

# DEFINITIVE GUIDE TO 21<sup>ST</sup> CENTURY LEARNING











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With the rapid evolution of technology over the last 50 years, ensuring student learning is a key concern for today's educators. Let's look at how 21<sup>st</sup> century learning differs from 20<sup>th</sup> century learning.

20 <sup>th</sup> Century Learning VS 21 <sup>st</sup> Century Learning		Benefits
<p><b>Teacher centered</b></p> <p>One-way flow of information from the teacher to the students.</p> 	<p><b>Teacher-led + Student-driven</b></p> <p>Free-flow of information between students and teachers.</p> 	<p>Research shows that student-driven learning as the most effective strategy for helping kids from a variety of backgrounds meet educational goals. A study linked student-driven learning to improved social skills and academic achievement.<sup>1</sup></p>
<p><b>Structured learning environment</b></p> <p>Rigid structure and strict instructional times.</p> 	<p><b>Learning Spaces</b></p> <p>Flexible structure according to student strengths and personal preferences.</p> 	<p>A study from the National Training Laboratories in 2000 found that only about 5 percent of the information delivered through lecture was retained. Compare that with retention rates at 50 percent for discussion group and 70 percent for practice by doing.</p>
<p><b>Isolation</b></p> <p>Learning happens in isolation – in front of worksheets that are marked by the teacher.</p> 	<p><b>Collaboration</b></p> <p>Learning happens in collaboration with other students supplemented by information gathered on the Internet.</p> 	<p>When compared to more traditional methods where students passively receive information from a teacher, cooperative, problem-based learning has been shown to improve student engagement and retention of classroom material (Prince, 2004).</p>
<p><b>Passive Learning</b></p> <p>Memorization provides the right answers but knowledge is quickly forgotten.</p> 	<p><b>Active learning</b></p> <p>Active learners created building blocks to be able to problem-solve.</p> 	<p>Freeman et. al's (2014) meta-analysis of 225 studies comparing active learning approaches with traditional lecturing showed improved exam scores and decreased failure rates for active learning.</p>

“ If we teach today's students as we taught yesterday's, we rob them of tomorrow. ”

John Dewey

<sup>1</sup> The Impact of Student - Centered Learning on Academic Achievement and Social Skills (2012)

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## 21<sup>st</sup> century classroom

### Learning spaces

Let's face it. Children aren't built to sit still. When students have the chance to move, both their brain and their concentration and cognitive abilities are refreshed. The exercise and change of pace help enhance concentration and reduce fidgeting and daydreaming.

Key components of 21<sup>st</sup> century classroom design include flexible learning spaces, integrated technology, and areas to foster creativity in the classroom. It is becoming increasingly common for a larger number of students to learn in an open classroom with more than one teacher. Some school classrooms have removed walls in some locations and replaced others with glass, to increase openness and transparency in learning. 20<sup>th</sup> century classrooms are arranged in neat rows of desk and teachers are in the front of the classroom, with information flowing from the teacher to the students. 21<sup>st</sup> century classrooms can be arranged in learning centers, which are designated areas within the classroom that provide students with exciting and interesting experiences to enhance their learning.

### Benefits

21<sup>st</sup> century classrooms go beyond the physical confines of the classroom and into a digital space. Students can co-create with their peers – whether in the same class or virtual – using collaboration tools such as Microsoft Sharepoint, as well as publish their work using blogs such as Tumblr, or publishing sites such as YouTube or Slideshare.

### Technology

With the rapid rise and evolution of technology, various forms of “tech” have become commonplace in today's classrooms. Technology takes various forms ranging from hardware such as Chromebooks, tablets, interactive white boards, and smartphones to software such as Mathletics, among many others.

Having technology in classrooms is one thing but transforming lessons to enable higher-level learning is another. The SAMR model by Dr. Ruben Puentedura illustrates how learning is transformed at each integration level. Here's an example of how to use technology to support maths learning in a Grade 3 Multiplication classroom.

S	Substitution	Use online learning programs to replace printed multiplication worksheets.
A	Augmentation	Online learning programs provide real-time feedback to students and teachers on their progress.
M	Modification	Teacher sets up a timed online multiplication program as a way to gamify learning.
R	Redefinition	Teacher projects online resources onto the interactive whiteboard and has the class use virtual tools to uncover answers through a collaborative environment.

If you are new to technology, fear not! You can always start at the first stage of technology integration so that you can progress to the next stage as you get more comfortable.



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## Teacher-led + Student-driven

Student-led learning is an approach that positions the teacher as the “guide on the side” rather than the “sage on the stage”. Teachers must become comfortable with changing their leadership style from directive to consultative -- from “Do as I say” to “Based on your needs, let’s co-develop and implement a plan of action.”

When given an opportunity, students can, and do, take ownership of their learning. According to **Leaders of Their Own Learning: Transforming Schools Through Student-Engaged Assessment**, the most important assessments that take place in any school building are seen by no one. They take place inside the heads of students, all day long. Students assess what they do, say, and produce, and decide what is good enough. These internal assessments govern how much they care, how hard they work, and how much they learn. They govern how kind and polite they are and how respectful and responsible. They set the standard for what is ‘good enough’ in class. In the end, these are the assessments that really matter.



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## 21<sup>st</sup> century learner

In 2002, the Partnership for 21<sup>st</sup> Century Skills (P21) identified the Four Cs of 21<sup>st</sup> Century Learning, also known as the Four Cs or 4 Cs, as the most important skills required for 21<sup>st</sup> century education. These four skills (communication, collaboration, critical thinking, and creativity) have become an oft-touted benchmark in education as key skills for today's graduates.

### WHAT ARE 21<sup>ST</sup> CENTURY SKILLS? THESE 4 C'S"



#### COMMUNICATION

Sharing thoughts, questions, ideas & solutions



#### COLLABORATION

Working together to reach a goal. Putting talent, expertise, and smarts to work



#### CRITICAL THINKING

Looking at problems in a new way and linking learning across subjects & disciplines



#### CREATIVITY

Trying new approaches to get things done equals innovation & invention

This framework provides a great vision, but what does a 21<sup>st</sup> century learner look like?

#### Strong Communicators

Students can express their thoughts clearly both verbally and through writing. Students are self-directed learners who know how to pursue ideas, find resources, and ask for help. They can speak confidently to a variety of audiences and know how to represent themselves.

#### Collaborators

Students can work collectively with others. They contribute their strengths to group efforts and take responsibility for the work assigned to them. They know how to lead group work and how to give and receive constructive feedback.

#### Critical Thinkers

Students develop strong analytical skills. They are able to synthesise information, identify valid source material, and think creatively to solve problems. They also develop the confidence and skill to ask good questions.

#### Creativity

Students think creatively by exploring a wide range of idea creation techniques, create new and worthwhile ideas (both incremental and radical concepts, elaborate, refine, analyse, and evaluate original ideas to improve and maximise creative efforts. Students are also open and responsive to new and diverse perspectives. Lastly, students view failure as an opportunity to learn that creativity and innovation are part of a long-term, cyclical process of small successes and frequent mistakes.

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Teachers play a key part in fostering skills in today's students. One of the tools available at their disposal is technology. It provides a way for fact-based learning and allows students to do a lot of the research using the internet and various online tools. And at the same time these students are learning very valuable research skills which they can transplant at high levels of education, at post-secondary and beyond. Technology can be used to enhance critical thinking and critical literacy skills, evaluating the legitimacy and accuracy of online content is the central part of 21<sup>st</sup> century education. Technology can create flexible learning environments, setting students up for success as they prepare for jobs that aren't yet created. When used to its full potential, technology provides the opportunity for students to reflect on their own learning, and in turn, take ownership of their learning.

## 21<sup>st</sup> century educator

Nurturing 21<sup>st</sup> century learners in 21<sup>st</sup> century classrooms cannot take place without teachers. But with the changes in teaching and technology, how exactly does a teacher thrive in a 21<sup>st</sup> century classroom? Let's explore the critical competencies of a modern educator.

The 21<sup>st</sup> century educator looks forward to the future. They embrace ever-changing trends in technology and are in tune with what the future may bring to education. A good 21<sup>st</sup> century teacher is aware of the career opportunities that will be in the coming years for their students and are always advocating towards forward thinking and planning to ensure all students will not be left behind. Lastly, the 21<sup>st</sup> century educator must use teaching strategies to ensure that the focus in education is on preparing today's children for the future of tomorrow.

## Technology Master

Technology in the classroom is ever-changing and moving at a rapid pace. The 21<sup>st</sup> century teacher is one that not only keeps up with the changes but evolves with it. Technology in the classroom, whether it's for facilitating instruction, tasks, or grading, can help students deepen their learning and faster, and help make a teacher's time more effective. A 21<sup>st</sup> century teacher does not have to have a class set of tablets in every child's hand, or the latest interactive display. However, they should have a nice balance of educational tools in their classroom.

An effective teacher knows which technologies in the classroom can truly help transform their students' learning. They use resources that are aligned to their curriculum and outcomes, engages their students, and removes the strain from time-intensive tasks such as marking, reporting and assessments. This way, they can focus more of their time on what they do best – facilitating their students' learning.



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## Collaborator

An effective 21<sup>st</sup> century educator should be able to collaborate and work well in a team. Working with others is an important 21<sup>st</sup> century skill. Over the past few years, being able to collaborate effectively in the workplace has grown rapidly. Learning has proven to be more effective when you can share your ideas and knowledge with others. Sharing your expertise and experience, communicating and learning from others, and being able to self-reflect is an important part of the learning and teaching process. 21<sup>st</sup> century educators cultivate collaboration between their students, and practices collaboration in their own teaching practice amongst peers.

## Adaptive

While teaching strategies and curriculum requirements have evolved over time, the root of it all, setting up students for success, has not. The 21<sup>st</sup> century teacher looks at their practice and adapts based on the needs of their students. They must be able to adapt their teaching style to include different learning styles such as visual, logical, kinesthetic, etc., when a lesson fails, and to new technology. They must be able to adapt to the curriculum and the requirements and be able to use their imagination to teach in creative ways.

## Lifelong Learner

The 21<sup>st</sup> century educator is a lifelong learner. They don't just expect their students to be lifelong learners, but they too stay current and on top of what's new in education. Even though they may still use the same lesson plan from previous years, they know how to change it to keep up-to-date with what is current. A great educator will not only embrace technology but be interested to learn more about it.

21<sup>st</sup> century learning means teaching just as teachers have done in the past centuries, but with dynamic resources. Today's teachers have a great advantage, they have powerful learning tools at their disposal that they didn't have before. 21<sup>st</sup> century technology is an opportunity for students to acquire more knowledge. Teachers can move away from being the dispenser of information to someone who can guide them and prepare them for their future. Ultimately, the 21<sup>st</sup> century learner will be "learner-driven," where they choose how and what they want to learn. The teacher will serve as a facilitator and guide to help embrace 21<sup>st</sup> century learning.





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## 21<sup>st</sup> century educator

21<sup>st</sup> century administrators exhibit many of the traits of 21<sup>st</sup> century teachers. However, to become an effective 21<sup>st</sup> century leader, these administrators need to go beyond what they have known in the past and equip students for the future. Let's explore the profile of a 21<sup>st</sup> century school leader.

### Communicative, Collaborative and Connected

21<sup>st</sup> century school leaders openly seek and share information and knowledge. They collaborate with others virtually and face-to-face to ensure the best decisions are made. They are open minded and consider all relevant perspectives to come up with the best decisions for their schools and districts. They are also connected with the world through blogging and social media, and follow organisations relating to education.

### Inspiring & Empowering

21<sup>st</sup> century learning represents a dramatic shift from 20<sup>th</sup> century learning. Administrators play a key role in managing this change for their staff. Maintaining teacher morale while shifting a mindset in seasoned staff is a challenge, but 21<sup>st</sup> century leaders are inspiring! Inspire teachers, students and parents with speeches about 21<sup>st</sup> century educational possibilities, highlighting the school's vision and mission. Create an enthusiasm and optimism to work together in creating future directions for the school. Continue this focus all through your tenure. Listen to your teachers and students. Learn their talents, interests and passions and then lead accordingly.

21<sup>st</sup> century administrators empower their staff to stretch their teaching to the next level. They coach and makes sure to celebrate each milestone. Empower students and teachers to be resourceful, flexible, creative, to think like entrepreneurs and develop global partners and resources to succeed in our ever-changing world.

### Data Driven

Today's administrators are using data more than ever to inform their leadership, assess professional learning opportunities and provide feedback to teachers to improve learning experiences for student. Principals place a high importance closing achievement gaps in their schools and highly value accessible reporting on their school's city, state or national performance.



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## Technology Champions

A majority of technology leaders see a significant expansion of blended and flipped learning experience for students by 2019.

49% of principals say that technology is being used effectively in maths classes, but 37% also indicate that there needs to be improvement in how digital tools are used to support student instruction in maths (Source: Blackboard).

Technology leaders must model the practices and be instructional technology experts in their schools.

## Willingness to Learn, Unlearn and Relearn

Like 21<sup>st</sup> century teachers, 21<sup>st</sup> century administrators must sustain a mindset to never stop learning! The opportunities and possibilities of the 21<sup>st</sup> Century are exciting and empowering for you and your school community. Embrace a growth mindset! Seth Godin says, "If you're not doing the things that scare you, you're not really learning."

Here are a few thought leaders that we recommend:



**Sir Ken Robinson,**

British author, speaker and international advisor on education in the arts to government, non-profits, education and arts bodies.



**David Eagleman,**

American writer and neuroscientist, adjunct professor at Stanford University.



**Reshma Saujani,**

Founder and CEO of Girls Who Code.

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## Making it work in a 20<sup>th</sup> century setting

We've profiled the various components of 21<sup>st</sup> century learning. However, most of the schools today were built with 20<sup>th</sup> century learning in mind. With all our findings in mind, how does 21<sup>st</sup> century learning happen in today's classrooms?

As schools change to adapt the framework set up by the Partnership for 21<sup>st</sup> Century Skills, it is important that teachers and administrators are open to learning new approaches and technologies in their schools. Student-led learning is a key component of the 21<sup>st</sup> century learning, and today's students need to feel empowered to take ownership of their learning. To do so, they need a classroom that empowers them to become technology masters and support from teachers and administrators to model the values of the 21<sup>st</sup> century such as collaboration, critical thinking, creativity and communication.



Here are some great tools to help you get set up in a 21<sup>st</sup> century classroom:

- ▶ Chromebooks
- ▶ Twitter
- ▶ Mathletics
- ▶ Flipgrid
- ▶ Interactive Displays
- ▶ ... and many more!

We hope this eBook provided some critical insight so that you can learn more about 21<sup>st</sup> century learning.

To find out if Mathletics is a good 21<sup>st</sup> century tool for your school, why not try it for free?

Learn more at [mathletics.com/free-trial](https://mathletics.com/free-trial)



## About Mathletics

Mathletics is a captivating online math learning space providing students with all the tools they need to be successful learners, both in the classroom and beyond. Powerful courses are aligned to national curriculum outcomes across the primary and secondary years.

The newly revamped student experience includes age-appropriate learning spaces and includes access to a diverse range of learning resources including eBooks, videos and games. Student-driven learning is made easy with content grouped by topic and difficulty. Powerful diagnostic tools put data at the teacher's fingertips and dynamic results provide an immediate snapshot of the latest student progress.

Mathletics is designed for students and educators by passionate educators and curriculum experts with the aim to make learning and specifically maths fun for all.

powered by



Learn more about us at [mathletics.com](https://mathletics.com)