

# Improving Student Achievement

There is [existing research](#) that supports how **Promethean's ACTIVclassroom solution** allows for a learning environment that is centered upon and enables proven effective teaching and learning strategies. Let's start with these three areas:

- 1. Formative assessment**
- 2. Student engagement**
- 3. Ability to teach to different learning styles**

The reason we focus on these three areas is that these are three valid strategies that we know improve and positively impact student achievement. The Promethean ACTIVclassroom environment addresses all three of these principals. See sample supporting research below as well as specific examples of how these strategies are using in this environment.

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## 1) Formative Assessment and Promethean's ACTIVclassroom

*"The aim of assessment is primarily to educate and improve student performance, not merely to audit it"*  
(Grant Wiggins, 1998).

Formative assessment, which is the frequent assessing of student progress to identify learner's needs and shape teaching, is certainly a prominent issue in today's classrooms. Black and William report that studies of formative assessment show an effect size on standardized tests of between 0.4 and 0.7, larger than most known educational interventions.

According to the NCTM's *Principles and Standards for School Mathematics (2000)*:

*Assessment should be more than merely a test at the end of instruction to see how students perform under special conditions; rather, it should be an integral part of instruction that informs and guides teachers as they make instructional decisions. Assessment should not merely be done to students; rather, it should also be done for students, to guide and enhance their learning (The Assessment Principle, ¶ 1).*

Paul Black and Dylan William's "Inside the Black Box: Raising Standards Through Classroom Assessment" (*Phi Delta Kappan*, October 1998) provides strong evidence from an extensive literature review to show that classroom "formative" assessment, properly implemented, is a powerful means to improve student learning - - but summative assessments such as standardized exams can have a harmful effect. They also report that formative assessment is particularly effective for students who have not done well in school, thus narrowing the gap between low and high achievers while raising overall achievement.

*"When the cook tastes the soup, that's formative assessment; when the customer tastes the soup, that's summative assessment."* Paul Black, 1998

According to Kellough and Kellough, "Teaching and learning are reciprocal processes that depend on and affect one another. Thus, the assessment component deals with how well the students are learning and how well the teacher is teaching" (1999, p. 417).

A research paper, **"Formative Assessment and its Uses for Improving Student Achievement,"** commissioned by STI, and authored by Carmen Giebelhaus, Ph.D. and Sandra Young, Ph.D. identify three key points regarding formative assessment.

1. They confirmed that formative assessment, when used correctly, significantly improves student learning.
2. They confirmed that formative assessment produces the greatest achievement gains among the low achievers—more than any other group of students, helping to reduce the achievement gap.
3. District and school leaders play an important role in assisting teachers in the appropriate use of formative assessment and assessment data analysis to improve student learning.

Although this research cited above proves the importance of formative assessment, the effective design and use of it is neither widespread nor consistent in today's classroom. Leadership is essential in the cultivation and implementation of formative assessment initiatives and should provide the training and tools necessary to carry out the process,

If this is an agreed upon effective way to impact student achievement, why don't we do more of it?

- It takes up class time.
- It is hard to document and to do.
- You have to plan it in advance.

**In Promethean's ACTIVclassroom learning environment , many of these factors are eliminated. Each student would have at their desk a hand held student response device called an ACTIVote device. Using these devices in conjunction with the ACTIVboard and ACTIVstudio, assessments can be taken at any time.**

**Teachers can plan within their lessons (using ACTIVstudio lesson authoring program) prepared questions (or ask questions on the fly) that can poll student understanding DURING the lesson.**

**The results are tallied and shown immediately to the group which:**

1. **Give students real-time feedback to their answers**
2. **Allow teachers and students to discuss how the classroom "voted."**
3. **Give the teacher the ability to change direction at any time depending on the outcome of the assessment.**
4. **Provide a student-focused approach to teaching.**

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## **2) Student engagement in Promethean's ACTIVclassroom**

Research findings are unequivocal in this matter. Student learning and student retention are correlated strongly with student engagement. The more actively engaged students are – with teachers, each other and with the subject matter itself- the more likely they are to have higher achievement levels.

In a report sponsored by the National Institute of Education states "two fundamental principles about the conditions of educational excellence everywhere." Those principles are:

1. The amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program.
2. The effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement in learning (p.19).

In "Seven Principles for Good Practice in Undergraduate Education" (1987), Chickering and Gamson provide this oft-quoted guidance:

Good practice in undergraduate education:

1. Encourages student-faculty contact.
2. Develops reciprocity and cooperation among students.
3. Encourages active learning.
4. Gives prompt feedback.
5. Emphasizes time on task.
6. Communicates high expectations.
7. Respects diverse talents and ways of knowing.

A definition offered by Skinner & Belmont (1993):

*Engagement versus disaffection in school refers to the intensity and emotional quality of children's involvement in initiating and carrying out learning activities...Children who are engaged show sustained behavioral involvement in learning activities accompanied by a positive emotional tone. They select tasks at the border of their competencies, initiate action when given the opportunity, and exert intense effort and concentration in the implementation of learning tasks; they show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity, and interest. The opposite of engagement is disaffection. Disaffected children are passive, do not try hard, and give up easily in the face of challenges...[they can] be bored, depressed, anxious, or even angry about their presence in the classroom; they can be withdrawn from learning opportunities or even rebellious towards teachers and classmates. (p. 572.)*

**But how do we measure student engagement?**

#### **Past strategies**

The difficulty researchers have had in quantifying student engagement has led many to adopt “time-on-task” as the means for measurement for engagement. Time-on-task researchers commonly use observable behavioral measures—such as whether the student is looking out the window or at the teacher while he or she is talking—to determine students’ rate of engagement. Wilson (1987) states, “For the purpose of observation, on-task behavior can be defined as the time a student spends actively looking at some appropriate instructional object or person. . . . If students have their eyes closed or oriented toward a window, door, floor, or a nonparticipating classmate, they are considered off-task. . . . Of course, there will be errors. Students who are looking out the window but thinking of math will be judged off-task, while those who are looking at the teacher but daydreaming will be rated on-task. Still, these errors occur infrequently, and they tend to cancel one another.” (p. 15)

#### **Strategies in a 21st century learning environment**

Observational data can also be gathered in this environment, but other more interesting methods are available as well.

**Using interactive whiteboards or wireless slates as a presentation tool itself can keep student attention but this is not actively participating. It is passively watching.**

**Obviously, by asking for individual student participation in a lesson at the ACTIVboard or wirelessly using an ACTIVslate, we can see if students are participating or not. But how do we keep the engagement of the entire class?**

**Imagine that the teacher has prepared a lesson where a student is asked to come to the ACTIVboard to work out a problem or make a choice on moving an item from one place to another. The teacher can simply ask to whole class to “vote” on whether they agree or not. By having the entire class give input and not just the teacher saying “yes, that’s right,” the teacher can immediately see who is actively engaged or not AND if they are understanding the subject matter.**

According to an article in the **Alabama Federation Council for Exceptional Children**, children are actively engaged less than 50% of classroom time.

[http://www.afcec.org/tipsforteachers/tips\\_b4.html](http://www.afcec.org/tipsforteachers/tips_b4.html)

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**Managing the Learning Environment: Strategies for Increasing Student Engagement**

*“Research consistently shows that the more time students spend involved in learning activities, the more they learn. That is, there is a strong positive relationship between the amount of time students are actively engaged in learning activities and their achievement. Further, increased time spent in academic learning does not result in negative attitudes toward school or learning.*

*Learning time in the school day has been divided into four categories: (a) scheduled time - the amount of time the teacher plans to spend on various subjects; (b) allocated time - the amount of time actually devoted to the learning activities; (c) academic engaged time - the time students are actually on-task in a learning activity (e.g, taking notes, listening to teacher, solving a problem); and (d) active academic responding time - the time a student spends making responses that are active and observable (e.g., discussing tasks).*

*Most teachers schedule and allocate the appropriate amount of time for learning, but few teachers actually ensure that their students are engaged or actively responding during the allocated time. It has been found that in some classes, students spend less than 50% of the allocated time engaged or actively responding. Two major factors that contribute to such low rates of engagement are (1) instructional design, and (2) classroom management. This brief provides the teacher with techniques for increasing academic engaged and active academic responding time (Mastropieri & Scruggs, 2000; Polloway & Patton, 1997).*

One of the methods recommended include:

*“Ensure that students’ opportunity to respond is high and active responses are part of the lesson. The opportunity to respond is positively related to academic achievement. That is, the more opportunities students have to respond to a particular content or practice a skill, the better their understanding of the material or skill. Additionally, increasing opportunities for responding tends to increase the amount of material covered. Ways in which to increase opportunities to respond include making sure that all student are called on, using choral responding techniques, peer tutoring, and cooperative learning. Further, when students are actively involved in an activity (e.g., writing, solving a problem, reading out loud), in contrast to being passively involved (e.g, listening), greater achievement gains are made. Strategies that facilitate active involvement include (a) providing cues and prompts that lead students to correct answers, (b) sequencing instruction so that high rates of accuracy are achieved, (c) asking frequent questions, (d) peer tutoring, and (e) cooperative learning.”*

**By correctly using tools in a 21st century learning environment, teachers can create lessons that encourage active student participation by their lesson design.**

**Some teachers will be tempted to use these tools as a glorified whiteboard that allows notes to be save and share later. Other may use the solution to make “cool” presentations. ACTIVstudio and ACTIVprimary lesson development software were designed to allow teachers to create interactive lessons, not presentations that allow for easy to create authentic learning situations and encourage whole group feedback. Staff development is the key to these best practices.**

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### **3) Addressing student learning styles with Promethean’s ACTIVclassroom**

Each person has different learning styles or a mix of them. Using multiple learning styles and “multiple intelligences” for learning is a relatively new approach. This approach is one that educators have only recently started to recognize. Traditional schooling used (and continues to use) mainly linguistic and logical teaching methods. It also uses a limited range of learning and teaching techniques. Many schools still rely on classroom and book-based teaching, much repetition, and pressured exams for reinforcement and review. Students who use these learning styles and techniques are often labeled as “bright.” Those who use less favored learning styles often find themselves in lower classes, with various not-so-complimentary labels and sometimes lower quality teaching.

In her book *The Confident Student*, Kanar (1995) describes learning styles that are related to physiological factors: visual (seeing/picture), auditory (hearing), and kinesthetic (touching/physical).

- Visual learners

- Auditory learners
- Kinesthetic learners

### **Visual learners in a 21st century learning environment**

**Many children today are visual learners. Images, pictures, color and other visual media help these children learn. A 21st century learning environment allows all of this to happen. Teacher can effectively use color in lessons for differentiation through allowing students to color or “fill” in specific words or a highlight to highlight items with similar meanings with the same color. Mind maps using colors and pictures in place of text helps the visual learner. As mind mapping software such as Inspiration work so well on an ACTIVboard, making these ideas “in full color” as simple.**

### **Auditory learners in a 21st century learning environment**

Teachers of auditory learners need to provide as much auditory stimuli as possible, such as verbal reinforcement, group activities, and class discussions.

- **Include audio in your lessons - ACTIVstudio allows teachers to make links to sounds (music, sound effects, speeches)**
- **Participate in class discussions. –Put questions in your lessons and allow for all students to give their input first via the ACTIVote devices and then follow up with a group discussion of the answers given.**

### **Kinesthetic learners in a 21st century learning environment**

Kinesthetic students prefer the tactile sense. They are poor listeners, learn by doing, express emotions physically, and have an outgoing personality. They must touch or feel to understand. They learn best by engaging in hands-on activities (Kanar, 1995). If they can touch and feel whatever they are learning about, the kinesthetic/tactile learner will process and remember the information quite well. As students in a classroom, these people are usually quite restless, have more difficulty paying attention, and “can’t seem to get focused.”

**Provide an environment for kinesthetic learners that allows the student to physically come to the ACTIVboard (or use the ACTIVslate to:**

- **Physically move objects around**
- **Highlight and underline ideas.**
- **Draw picture of what is learned.**
- **Use tools such as the interactive ruler, protractor, map tools for those who need to learn by actively doing.**

## **Conclusion**

Promethean’s ACTIVclassroom when implemented and used correctly provides an environment that encourages research-based teaching and learning strategies.