CEC DResearch Matters

Enhancing science performance of middle-school students with and without developmental and behavioral-based disabilities using the Content Acquisition Podcast Professional Development approach

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COACHED/CT Scan (tool used to provide feedback to teachers): https://www.coached.education.virginia.edu/

Improving teacher instructional practices when teaching science vocabulary can positively impact science knowledge acquisition for students with and without developmental and behavioral-based (DB) disabilities. Students in the United States consistently underperform on science achievement tests. Scientific vocabulary is a crucial part of these assessments yet many teachers do not teach it explicitly (Kennedy et al., 2017). Science vocabulary achievement discrepancies are further compounded for students with DB disabilities. Students with DB disabilities can lack effective vocabulary learning strategies (Harmon et al., 2005). As such, improving teachers' instructional skills through professional development on how to explicitly teach scientific vocabulary is imperative.

How can research address this problem? Science teachers have reported feeling unprepared to effectively teach scientific vocabulary (Johnson & Massey, 2021). Additionally, science teachers have also reported that they do not think they can adequately instruct students with disabilities due to lack of preparation, time, and resources (Kahn & Lewis, 2015). Therefore, professional development for teachers in regards to developing skills for effectively teaching scientific vocabulary needs to be done efficiently while providing resources for teaching students with and without disabilities. In 2017, Kennedy and colleagues created a professional development package to support evidence-based vocabulary instruction during science lessons which included asynchronous multimedia presentations that support building teacher procedural knowledge, evidence-based science vocabulary presentations that teachers are able to use in their lessons, and individualized feedback for each teacher based on live classroom observations targeting strengths and areas of growth with vocabulary instruction. VanUitert and colleagues used this professional development package in their 2022 study to examine if it would improve vocabulary instructional practices of middle school science teachers who taught students with and without DB disabilities.

What has the research shown? Positive effects on science content knowledge were shown for students with and without DB disabilities (N = 980) who had indirect exposure to the professional development package. Additionally, general education students who had teachers that did not have access to the professional development package showed less gains in science knowledge than students with DB disabilities who had teachers that did have access to the professional development package.

Ultimately, using evidence-based professional development to develop vocabulary instructional skills for teachers not only impacts student achievement but also helps foster more inclusive and equitable learning environments for students of all abilities.

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