Eric Jensen's

Top 10 Achievement Boosters

The list below is a synthesis of my own "Top 10." It is drawn from many sources and each one of the "Top 10" listed below went through rigorous screening.

In some cases, you'll see "effect sizes" listed. This is just one of over a dozen effective ways to measure the value of a particular classroom intervention.

To use a sports metaphor, there is a commonly agreed upon measure of performance from "kids play" to the professional level. In baseball, we measure runs scored, in football and basketball it is points scored and in hockey it is goals scored.

In research, a common measure is known as the "effect size." This is the relative gain or loss that an intervention has created *when contrasted with a control group* with no intervention. Effect sizes can give you one way to understand the value of interventions.

Low effect sizes are generally under 0.25. The median of all effect sizes is about 0.40, meaning half are above and half are below (Hattie, 2009). Any effect size over 0.50 (if applied continuously), would add one year's growth in student achievement and effects sizes over 1.0 are considered large (Coe, 2002).

I use other measures besides effect sizes, but now you'll better understand the impact of each top ten item. I make no claims that this list is exclusive or flawless.

It is simply my absolute best judgment at this time of my life. I have detailed the sources and citations at the end. While we could all add our own "favorites" to this list, it is rock solid and every choice is a great one. You'll want to grab something to take notes with (or do a graphic organizer). These tools can and will be life changing (if and when you implement them). Let's jump in and get started!

1. Better Stories

WHAT THIS MEANS: The “story” that students bring to school every day is a critical predictor of how they will actually do. Every student has a mental scenario about their chances for success and why they think that their expectations are correct. In Hattie’s research (2009), this factor is the number one predictor of student achievement with a huge 1.44 effect size. For many of your students to succeed, you will have to shift the student narrative and provide a better story for them to buy into. Their story consists of their expectations based on the past and based on what current situation is right now. You must get them to “buy into” a different, more robust future or their odds of success are low (Wilson, 2011).

Strong teachers are reliably good in this area. They raise expectations through the roof and they provide the skills to set and manage goals. But that means you will also have to deal with failure, setbacks and discouragement. The growth mindset is a key puzzle piece because Dweck’s research (2006) showed that it is what you do after you fail, not succeed, that matters most. When you shift the student’s “story” to a more robust and optimistic one, student’s expectations of go up. It creates energy and momentum. The effect on student achievement is huge. It fuels energy to get through rough patches.

HOW TO MAKE THIS HAPPEN: Help students set higher goals than they would ordinarily. Ask students to turn their goals into a narrative that details their story of their future plans. The more real the story becomes, the higher the predictive power of the story. One Title 1 teacher posts up college pennants in his 5th grade classroom and lists underneath each one, the names of his own students that have attended that college. This helps make it VERY real. College is not for everybody, so have 5th graders partner up with a classmate to research and present job options to second graders (or 11th present to 10th graders). By the way, when you set high goals, you’ll also need to teach students how to deal with failure. Treat mistakes as a way to learn faster. Share success stories of students who have succeeded and let new students start to tell their predicted stories.

YOUR PLAN: _____

2. Fearless Feedback

WHAT THIS MEANS: Formative feedback is ideal, daily quality feedback is better and summative is still good, but the least valuable of the three. Why? Ideal feedback answers 3 major learning questions: 1) What is my big goal, 2) What is my progress being made toward that goal and, 3) How do I get there next? Feedback is always rated in the top 10 for contributions to student achievement. Feedback has sky-high effect sizes (0.81 - .90, Hattie, 2007) so let's flesh out the best way to do this.

HOW TO MAKE THIS HAPPEN: First, the ideal ratio for positive to negatives is 3-1 (Fredrickson & Losada, 2005). Kids need to get plenty of error corrections as they learn, but also affirmations. When kids play a video game, both the visuals and sound effects are designed to give more positives than negatives. When you call on students, always affirm something, even if it's just their effort ("Thanks for jumping in. We will need more details, so I'll come back to you in a minute when you are ready with a few").

The second option is to use feedback that includes the "mission" (the big long-term goal), the "milestone" (where progress is at right now) and "move" (how to move to the next stage, step or milestone). This is critical in moving students forward (Petty, 2009). The third rule for quality feedback is to focus on identifying which traits are in play. Say to a student whether you liked or need more of a specific attitude, effort or choice of strategy used. "I love how you tried several strategies to come up with the right one. That shows me grit and it may help you get into that college you told me about." The fourth option for feedback is to allow the task results to inform the students. For example, if they are brainstorming with fellow students, one suggestion students make may be met with many positive and curious questions and a different suggestion may meet with silence. Here the feedback is about the product and process, not the person (Hattie & Timperley, 2007). In this case, the process of brainstorming itself informs

students on the quality of their contributions, albeit in an informal way.

YOUR PLAN: _____

3. Connections

WHAT THIS MEANS: Teacher-student relationships and student-student relationships are both critical. Invest in relationships and get a whopping effect size of 0.72. You get extra synergistic effects when the relationships are staff to staff and staff to parents. We also see high degrees of success where teachers use appropriate levels of interdependency so that students have their success tied to the success of others. This type of learning, relational learning, works best when the student alliances (including partner, team, cooperative learning) are also taught social skills as well as content. Students *will usually be happier and work harder in class when they can work well with peers.* There are limits to this factor, but when done well it seems like a miracle.

HOW TO MAKE THIS HAPPEN: First, read up on how to build effective teams or you'll likely be disappointed. There is no "free lunch" with groups, teams or study buddies. They all take work to develop and maintain. If you do not already use this factor, and you're ready to begin, start with something small and build. I began using temporary partners. Students get up for a quick stretch, then take 8 steps, find a partner. Build 30" of "get to know you" time into each of your content and skill-builders (e.g. name, something you dream about doing someday, etc.) so that you increase the social glue and reduce the cliques in the class. Once I got good working with partners, then I started getting comfortable with building and using teams. You start small and keep building.

YOUR PLAN: _____

4. Bridges

WHAT THIS MEANS: Just to survive, teachers must make an enormous number of assumptions. For example, you assume that if a student does XYZ, they will

get suspended. But you have a lifetime of learning the “rules of the game.” Your students are generally terrible at making the “mental bridges” that link X behavior with Y outcomes. For example, when they put out extra effort, they don’t know that it sets the trend for a lifelong habit of persistence. Attribution, linking what they do to what they get or will get in the future turns out to have a sky-high effect size of 1.42 (Dweck, 1999). This is just a minor bit of extra work, but it pays off big time!

HOW TO MAKE THIS HAPPEN: Once you have high goals in place (very high) or you have elicited student dreams, you now have something to link classroom academics and behaviors with as an attribution. This link can be made visually (graphic organizers, arrows or with a flow chart) or make verbally. When you see a student working extra hard, you simply say, “Eric (or Erica), I love how you’re putting extra effort into your assignment. That shows grit and that will help you get that job you were thinking of as a software developer (or whatever it was).” If you don’t make these EVERY DAY, kids will never know what they did, that helps move their life forward. This is a constant effort; without it, students simply do not connect the dots. Is that what you want?

YOUR PLAN: _____

5. Spaced Learning

WHAT THIS MEANS: In general, the longer you stretch out learning (vs. bunch it up into less time), the better quality the learning. At UCSD, lead researcher Dr. Hal Pashler and colleagues have studied this for years (Cepeda, et al, 2008; Cepeda et al, 2009). They have done action research studies in real classes to show the power of this strategy. This process has a robust 0.71 effect size, yet it is routinely ignored. Research suggests that the best ratio for new learning is about 50% content and 50% of the time for processing (Russell, Hendricson, & Herbert, 1984). There are many easy ways to make this happen.

HOW TO MAKE THIS HAPPEN: Conceptually, the easy way to understand and embed this path is to think, “10-80-10.” That means you might invest 10% of your time IN ADVANCE of your unit to prepare the learners. Use pre-exposure with introductory videos, cues, gathering background information, finding out what students want to learn, using advance organizers and a pre-quiz. Then invest only 80% (vs. 100%) of your time during the unit on the content. Why 80%? Each chunk of time you allocated for a unity must allow for time to be adding in the 10% from the last unit and adding the 10% for the next unit. This effectively stretches or spaces the learning out over a much longer. After you finish the 80%, then stretch the unit another 10% into the next unit. Use mind maps to tie it into the new content (or the last few months). Have students submit review Qs to develop simple partner practice. Let students work as a team to prepare a new quiz once a week for 3 more weeks. The main rule is, “Keep the content alive longer.”

YOUR PLAN: _____

6. Brain-building

WHAT THIS MEANS: As you know, the brain research over the last ten to twenty years has shown to us the brain’s amazing plasticity, meaning the capacity to change. Our brain changes when we learn a new language, a new skill, change our diet, change our exercise routine and even change our social circles. When we say, “The brain can change,” many nod their heads in approval, but they are unsure what that means. This is one of the greatest single discoveries of our generation: “DNA is not your destiny.” But to get the maximum changes, one must know how to do it.

HOW TO MAKE THIS HAPPEN: There are two types of neuroplasticity (rewiring the brain). One is the residue of bad events and is maladaptive (e.g. head trauma, drugs, neglect or abuse). The other is a good type that comes from positive diets, people, new skills or attitudes. Let’s say you are building a specific cognitive skill, like reasoning or memory. The path to maximizing the time and getting the greatest results is simple. Start with getting “buy-in”, and then ensure

you provide students with a quick initial learning curve to get everyone excited. As they grow, ensure students get 95-100% success at each level of skill, and then bump up complexity and challenge (Abuhamdeh & Csikszentmihalyi, 2012). Remember the importance of challenge for optimal mental engagement.

Students also need actionable feedback during the skill-building as well as a long-term goal to keep effort high. Social learning can help with motivation, so partners can boost effort. Time is also huge issue, so ensure kids get 10 minutes or more 3-5x/wk. over 8-16 weeks. Once they get it right, they still need practice. Every good academic program follows the same rules, whether students are learning calculus or learning to play the piano. Learn the skills and embed them with the content to be learned. Stick with these and good things will happen. Best resource for skill-building is *Practice Perfect* (Lemov, Woolway & Yezzi, 2012).

YOUR PLAN: _____

7. Engagement

WHAT THIS MEANS: Engagement means different things to different people. The so-called “experts” are quick to point out that we want higher order engagement. But engagement happens on many levels. Here I introduce several levels and after each of them, there are suggestions on what to do and how to do it. Teachers who use high engagement and engage *relentless affirming interactions* with thoughtful error correction usually have high-performing students. Let’s introduce the WAYS that you can engage. All of them are good, just not all for the same situation.

HOW TO MAKE THIS HAPPEN: The first type of engagement I call “maintenance.” These engagements go by very quickly and are designed to “maintain mind-body states” for optimal learning. This 1st level consists of brief actions such as call-responses, “turn tos” (“Turn to your neighbor and say, ‘Great effort’”), and physical acts like, “Slide your chair a foot forward” or “Clap twice and stomp your feet,” or teams do an energizer, or just stand and stretch. These

keep students in behaviorally flexible states and promote curiosity, attention and blood flow. Without these, students may drop off into states of lethargy.

The second engagement is called “set-ups and buy-in.” Most of your activities or content blocks will work (or not) based on how well you prepare learners before you begin. Set-ups include “priming” for content, cueing with teasers, using buy-in strategies and invoking states of anticipation (e.g. “Oh! I’ve got a great idea; it’ll only take a second. Please stand up and take in a deep breath. Now, if you’re ready, next you’ll…”). These strategies are not much of anything EXCEPT they ensure the NEXT thing that you do WILL work. “Set-ups and buy-in” are priceless and without them, even good activities will die.

The third type of engagement is orchestrated to elicit a certain type of cognitive change. These would be activities such as whole class Q & A time, partners creating a quiz, discovery learning, group projects, completing a summary, discovering missing items, doing key research or skill-building. These are the most commonly cited forms of engagement. These are indeed powerful. But you can’t be doing these 100% of the time, so that’s why there are other types offered here.

Finally, for long-term change, you’ll want “Eudaimonic engagement” to give your students the joyful satisfaction that arises from pursuing long-term and worth-while goals. You get this when students cooperate to become a team, or they focus on learning a tough new skill, or building something relevant, or leading an interesting project. This can sustain students through long-haul learning and it fosters grit and resilience.

This final type of engaged learning joy is associated with increased gray matter (Lewis, Kanai, Rees & Bates, 2013) and a lower inflammatory level and stronger antiviral response (Algoe & Fredrickson, 2011). Research shows it also helps kids stay healthy, avoid drug temptations and have greater resilience (Cohn, Fredrickson, Brown, Mikels & Conway, 2009) plus it helps students choose healthier life pathways (Tong, Fredrickson, Chang & Lim, 2010). This

engagement requires BIG goals, interdependency, feedback and relevant challenges with buy-in. You have to look hard for this research, since it is all pretty new. But, it's one of my favorite types of engagement and motivation is usually through the roof with life-changing dividends.

You've been introduced to several ways to think of engagement. Your new mindset should be, "I can engage any student at any time, at any level, for any activity." That's the level of confidence you want. Over time, you'll have collected or developed enough strategies to back up that confidence by working with some new levels of engagement. Some of the benefits may turn out to be invisible to the untrained eye. But you'll know better.

YOUR PLAN: _____

7. Nitty-Gritty

WHAT THIS MEANS: Fostering grit, persistence and dealing w/ failure are known success-builders. The success of two best-selling authors (Carol Dweck with *Mindset* and Paul Chance with *How Children Succeed*) has invited all of to think more deeply about the nature of mindsets for school and life. The core understanding here is a critical one because the perception is that these traits are about only succeeding. Actually they are as much about how we deal with failure.

HOW TO MAKE THIS HAPPEN: When students fail or struggle, here's what to avoid. Avoid excuses, don't bless them ("Bless his heart; he's just not cut out for math") and avoid blaming luck, genetics or home situation. Avoid giving 'individual-orientated personal praise' such as, 'I'm proud of you.' When you do that, it is unclear that success is due to. Is it genes, personal attributes, or luck?

Now, here is what TO DO. Instead, give praise focused on the process required for success such as the student's effort or strategy. Say, "Seems like you really tried hard, which is a good way to get it done on time." When students fail or

struggle, here's what you say, "We are all in this for the long haul and this was just a glitch. Yes, it is disappointing. But let's regroup, figure out a new plan and jump back in with a big effort."

There are many ways to build grit. Create a common vocabulary for it. Tell kids what it is, and what it is not. "Doing THAT shows me a lot of grit!" Reinforce it every time you see a student pushing through obstacles. "I love the way you're being so gritty with that task." Use reflection when "grit drops." How? You help them connect their values to the task to infuse new energy and effort for success. Give students a 10-minute writing assignment about their own values and how they apply to their work. This can also be done verbally or in writing. Tell stories of the results of "grit in action." Students do better after they connect values with their work. Finally, give them a task that is big enough, complex enough or time-consuming enough to even have a chance to develop and show grit.

Here's how one high-performing teachers introduces grit. He begins the grit lesson by holding a Superball and an egg. You can guess where this lesson will go. He says to the class, "Who are you? An egg or a Superball? Now, what happens when an egg hits an obstacle? Now, what happens when a Superball hits an obstacle? 'It bounces back harder, they shout out.' He throws the Superball up against the wall and catches the bounce back a few times. So what happens when an egg hits an obstacle? The class shouts out, 'It goes splat!' The teacher says, 'Yes!' and to prove it, he throws a few eggs up against the wall. The splatter goes everywhere but the kids understand. The Superball people

Work through challenges, never give up, and keep trying different strategies. If you want to succeed in this world, you will need to be a Superball, not an egg.

YOUR PLAN: _____

9. Relevance

WHAT THIS MEANS: Many students walk into a class asking the question,

“What’s in it for me?” While that question may seem a bit selfish and even harsh, put yourself in their shoes. A survey was done with over 81,000 kids. Over half of them said that the only reason they were in school was that 1) it’s the law, and 2) their friends are there (Yazzie-Mintz, 2007). This speaks quite loudly to the challenges we all have as educators to make our curriculum relevant, whether it is Common Core or state standards. When you look at the list of all content areas that are required for students, you’d be hard pressed to say, “Kids will love these!” Instead, we get kids who think school is boring and they simply tune out. It’s no secret; creating relevance can be tough. Here are some suggestions.

HOW TO MAKE THIS HAPPEN: Chunk the content down to smaller “bite-sized” chunks. Use buy-in strategies to get students involved right at the start. Sometimes, once a student is involved, they can get caught up in the learning and it takes on a life of it’s own. At the K-5 level, use the “bigger kid” challenge (if you have 2nd graders, entice them with the opportunity to do something only 3rd graders would get to do), use a simple reward such as a privilege, make the task extra fun (maybe add music to it?), teacher enthusiasm, evoke curiosity (“What will happen next?”), affirmation of value of activity, be gross (better if it is ugly, dirty, weird or it drips), allow kids to make a new friend and include movement. Provide more choice to students of all ages. Ensure you have pre-selected the choices so everyone will be happy. Then “sell” the choice to them so they realize that it is valuable.

At the secondary level, be a bit edgy or risky, use peer pressure, bump up the challenge, stair-step the activity into super micro-bits, increase work amounts with friends, provide opportunities for kids to gain peer status, be experimental, help them find their voice for something they really believe strongly in, allow them to wed content with solving local problems, let them carry out their vision to work for something much grander. Finally, immerse the work by inside respectful and caring relationships. With all kids, especially kids of color and from poverty, a key piece of the puzzle is relevance of instruction based on a student's culture, history and "story." Remember the narrative from item #1 above?

Now we are combining all three and this is a blockbuster of an idea. An example is in Whitney's class. She teaches middle school English but her class is about giving kids a voice. Ask kids for what's wrong in the world and every middle school kid has got an answer. Now turn the question around to, "If you knew someone important would listen to you, what would you say we should do about it?" She says, "We write to change the world." This is relevance based on culture and the kid's story. And it works; she gets three years worth of academic gains for every year she teaches. Her kids work all semester to write a paper so good that someone will listen to them. The teacher arranges a VIP audience for the kids to read their paper to at the end of the semester. Not a dry eye in the house!

YOUR PLAN: _____

10. Plan B

WHAT THIS MEANS: Every teacher has their favorite ways of teaching. If your results are through the roof good, keep using them! For most of us, what we need is to invite alternative representations for the learning. This means simply, if you said it, let them write about it. If they read it, let them perform it. If they built a model, let them present the model to others. In short, whatever the original representation of the learned concept (visual abstract, performance, soundtrack or experiential learning, etc.) shake it up and offer a "Plan B."

HOW TO MAKE THIS HAPPEN: Gesturing the learning is VERY powerful. Requiring children to gesture while learning the new concept helped them retain the knowledge they had gained during instruction at a 90% level. In contrast, requiring children to speak, but not gesture, while learning the concept had no effect on solidifying learning (Cook, Mitchell & Goldin-Meadow, 2008). In math, researchers used three groups. First, they found that children required to produce correct gestures learned far more than children required to produce partially correct gestures, who learned more than children required to produce no gestures (Goldin-Meadow, Cook & Mitchell, 2009).

Writing is powerful. Asking students to write out their thoughts has three benefits. The research among meta-studies assigns summarizing a high effect size of 1.0 contributing to student achievement (Marzano, 2001). First, it allows them time to reflect and clarify. Second, writing can deepen our thinking, encouraging us to make additional connections. Finally writing helps us remember more than if we did nothing or used a keyboard (Mangen & Velay, 2010).

But allowing them draw out what they are learning helped them recall even better (Azer, 2011). Here's how to use this. In your work, after students learn a small chunk of content, give kids a choice, they can gesture or write (summarize) the topic to summarize for 5 minutes. Then, switch them off, so that those who wrote will now gesture and vice versa. The results are powerful, since each skill helps unleash the other. Both processes will help unleash a powerful memory.

The final and most well-known strategy is using some type of graphic organizer. The effect size is a huge 0.75, and some of the sub-strategies can be higher (Marzano, 2000). You've got common options to use mind maps, bubble maps, the fishbone and flow charts. There also a dozen or more other types of graphic organizers you can use so that your students never get tired of them. Once you start down this path, you'll see you can have students do them solo, with a partner, on a team, piecemeal for a jigsaw effect, use flip charts, digital maps and even collaborate with other classes. It is one of my favorite tools to use as pre-learning or for post learning reviews as well as a cognitive or social builder. There are many other ways to represent student learning, but you get the idea: always use your "Plan B."

YOUR PLAN: _____

BONUS IDEA: Physical Activity

Energizers, recess and movement support learning and are critical to education. How? We now know that we can grow new neurons through our lifetime and that they are highly correlated with memory, mood and learning. This process can be

regulated by our everyday behaviors, which include exercise. The optimal activity is voluntary gross motor, such as power walks, games, running, dance, aerobics, team sports and swimming. We also now know that early childhood movement wires up the brain to make more efficient connections. That supports the later academic learning. Schools can and should influence these variables.

Practical school applications: Support more, not less physical activity, recess and classroom movement. A brief classroom energizer (2-10 minutes) is good. It raises the right chemicals for thinking, focus, learning and memory (noradrenaline, dopamine and cortisol). It pumps up blood flow to the brain. Optimal benefits are recess and P.E. Why? Students need 20-50 minutes per day to generate the biological changes for a lower stress response, boost neurogenesis and boost learning. For the first few weeks of school, expose students to a variety of physical activities. Then, offer choice. That's critical because voluntary activity is better than forced activity, which may cause an overproduction of cortisol.

SPECIAL NOTES:

I have used five primary sources. In addition to the research "giants" (Bob Marzano and John Hattie), I have also referred to the excellent works of Geoff Petty including, "Evidence-Based Teaching" (2009). The other additional sources include individual studies from peer-reviewed scientific journals and finally, my own doctoral studies on twelve schools in five states and three time zones.

Professor John Hattie researches *factors* such as "relationships" but rarely details the exact strategy to use. Visible Learning (Hattie, 2009) has 15 years' research and synthesizes using over 800 meta-analyses (from over 50,000 studies) relating to the influences on achievement in school-aged students. It is simply the largest ever collection of evidence-based research into what actually works in schools to improve learning.

In contrast, Bob Marzano reveals specific curriculum-based classroom *strategies* that give real effect sizes in the everyday context of teaching. For example, he suggests, "Compare and contrast" as a cognitive skill builder. There are benefits and drawbacks to both approaches. In the list above, I have taken the liberty of combining items and renaming them for additional clarity. The good thing is that this list will work with students from all socioeconomic levels and academic achievement levels. Here are the cites from the material above:

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