

Focus Paper written by Julie Lindsay for the Education Technology Leadership MA degree with the George Washington University.

Topic: The Use of Technology in Differentiating Instruction to cater for Special Needs Students

My Position

All students are not the same. They learn in different ways and respond to different kinds of incentives (Tomlinson and Kalbfleisch) The interrelationship between technology, differentiation of instruction and special needs students is crucial for a teacher to consider. Technology can enable teachers to accommodate a variety of orientations to learning, remediate struggling students and challenge advanced learners as well as include other special needs students. Children are aware from a young age of their own diversity. Technology can act as a motivator and build self-esteem. It is the responsibility of the teacher to include and cater for students with mild learning disabilities as well as gifted and talented students to maximise the capacity of each student.

Supporting Evidence

Differentiation means being sensitive to the needs of the students, to assess students readiness and interest, to modify curriculum to meet the students needs. It is a 'how' to teach not a 'what' to teach approach which advocates personalised instruction and finding ways to help students in developing the knowledge and skills necessary for achieving positive learning outcomes. Recommended steps to achieving a differentiated classroom are to determine the ability level of the child; have a variety of teaching strategies (such as didactic, inquiry-based, cooperative learning); identify a variety of instructional activities (orally, visually, demonstration); and identify ways to assess or evaluate student programs. Successful differentiation is based on student engagement and student understanding, the constructing of understanding rather than the amassing of data.

Technology needs to be viewed as a tool for discovery, exploration and collaboration that can be used to solve problems in the education of students. Blackhurst discusses the range of solutions from 'No Tech' to 'High Tech' and suggests that a combination of technology types are usually used within a teaching situation such as instructional technology (hardware and software in combination with innovative teaching), medical technology and assistive technology.

The use of CAI, a more didactic approach, has been successful with special needs and learning disabilities as it provides a self-paced, repetitive learning environment with built in monitoring. Difficulties in producing written work that some students experience can be assisted simply by the use of a computer and word processing software (Roblyer) or, in the example of 'Garrett', a computer system with software Write:Outloud and Co:Writer which help him keep up with class notes and assignments. See <http://www.setbc.org/success/docs/welcome.html> for Garrett's and other children's stories. Specific software features such as drill and practice, tutorial and simulation and hypermedia applications can enhance mathematical skill acquisition. See '10 Tips for Software Selection for Math Instruction' found at

http://www.ldonline.org/ld_indepth/technology/babbitt_math_tips.html for tips on choosing software for differentiation. In the example of gifted students, teachers can differentiate the program by changing the content, teaching and learning process, type of product the student develops and evaluation. Strategies suggested by SNOW include using WP and keyboarding software, developing maths skills by encouraging problem solving (computer programming), creating multimedia games related to classroom content and interacting with a mentor. The latter can be provided for via a telecommunications project whereby opportunities for people to learn from people are provided. The special needs of gifted students can be met by informed use of technology (Jones) including encouraging exposure to, selection and use of appropriate and specialised resources.

Another example is the Centre for Electronic Studying (Anderson-Inman) where the emphasis is put on using computer technology to minimise the negative impact of student disabilities and maximise the potential of their learning strength to succeed at school. It advocates students with learning disabilities be automatically supplied with computers and necessary instruction.

Conclusion

Differentiation is concept-based and principle-driven instruction. To truly differentiate instruction is to provide several different learning experiences in response to students varied needs. Technology has an important role to play. If we speculate as to the future of technology in providing for special needs students we could say that 'No Tech' solutions means that people will become more knowledgeable about the various technologies and their applications. As to 'High Tech' there will be continual improvement in hardware, software and interconnectivity. There are very real issues to be addressed, and computers hold great promise as being developed as a tool in the classroom by teachers who do want to meet different student needs not a 'one size fits all' approach.

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