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ISTE webinar offers new strategies for ensuring that all students learn by tailoring instruction to their abilities, needs, and interests

By Meris Stansbury, Associate Editor

Primary Topic Channel: Instruction

Although many educators realize technology's enormous potential to help them differentiate their instruction so that all students can learn, regardless of students' needs, abilities, or learning styles, it might be hard for them to find concrete applications of this approach to emulate in their classrooms. But in a Jan. 28 webinar from the International Society for Technology in Education (ISTE), experts provided several examples of classroom projects that can help all students learn while keeping them engaged.

The webinar, titled "Differentiated Instruction + Tech = Powerful Learning," was presented by Grace Smith and Stephanie Throne--authors of the book *Differentiating Instruction with Technology in K-5 Classrooms* and the soon-to-be-published *Differentiating Instruction with Technology in Middle School Classrooms*. Both authors are former educators.

Smith and Throne described differentiated instruction (DI) as a strategy that is centered on the belief that students learn in many different ways. They also said DI is a collection of best practices from gifted, traditional, and special education. "Some educators think it's a new model, but it isn't," said Throne.

Both presenters agreed that DI is student-centered, offers multiple paths to learning, and is grounded in assessment practices. They also cited research that shows students are more successful in school and find it more satisfying when they are taught in ways that are responsive to their readiness levels, interests, and learning profiles.

According to the presenters, teachers can differentiate four elements of instruction: content, process, product, and learning environment. They also can differentiate instruction based on student traits, such as readiness, learning profile, interest, and affect.

Finally, educators can differentiate instruction through a range of instructional and management strategies, including software, video streaming, and the web.

"Above all, DI should be used to promote 21st-century skills," said Smith. "This includes digital-age literacy, inventive thinking, effective communication, and high productivity. A mastery of these skills will lead to student achievement."

Both authors said technology is a great choice to consider for DI, because it helps to personalize instruction, enhances learning with multimedia components, can help students construct new knowledge, and motivates students with their work.

"We also like to give students choices in their learning, because offering choices gives students a way to make decisions about what they will do in order to meet class requirements," said Smith.

One way to do this is to create and present what the authors called a "tic-tac-toe board," or three-by-three grid, of suggested activities from which students can choose to demonstrate their understanding of a topic. This helps students make their own choices and also gives the teacher an idea of his or her students' interests.

For example, students in grade two might be asked to choose from the board three different activities they'd like to complete about dinosaurs. Activities might include composing a song or poem about a dinosaur, using Kidspiration to make a dinosaur web of facts, or drawing a dinosaur skeleton using KidPix and then labeling as many parts as they can. (You can find more information about tic-tac-toe boards at http://daretodifferentiate.wikispaces.com/Choice+Boards.)

The authors believe that differentiating instruction by students' interest helps spark their curiosity during activities, makes learning more appealing to all students--even to reluctant learners--and encourages students to become more actively involved in their own learning.

First steps

"Teachers first need to pre-assess student interest through inventories and surveys, observation, or interviews," said Smith. She listed Survey Monkey, Free Online Surveys, and Zoomerang as online survey tools that can help teachers do this.

The student inventory might include a form with statements that students must complete. For example, the form might say: "My favorite subject is [blank], I like to read books about [blank], my friends are [blank]," and so on. (For more examples of inventories: http://tinyurl.com/dye7sp.)

Next, the authors recommend that teachers choose different strategies to build on students' interests in ways that are appropriate for their abilities or age levels. For example, elementary students might use a strategy called "I-Search," in which students do research online, to learn about earth explorers, while middle-schoolers might use I-Search to learn about the Civil War.

Other strategies include WebQuests, interest centers, flexible groups, literature circles, Role Audience Format Topic Tech (R.A.F.T.T.), Jigsaw, or computer software.

I-Search

With I-Search, students individually, or in pairs, use the internet and other research tools to investigate a topic of interest. Students then can use a word processor, drawing and painting tools, or other software to create and present information to their peers, explained the authors. (See The I-Search Unit and the I-Search Curriculum Unit)

For example, Smith created a bookmark template in Microsoft Publisher and showed students how to enter text about the explorers they had chosen to research and write about. She also showed students how to use Microsoft Paint to produce their explorer pictures.

After students printed their bookmarks, another teacher laminated them and showed students how to create bookmark loops and tassels.

Another way to conduct an I-Search is to have students create a Webbe, or a printed book of web images and text related to a subject. (See Webbe Template and Storyboard, Webbe Printing Tips, Webbe civil war example, RealeBooks)

"Creating a Webbe can be very empowering for students," explained Smith. "By creating their book, then printing it, or 'publishing' it, students have a sense of accomplishment. We even had a book signing party and invited parents. It was a great time."

WebQuests

"Working collaboratively, students use web research tools to investigate a teacher-designed topic of interest. They can also work collaboratively and use technology to create, write, publish, and present their information to their peers," said Throne in explaining WebQuests.

WebQuests challenge students to solve a problem or answer a complex question with several possible answers. In the process, students typically learn about several different subject areas. (Links to examples: Build the Code WebQuest, Multiplication Flashcards, Break the Code at the CIA. Tools: PuzzleMaker Cryptogram, The WebQuest Page)

For example, in the "Build the Code" WebQuest, students must combine math with cryptography. The introduction tells students: "The government is looking for a few good code writers to help send classified information to their agents," and students must "successfully develop a code to send their message and join the secret circle of cryptographers."

Student must then choose a role as part of the cryptography team: multiplication expert, researcher, cryptographer, or organization specialist. In choosing different roles, students can take on responsibilities that play to their strengths or interests.

Each role is then defined, and students are told that all group members are responsible for evaluating and solving their cryptogram, answering a data worksheet, helping their teammates with their roles as needed, and filling out an evaluation.

The WebQuest also provides tasks, resources, a teacher resource guide, a conclusion, and credits.

Tools to help teachers create their own WebQuests include Pre-Writing your WebQuest and WebQuest Maker.

R.A.F.T.T.

R.A.F.T.T., which stands for "Role Audience Format Topic Technology," is a strategy that, according to the authors, integrates reading and writing in a non-traditional way--students create a product that illustrates their understanding.

R.A.F.T.T. is defined as:

- Role: The role or character the writers take on
- Audience: The audience for the product
- Format: The format or vehicle for showing students' understanding
- Topic: The focus of the final product--the who, when, what...
- Tech: The software application to be used

(See R.A.F.T.T. strategy, What is R.A.F.T.T.?, Example of subject)

For example, the authors said, fifth graders used R.A.F.T.T. to make products based on the book Sign of the Beaver, by Elizabeth George Speare.

Students could choose a character from the book (role), and their classmates were the audience. They chose formats ranging from posters to board games based on the book's events and plot; they focused on a specific topic, such as "survival," and they used various software to make their project formats.

Jigsaw

In "home" groups, Thorne said, each student is assigned a subtopic of a particular topic of study. Students from different groups who have the same subtopic then "jigsaw" to their appropriate subtopic expert groups, where they use electronic tools and resources to investigate their portion of the task. They use technology tools to produce information

for their peers. Then, they return to their "home" groups to share their knowledge.

For example, in grades four and five, students can use the jigsaw approach to learn about volcanoes. Students can go to a volcano web site to gather information, with each student in a group gathering information on a specific subtopic, such as basalt, or lava flow. Each group will have the same subtopics.

After students gather information on their subtopic, they break off from their main group to join their "expert groups"--groups that consist of students from every home group that have researched the same subtopic.

In the expert group, each member will present her or his research on the subtopic, taking notes on any new information. Then these expert groups will splinter and rejoin their main group to present their information on basalt, or lava flow, to the entire group.

Students in these groups can then build a wiki with all of their information on various parts of a volcano. (Example: http://pidema.wikispaces.com/Super+Volcano)

Educators who want more information on DI or any of the strategies presented are encouraged to go to http://everythingdi.blogspot.com or eMail the authors at everythingdi@everythingdi.net.

Link:

International Society for Technology in Education

Note to readers:

*Don't forget to visit the **Math Intervention** resource center. U.S. students are lagging behind their peers in other countries in math achievement, fortunately education companies are responding with solutions. Go to: Math Intervention*

eSchoolNews
7920 Norfolk Ave, Suite 900, Bethesda Maryland, 20814
Tel. (866) 394-0115, Fax. (301) 913-0119
Web: http://www.eschoolnews.com, Email: WebAdmin@eschoolnews.com