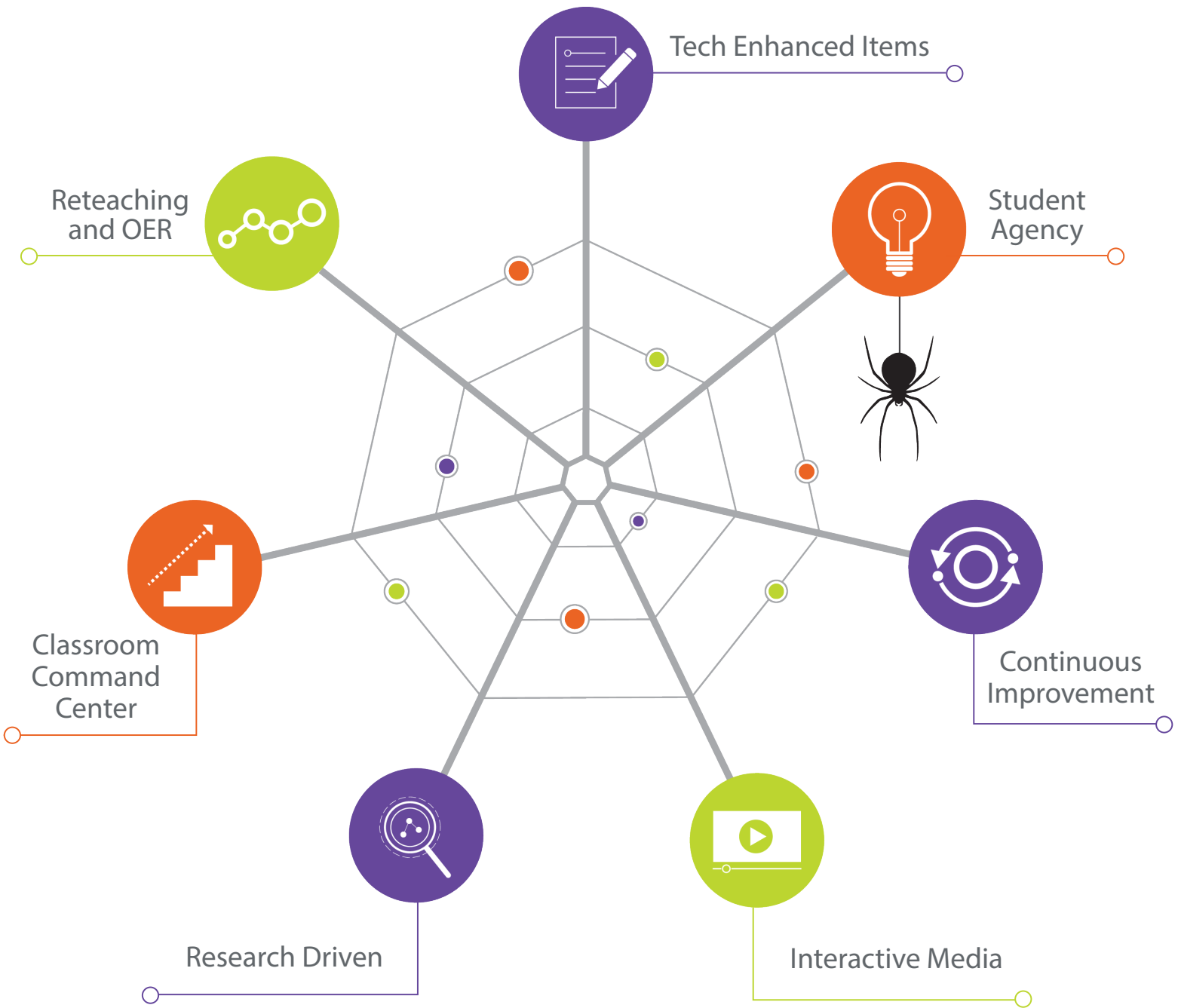




SPIDER LEARNING, INC. CURRICULUM DIFFERENTIATORS



Research Driven Design

All decisions related to the instructional design of our curriculum, from the actual lesson flow experienced by students to the consistent unit structure, are driven by relevant educational research and proven practices. We have integrated technological advancements with our experience in digital curriculum design to ensure an appropriate delivery strategy for today's learner. Components of the following pedagogical and learning research have been incorporated into the curriculum design:

- Gagne's 9 Events of Instruction
- Metacognitive Theory
- Bloom's Taxonomy
- Webb's Depth of Knowledge
- Cognitive Theory
- Impact of Technology-Enhanced Items
- Chunked Instruction with Guided Practice

Continuous Curriculum Improvement Cycle

Educators are constantly asked to review, evaluate, and modify their instruction to best meet the needs of their students. This tactic is completed so that every student gets the most out of the instruction that is presented to them and can be successful in mastering concepts and skills. Spider Learning, Inc. follows that same philosophy as we develop, review, and revise our content. Data is collected before, during, and after each student engages with the instructional content, so that the effectiveness of the individual lesson components can be evaluated. This means that we are no longer waiting until students attempt end-of-course examinations to determine if the content has been effective for them. Instead, the effectiveness of each activity can be evaluated immediately while students are progressing through coursework.

- Constant evaluation of student progress allows us to identify weaknesses within activities, analyze their impact on student mastery, and provide us with the ability to replace those activities with more effective ones. This helps to ensure that the next set of students moving through that lesson is having a more **meaningful and effective experience** with the content.
- Depending on the level of user demographics shared with our system, custom reports may be utilized to determine how the content is meeting the needs of user groups and subgroups. Over time, this will enable us to target specific strategies or direct students to specific content that best meets their individual needs.

Interactive Instructional Media

The design of our interactive instructional media encourages educational segmenting, or the sectioning of information into smaller parts. This allows users to control the flow of information, and ensures that they have enough time to process each concept before moving on to the next segment of the lesson. As stated by Cynthia J. Brame, Assistant Director of the Center for Teaching at Vanderbilt University, segmenting is one of the most effective practices for interactive media.

- Interactive Instructional Media encourages a **personalized path** through the lesson video based upon each student's individual responses.
- Collection of data related to student responses to video segments allows for analysis of student prerequisite knowledge and preparedness for the upcoming instruction.
- Instructor-directed alerts generated from this data inform teachers when students need prerequisite skill intervention in order to be in a position to successfully master the content of the upcoming lesson.

Lesson Activities

The activities developed within our lessons are designed to facilitate student agency. As noted in the iNACOL May 2016 report titled Student-Centered Learning: Functional Requirements for Integrated Systems to Optimize Learning, "An additional focus of the system design for student-centered learning involves facilitating student ownership of learning by engaging students in co-planning their learning, incorporating their interests and skills into the learning process, monitoring their progression and celebrating their own successes." Each lesson begins with an overview of the lesson objective combined with a metacognitive prompt. Research by Catherine M. Aurah shows that, "In the process of learning, if teachers design tasks to help the students increase their self-efficacy and metacognitive awareness, this increase might have positive effect on their academic performance." As students progress through the three direct instruction components of the lesson, they progress upward through Bloom's Taxonomy Levels to promote cognitive rigor that, when paired with the metacognitive prompt, helps students develop crucial problem-solving skills and encourages stronger connections and a deeper understanding of the content presented.

- **Metacognitive prompts** nested within each lesson introduction ensure **student agency** when evaluating their individual learning styles, planning their learning approach, and taking ownership of the strategy they will apply to master the lesson content.
- Traditional static examples have been replaced by Lesson Activities developed to progress through Webb's Depth of Knowledge (DOK) Levels 1-3 by utilizing embedded technology-enhanced items. This ensures continuous student engagement and introduces **guided practice** to the online learning experience.

Skill and Lesson Assessments

The assessment items designed for our curriculum are technology-enhanced items that are designed to engage students and encourage thoughtful responses rather than guessing. Not only do these assessment items promote interaction with the question, but real-time data collection also helps to show the student's thought process as they answered the question. Through the collection of these learning analytics, educators have the ability to make instructional decisions during class. As stated in the U.S. Department of Education Office of Educational Technology's 2010 Issue Brief on Enhancing Teaching and Learning Through Educational Data Mining and Learning Analytics, "... learning analytics enables human tailoring of responses, such as through adapting instructional content, intervening with at-risk students, and providing feedback."

- **Formative Skill Assessments** are included at the beginning and end of each lesson to track both **student growth** and **lesson efficacy**.
- Student performance data is collected at up to **18 unique points** in every lesson and may be used by teachers to group students and differentiate instruction.

Reteach Materials

Each lesson also contains a skill-based resource bundle that can serve as an extension of the lesson content for students. Served up as collections of aligned Open Educational Resources (OER), each bundle can be used to reinforce concepts within the lesson, or provide enrichment opportunities for a more personalized learning experience. As Robert J. Marzano mentions, "For reteaching to be effective, however, teachers must use a different approach from the one they initially used, one that builds on previous activities but that focuses on the omissions or errors in student thinking that resulted from these activities."

- Skill-based supplemental resource bundles tied to each objective serve to **enrich** or **support** the lesson content for teachers and students.
- As additional OER-based materials are made available or created by your district, teachers can customize and build upon the initial material bank to increase the opportunities available for students.

Interdisciplinary Projects

Interdisciplinary Projects are embedded into the Spider Learning Middle School curriculum that provide students opportunities to integrate concepts from various themes and apply them to real-world examples. Students working on an ID Project hone their skills and apply knowledge from one discipline to another. Research has found that Significant Learning takes place when meaningful and lasting classroom experiences occur. When teachers impart students with a range of skills and insights about the educational process that student find meaningful and salient to them, they promote student engagement in the learning process and greater learning occurs (Fink 2003). Additionally, interdisciplinary instruction helps student achievement in two ways:

- It helps students identify insights from a range of disciplines that contribute to an understanding of the issue under consideration.
- These projects help students develop the ability to integrate concepts and ideas from these disciplines into a broader conceptual framework of analysis (Bransford 2000).

By collaborating with their peers to complete these projects, the students will build confidence, strengthen his or her understanding of the material and gain exposure to essential social developmental skills.

Questions and Notes



Bringing equity and opportunity to every student, every day, everywhere.

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