

## Chapter 8

# Hands–On Activities to Keep Students With Disabilities Engaged in K–12 Classrooms

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### **ABSTRACT**

*The central aim of this chapter is to identify the best practices in hands-on activities to keep students with disabilities engaged in K-12 classrooms. With diversity being a key component in today's classroom, teachers struggle in devising strategies to keep students with disabilities stay engaged. Improving student's learning by keeping them engaged is vital for our nation's competitiveness. Studies have shown the role of hands-on activities in improving engagement of students with disabilities. This chapter will define student engagement and will highlight some of the causes of student disengagement in classroom, relationship between hands-on activities and student engagement, need of hands-on activities/project-based learning in 21st century classrooms, creative ways to implement hands-on activities, connecting hands-on activities with the real-world situations, creating hands-on activities for students with disabilities in self-contained and inclusion classrooms, and matching students' interest and learning styles when developing hands-on activities.*

### **INTRODUCTION**

Teachers play an important role in incorporating enriching learning activities and in providing relevant experiences to students with disabilities using research-based strategies in K-12 classrooms. K-12 teachers employ repertoire of research-based teaching strategies, such as direct instructions, peer tutoring, guided practice, problem-based learning, scaffolding, class discussions, hands-on activities, individualized and remedial instructions to keep students with disabilities engaged in inclusive and self-contained classroom settings. Student engagement is a key construct which is highly researched in the field of education.

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Student engagement is based on the theory of John Dewey (1962), which states that learning should be not only passive and theoretical but relevant and practical and related to real world skills. Students with disabilities struggle in learning, more than students without disabilities (Lambert & Sugita, 2016). This chapter highlights how K-12 teachers create and integrate hands-on activities in their inclusive and self-contained classrooms to keep students with disabilities engaged in the learning process.

A positive relationship was found between hands-on activities and students interest in core subjects (Holstermann, Grube, & Bögeholz, 2009). Teachers who adopt hands-on activities in their lessons, increase the opportunities for student's engagement in students with disabilities (Bhattacharya, Gelsomini, Pérez-Fuster, Abowd, & Rozga, 2015). Teachers should give students with disabilities opportunities to manipulate objects, complete puzzles, investigate ideas, and conduct science experiments in K-12 classrooms. Teachers need to select manipulatives from the real world to make learning more meaningful and relevant. Hands-on activities can be a part of both individualized and small group instructions. Use of manipulatives in hands-on activities has revealed its impact for long-term maintenance of learning skills (Carbonneau, Marley, & Selig, 2013; Cass, Cates, Smith, & Jackson, 2003). Manipulatives include concrete manipulatives, such as Legos, Tinkertoys (Hecker, 1997), and Cranmer abacus (Amato, Hong, & L, 2013), as well as virtual/digital manipulatives which are app-based (Bouck, Chamberlain, & Park, 2017).

## **BACKGROUND**

Student engagement in classroom activities is a critical and central component of effective interventions for students with disabilities and is vital for our nation's development. Student engagement simply refers to student's participation in learning activities or how much is the student involved in the classroom task. The factors related to engagement relates to the aspects of environment (types and quality of learning opportunities provided to students), student's ability and skills to participate in the classroom task, and on the student's investment and interest in those opportunities.

Classroom environment and careful selection of hands-on activities plays an important role in promoting student engagement which is a critical factor in learning and academic gains for students with or without disability. How conducive is the classroom environment to support positive learning in student's, determines how much is the student engaged in the educational environment? Selection of hands-on activities need careful planning by the teachers, who executes effective evidence-based strategies, and crafts highly engaged hands on activities, considering the individualized needs of student's in the classroom.

The type of disability affects how much is student engaged in the classroom. Small group instructions, individualized instructions, frequent teacher-student interaction, and use of adapted materials relates to higher degree of student engagement. Teachers face major challenges in implementing hands-on activities to engage students with disabilities in inclusive classroom settings. Many classroom teachers find difficulty in actively engaging students in meaningful classroom tasks, as students with disabilities struggle with their academic goals, and have deficits in memory, retention, higher-order thinking skills, and generalization of tasks. Teachers need to implement several proactive and research based effective strategies during whole-group and mini-group instructions to strengthen and maintain student engagement. Students converted the shoe box to make a pinhole camera as shown in Figure 1. They stayed engaged in this science activity as the materials were of highly interest to them and were readily available (as shown in Figure 2).

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