I hear, I know. I see, I remember. I do, I understand. – Confucius

Teaching in a Digital Age

Effective teachers know that they must get (and keep) their students' interest and attention to be successful. In other words, they create situations that encourage students to be engaged in lessons. Engaged students are those students who are actively learning. They are not passively listening, but are instead actively constructing, dissecting, analyzing, comparing, collaborating, contributing, creating; they are reflecting upon information and ideas as well as how to use that information and those ideas. Technology is a vital tool that can be used to foster student engagement through active learning tasks.

You may wonder why student engagement is important (or whether it is important). Gallup conducts a student engagement and satisfaction survey annually. According to their research, student engagement is a vital factor to academic success. Gallup asks students to rate their agreement with statements such as "My teachers make me feel my schoolwork is important. At this school, I have the opportunity to do what I do best every day," for example. Based upon student ratings, Gallup assigns each student a number on their student engagement index. The engagement index allows for statistical comparisons across time and across indices. For example, the 2013 Gallup report shows that engagement is **the** most important non-cognitive factor correlated with academic success. Also, the report reveals that students are 30 times more likely to feel engaged with school if they have 1 or more teachers who makes them feel excited about their future as compared to students who do not have a single teacher who makes them feel excited. Gallup's 2009 Engagement study also reports that a 1-percentage-point increase on the student engagement index was associated with a 6-point increase in academic achievement. Those are powerful statistics. A single teacher can make a huge difference for a student in how engaged they feel. In turn, small increases in feelings of engagement can lead to large academic gains.

The importance of student engagement is also supported by learning theory, learning practice and research, especially as they tout the benefits of actively engaging with learning materials. Learning by actively engaging with material has its roots in Constructivism (cf., Jonassen, 1992). Constructivism is a foundational learning theory originating in psychology that attempts to explain how people learn. The theory was named for its main tenant, which is that people learn by constructing knowledge and meaning from their experiences in the world. Dewey, Piaget and Vygotsky are all associated, to various extents, with constructivism. For example, Dewey spoke about an "active learner" who uses sensory input to make sense of the world. Most importantly, the learner is not passive—the learner must actively engage with the world in order to learn. Importantly, students can (and do) learn

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from direct lectures. These need not be completely tossed out as there is a time and place for them. After all, students can actively attempt to construct new knowledge while listening to a lecture. However, instruction should not rely solely on lecturing but rather approach instruction from various angles. Some examples are given below.

Experiential Learning theory (Kolb, 1984) is another theory of learning supporting the importance of student engagement. Experiential Learning theory says learning is driven by experience. A person's experiences with the world form and re-form their ideas and understanding of the world around them. This learning theory also fits well with the ideas put forth by Dewey and Piaget. The commonality lies within the necessity and utility of *active learning*.
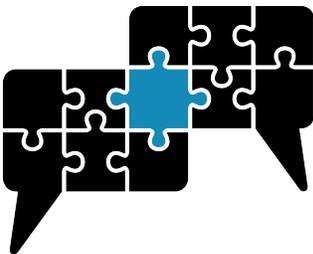
Teachers can use instructional methods that encourage students to actively engage with course material to increase their students' overall course and school engagement. Technology is an excellent way to do this. For example, teachers can (1) provide students with real-world problem solving opportunities, (2) provide students with experimental methods for reaching a conclusion, (3) and encourage students to think about and discuss learning activities during and after a lesson. Through the use of message boards, for example, the discussion can continue outside of the classroom walls. Teachers' roles should be less about direct instruction and more about helping students become "student experts" or "expert learners". Having students explain and discuss topics with other students, by creating multimedia presentations, for example, can be an excellent way of fostering this via technology.

ASCD's (formerly the Association for Supervision and Curriculum Development) research also supports the importance of student engagement (and teacher engagement). ASCD conducted a study examining both the activities students and teachers report as most engaging, and those that they report as hating to do (Strong, Silver & Robinson, 1995). Participants report enjoying and being engaged by work that (1) allowed them to be creative, (2) caused them to be curious, and, (3) promoted positive relationships with others. In contrast, the activities they report hating were those (1) that were repetitive, (2) activities forced on them with no choice, and (3) activities that requited little to no thought. In other words, both students and teachers are engaged by work that excites their curiosity and are put off by work that does not.

According to Strong, Silver and Robinson (1995), students who are engaged are driven by four goals: success, curiosity, originality and relationships. These four goals are intrinsically motivating to students; that is, students feel a natural motivation to reach these goals with no external reward. To create lessons that tap into these naturally motivating goals, teachers should strive

to connect content to issues students are facing outside of the classroom. For example, a teacher might connect adolescent independence ("How can I develop my own identity separate from my parents and other adults?") to the teaching of the American Revolution with the connection "When is rebellion justified?" Students could use technology to record themselves providing examples of rebellion that is (and is not justified) and why that is. The class could use clickers to vote on the most convincing arguments and use discussion boards to continue the conversation. This lesson uses the power of technology to connect what students care about to what they need to learn in school in order to increase their course engagement.

As another example, teachers could connect a lesson on calculating percentages with students' natural search for identity using the connection, "To determine your likes and dislikes, compute the percentage of your life spent in various activities." Students could use computers to create visual representations (bar graphs or pie charts, for example) showing visually how their time is spent (reported in Strong, Silver & Robinson, 1995, adapted from Beane & Lipka, 1986). Comparisons between students or student groups could be made and visually displayed for the class on a smart board. Students could discuss what they think certain people value, use clickers to vote on what they think others value and what they might want to do when they are adults. Again, technology can harness students' intrinsic motivation and curiosity and tie it directly to learning to increase engagement.

Other ideas to increase engagement through instructional methods that utilize technology: (1) make use of visual displays (especially for comparing, constructing, dissecting and analyzing); (2) create opportunities where students have choices about how they interact with content; (3) allow for opportunities to collaborate both within the classroom and across classrooms, institutions or the world; (4) connect students with experts from across the globe; and (5) use up-to-date real world news and information in teaching. Each of these methods, as well as the other lessons and practices mentioned earlier, will help increase student engagement through the power of technology—and with increased engagement, increased learning is sure to follow.

Research & Innovation NETWORK

About the Teaching in a Digital Age Research

States and districts are investing heavily in educational technology, aiming for a transformational change in student learning. The crucial next step is to effectively integrate technology with instruction to improve learning outcomes. Pearson, Digital Promise, National Network of State Teachers of the Year (NNSTOY), and the University of San Diego have come together to research digital learning strategies and how they positively affect student learning. Separating tools from toys, this research strives to provide evidence-based recommendations for educators to implement in their classrooms.

Learn more at ResearchNetwork.Pearson.com

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