



The SmartLab[®] Learning Process

How to Engage and
Empower Learners

smartlab

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ABSTRACT

SmartLab Learning is a process of engaging and empowering students through experiential, personalized, and collaborative learning.

According to the constructivist theory of education and decades of observations, students learn best with a diverse, hands-on approach to learning. Rather than a traditional teacher-centered classroom where students are expected to sit and absorb information, effective classrooms create an environment that empowers learning at all levels and paces. This collaborative approach creates in students the skills necessary for the 21st century workplace.

The SmartLab Student Learning Process is a repeatable process that learners can use to solve problems and make decisions, and, as students work through the process, they gain essential 21st century skills for future success

INTRODUCTION

Today's students are faced with many learning challenges both in and out of the classroom, including developing skills and knowledge suitable for a constantly changing, fast-paced world. Traditional, teacher-directed instruction alone is not enough to meet the needs of 21st century learners.



Based on years of research and studies done by educational theorists such as Piaget and Vygotsky, we know that students learn best with a diverse,

hands-on approach that accommodates a variety of learning styles, especially in a STEM-focused classroom, which typically incorporates inquiry-based and experiential teaching methods.

When students are taught to use the SmartLab Student Learning Process—explore, plan, do and reflect, and share—they embark on a path toward deeper thinking and mastery of skills. This method is considered a constructivist approach and promotes a natural progression of learning with teachers acting as facilitators, rather than directors, in the classroom.

In order for students to be actively engaged in their learning, the curriculum should be personalized based on students' natural interests and provide opportunities for real-world application. Lessons that include a hands-on approach promote student engagement and allow learners to explore new concepts in a way that leads to deeper understanding.

Student learning models that encourage exploration, reflection, and social interaction are most effective because they encourage learners to marry pre-existing knowledge and experiences with new ones while also creating ample opportunities for social development and personal reflection.

EXPLORE

The most successful learning takes place in a classroom that promotes a constructivist approach in which children are active participants in their own learning. Most modern, progressive teaching philosophies are rooted in the constructivist, student-centered approach.

Teachers who merely immerse students in information are not engaging students or making students better learners (Fullan, 24). When learning is teacher-centered, students become passive learners, but when teachers allow students to have some control over the content and how it is presented, students are more intrinsically motivated to learn.

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In the constructivist classroom where hands-on learning and meaningful experiences are valued, students and teachers are “co-constructors” of knowledge. Constructivism is successful in today’s classrooms because when learners are active participants in their own learning, information becomes more meaningful and easily recalled. The role of the constructivist teacher is to work alongside their students to encourage new skills and create an environment that lends itself to meaningful lessons (Le Cornu & Peters, 51).

Learner-centered curriculum also means that learning is more personalized to the individual learner. All students learn best when the content reflects their individual interests and learning styles.

This personalized learning promotes student interest and natural curiosity because when the curriculum is tailored to each student’s interests and skills, students take ownership of their learning and develop a deeper connection to the material (Struyf et al.).

Exploratory learning encompasses all learning that occurs as a result of active participation in the learning process, such as touching, experimenting, and investigating both physical and technological concepts. Simply put—exploratory learning is “learning by doing” (Experiential Learning Theory).

Exploratory learning often leads to experiential learning in which children are creating memorable experiences and are then encouraged to reflect on the experience, which results in mastery of knowledge and skills.

The STEM-focused classroom lends itself to exploratory learning due to the fact that it is most often inquiry-based with endless opportunities to dissect, question, experiment, and analyze.

In addition, STEM curriculum can easily be integrated across disciplines to increase the likelihood of authentic, exploratory learning in the classroom (Struyf et al.). A classroom with a physical setup that intentionally and methodically incorporates spaces designed to encourage exploration and experimentation—from the arrangement of the furniture to the latest technological equipment—will naturally promote exploratory learning.

To the outsider, exploratory learning may look a lot like play, but according to educational theorist Vygotsky, children learn best through play because it promotes academic, social, and emotional development (Vadeconcoeur & Collie, 202).

Vygotsky was one of the first theorists to suggest that children take an active role in learning within their zone of proximal development, in which adults or more competent individuals help children reach their learning potential through collaborative guidance (Vadeboncoeur & Collie, 202).

Learning is not a solitary experience, but rather most often the result of joint efforts between those with different backgrounds, skills, and ability levels. When less knowledgeable individuals interact and explore with peers or teachers who can bridge the knowledge gap, effective collaborative learning occurs. When students are provided the opportunity to work together in a student-centered classroom, learning becomes a memorable experience rather than a short-term goal.

Today's effective teachers are able to merge everyday experiences and ideas with more complex, scientific ones in order to engage students and stimulate collaborative learning.

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PLAN

Once students have the opportunity to explore and experience new concepts, planning is the next logical step. When students are expected to execute a plan to demonstrate their new knowledge, it requires them to use executive functioning and develop strategies for thinking ahead. In their 2010 article “The Development of Expert Learners in the Classroom,” Rahman et al. emphasizes the importance of planning in the learning process when teaching students to become more self-aware and engage in metacognitive thinking¹.

Planning is a vital life skill that translates to all areas of life, from academics to driving to cooking. When students plan in the classroom, they utilize what they already know and apply it to a new situation by taking the appropriate steps needed to meet an academic or personal goal. The ability to form a plan demonstrates higher-level thinking which leads to a deeper understanding of the curriculum and the ability to make multiple steps with an end goal in mind.

Personalized planning means that learners are provided the opportunity to plan according to their individual goals, interests, and abilities. Students must analyze what they already know, what they’ve newly discovered, and what they are still unsure of in order to consider the most logical next steps. This student-centered planning leads to increased participation, as students are more motivated to become actively involved when they are given the opportunity to make decisions that affect the future of their own learning (Rahman et al., 2).

Although effective student planning should be personalized, one of the core tenets of constructivist learning pedagogies is collaboration, even in the planning process. Vygotsky, the father of social constructivism, insisted that every aspect of the learning process is deeply rooted in social interactions. When students work together to reach a common goal, they are participating in collaborative planning. This promotes important life skills, such as communication, cooperation, and turn-taking.

Students must consider and analyze what they know as a group and decide together how to best demonstrate this knowledge or skill. According to Vygotsky, learning and social development are intertwined and one cannot exist without

the other (Social Constructivism). When students of different backgrounds and ability levels collaborate to decide on the next steps in their learning process, students are growing both cognitively and socially.

DO & REFLECT

Once students are able to explore and plan how to best demonstrate their skill mastery, the next logical step is to take action and implement their plan.

In a constructivist classroom environment, learners choose the best way to demonstrate their knowledge. Providing students with choice leads to increased motivation and effort because their project or assessment reflects their interests and personal strengths.

There are endless ways to demonstrate proficiency; therefore, in a student-centered classroom, learners are provided the opportunity to choose the best way to manifest and reflect upon their new skills. According to Anne Vilen in her article “Assesment Works Best When Students Are in the Driver’s Seat,” reflection should be a routine occurrence in the classroom to guide both teaching and learning².

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Reflection for the 21st century learner is especially important in a time when our technology-driven world is constantly changing and modern learners are regularly being asked to pivot and consider new, developing information. Reflection encourages students to think about what they learned and how to apply that to future situations.

A key component of experiential learning is reflection because it shows students the importance of the learning process itself. According to educational philosopher John Dewey, “We do not learn from experience ... we learn from reflecting on experience.”

Dewey suggested that open-mindedness, responsibility, and wholeheartedness are the key qualities that promote reflective attitudes in the classroom. When students reflect on an experience, they merge what they already know from previous experiences with their newly acquired knowledge to create new or changed understandings (Experiential Learning Theory). Thus, true learning cannot occur without adequate reflection.

Classrooms that encourage reflection provide designated time and space specifically for the reflection process. Teachers promote reflection through higher-level questioning that encourages students to reflect on the experience's positives and negatives or successes and failures. Effective questioning facilitates reflection and leads to self-awareness and metacognition. When teachers use specific vocabulary and questioning techniques, students are more likely to engage in reflective behaviors and conversations (Le Cornu & Peters, 56). Reflective questioning encourages students to not only think about what learning choices they made but why they made those specific choices.

A constructivist classroom that makes reflection a vital component of the learning classroom through explicit teaching, intentional physical space, and language that encourages metacognition will produce learners who not only value learning but the learning process as well.



Collaborative learning also leads to collaborative reflection and the opportunity for learners to practice navigating interpersonal relationships throughout the reflection process. Open discussion promotes deeper reflection as all learners will offer their own unique insight and personal understanding of the topic at hand. When every student has different strengths, backgrounds, and previous experiences, learners are forced to challenge their own thoughts and beliefs and

reflect on why they think the way they do.

Collaborative reflection encourages a multi-dimensional view of the curriculum and brings to light how different backgrounds and skills lead to different learning (Lecornu & Peters, 58).

SHARE

Sharing is one of the most important components of the constructivist teaching model because true understanding is best tested by one's ability to share their

learning with others. As Vilan states, “A learning target is only as powerful as the student’s ability to explain it” (Assessment Works Best).

Authentic assessment in the constructivist classroom allows students to choose how they will share their knowledge with others and allows students to once again become the leaders of their own learning. Sharing provides students with the opportunity to engage with their teachers and classmates in a way that leads to discussion, validation, and increased engagement. Humans are social beings and much of our learning is the result of interacting and sharing with others.

Sharing their work encourages the development of important communication skills, which leads to increased self-confidence and learning motivation. Students are motivated by positive interactions with their peers, thus sharing with others promotes student engagement. The social environment plays an important role in the learning environment, and sharing one’s learning with others therefore leads to stronger peer relationships and deeper social understandings (Smith and MacGregor).

When sharing leads to collaborative discussion, learning is magnified even further because as students verbalize their newly acquired knowledge and reflect on their learning experiences, new concepts are often clarified or challenged. During the sharing process, learners are working together to create new ideas, solutions, and understandings, which results in higher-level, multifaceted learning (Smith & MacGregor).

A progressive, constructivist teacher will see the academic and social value in student sharing and allow ample time and opportunity for students to demonstrate their knowledge through sharing. Sharing in the STEM classroom can manifest in a variety of ways, from a live experiment to a virtual presentation. In their article “Students’ Engagement in Different STEM Learning Environments,” Stuyf et al. found that STEM students showed increased engagement when allowed to share knowledge with other students. Sharing becomes a meaningful academic and social experience and an authentic method for demonstrating mastery of skills.

Yet another benefit of sharing for the 21st century learner who will one day enter into a global workforce is the development of important social skills, including observation, reflection, and listening.

CONCLUSION

A constructivist classroom values student interest and engagement as well as the social benefits that result from collaborative learning and reflection. When students follow the SmartLab Student Learning Process of explore, plan, do and reflect, and then share, learning comes to life and becomes an actual experience rather than a rote activity.

Exploratory learning combined with ample opportunities for social interaction leads to intrinsically-motivated, engaged learners who understand the importance of the learning process.

ABOUT SMARTLAB LEARNING

We've pioneered the conversion of traditional learning environments into project-based learning experiences and constructivist spaces since 1987.

Today, we partner with the most innovative school leaders nationwide to provide personalized, project-based learning experiences and environments that engage and empower students through experiential, personalized, and collaborative learning.

With SmartLab Learning's suite of solutions, we have provided students with hands-on, project-based learning experiences that ignite their passion for science, technology, engineering, and math; helped them build lifelong communication, collaboration, and critical-thinking skills; and empowered them to approach challenges with creativity.

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