

An IDE Corp. White Paper: Addressing Learning Losses, Equity, and SEL Needs Through The *Learner-Active, Technology-Infused Classroom*

While much professional learning focuses on a single topic or subject area, changing the course of education for greater outcomes is going to require a more systems-based approach. There is research-based evidence on the positive academic impact of project- and problem-based learning (Appendix A), student agency, differentiated instruction, executive function, Universal Design for Learning, small-group instruction, and Social and Emotional Learning (SEL). IDE Corp.'s *Learner-Active, Technology-Infused Classroom* (LATIC) melds evidence-based best practices into one instructional model.

Paradigm Shifts

Ron Heifetz and Marty Linksy (2002) present the case for schools to shift from technical change (e.g., a new textbook or program, a new strategy, a new schedule, etc.) to adaptive change that requires one to shift their belief systems. All action stems from one's beliefs. Technical changes, which are prevalent in educational improvement attempts, require an educator to implement a new tool, structure, or strategy, but do not address mindset shifts. The *Learner-Active, Technology-Infused Classroom* focuses on shifting educators' thinking as to their role in the teaching-learning relationship around five paradigms:

- **From Lesson First to “Felt Need” First** — Typically, when teachers offer lessons, they are counting on scholar compliance to stay engaged. Scholars are more engaged, delve more deeply into content, produce more, and retain more when their efforts are driven by a personal “felt need” to learn. In LATIC, we accomplish this through the 5 Ps of PBL: problem-, project-, place-, profession-, and pursuit-based learning. In our personalized learning approach, scholars have choice and voice over aspects of the problem and how they will present their solutions. The most accomplished teachers in this area use pursuit-based learning, where the scholars themselves identify the real-world problems they wish to address.
- **From Teacher as Ferry to Teacher as Bridge Builder** — Student agency, which leads to greater scholar engagement and, thus, retention of learning, depends on teachers shifting their roles from being purveyors of information to being architects and facilitators of complex learning environments that provide scholars with differentiated opportunities to learn, combined with choice and voice in their learning paths. In LATIC, teachers provide differentiated activity lists and a resource area for scholar access, offer small-group lessons, and position scholars as peer experts. Scholars co-create a personalized learning path and schedule how they will use their time, making decisions on how, when, with whom, and where they will learn, with the teacher acting as a facilitative coach in the learning process.

- **From Information Deliverer to Facilitator of Learning** — Given the shift away from “teacher-dependent” learning environments, the teacher must shift focus from disseminating information and lessons (much of which can be found already on the internet) to curating a powerful collection of learning opportunities, and then facilitating learning to ensure that all scholars achieve at high levels. In LATIC, teachers provide classroom management, academic, and process facilitation to students. Using personalized content facilitation grids, and with scholars using learning dashboards, teachers monitor scholar progress and discuss next steps.
- **From Grading the Transactions to Grading the Transfer** — Using a problem-based approach to instruction requires teachers to become facilitators in the process, ensuring all scholars learn at high levels and produce powerful solutions; any grading of the outcome product would reflect the teacher’s efforts more than those of the scholars. While formative assessment can be used throughout a unit to determine scholars’ progress and modify instructional plans, it is important for teachers to implement summative assessment strategies that determine if, as a result of the problem-based unit, scholars can transfer that knowledge to other situations.
- **From Classroom-Based to Learning Anywhere, Anytime** — The pandemic-related school closures shined a light on how “teacher-dependent” classrooms are, with the “lesson” being the core element. This approach did not prove to be effective when schools switched to remote and hybrid learning. Instead, learning environments need to become “scholar-dependent,” with scholars taking charge of their own learning. The core element needs to become “scholar curiosity and drive” to ensure that learning continues beyond classroom walls and the school day. The structures and strategies utilized in the LATIC personalized learning environment work as well at home as they do in school. During the pandemic, LATIC teachers and students simply shifted to working from home, but the instructional program continued as if they were in school. In LATIC, technology is infused into the learning environment so that students have greater choice and voice in their own learning and are able to access resources for learning based on their personalized learning path.

Evidence of Successful Outcomes

The *Learner-Active, Technology-Infused Classroom* (LATIC) has been producing student gains in academics, executive function, and social and emotional learning competencies for decades. Teachers who implement the framework with fidelity consistently support success. Following are a number of indicators of success in comprehensively melding together best practices to take advantage of a systems-theory approach to transformational, adaptive change, along with a few “stories from the field.”

LATIC builds learning retention by establishing a context for learning (Sousa, 2017) through real-world problems, giving students ownership and agency over their own learning, and utilizing cognitive strategies — such as spaced, varied, and interleaved practice (Brown et al., 2014) to ensure information stays in long-term memory for longer periods of time.

A veteran secondary teacher, after implementing LATIC for a year, indicated that his students in May were referencing what they learned in September to apply it to their current real-world problem. He said he had not experienced that level of retention of learning in his 30 years of teaching. After three years of engaging her school in designing LATIC, an elementary principal shared that her teachers were reporting there was no more “summer slide.” An AP English teacher said that her students typically reported having difficulty responding fully to all of the free-response questions on the AP exam, until LATIC. After she shifted her teaching style, her students reported easily finishing the exam and having time to review their answers completely. The teacher also reported having students score more fives than ever before. After the start of school, the geographic region experienced a hurricane and was out of school for three weeks. The teachers weren’t sure to what extent they would have to start the year over. When school resumed, they reported that students came to class, referred to their activity lists, and continued learning, showing no evidence of forgetting what they’d learned in the opening weeks of school. Teachers regularly report their surprise at how well students retain learning in LATIC, and that translates to higher test scores.

LATIC increases student engagement. According to brain researcher David Sousa (2016), students who are engaged in learning exhibit increased intrinsic motivation to learn, persist through struggles, and enjoy learning and achieving their goals. Increased engagement leads to increased achievement (Chesley, 2007).

While many teachers are questioning how to keep students engaged through the end of the school year, LATIC teachers are tweeting students heavily engaged in solving real-world problems on the last day of school, not wanting school to end. A nor'easter was predicted, and schools in one geographic area were planning to close for the next day. Students in a LATIC school were telling their teachers that they were planning to connect virtually with their friends and wanted to know if the teachers would be available for help. A principal of an urban middle school shared how a student who was not reading or writing became so engrossed in a project that he created a multimedia presentation and wrote out invitations, garnering an audience to hear him share. He was so excited afterwards that, on his own, he decided to create a “part two” of his project. A principal was walking around her elementary school campus and noted a small group of students engaged in filming a video. She remarked that this particular student, while highly capable academically, had been in her office nearly every day of his school career due to behavior problems and refusal to work, until LATIC. Now, as a fourth-grader, he has emerged as a natural leader and is never in her office. Engagement matters, and in LATIC, students engage through problem-based learning and by taking responsibility for their own learning. A fifth-grade student once thanked IDE Corp. President Dr. Nancy Sulla because she was weary of always starting the day with reading. She said that now, because of LATIC, she can start her day with science and read in the afternoon, which she prefers. One of our LATIC schools uses the Gallup

surveys to measure student engagement and hope. After their first year of implementing LATIC, they showed gains in both student engagement and hope. LATIC produces higher student engagement, and engaged students are happy students who are less bored and perform better (Fredricks, Blumenfeld, & Paris, 2004).

LATIC builds social and emotional learning (SEL) competencies and the executive function skills that support it. Research shows that SEL lowers stress and depression, improves students' attitudes and social interaction, and leads to gains in student achievement (Durlak et al., 2011).

In March of 2020, when the pandemic closed schools, teachers, parents, and administrators reported that LATIC allowed students and teachers to shift to remote instruction without interruption. Students already knew how to take responsibility for their own learning, and teachers were used to engaging in more small-group and one-on-one settings rather than addressing students through whole-group instruction.

At one New York district's board meeting, in a district where LATIC had been implemented across the grades, K–12, for a number of years, several of the board members with children in the schools sang IDE Corp.'s praises, saying that LATIC prepared their children for this very moment. Their children had no difficulty switching to learning at home due to the level of engagement, empowerment, and efficacy this framework provided them. The high level of executive functioning skills (e.g., planning, reasoning, inhibitory control, and self-awareness) that scholars develop as a result of the intentional structures and strategies that are part of LATIC positioned them well for learning anywhere, anytime. Teachers across LATIC schools and districts regularly report that students feel better about themselves as learners, push through to success, collaborate well, and are happy coming to school. The building blocks of SEL and of student achievement in general (Sulla, 2018) are executive function skills, which are built through the structures of LATIC and teacher facilitation strategies. One district's study of kindergarten students through fall and spring teacher and parent surveys indicated significant gains in executive function across the school year. Kindergarten students from a high-poverty area entered school with many of them not being able to hold a pencil, not knowing their letters or numbers, and some not knowing their own names. Within just weeks of engagement in LATIC, they were following an activity list, making choices, using iPads to scan QR codes to learn needed skills, following videos, writing letters, counting, and more. Teachers in elementary and secondary inclusion classrooms report regularly that as students engage in LATIC, they build the executive function and SEL skills of self-assessment, goal-setting, focus, persistence, inhibitory control, and social awareness to the point that someone observing the classroom would not be able to identify the special education students. Administrators concurred. An elementary school principal remarked on how quickly a student who transferred to the school not knowing English was speaking and engaging with peers due to the collaborative and social nature of LATIC.

LATIC improves student achievement for all; our LATIC schools regularly report significant standardized test gains, including for disaggregated subgroups.

IDE Corp. consultants began working with an elementary school serving financially disadvantaged scholars in Florida six years ago; the school was in state takeover when we started working with the teachers and principal. By the third year of working with them, and continuing for two years in a row, the governor sent them a letter commending them for their growth scores. Once in the bottom of the district-wide spreadsheet, this Title 1 school now falls at or above the district average in test scores, and has risen from an F to a B in the state school reports system (missing the A by only three points and waiting for the next round of grades, post-COVID interruption). At this point, all of the teachers in the school, from grade-level teachers to special-area teachers, implement LATIC.

IDE Corp. consultants began designing LATIC in a suburban New York middle school when they had been listed as a Focus school in need of improvement due to the low scores of the subgroup of students with disabilities. Within a year, they were reclassified as a Reward school. The eighth-grade English teachers excitedly reported that their students scored the second highest in the state, which had not been accomplished before.

IDE Corp. consultants partnered with a Florida middle school in failing status that moved from an F to a C over three years (then COVID put state tests on hold). IDE Corp. consultants led the transformation to a STEM LATIC magnet school as part of the district's desire to create pathways for scholars before high school, supporting the expansion of career and technical academies. This work included intensive professional learning and coaching in STEM-focused, authentic, problem-based curriculum design and engaging scholars and teachers in design thinking to make it part of the school's culture.

A New Jersey school district looking for a way to move the fifth- and sixth-grade students from neighborhood schools to a district-wide intermediate school knew they needed a way to convince parents of the benefits of this move. They adopted LATIC as their model. One group of teachers requested that the district take down a wall so that three teachers could collaboratively teach three homerooms of students in one large space; the district complied, and the teachers ran LATIC with fidelity. The next year, parents who were registering their kindergarten students asked to register them in advance for this fifth-grade classroom. When the superintendent of schools met with the three teachers and their inclusion teacher at the end of the year to congratulate them on their success, he asked what additional support or resources they needed. Their answer was to give them all of the special education students because they were tired of hearing about how LATIC doesn't work for special needs students when, in fact, it was propelling them to higher achievement and higher levels of self-esteem and efficacy.

IDE Corp. redesigned the comprehensive high schools in one of New Jersey's urban school districts into career academies. Two of the schools additionally worked with IDE Corp. to design LATIC. At the end of two years, one of the schools was listed in *NJ Monthly Magazine* as the second most improved school in the state. The other, a year later, posted its best standardized test scores in its recent history.

Conclusion

By combining a number of research-based best practices into a framework that prioritizes student engagement, empowerment, and efficacy in an equitable learning environment, LATIC produces significant results. These results cross areas of academic achievement, well-being, efficacy, and more.

References

Brown, P. C., Roediger III, H. L., & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Cambridge, MA: Belknap.

Chesley, J. (2007). Student engagement and academic achievement: A promising connection. *Counterpoints*, 305, 177–193.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82, 405–432.

Fredricks, J. A., Blumenfeld, P. C., Friedel, J., & Paris, A. (2005). School engagement. In K. A. Moore & L. Lippman (Eds.), *Conceptualizing and measuring indicators of positive development: What do children need to flourish?* New York: Kluwer Academic/Plenum Press.

Heifetz, R. A., & Linsky, M. (2002). *Leadership on the line*. Boston, MA: Harvard Business School Press.

Sousa, D. A. (2016). *Engaging the rewired brain*. West Palm Beach, FL: Learning Sciences International.

Sousa, D. A. (2017). *How the brain learns* (5th ed.). Thousand Oaks, CA: Corwin Press.

Sulla, N. (2018). *Building executive function: The missing link to student achievement*. New York: Routledge.

Appendix A

Problem- and Project-Based Learning (PBL) Evidence-Based Program Review

PBL represents an approach to learning in which students are given an open-ended, real-world problem to solve (problem-based) or challenge to tackle (project-based). PBL has been the topic of research for decades, with a preponderance of evidence that it supports increased learning outcomes for K–12 students. Following is a review of some of the research:

- A study of 17,006 students in four countries demonstrated “meaningful positive and statistically significant effects on both mathematics and science test scores” and a lessening of learning gaps of boys vs. girls. [Bando, G. R., Näslund-Hadley, E., Gertler, P., & National Bureau of Economic Research. \(2019\). *Effect of inquiry and problem based pedagogy on learning: Evidence from 10 field experiments in four countries.*](#)
- A highly controlled middle school study demonstrated that students engaged in a PBL approach showed significant mastery over students in a more teacher-directed setting. [Wirkala, C., & Kuhn, D. \(2011\). *Problem-based learning in K–12 education: Is it effective and how does it achieve its effects?* *American Educational Research Journal*, 48\(5\), 1157–1186.](#)
- This review from 2000 to 2011 indicates that a PBL approach to K–12 instruction yields “improved content learning, higher levels of engagement and more positive perceptions of the subject matter” as well as “increases in level of student engagement, heightened interest in content, more robust development of problem-solving strategies, and greater depth of learning and transfer of skills to new situations.” [Holm, M. J. \(2011\). *Project-based instruction: A review of the literature on effectiveness in prekindergarten through 12th grade classrooms.* *InSight: Rivier Academic Journal*, 7\(2\).](#)
- A study of the effectiveness of a PBL approach on reading indicated significant effects on students’ reading comprehension and motivation. [Syahfutra, W. \(2019\). *Improving students' reading comprehension by using problem-based learning strategy.* *Journal of Education Informatic Technology and Science*, 1\(1\), 135-162.](#)
- A study of a PBL approach in high-poverty communities demonstrated that it did “improve achievement as compared to business-as-usual instruction in high-poverty, low-performing school districts.” [Duke, N. K., & Halvorsen, A. \(2017, June 20\). *New study shows the impact of PBL on student achievement.* *Edutopia.*](#)
- The George Lucas Educational Foundation released a report on four recent studies entitled *The Evidence Is Clear: Rigorous Project-Based Learning Is a Lever for Student Success*. In addition to increased student achievement, the report indicates that “project-based learning can be a powerful lever for improving equity in U.S. schools.” [Lucas Education Research. \(2021\). *The evidence is clear: Rigorous project-based learning is an effective lever for student success.* Lucas Education Research.](#)