will be asked to think deeply about whether the phrase "more than 60 minutes" means that the students who travel exactly 60 minutes should not be included.

Students will continue their exploration of the coordinate graph, by writing their own set of five true statements about the coordinate graph or table. These true statements will be "reviewed" by their base group members (using a think-pair-share format) to ensure they are accurately written before

students share whole group. This activity to designed to help students with more divergent thinking skills and to afford multiple opportunities for success.

(5) What assessments *for* learning will you collect during the exploratory phase to guide instruction during this lesson?

Evidence of student understanding will be collected as students both identify statements are true or false and work to create their own. The teacher will monitor progress, ask clarifying questions to assess student understanding and insert or delete exploratory activities as necessary. Students will be provided feedback in both their small groups and as a whole group. The creation of true statements, as well as interpretation the coordinate graph will be used as both summative and formative assessments. They will help to guide instruction and demonstrate that learners are developing these understandings.

(6) How will you use the assessments *for* learning data to guide the rest of this lesson?

As the teacher "works the room" and debriefs as a whole group, evidence of student understanding about coordinate graphs will be collected. Based on this evidence, the teacher may choose to shorten or lengthen the exploratory activities and use observed misconceptions or common errors as entry points for student discussion. The teacher may choose to pose additional questions to scaffold student understanding based on the assessment data collected.

Discovery Phase:

(7) What authentic assessments *of* learning will students produce to demonstrate their new understanding of the lesson's learning target?

After considering how to interpret information from a coordinate graph, students will consider how two different coordinate graphs can be used to compare relevant statistical information. Problem 1.9 asks students to consider two coordinate graphs (one of student travel times to Emmet Belknap Middle School and the other of student travel times to North Park Middle School). Students will demonstrate their ability to use median, mode and range to describe data, a skill which was taught

several weeks ago but has been refined and revisited for the past two investigations. Students will use the statistics of mode, median and range to determine which schools' students travel further and defend their answer with statistical evidence.

(8) What spontaneous and planned interventions will you have available to assist students in developing their authentic assessments *of* learning?

For students who struggle to read and/or interpret the coordinate graphs, additional teacher and team interventions will be provided. Students' previous investigation from this unit had learning targets specifically designed to help students make sense of information from coordinate graphs and can be referenced as needed. Since students are working in base groups of three, struggling students will be directed to work and ask questions of their teammates during the lesson. These investigations will be collected at the end of the period so that more formal, individualized written feedback can be provided.

(9) How will you provide closure to the lesson in a way that allows students to reflect on the lesson's learning target?

To conclude this learning experience, the teacher will lead a whole group debrief of the statistical information that can be provided by the range, mode and median of each data set. Student questions will be addressed and discovery work will be inserted, deleted or modified to fit student needs and curiosities. At the end of the period, all investigations will be collected as formative assessment data. Students will also answer a two question exit slip, which requires them to reflect on the questions: "What did you contribute to your team's thinking/learning in today's class?" and "How did you show persistence in today class?" These reflections will be used to provide further interventions as required.

(10) What future opportunities will ensure that students who have not yet met this learning target are able to do so?

Students who have not yet met this learning target will have the opportunity to continue thinking about these ideas during the next day's lesson, as this concept of graphical representations of data is spiraled throughout the rest of the unit. Weekly student reflection sheets and homework assignments will also give students an opportunity to think deeply about how to distinguish and interpret information from coordinate graphs.

Implementation:

(11) What materials, technological equipment and/or human resources are required to successfully implement this lesson?

- Investigation 1.9: Relating travel time to distance
- Learning targets posted on the board

(12) What is the essential and non-essential content vocabulary required to successfully implement this lesson?

Essential Vocabulary:

- range
- mode
- median
- coordinate graph
- x axis
- y axis

Nonessential Vocabulary:

- inference
- prediction