DESIGNING 21ST-CENTURY LEARNING SPACES

smartlab

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INTRODUCTION

Every teacher spends the week before the beginning of the school year preparing the classroom for students.

They make the most of the furniture, space, materials, and technology available to them to set the stage for the learning culture they want to develop throughout the year.

What if each component of their classrooms could be thoughtfully chosen and designed to support 21st-century learners and the skills necessary to prepare them for their future?

This paper will discuss best practices in classroom designs, how to implement those practices to support the unique needs of Generation Z, and provide suggestions for retrofitting your classroom to meet the changing needs of your learners.

WHAT WE'LL COVER IN THIS WHITE PAPER
- What Should a 21st-Century Learning Space Encourage?
- 21st-Century Learning Space: Layout and Furniture
- 21st-Century Learning Space: Materials and Organization
- 21st-Century Learning Space: Technology

WHAT KIND OF LEARNING SHOULD A 21ST-CENTURY CLASSROOM SUPPORT?

The challenge of designing a 21st-century learning space is predicting the skills that students will need when they enter the workforce.

In fact, many of the jobs that current students will hold as adults do not exist today. So how do we prepare them for an unknown future?

According to The Future of Jobs Report 2018, the skills that will be in highest demand in 2022 include critical thinking and problem-solving, creativity, leadership, initiative, and innovation[10].

Although literacy and math skills are essential for every student, the soft skills they leave with will help them in whatever post-secondary path they choose.

A 21st-century learning space should be designed to optimize a learning approach that allows students to develop these high-demand skills as well as important content knowledge.

In addition to considering the skills that the next generation of graduates will need, it is also important to examine the unique learning styles of Generation Z, or iGen, learners.

Traditional teaching practices, including lectures and reliance on technology-free resources, are no longer the most effective methods for this generation of learners[4].

iGen learners, born after 2000, are fluent technology users, prefer to be active over passive participants in their learning, and want to make positive changes in the world[9].

Technology should be leveraged with millennial and Gen Z learners to engage them in active learning and to personalize their learning experiences[3].

As the needs of each generation of learners change, their learning environments must also change.

IF WE TEACH
TODAY'S STUDENTS
AS WE TAUGHT
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WE ROB THEM OF TOMORROW
— J O H N   D E W E Y

21ST-CENTURY LEARNING SPACE: LAYOUT AND FURNITURE

The layout and design of furniture in a learning space has significant impacts on both teachers and students[5].

Although millennial learners prefer collaboration over Gen Z learners, who prefer to work independently, it is important that a learning space can facilitate both independent and collaborative learning[9].

" A student-centered space encourages collaboration and allows students to develop initiative and problem-solving skills. "

Technology has enabled iGen learners to grow accustomed to intrapersonal learning, but collaborative learning is even more important now to prepare iGen learners for the inevitable collaboration they will engage in as members of the workforce.

A traditional classroom consists of student workspaces organized in rows and features the teacher at the front of the room[1]. This layout encourages a learning space in which the teacher is the holder of all knowledge, and shares that knowledge with students through lecture and other teacher-led instructional practices.

Constructivists, like Jean Piaget, assert that students must be actively engaged in their learning by constructing meaning and understanding through their experiences[7].

Piaget believed strongly that, "construction is superior to instruction," and that students' breadth of understanding will be greater than the knowledge they will gain from reading or explicit instruction.

What does this mean for a 21st-century learning space and how do we design a space that engages and empowers learners?

The layout of a classroom should place the students in the forefront, and the majority of the furniture should be designed for students to use.

Although teachers will likely have their own space to organize their materials and store their personal belongings, the teacher's desk in the classroom will no longer serve its original purpose of instructing students.

Instead, the teacher will be able to meet with students in their work areas, empowering the students to be in charge of their own learning with the support of their teacher.

To promote collaboration and student-centered learning, students need to be able to work in small groups, have sufficient work space, and the ability to move about the space as they access resources and peer experts[5]. Group workstations

should ideally allow students to work in both pairs and small groups.

Movable seating encourages students to move around their workstation as they complete tasks independently, with their partner, or with the support of other peers. Sufficient work space is also necessary for students to use materials, document their learning, and access technology, including tablets and desktop computers.

The optimal learning space for 21st-century learners can be realized even in the most outdated spaces with just a little planning and elbow grease.

A traditional classroom can be modified by shifting desk orientation into small groups, providing space for students to stand and work or sit on the floor and work, and by removing restrictive furniture.

Creative Learning Systems has mastered the design of learning spaces for 21st-century learners with their SmartLab. The SmartLab is a student-centered learning space that allows students to engage in project-based learning as they utilize a variety of technologies, both physical and digital.

In a SmartLab, students work at tables designed for up to six students working in pairs. The design of these tables enable students to work in partners, while utilizing the other four students at the table for support when needed.

Students are able to work side-by-side or across from each other, providing them with the ability to customize how they collaborate.

Computers located at each workstation are mounted on swinging arms, which frees up significant space on the tabletop for students to engage in hands-on learning.

Designing a student-centered space that encourages collaboration allows students to develop initiative and problem-solving skills, which are essential to the success of students later in life[2].

21ST-CENTURY LEARNING SPACE: MATERIALS AND ORGANIZATION

The choice and organization of materials in a learning space sets the stage for the kind of work students will engage in. Compare these two classrooms:

CLASSROOM 1: TRADITIONAL, TEACHER-CENTERED

In this classroom, materials are neatly organized in locking cabinets that hang on the wall above counters. The teacher manages the organization of the materials including when they are utilized and how. The teacher is responsible for identifying and retrieving the appropriate materials for each activity ahead of time. The materials in the classroom are rudimentary with simple color, material, and overall function.

CLASSROOM 2: 21ST CENTURY, STUDENT-CENTERED

In this classroom, materials are organized on shelves that are no taller than the students. The students are in charge of managing the organization of the materials. Because the open shelves allow the students to see all of the materials, they know the full inventory of materials in their classroom, and choose the resources they believe are most appropriate for their task. The materials are safe for student use, but are identical or similar to the materials that would be used in applied situations.

Who has control of the learning in each of these classrooms? Who is doing the most work? Who is learning the advantages and disadvantages of each material?

For the first classroom, your answers are likely the teacher; in the second, it is the student. If the goal is to position students so they can take ownership over the learning, we want to strive for a system like that in the second example.

Not only does student management of materials free the teacher to focus on facilitating learning, but it also teaches students initiative[7] and critical thinking skills.

Making all materials accessible to students encourages creativity as they discover ways to incorporate materials, which will likely go beyond the original purpose or design of that material.

Shifting ownership can be a challenging change for many educators, even more if you're an educator with severely limited resources.

Help empower your students by storing items in clear and easily accessible containers—recycled and modified milk jugs, cans, and other plastic containers work great.

You can still manage the flow of resources while allowing for student management by limiting how much of the materials you put out at any given time. Additionally, setting expectations around using materials, as well as having a discussion

with students about making thoughtful choices and reusing materials, can be very powerful.

When selecting materials in the classroom, it's important to give students real-life tools[7]. Maria Montessori believed that we are doing a disservice to students when we select tools that don't work the way they were designed to.

For example, instead of giving students models of a pre-designed circuit, it is more powerful if they can manipulate functional batteries, light bulbs, wires, and additional components. Although the batteries will not have enough voltage to hurt students, they may still feel the warmth generated from a short circuit, while learning fundamental principles of circuitry. Students are capable of safely using functional tools when given the opportunity and appropriate support[7].

While striving to prepare students for what they'll encounter as they join the workforce, it's also important to balance this goal with the need to provide materials that are appropriate in size and accessibility for the learners.

The materials in a SmartLab are organized to be accessible to students. SmartLab teachers, called facilitators, are encouraged to develop routines with their students that place the responsibility of material organization on the students.

Learning materials are thoroughly tested and developed into products that can be used independently by students. Students are given

various tools, like 3D printers, CNC mills, and circuit boards, that allow students to engage with them in authentic, meaningful ways.

The organization of the materials in a classroom, and the selection of those materials, is as important as the design and layout of furniture. Above all, it is important to remember that as students take ownership of the space, they will be able to take ownership of their own learning.

21ST-CENTURY LEARNING SPACE: TECHNOLOGY

Technology has become as common as pencils and paper in most classrooms.

Generation Z learners have grown up immersed in much more advanced technology than previous generations. These learners are used to finding the answers to their questions with a simple "click" on their computer, phone, or tablet[9].

Though we still want to teach students additional problem-solving skills, the accessibility of the internet and online resources are powerful tools as you strive for student-centered learning.

Providing students with appropriate technology (and support with using it appropriately) is essential to engage iGen learners and connect them with
the resources that
will transform their learning experiences.

Simply providing computers to every student, or group if they're working collaboratively, can increase student initiative and opportunity to apply technology in new ways[6].

Today, a lot of teachers are using technology as a substitute for what students could do with other materials[6], which falls in the lowest level of technology integration according to the SAMR model[8].

As the majority of teachers become more comfortable with technology, they will be able to apply technology to transform learning, the highest level of the SAMR model[8], which goes hand-in-hand with innovation and creativity[6].

If there are issues regarding access to technology in your classroom, work with other teachers or spaces with technology in your building to help provide your students regular access to technology.

Consider gathering the technology in your school or grade into class sets and use a checkout system. Though you may not be able to implement one-to-one devices yet, this allows you to enhance one or more targeted lessons each day.

In a SmartLab, a computer is available to every pair of learners in the class. Students use the computers to access online curriculum that they can navigate independently with minimal support from their teacher.

Computer access also allows students to access resources online that assist with the completion of their projects. In addition to internet access, the computers are configured with software programs that allow students to create and represent their ideas and learning in unique ways.

Technology is essential to a 21st-century learning space, but must be implemented thoughtfully to encourage creativity, innovation, and engagement.

CONCLUSION

From the furniture to all of the materials used to support learning, it is important to consider the type of learning you want to encourage and the needs of learners in the space.

Generation Z learners want to actively participate in their learning, and technology is an integral part of their life that can be leveraged to increase engagement, initiative, and innovation.

As you begin to design learning spaces for your 21st-century learners, consider the recommendations in this paper, and the comprehensive, tested solution that Creative Learning Systems provides to schools.

ABOUT CREATIVE LEARNING SYSTEMS

Creative Learning Systems has pioneered the conversion of traditional learning environments to project-based learning experiences since 1987. Today, Creative Learning Systems partners with the most innovative school leaders nationwide to provide personalized, project-based learning experiences and environments that increase a student's capacity through engaged, active, and social problem solving.

With SmartLabs' 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.

CONCLUSION

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