

Collaboration as a Tool to Write Differentiated Lesson Plans

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Differentiated instruction has become increasingly prevalent. Today's classrooms demand that teachers use various evidence-based strategies to meet learners' needs. One method that considers the various types of learners that teachers will encounter is differentiated instruction (DI). Based primarily on the constructivist theories of Piaget and Vygotsky (Thakur, 2014; Tomlinson, 2014), DI is an instructional process that considers the various abilities of students in the classroom by supporting and accommodating their learning preferences (Subban & Round, 2015). These procedures have become increasingly important for students with learning disabilities because of the positive impact they can make for those students in an inclusive classroom (Bondie et al., 2019). Inclusion is a philosophy that students with disabilities will benefit from a curriculum that is delivered in a general education classroom. These classrooms integrate practices such as differentiated instruction to respond to the diverse needs of all learners (Salend 2016; Tomlinson, 2014). In the secondary mathematics classroom, successfully implementing the practice of inclusion by differentiating instruction depends on both the mathematics and special education teachers working collaboratively.

In an effort to help preservice teachers grow in their ability to write differentiated secondary mathematics lesson plans, we created a partnership across two institutions that provided the opportunity for preservice secondary mathematics teachers to work with preservice special education teachers. The purpose of this paper is to explain how the two professors from those institutions collaborated to teach preservice teachers (PST) how to differentiate instruction for a secondary mathematics classroom. First, we will consider the importance of learning to differentiate instruction as part of the preparation of mathematics teachers. Next, we will detail the organization and implementation of the project. Finally, we will share the reactions of the PSTs involved and our own reflections on the process.

Background

When differentiating instruction, mathematics teachers must consider the mathematical content, the process by which the students learn the material, and the products that students generate (Tomlinson, 2014). By using DI, the teacher recognizes that students have learning differences that need to be supported through scaffolding to maximize their learning. These learning processes have become increasingly important for students with various learning abilities because of the positive impact both socially and academically (if done correctly) for them (Bondy et al., 2007). Successfully implementing inclusionary practices through differentiating instruction depends on the general education and special education teacher working collaboratively since they are both stakeholders invested in the preparation of mathematics teachers (AMTE, 2017). Going beyond the physical placement in the general education classroom, inclusion strives to remove barriers to participation. One strategy for removing barriers is to support meaningful collaboration through common planning and shared responsibility of

assessments and instructional methods. These key components are often lacking in school environments due to time constraints and disagreement on students' needs (Mofield, 2020).

Recent research demonstrates that barriers to collaboration are common (Allday et al., 2013; Hamilton-Jones & Vail, 2014). Early exposure to collaboration and to implementation of DI strategies in the preservice training years is critical, but these practices are often inadequately addressed (Allday et al., 2013; Dack, 2019). Therefore, it is necessary that teacher preparation programs purposefully integrate these strategies in the teacher candidate's program (Sands & Barker, 2004).

Implementation

The project took place over two different semesters with two different cohorts of undergraduate and post-baccalaureate students: one from a secondary mathematics methods course at Saint Vincent College and one from a group of special education students enrolled in a differentiated instruction (DI) course at Chatham University. Each semester, PSTs were paired (one from each course) to assist one another in making accommodations and adaptations to secondary mathematics content. They did not meet in person, and all communication was through written correspondence. Each time, the mathematics PSTs wrote a different lesson plan for middle or high school level mathematics, and the special education PSTs then provided suggestions on differentiating for process, content, and product. This procedure was repeated for three lesson plans.

Mathematics PSTs Reactions

The mathematics PSTs of both cohorts reported similar observations. During and after the project, the mathematics PSTs reported taking the lesson plan assignments more seriously because they were writing for an outside audience and were concerned about how potentially future colleagues viewed their skills. They were comfortable making mistakes when only the professor was seeing their work, but they pushed themselves harder to write what they believed to be a complete and effective lesson plan when an anonymous peer was reviewing it. After receiving feedback from their special education peers on the first lesson plan, the mathematics PSTs in both cohorts reported trying to anticipate the suggestions that the special education PSTs were going to provide. They worked harder to anticipate the needs of all students and reflected that in their subsequent two lesson plans.

Professor Reactions

In the mathematics methods course, the discussions following the feedback from special education PSTs were rich and complex. Prior to the partnership, returning lesson plans and feedback typically resulted in few, if any, questions that were often superficial, and focused more on the deduction of points rather than improving the quality of the lesson plan or meeting the needs of the learners. In contrast, during the

project, when the mathematics PSTs received the feedback from the special education PSTs, there were lengthy conversations regarding how to implement the suggestions, the purpose of the accommodations suggested, and how the suggestions could be generalized to other lessons. The mathematics PSTs also asked questions relevant to their future employment, specifically about ways that they could plan on working with special education teachers.

Conclusion

We found this experience to be rewarding and worthy of further development in our classes. Both professors noticed that the PST's motivation to create better lesson plans and to provide detailed feedback and suggestions increased throughout the partnership. The PSTs in both courses could be seen transitioning from students completing assignments to professionals collaborating to meet their students' needs. Although they were still concerned with the grade on each lesson plan, that concern slowly moved to a less prominent place in the conversation as it was replaced with concern for providing varied and interesting learning experiences.

Proponents of teacher collaboration believe that teachers working together have a positive impact on each other and contribute naturally to school improvement (Foltos, 2015). By implementing this practice at the preservice level, PSTs will gain experience working collaboratively with the aim of increasing success for all students in their classrooms.

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