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LEARNING THEORY IN THE ELL CLASSROOM

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Learning Theory in the English Language Learner Classroom

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Out of 2,309 students, Farrington High School has over 416 students who are English Language Learners (ELLs) (Hawai'i State Department of Education, 2019). More of these students speak another language at home or with family but are not identified as ELL and therefore not receiving services, while even more have family who speak other languages but the student may not consider themselves fluent. This culturally diverse hub presents a unique challenge to educators who must adhere to teaching academic standards set by local and federal governments. These standards, benchmarks for student achievement, are a guide intended to indicate a student's mastery level over certain concepts, skills, and topics. But how can we teach in a language foreign to our students and still reach those standards for success?

By understanding "learning" and how learning occurs, we are able to teach effectively and powerfully. Learning, essentially, is a process of encoding information, storing that information, and later retrieving it for use (Agarwal and Bain, 2019). By this definition, learning occurs every day; we use this process when we want to remember directions, when we learn someone's name, and when we read information on social media. Learning is a process that is constant in our lives, and as teachers, we need to understand how each decision we make, as learners and as educators, affects learning. In order to understand how to make that process effective, research has been conducted to determine exactly what strategies and practices should be used in the classroom. Agarwal and Bain determined that there are four strategies, which they call Power Tools, that teachers should use in their classroom: retrieval practice, spacing, interleaving, and feedback-driven metacognition (2019). These practices, paired with differentiation strategies as explained by Tomlinson (2017), create a positive culture for learning

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that improves student achievement as evidenced by a multitude of studies and experiments. In order to deepen my understanding of learning theory and how these practices can be incorporated in the classroom, I observed a colleague of mine at Farrington High School who specifically teaches Biology to a sheltered classroom of ELL students. What I found is that teachers are already using versions of these Power Tools in the classroom. By giving names to the strategies we use, though, we can integrate them more purposefully into our curriculum and empower our teaching practice.

A colleague of mine, who I will call Mr. H, is one such teacher that uses the Power Tools daily in his classroom. His room, a large science class fit with two long rows of lab tables and stools, is a very open and comfortable space. Like most schools in Hawai'i, it gets hot, so he has fans on the lab tables, as well as a few hanging on the walls. The windows are always cracked open to allow for a breeze, and large double doors open to a courtyard are also swung open to allow for more fresh air. An old, but comfortable sectional sits in the front of the room in a corner, and completing the area is a rug and small coffee table. Between the front projector and lab area are smaller tables, where groups of four to five students sit with their notebooks in front of them and backpacks on the floor. Students are given the freedom to sit where they wish - couch, desk, or lab table - so long as they adhere to the classroom rules and procedures. Mr. H stands at the front of the room by his classroom door, an entry to the hallway separate from the courtyard double doors, and greets each student as they walk in, "Good morning!" He's generally cheery and his red beard and hairy fist bumps are a fun welcome, for every student in every period, to his classroom. These students are all English Language Learners. Many of them

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are also in my own classroom, as “J” students are generally in a cohort together. This level of language development places them into a general ed core classroom, but with sheltered instruction. However, they still require more support before they are ready to join mainstream classes with their academics. The J teacher, myself and Mr. H among others, are not primarily trained in ELL specifically, but rather our content was our primary education with some ELL training. This is the room, students, and teacher I am observing for a week, from December 2 to the 6th.

A roster of 29 students are learning meiosis this week, but only 23 attend on average.. Mr. H is encoding information, hoping his students will be able to store and use the information. To do this, he has designed lesson plans intended to give students opportunities to practice and use what they have learned in class. He does this by beginning Monday with a story from a student - a practice they have done every day this semester, and move on to reading an article about doppelgangers and twins. The co-teacher, who we will call Ms. E (an ELL specialist), and Mr. H split the class in half, each teacher taking students to a different part of the room to read an article. The articles are about the same topic, but at different lexile levels. Earlier in the year, Mr. H and Ms. E use the student’s WIDA scores to determine their proficiency in reading. In this instance, they are differentiating by content and each student is reading part of the article as they go. Before reading the article, students complete a KWL chart and share their answers with each other, using metacognition to establish what they know and don’t know before the article, based only on the title. The students then highlight the text and ask questions, as they learn why some people look very similar. There are many twins well-known in the school and the students make

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these connections verbally. Mr. H then plays a small game he called, “Twins or Doppelganger?”

As the name implies, students guess if the people on the screen are twins or look-alikes.

Throughout this game, Mr. H asks questions using the vocabulary from the article, as well as academic terms used from previous lessons (the class corrects two students who used more colloquial language).

As Monday ends, he asks students what they did on Friday - the students take a moment to retrieve the information and respond, “Quiz!” This carried directly into Tuesday, where Mr. H reviews answers and questions from their Friday quiz. The spacing causes some struggle with the students, but all watch the board displaying their data from each question. Many have notebooks open in front of them, comparing the correct answers to the notes they took previously. Mr. H is, without the jargon, using feedback-driven metacognition to engage the students in what they think they know and what they do not know. However, he is not using it quite as purposefully as demonstrated by Patrice Bain, who uses metacognition sheets and has students directly write their judgements of learning (Agarwal and Bain, 2019). Doing such strategies with the quiz data could be an effective use of this Power Tool.

After the quiz review, which included scaffolding of content from throughout the semester - an excellent example of spacing, Mr. H presented a brief lecture on Meiosis and relating it to their article from Monday. His lecture included various images and color while Ms. E modeled Cornell Notes on the board. According to Agarwal and Bain, retrieve-taking is a much more effective strategy than note-taking, though the use of cornell notes is an Avid strategy preached by many to be effective. Using a color-coded system on the board, students

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copy the notes and must write their own summary at the end. After this information input, students were given a task: use the GIZMO computer program with a partner to create either an egg or sperm cell using the process of meiosis while tracking the steps on a piece of paper. Mr. H is certainly using some differentiation here, allowing students to choose a partner (or complete the assignment individually) and seating arrangement as well as choosing the cell type they wish to create. This is an example of differentiating by profile and somewhat by process as students are getting an opportunity to interact with the content differently. This activity continues through the next day, Wednesday, and students check with Mr. H as they progress through the learning activity. Rather than provide them with answers, he does a similar practice to Patrice wherein he does not tell them the correct answer, only that a step was incorrect. The program GIZMO also does this - students are not allowed to progress through the digital model if they don't get the steps correct, but the program will not guide them how to do it.

Upon completing the model that day, students learned about heredity on Thursday. The topic involved meiosis, and students needed to actively recall, as Oakley, Sejnowski, McConville, and Young (2018) put it, the process and academic language needed to discuss heredity. Questions were generally asked of the whole class verbally, which unfortunately meant that many students were not retrieving the information like they would if they were all held accountable to answer with a partner or write it down. The initial lecture on heredity was very similar to Tuesday's on meiosis, with color-coded note-taking and a brief gamification of level one and two questions as students compete against other tables and groups. At the end of the day, Mr. H returns to the KWL they began at the very beginning of the week. Each student answers

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the questions from the W column and fills in the L column with new information that they have learned over the course of the week. Mr. H asks them to “recall” the information, using a term commonly used by other education specialists. Agarwal and Bain would call it “retrieval” - and this certainly isn’t the last chance to retrieve the new information this week.

On Friday, Mr. H begins the class just as he usually does, with a student telling a story, with others listening so that they may retrieve the information later and summarize it. They will retrieve all the information they learned this week about heredity, meiosis, and a few questions from previous lessons. This will exhibit spacing over several weeks for some questions and a few days for others. The stakes, while not necessarily high, are also not particularly low. The students nervously check their notes one last time to cram information for the quiz, an effective short-term learning strategy but not so much for long-term learning (Agarwal and Bain, 2019). These students take their quiz and are celebrating their learning of heredity and meiosis.

Based on his quiz and the time I have spent in his class, students have not finished retrieving meiosis, though, as they will continue to see questions throughout the course. Mr. H’s use of the Power Tools and differentiation is immensely beneficial to ELL students (Ferland, 2016), though it could benefit from some more purposeful integration of other retrieval methods. Nonetheless, Mr. H and Ms. E provide a classroom environment and curriculum that is designed to generate enough productive struggle that students will learn in the long-term. With flexible seating, tiered reading content, and some choices placed strategically in the lesson, Mr. H and Ms. E were able to differentiate their lessons effectively. Reviewing data allowed students to use their metacognition as they retrieve information for the current assignment while Mr. H has

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spaced out the content knowledge throughout the semester. The Power Tools are being used because teachers use them every day. It is how we use Power Tools that determines just how effective our teaching is, and it is the purposeful integration of these strategies into our curriculum which will increase student learning.

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