Chapter 16
Differentiating Instruction in the Forensics Classroom

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EXECUTIVE SUMMARY

This chapter will discuss differentiated instruction within the STEAM classroom. An example of a differentiated instruction case that was used in a Forensics Science class will be referenced. The case study focuses on fingerprint recovery, identification, and classification. After a series of lessons about the science of fingerprinting, a mock crime scene is set up to allow students the opportunity to become forensic scientists. Students use the forensic tools to recover them, and then identify and classify them using the process taught through direct and supplemental instruction. Some issues with differentiating instruction that arise are professional development around differentiated instruction, the time it takes to differentiate (amount of planning), lack of classroom time to complete projects, and lack of support or collaboration with key stakeholders are discussed.

LITERATURE REVIEW

Students differ from one another socially, academically, physically, cognitively, and emotionally. They also learn differently (Gregory & Chapman, 2007). Teachers can no longer just "teach the lesson" and hope that everyone understands. It important to first take into consideration who each learner is, their readiness levels, interests,

preferred learning styles, and strengths and needs (Tomlinson, 2005). This is the first step in differentiated instruction.

Differentiated instruction allows all students to access the same classroom curriculum by providing accommodations tailored to meet their individual needs (Tomlinson, 2005; Watts-Taffe, Laster, Broach, Marinak, Connor & Walker-Dalhouse, 2012). After teachers know, understand, and assess each learner, it is critical to use that information to design instruction. This can be done through curriculum compacting, grouping, and adjustments to students' learning.

Curriculum compacting is a strategy that can be used if a student has already mastered the content; the teacher then designs the instruction to "dive in deeper" or "compacts it" and moves on to the next skill (Gregory & Chapman, 2007; Logan, 2011). If, for example, a first-grade lesson's is to use observations of the sun, moon, and stars to describe patterns, the student should be able to identify and discuss patterns like how the sun and moon rise in one part of the sky and move across the sky. To compact the curriculum, the teacher would design "deeper instruction" where the student collects data on specific times that the sun rises or data on the location of the sunrise and sunset. The other option for curriculum compacting would be for the teacher to move the student on to the next skill within the curriculum. For example, if they mastered that topic, then the teacher would move the student onto making observations at different times of year to relate the amount of daylight to the time of year (since this is the next-generation science standard) or the next standard in the curriculum.

An important feature in differentiated instruction is the use of flexible grouping and different grouping strategies. The best instruction is when students have a balance of working alone, with a partner, and in small flexible groups. Flexible grouping means students are mixed with other students based on their ability and interest level. By incorporating flexible grouping, students "maximize their learning time based on their performance levels" (Gregory & Chapman, 2007). The critical components in flexible grouping are that students work with a variety of their peers, and the groups are not always the same. There are a variety of grouping strategies (see Figure 1: Differentiated Grouping Strategies), and based on content the teacher can determine if another grouping strategy would better meet the needs of the students.

Figure 1.

$$f(x) = xw(x) - \sqrt{x^2 w^2(x) + f_0^2},$$