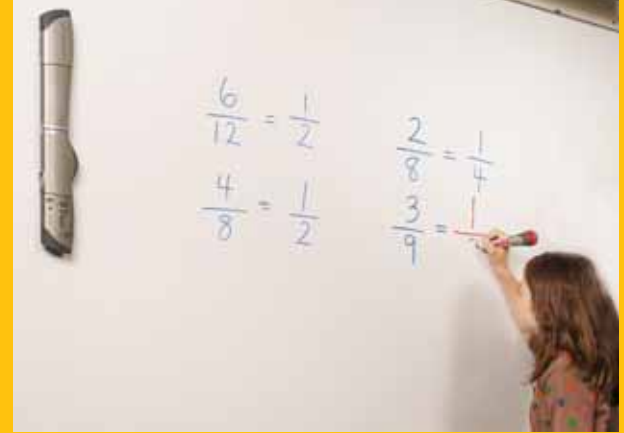# LearningGrounds™

Enhance Education with Innovative Learning Centers

International
Laboratory
of Advanced
Education
Technologies

iLAET

Superior **Education** **for** Superior **Outcomes**

Community Centers for Learning & Intellectual Growth

What if **children** have someplace to go after school that is **fun**, **safe**, and **educational**?

The Science & Art
of Learning

Deliver advanced 21st century learning without building new schools. Provide a safe place where children can nurture their talents, interests, knowledge, and skills. Challenge gifted learners with science, math, technology, engineering, and the arts. With LearningGrounds™, communities can elevate the quality of education easily and effectively.

LearningGrounds are innovative learning environments for after-school, weekend, and summer programs. Featuring state-of-the-art technologies and learning strategies, each offers opportunities to grow and excel that exceed most K-12 schools.

LearningGrounds are integrated systems of walls, spaces, lighting, colors, technologies, and staff that nurture creativity, stimulate curiosity, and foster a love of learning. Students study with hands-on projects that mirror how children learn and professionals work.

A LearningGround can be constructed from the ground up or an existing facility that has been repurposed. ILAET offers LearningGrounds as complete solutions – from planning and design to curricula and staff training.

Educational Playgrounds
for Children

Picture **students** **collaborating** on a science project **with peers** in another country

- Provide out-of-school sanctuaries for learning.
- Enhance learning in science, math & engineering.
- Stress both content mastery and foundational skills.
- Teach nano- and biotechnology & sustainable development.
- Challenge gifted children.
- Build a pipeline of talented students from kindergarten to universities.
- Provide remedial support for learners in need.
- Offer refresher courses & preparation for standardized tests.
- Test beds for school reform & innovation.
- Train teachers in state-of-the-art instruction & tools.
- Meet local needs, objectives, and budgets.

Nurture
Every Child's Talents

Celebrate
Every Child's Individuality

Suppose **students experience physics** by pedaling a bicycle to **boil** a beaker of **water**?

Affordably Improve Student Performance

- Municipalities must improve student outcomes, but building truly modern schools is costly.

- Schools need to teach new fields and technologies, but curricula and school cultures are slow to change.

- Gifted students require learning beyond the scope of traditional classrooms.

- Remedial support is often difficult in school settings.

- Under-represented student populations must be better served.

- Schools must adapt to how children naturally learn, interact, and network.

- **Children need safe after-school environments where they can learn and grow.**

LearningGrounds Meet These Needs

What if **learning was built into a facility**, not just inserted afterwards within four walls?

LearningGrounds are intellectual playgrounds where children use technologies to explore the world. They feature colorful walls, interesting shapes, and playful learning tools that attract, engage, and inspire. They value each child's individuality and make education fun yet rigorous, empowering children to learn, discover, and blossom.

LearningGrounds meet diverse needs. They offer introductory, intermediate, and advanced instruction for virtually any topic, accommodating children of all ages and capabilities.

Moreover, LearningGrounds offer safe and healthy environments. They are green, environmentally friendly, and free of pollutants like chalk dust.

Where Education is Both Fun & Rigorous

Sanctuaries of Learning

Suppose **students** could **discover hydro-dynamics** by building a dam?

Real Interests, Real Tools, Real Science

LearningGrounds do not replicate formal K-12 classrooms. Students cluster for projects in learning spaces that feature tools, technologies, and carefully arranged workstations. Instructors use virtual boards synched with students' computers to enable dynamic, interactive instruction, meeting each child's interests and learning needs.

Every LearningGround is a hands-on playground for discovery. Children use the tools of science and industry to grasp concepts and deepen their intellectual capabilities. Technologies range from dynamic molecular modeling and data analyses applications to digital microscopes, probes, 3-D printers, and interactive wall displays. All are tightly integrated with instruction.

LearningGrounds can also extend outside. They can feature different eco-systems, a biosphere, and a greenhouse, providing real-world learning for biology, Earth science, environmental science, and sustainable development.

Technologies Support Learning, Not the Other Way Around

Leverage LearningGrounds

Adult education: Training or re-training adults.

Teacher training: Provide training and professional development for pre- and in-service teachers.

School reform: Create a testbed for school reform.

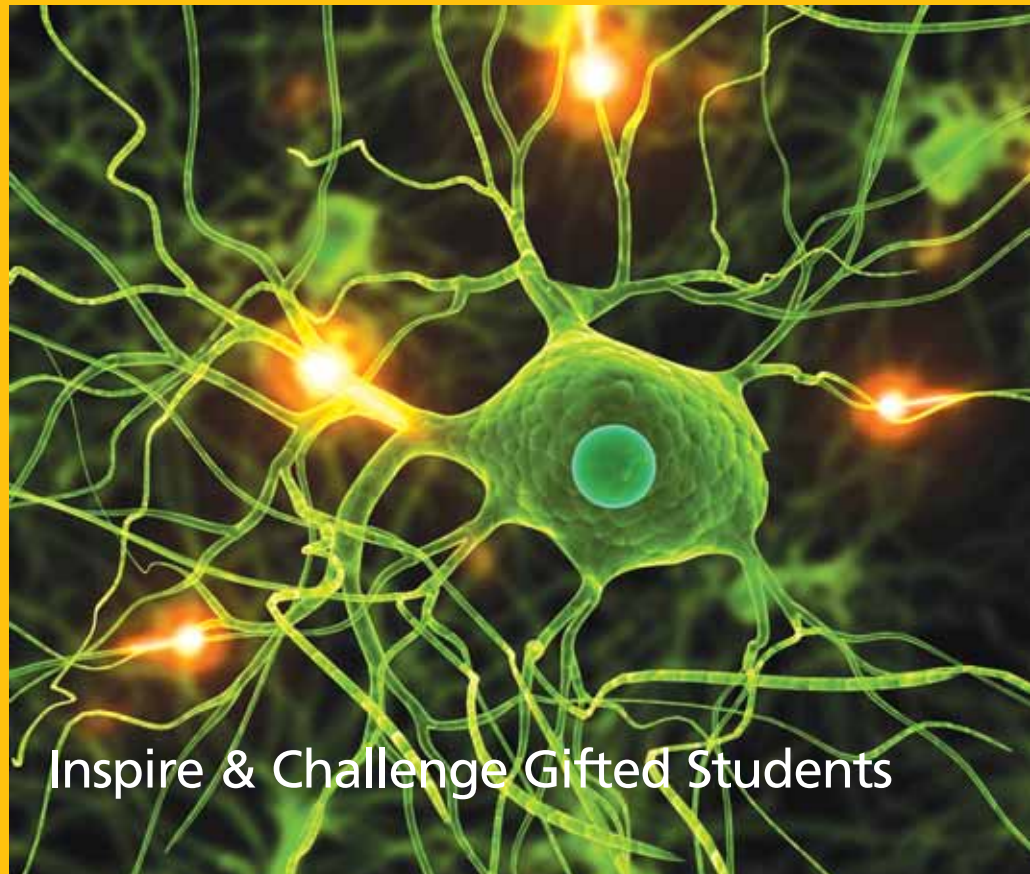Partnerships: Partner with local universities and colleges to build a pipeline of motivated students.

Imagine **children** who actually **understand nanotechnology**

LearningGrounds teach the knowledge, literacies, and skills that students need today. They offer both traditional and emerging fields in focused learning centers: Science Lab, Building Future Engineers, NanoSchool, Math & Computer Science, Sustainable Development, and Digital Art & Design. Students refine their math and reading literacies as they pose questions, define problems, and generate solutions and answers. They learn to think, reason, communicate, and collaborate. ILAET can tailor each center within a LearningGround to local learning objectives.

Education is multidisciplinary. In the Sustainable Development Center, students integrate biology, ecology, physics, chemistry, and economics. In NanoSchool, they learn about atoms, molecules, and organic chemistry, and how they underpin both medicine and manufacturing. When studying Mozart, they examine composer's times and the mathematical structures of his music.

Introduce Students to Their Future

Inspire & Challenge Gifted Students

Imagine **children** who **understand the scientific process** because they used it

The Science Lab

Students learn science as an exciting, hands-on process for constructing knowledge. Science is relevant, immediate, and rooted in the real-world. Working over the Internet with peers in a global community of practice, students experience the rigors of real science while mastering content and developing such skills as critical thinking, problem solving, communication, and teamwork. They use technologies like digital microscopes, probes, sensors, and data visualization and analysis tools. They even deploy dynamic modeling simulations to explore the science of macroscopic phenomena at molecular and atomic levels.
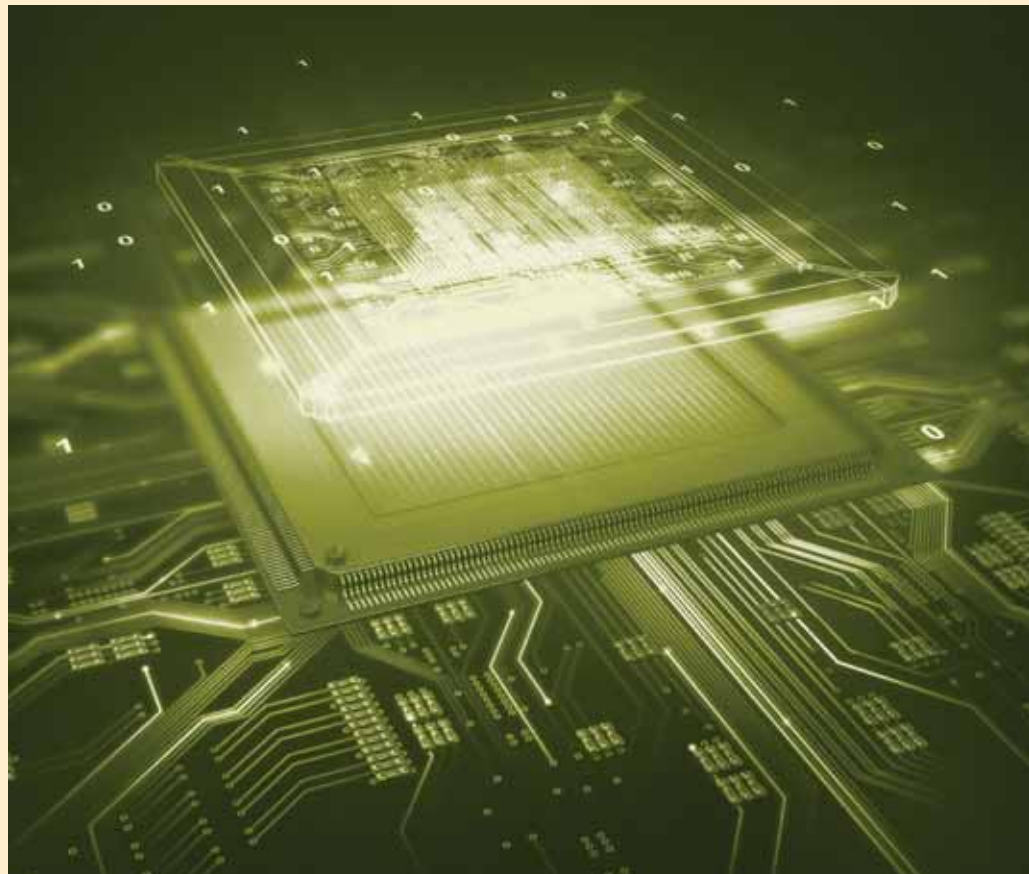
What if **students** could **build a robot** that empties the trash?

Introduce students of all ages to engineering, as well as robotics, bio- and nanotechnology, and instant manufacturing. Designed to inspire the next generation of professionals, engineering programs at LearningGrounds combine hands-on, project-based learning with the tools and techniques of engineering and design studios.

From concept to manufacturing, students experience engineering as a seamless process. They use CAD, CAM, and modeling applications, as well as 3-D scanning, rapid prototyping, robotics, and computer-controlled machining to design and prototype every-thing, from gears and devices to models of molecules. They even deploy innovative 3-D printers to create physical models of their designs.

Building Future Engineers

Imagine if **students** could **play with** individual **atoms** & **molecules**?
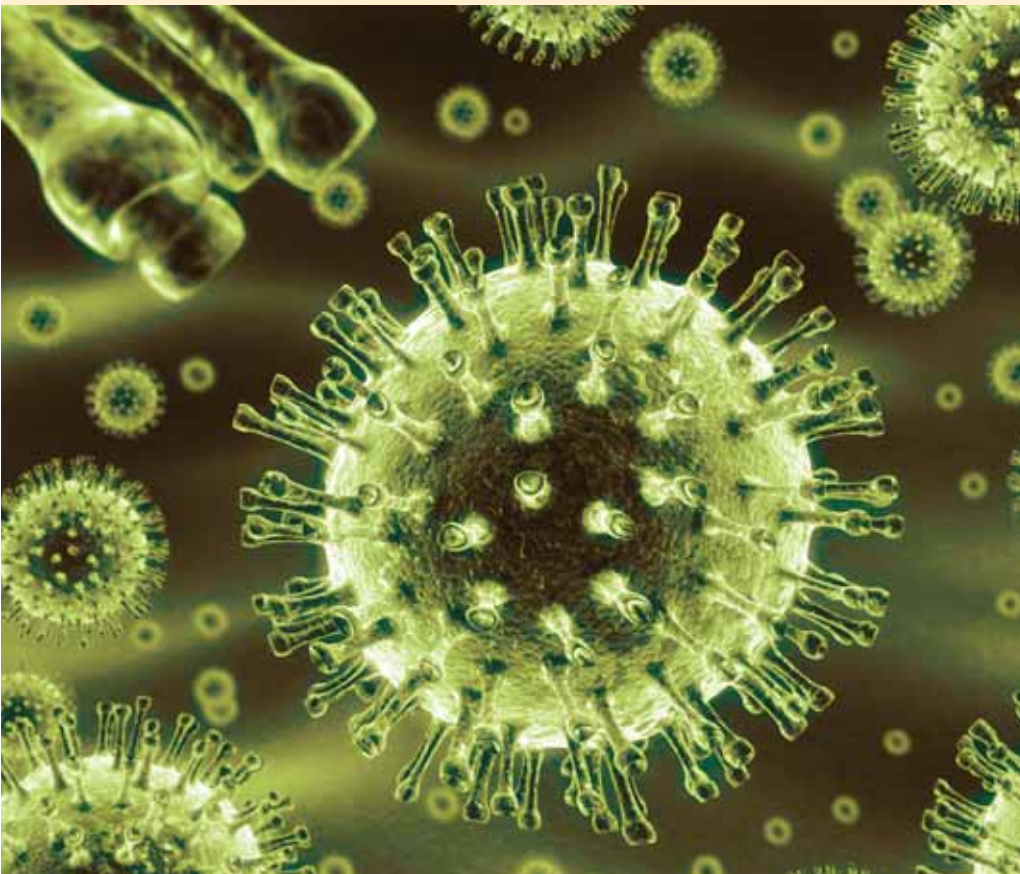
NanoSchool™

Students learned reading and math literacies for the Industrial Revolution. They learned computer literacy for the Information Age. Now, as nano- and bio-technology drive the next industrial revolution, the time has arrived for molecular literacy.

Integrating age-appropriate curricula with advanced technologies, NanoSchool enables students to understand the world in terms of atoms and molecules and their interactions. They discover how materials can be controlled on atomic and molecular scales.

On large computer screens, students experiment with dynamic, atomic-scale simulations that were once available only to scientists. They manipulate atoms and molecules, explore molecular recognition, and learn how molecular interactions determine life processes. Atom by atom, they design virtual models of nanomachines to learn about the science and tools that are transforming industries and opening new vistas of knowledge.

What if drab, **rectangular rooms are not** the best **learning environments**?
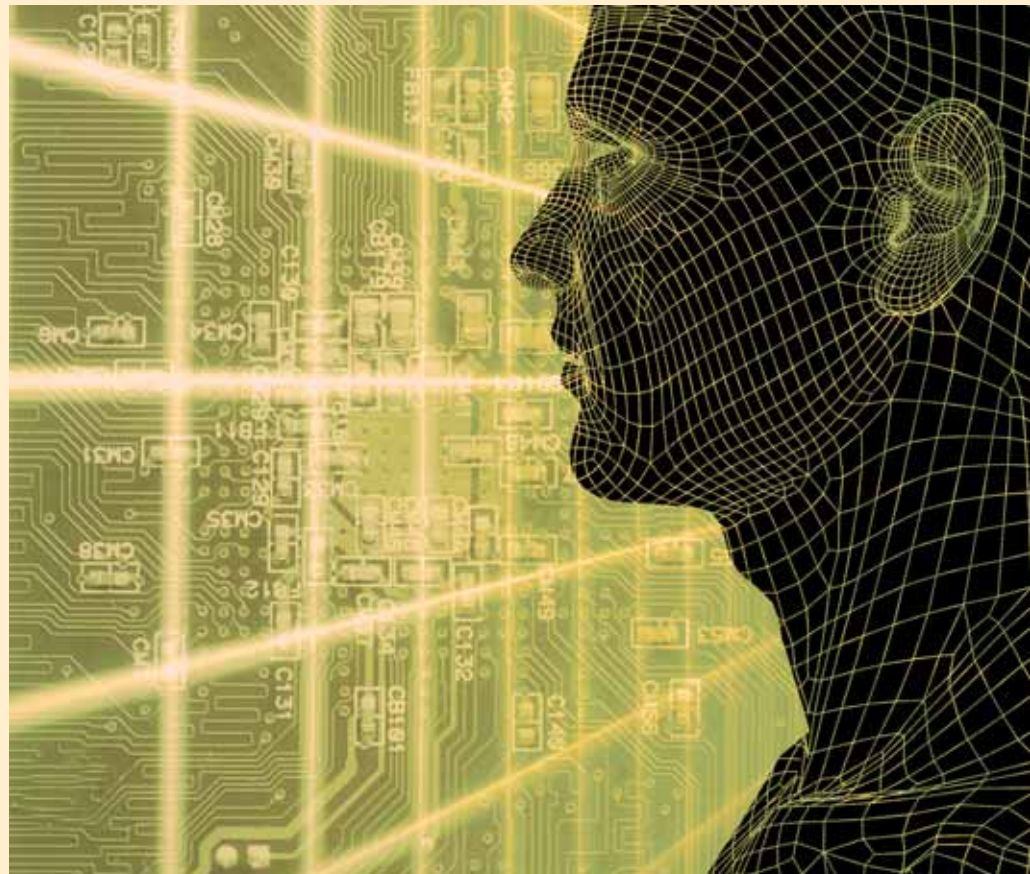
Engage children in solving mathematical problems to develop a love for theoretical and applied mathematics, nurture their interest in computer science, and spark curiosity about information theory. Provide training for gifted students, remedial support, refresher courses, preparation for standardized tests, and math and computer clubs.

The Center for Math & Computer Science introduces younger learners to algorithmic thinking and mathematical logic in a playful way. Students nurture their arithmetic skills, analytical and computational reasoning, problem-solving skills, and higher-order thinking. They advance to algebra, geometry, trigonometry, calculus, advanced statistics, and complex problem solving.

For computer science, learners explore programming and languages, software engineering, computational functions, and database design. They consider information theory in biology, the life sciences, and economics.

Math & Computer Science

What if **children** could **envision** cities of **the future**?

Sustainable Development

Uniquely train students for the future. They learn about social, economic, and environmental needs as they study energy efficiency, resource management, biodiversity, conservation, land use, and sustainable cities and transportation. They will grasp the challenges and opportunities of sustainable development and learn to make reasoned decisions as tomorrow's citizens, professionals, leaders, and innovators.

Because sustainability unifies science, technology, economics, and public policy, learning is highly interdisciplinary. Children engage in collaborative, inquiry-based projects to study everything from the entire planet, to their communities, to individual atoms.

Students investigate energy flows, water cycles, and crop development. They are introduced to nano-technology and biotechnology to discover the science underlying crops, biodiversity, and solar, nuclear, and electrical power. In LearningGrounds, teaching about the environment is no longer abstract, but directly applicable to students' lives.

What if **seven-graders**
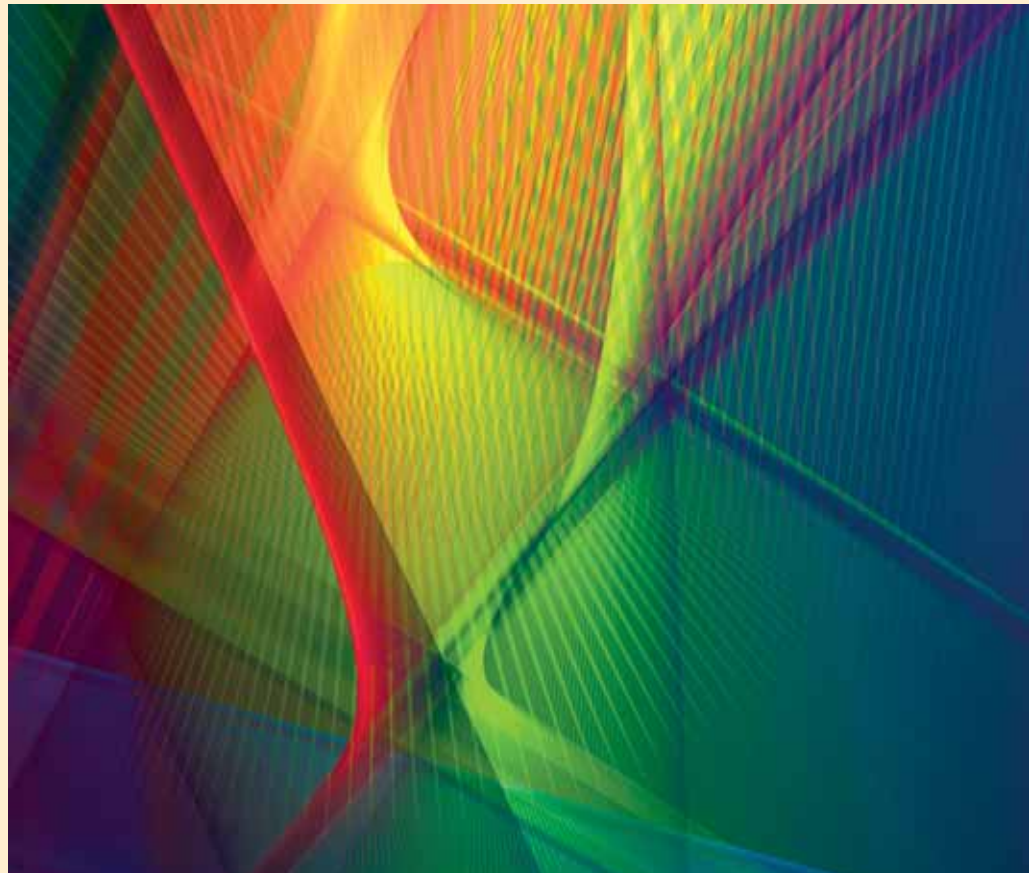could **make a movie**?

The Center for Digital Art & Design merges science, art, and multimedia technologies to engage students in communications, drawing, music, graphic design, digital arts, and new media. The center supports both gifted students and children who want to refine their artistic skills in a creative, fun, out-of-school environment. It emphasizes intellectual and conceptual development, self-expression, technical skills, and clarity of thought. Students study the theory and history of artistic fields and hone their talents with their own acts of creation.

The center offers training in music, painting, drawing, sculpture, ceramics, and jewelry design. Students explore elements of visual communications like composition, imagery, typography, color, and techniques. Musicians integrate traditional instruments with digital technologies, giving their imaginations full rein.

Students learn the art and science of Web 2.0 technologies, architecture, and interior design, exploring color, lighting, spatial composition, and ergonomics. They learn digital film, video, and photography, applying theory with real-world applications.

Digital Art & Design

What if **children** could **stick things on a magnetic wall**?

Complete Solutions from Planning to Instructor Training

To plan and design LearningGrounds, ILAET collaborates with leading educational R&D organizations and universities worldwide to identify the best practices, technologies, and resources. ILAET works with local educators and administrators to determine needs and objectives, and then plans an appropriate learning framework and facility. Although LearningGrounds can use existing sites, an ideal LearningGround is a purpose-built, 930 square-meter facility. Depending on specific designs, such a facility can host 100 learners and their instructors at a time.

From architectural and interior design to construction, we manage the facility's development. We work with leading software and hardware providers to procure age-appropriate technologies. We deliver curricula and instructional materials, and can design remedial and advanced studies. We offer staff training and ongoing support, ensuring project-based teaching is engaging and effective. Instructors can include local teachers, educators, graduate students, and mentors.

The implementation of every LearningGround is integrated and cohesive. We avoid the inefficiencies that occur when solutions are procured and deployed in a piecemeal fashion. We ensure that technologies support curricula and that learning is deep and vibrant. With this systemic approach, we deliver innovative and inspiring environments where children discover the world and themselves.

Bringing Innovation
& Vision to Learning

ILAET is an education systems integrator for both formal and informal learning. We identify the most promising learning technologies and teaching practices and convert them into comprehensive, cost-effective, turnkey solutions tailored to your objectives and budgets.

We leverage your investments for the highest pedagogical returns, avoiding the inefficiencies of piecemeal hardware, software, and resource deployments. We ensure that technologies support teaching, not the other way around.

We make everything work together so learning environments are integrated, practical, and cohesive. Our staff has decades of experience in delivering educational solutions from innovative curricula, to acclaimed applications, to Schools of the Future.

We work with foremost educators, developers, trainers, and architects, and partner with leading vendors to provide education that is dynamic, engaging, and effective. Whether you are a single school, a school district, a community or a nation, ILAET can help you educate the next generation of citizens, professionals, innovators, scientists, and leaders.

Contact us to learn more.

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