Three critical components ignite collaborative learning, student excellence.
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Technology, alternative collaborative tools, and staff. When it comes to fueling the education process, learning occurs most effectively using a combination of these three tools in a setting of collaboration between students and teachers.

CEO study ranked collaboration as the No. 1 trait that CEOs seek in employees. Schools using a variety of tools for interactive or collaborative learning see students excel exponentially. Collaborative efforts vary tremendously – from simplicity with a return to the chalkboard with peers to complexity involving 4th graders at Nettelhorst Elementary School partnering with Northwestern’s Department of Mechanical Engineering Computer-integrated manufacturing students to design a dragon-shaped candy dispenser.

Encouraging students to feed off one another’s strengths to solve problems and share knowledge not only builds collaboration skills, it also leads to deeper learning, whether via computer-supported technology, hands-on tools or interaction at the chalkboard/whiteboard. And educator involvement and ability, i.e., training in action, is crucial.

Investment in the arena of collaborative learning – whether via teacher and staff training, updating technology or improving facilities – takes an innovative administration and supportive community that understands the educational and long-term value.

Achieving high value for school investment takes commitment at every step – from installation to the consistent practice of excellence, according to a report by Filigree Consulting on Instructional Technology and Collaborative Learning Best Practices (2012). That means teaching the teachers to use products effectively, providing effective guidance and support and ensuring teachers have high-quality digital content relevant to subjects being taught. It means selecting products that integrate easily with each other and with existing technology. The report said it also means focusing on practices that enable adaptation to new pedagogical tools and models, including integrated learning spaces and flexible learning environments.

Researchers and educators constantly scan the field for innovative methods of interactive, or collaborative, learning in the classroom. Gone are the days of teaching solely from a textbook. Administrators and teachers are looking for ways to strengthen learning via collaboration with peers and teachers, which expands past the initial foray into the digital classroom world. Studies are showing that students learn best via engaging discussions with peers and faculty in participatory fashion.
Questions to bolster collaborative learning:

- What technology, at what cost?
- What tools, other than computer-supported technology, can be added to enhance varied learning styles to make the learning environment more dynamic?
- What ways make this collaboration for learning work?

These top three tools – technology, other collaborative tools and understanding what education is – can be instituted in varied formats in schools, tailored to budgeting and staff capabilities.

1. Technology

Tremendous growth in computer-based technology has opened the door for school districts in recent years through computer-based options that allow students to learn at their own ability, to become familiar with varied digital options in learning. Interactive whiteboards, IPads, and laptops are all familiar fodder in classrooms as facilitators to learning. Teachers and technology staff must have the confidence to embrace and use classroom technology as a key pedagogical tool.

Superintendent Justin Wagner of the Harlan, Iowa Community School District, a rural district educating 1,600 students, said: “I once heard an educational speaker say there is more technology in an IPad than in the shuttle that landed on the moon. Putting such information in the hands of kids – why wouldn’t we?”

But meeting students at their varied levels of learning is the district goal. Harlan is one-to-one with 1,200 leased laptops for 6th-12th graders, and access to laptops and IPads for K-5th students at the school. Superintendent Wagner notes that technology isn’t the “be-all, end-all” in education.

“We have three non-negotiables: writing, inquiry-based learning and technology,” he said. These three must come together to build student learning most effectively.

“We meet them at their level and ask, ‘How can I help them progress?’”

The prevailing question Superintendent Wagner poses on correct use of technology for collaborative learning: Is technology used in a transformational way? Does it require higher order thinking?
SMART Technologies recently commissioned a global research study to get a better understanding of measurable outcomes as they relate to investment in collaboration technology. The results indicated that participants viewed technology as an important enabler for improving student learning outcomes. However, a sound teacher and student support system, training, high-quality content and several other practices were necessary to get the greatest value from technology. “What can a notebook do in a child’s hands,” asked Superintendent Jeff Thelander of the Lawton-Bronson, Iowa School District, “vs. a notebook and a pencil?” That lies in the teacher’s hands. Collaborative learning, Thelander said, is an experiential activity that allows students to pull together resources to solve problems or open opportunity for collaboration.

“Technology allows for greater depth,” said Pat Burbach, assistant superintendent of the Kansas City-St. Joseph, Mo. Catholic School Diocese. “Learning is changing so fast; it’s a critical factor to get into electronic learning.”

In fact, 25% of the students were at the basic level of using the technology to its fullest, according to SMART Technologies studies, and only 5% reached the highest value in terms of student and teacher outcomes and the enablement of advanced learning methods. Superintendent Thelander asks: “Are the students becoming tech consumers or tech producers? There is a difference.”

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Tech tools most schools are using include:

- Interactive whiteboards, or SMART boards, allow the teacher’s computer screen to be accessed on a large white screen in the classroom. The screen is interactive for work between teacher and student, for learning new information, for playing games or accessing other information. In the Harlan, Iowa district, almost every classroom has one. They range in price from $800-1,200, and the district initially looks to grants to fund these.

- Audience response: students can use hand-held “clickers” to take quizzes or respond to information on the whiteboards.

- IPads and tablets: these offer online programs from math to art, keyboarding to goal setting, and a multitude of databases. The Harlan, Iowa district invested almost $400,000 in leased laptops; Superintendent Wagner said they justified that expense by viewing costs already in the district’s six computer labs and the yearly replacement costs of $150,000. “It was draining us.” When reviewing the $250,000 a year in book purchases, rotating books per subject every seven years, the tech route became clear. Cost to invest in infrastructure for his district was about $200,000, “not a Cadi” by any means, but functional.

- *cell phones: While not every school can afford tablets or IPads, most students carry smart phones. “They’ve got their little computer in their hand,” Burbach of Kansas City said, noting this is part of what some schools are now using--BYOD, or bring your own device.
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- *Internet math/science/reading programs to gauge progress: The Internet is teeming with instructional programs, varying in cost. In Colin Hussey’s article, “Why Classroom Collaboration is Key to Lifelong Learning,” (edudemic.com 2012/08/25) one of the best types of software to supplement collaborative learning is MoviePlus. He said making a video naturally encourages students to collaborate; one will direct, one will be the cameraman, one will edit, etc., and the teacher simply needs to facilitate the natural order for the students.

Computers are necessary in this day of technology, says Angie Knight, speech-language pathologist with the Marian Hope Center for Children's Therapy, Independence, Mo. “We want all children to have a good understanding and use of all this technology. However, to limit many of God's natural resources and limit natural experiences of learning in order to sit behind a computer screen actually can inhibit creative collaboration and neuronal development of a variety of other in the brain.

“I always tell parents, it is not what they are doing on the computer, it is what they are ‘NOT’ doing while they are on the computer (activity-based learning). When children move, explore, pretend, build, create, play...they learn!” Knight said.

2. How Collaborative Learning Occurs

While computer-based technology is a critical piece of collaborative learning, other tools must factor in. John Holt’s classic books, How Children Learn and How Children Fail, highlight the idea that kids want to learn, are natural learners, and will learn more if this is recognized and they can explore on their own terms, with educators functioning more as co-learners rather than the disciplinarian, lecture style. “It’s the guide on the side vs. the sage on the stage,” said Burbach of the Catholic School Diocese.

Knight says as useful as computers and other technology-supported tools can be, they are not necessarily needed to accomplish the goals of collaborative learning and sometimes can inhibit skills that can be exhibited by other means. “As a new start-up school, we have limited funds for tablets, SMART boards and other more pricey technology. That doesn't mean we cannot accomplish our goals in a collaborative learning experience.”

Igniting the flame of learning comes when students engage in their studies. Studies show that the way the brain learns is vastly different from how most traditional forms of learning in schools are set up. According to Mark Janda, secondary school educator at The Harker School, San Francisco Bay area, on his blog, Let’s Improve Schools Now, deems the need to apply “what we know about the brain and child development more effectively.”
"Approximately 20-30 percent of the school-aged population remembers what is heard; 40 percent recalls well visually the things that are seen or read; many must write or use their fingers in some manipulative way to help them remember basic facts; other people cannot internalize information or skills unless they use them in real-life activities, such as actually writing a letter to learn the correct format." (Teaching Students to Read Through Their Individual Learning Styles, Marie Carbo, Rita Dunn, and Kenneth Dunn; Prentice-Hall, 1986, p.13.)

Ask a principal of a 300-student school in the Midwest what collaborative learning is, and she is quick to list a multitude of options to further student learning. Kate Place of Briarchiff Elementary School, Kansas City, jumped at the chance to share the most effective interactive tools for this K-5 school: manipulatives; shared research projects; “turn and talk” program (pair-based discussions); partner interactions with reading and writing; interactive video recording.

“The ability to work with other students is a character strength,” she said. She recounted three classrooms approaching a math problem in three different ways: one with a student at the board; another with students in pairs at the board; and the third with groups working in comfortable fashion, sans table or desk if need be, using manipulatives and discussing a math concept. By far, the third scenario was most successful, she said.

The school uses technology, but is still moving toward using it as a transformational tool. “We are working to get it to the point it’s a collaborative tool,” Place said. How it’s taught makes it collaborative. She cited an example of a teacher having the students blog about a concept in class.

Group learning situations are useful, from English discussions to math practice in chalk outside. Students engage, via chalkboard, whiteboard, SMART board, or plain discussion with a group leader paving the way to unlocking topics that may not have been truly understood with lecture style.
3. Tech-less Tools of the Trade

Collaborative learning can occur in less-complex fashion; computer-based learning isn’t the only collaborative game in town. As Superintendent Thelander said, “There are many ways to skin a cat.” Simulation techniques, hands-on opportunities, group learning and dry erase boards all are tools that can open the door to constructing learning, challenging status quo, unlocking the key to true learning of a topic. If schools are looking to technology as the only source of collaborative learning, they are pulling the wrong lever, said Lawton-Bronson’s Thelander. “The right drive accelerates around the core content.”

While some schools may use the hand-held clickers, tablets and white boards, others cannot afford that. There are less-expensive ways to make learning interactive, Burbach said. It’s about the teacher entering into dialogue with the student and the student in dialogue with the teacher, anything that will help students enter into their learning, whether it’s a pursuing research, using projectors and whiteboards, blogging online or use of a dry-erase board.

Knight of the Marion Hope Center, in the midst of establishing a classical private school for fall 2013, agrees that these alternative tools for collaboration are invaluable, beginning with the right type of teacher.

- The number one tool is a teacher who knows how to question in a way to ignite a group of student's learning processes and thinking skills to foster natural conversation and discussion about a certain topic/idea. Writing is part of this collaborative skill, said Harlan, Iowa Superintendent Wagner. Writing is the single-most effective tool for developing long-term memory, as students have to negotiate information in their own minds. In this district, early elementary level students have to stop about every 5-7 minutes to write about what the teacher just spoke about.

- The teacher also is key to structuring the lessons in such a way to invite collaboration between the students. Collaborative learning at The Calhoun School, in Manhattan, has student mathematicians tackling algebraic puzzles, anthropologists re-creating ancient Egyptian tombs and medieval Islamic Suq markets, scientists extracting DNA from two 1st graders collaborated on strawberries, and writers publishing their own literary a T-report at Briarcliff Elementary magazine. (www.calhoun.org). The Calhoun School is an independent pre-K through high school in New York.

- Boards: the mighty chalkboard and dry erase boards or sensory materials such as writing in wax, shaving cream. These sensory-type platforms provide opportunity for innovative, cost-effective options such as dry-erase paints and coatings.

- Window markers, wall paint, sidewalk chalk

- Simple writing instruments (pen, pencil, markers, colored pencils) can all be used to graph, chart, journal, etc.

- A variety of hands-on materials for collaborative project-based learning.
All these great “tech-less” tools can aid in a collaborative learning experience, says Knight of the Marion Hope Center, as well as allow for one’s own artistic creativity and big movement (as writing on the chalkboard or wall facilitates big movement and mid-line crossing). “God made an entire area of our brain just for writing (Exner’s area); it is important we do not completely neglect opportunities to ignite that area as it is so close to the speech and language areas of the brain.”

Knight further endorses activity-based learning. “I always tell parents, it is not what they are doing on the computer, it is what they are "NOT" doing while they are on the computer. When children move, explore, pretend, build, create, play...they learn!”

Business and industry are looking for kids who can think for themselves, Wagner said. “To be able to work with others, work hard, think for themselves and pull others in, that’s interactive, that’s collaborative.”

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**Collaboration on a budget**

Matthew Davis, (www.edutopic.com), notes that learning isn’t necessarily weighted down with the dollar sign. Encouraging students to reach out to solve problems and share knowledge not only builds collaboration skills, it also leads to deeper learning. A college prep school in Oakland, CA, puts the power and impact of collaborative learning to the test, where one might find students sharing strings and chalk bent over the blacktop surveying triangles. Davis writes that a culture of collaboration isn’t resource-intensive. It doesn’t take hours of professional development, or technology, or even technical know-how.

In fact, cost-efficiency is key. “On our budget, priority of tools goes to the tools that will provide the most experience to a child,” says Knight. Although technology offers some innovative ways of learning and can be used to reinforce various concepts, for years people have been learning just fine without them. “Field trips, mission outings, hands-on materials that children can manipulate and utilize their individual creative processes can provide just as many benefits, if not more, and at a much lower cost. I would take a variety of natural materials, manufactured materials such as plastics, art materials, varying paper, water, sand, gardening tools, etc....to foster a wealth of experiences that leads to true learning.”

A resurfaced wall or chalkboard with a product that allows the surface to become a dry-erase board is one tool of choice for The DeLaMare Science and Engineering Library at the University of Nevada. About 20 percent of its walls were resurfaced with MDC Wall’s IdeaPaint into an area for creative collaboration amongst students and teachers. Resurfacing the walls, 1000 square feet of floor-to-ceiling workspace on 13 walls in the library, has encouraged the active part of learning. And Tod Colegrove, Ph.D., MSLIS, noted in School Planning & Management (Jan. 2013), that the students are excited about the technology via the dry erase paint that changed the learning space.
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A Chicago school also used this cost-efficient product from MDC to resurface its outdated chalkboards. Nettelhorst School had hoped to replace outdated, unusable chalkboards with whiteboards. But the school realized whiteboards weren’t cost-effective or space effective. Nettelhorst teacher Jason Merel suggested they experiment with IdeaPaint. It took about three days to revitalize all the chalkboards. The school prepped them, painted them and they were done. A single application of IdeaPaint converted the surface into a dry erasable one. MDC notes the product can be applied not only to chalkboards and walls, but also to table tops and stairwells for a reasonably cost-efficient collaborative learning tool. Now Nettelhorst’s old chalkboards function as whiteboards, and students have a bright clean surface for drawing word maps, curriculum maps, etc.

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