instinctools

Revealing EdTech trends that shape the future of education

2022

How will education evolve in 2022 and beyond, and where does that leave educational institutions and edtech companies? Discover the biggest EdTech trends to shape the industry.

Contents

Time to make long overdue changes

Education is one of the few industries that inimitably resists change and ignores the needs of its stakeholders.

To illustrate this, it is enough to trace how school was adjusting to the ever-transforming world over the last hundred years. In short, it wasn't. From the early 1900s up to pre-pandemic times — the same designated classrooms, the same teachers towering over the audience, and the same students performing the role of silent listeners.

The situation with higher and postgraduate education was not much better.

However, 2020 made the industry develop at an overwhelming pace. On-site learning, the role of the teacher as the main expert and content provider, and one-fits-all approach — all these pillars that had supported education for centuries fell. So what are going to be the next ones to take their place? Here are some of the top trends in education technology to look out for in 2022.

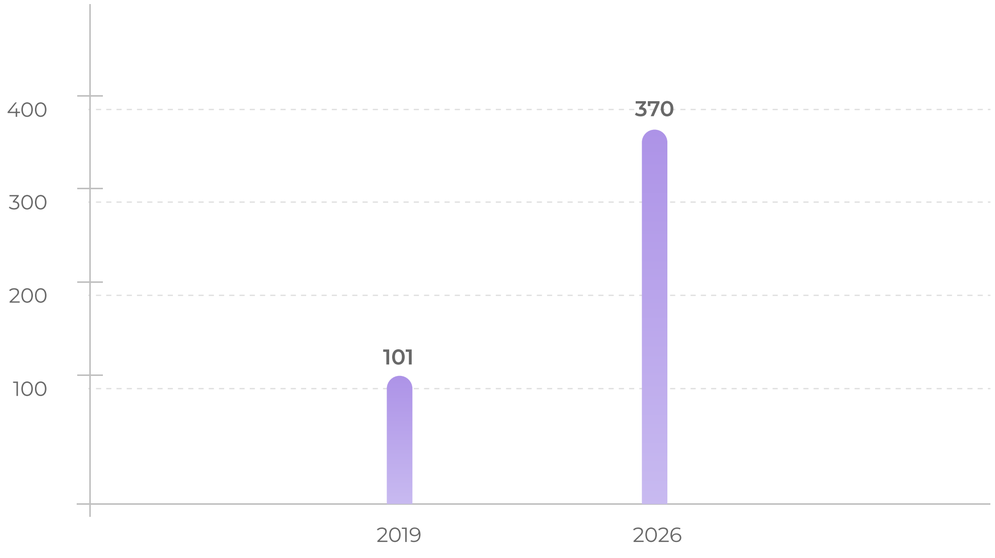
How the school was *not* transforming

The 1910s

The 1950s

The 2010s

The total market for eLearning worldwide (in billion U.S. dollars)



Source: Statista

What does the future hold? EdTech ideas

While the world outside classrooms is changing faster and faster, we aim to create a new model of education suited to the needs of the future that's coming. Technology let the genie out of the bottle, allowing ideas that have been brewing for quite a while, evolve and be implemented at breakneck speed.

Hybrid learning is here to stay

Although the idea of hybrid learning gained its momentum back during the first COVID-19 outbreak, it's naive to think that it'll go away any time soon. With so much money spent on the transition to eLearning (devices, infrastructure, etc.), educational institutions want to get more out of their investments. So rather than being a fleeting thing just for the pandemic, hybrid learning becomes a long-lasting movement that has provided a new setting for other education technology trends to occur.

Shaping this new landscape for more groundbreaking ideas to be implemented and thrive, hybrid learning is not in a perfect shape itself. At the beginning of 2020, when the world was suddenly awoken to one of the dystopian scenarios of the future, the pain points of education that had remained unnoticed for so long, had to be dealt with immediately. With such a rapid and abrupt shift from in-person to remote learning, making a bunch of mistakes was unavoidable. Some teachers, for example, state that switching to a partially online format has doubled their workload.

"With the amount of stuff we are juggling, it feels like it's impossible to always kind of keep your head above water. The sort of administrative stuff really piles up. So even if we're doing our best, we're still dropping balls left and right," *says Kristine Harootunian, a math teacher at South Burlington High, Williston, Vermont.*

Does it mean though that we need to give up on the idea of teaching children outside the classroom? Not at all. One of the possible solutions might be the use of refined learning management systems (LMS). They simplify lesson-building for educators, allow them to consolidate administrative tasks in one place, automate routine, and offer access anywhere. Yet, so far, LMS have been more about management and less about learning, but the balance can be found.

Thanks to technology advancements, the LMS of tomorrow has every chance to turn into truly intelligent learning platforms. Whether we

think about employees in a workplace setting, or kids in a classroom talking about a new lesson, people need both social interaction and some solitary work in order to successfully learn everything from a formal course. xAPI (Experience API) makes it possible to measure all types of learning experiences, and it can do so within an LMS. So it's just a matter of time until xAPI becomes a standard for all learning management systems.

Creating life-long learning experience

With the ever-growing demand for new skills conditioned by rapid world changes, learners have been put under pressure of continuous acquisition of new skills. Those who are not agile enough to adjust will end up on the sidelines of their career opportunities.

The problem with the current state of things is that the education levels are absurdly detached from each other. What students are taught in high school barely correlates with what they do at college or university, just as getting a degree doesn't guarantee that their knowledge will be applicable in the workplace.

But an EdTech company that'll break these silos and find the way to navigate learners throughout their life-long educational process could become the next Netflix for educational systems. Sounds impossible? Until it's done.

Most breakthroughs once started with a 'what if?' question. So what if there was a system that would 'meet' a learner at a pre-school and help acquire the skills (alphabet, numbers, colors, etc.) appropriate for this developmental stage. Imagine that the system can link a kid's school and home accounts so that the progress could be more easily tracked. The same model can work for K-12, and apart from supporting pupils in their studies, it will be able to track not only what is being learned but also how, and, thus, ensure smooth transition from school classes to assignments done at home.
Thanks to predictive analytics, the system will also anticipate the student's future needs and advise on the right college to apply to, and, when the time comes, all the data gathered in the system could be very helpful to match with employers.

As the range of the user's devices extends (a smart speaker, smart phone, laptop), all the apps track the learner's progress collectively, delivering perfectly calibrated lessons via audio mini-lessons, or quizzes, or games.

Once a job has been landed, the person's account can be connected to the employer's LMS and ensure appropriate professional development. The best thing about the system is that it evolves along with the user, adjusting to their changing needs.

Machine Learning (ML) technology makes it possible to build an educational system that will grow and mature with the user, using using the data gathered from them for unprecedented customization. Throughout their whole lives people will be able to leverage a smart system's assistance, which is especially beneficial for those, who suddenly find themselves needing to switch jobs or even industries.

EdTech companies can start moving in this direction by partnering with a vendor that already has expertise in building strategies for educational system development, data analytics, and experience design.

Reversing the lecture-homework routine with flipped learning

A flipped classroom overturns conventional learning by focusing on practical content that is delivered online and often outside the classroom. It leads to more collaborative environments as students get

an opportunity to interact with each other instead of being silent listeners to what their teachers say.

Traditional teacher	VS	Flipped Focus
In class Teachers review homework and present new content		**Out of class** Students learn new content through video & tech
Out of class Students do homework to practice new learning		**In class** Students discuss and explore applications
Instruction Student-centered 35% Teacher-centered 65%		**Instruction** Student-centered 80% Teacher-centered 20%

By removing the one-size-fits-all lecture from the classroom and allowing students to have a self-paced lecture at home, they are encouraged to do the actual work in the classroom, interacting with their teacher and classmates.

"Technology is used to humanize the classroom."
Sal Khan, the founder of Khan academy.

Such an approach encourages experimentation, whereas the traditional model doesn't have time for that. It overconcentrates on the result, missing though that the truly great result can't be achieved without experimentation and failure.

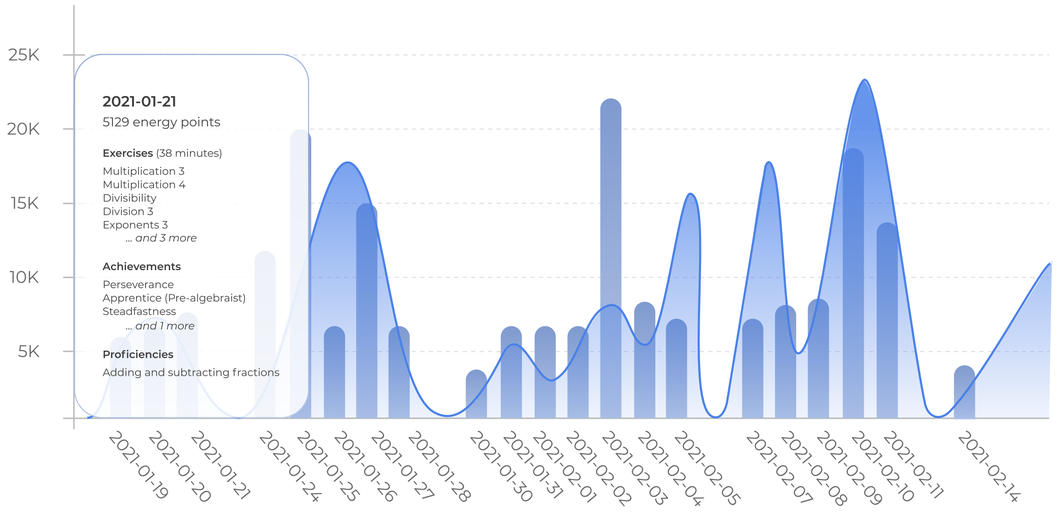
The technology makes flipped learning not only possible but genuinely effective. Its concept is not limited to simply recording videos and letting students watch them as many times as they'd like. The whole idea is that learning should be based on well-thought-out software ideally bolstered with BI dashboards to help teachers track their students' academic progress. You can convert the entire curriculum along with the data on students' performance into the form of a dashboard.

Let's take a look at how it's done at Khan Academy.

	Linear equations 1	Graphing points	Angles 2	Logarithms 1	Simplifying radicals	Scientific notation	Trigonometry challenge	Probability 1
Student 1								
Student 2								
Student 3								
Student 4								
Student 5								
Student 6								
Student 7								
Student 8								
Student 9								
Student 10								
Student 11								
Student 12								
Student 13								

Every row is a student, every column is one of the concepts within a discipline. Green means that students are already proficient, blue means they are working on it, red indicates they are stuck.

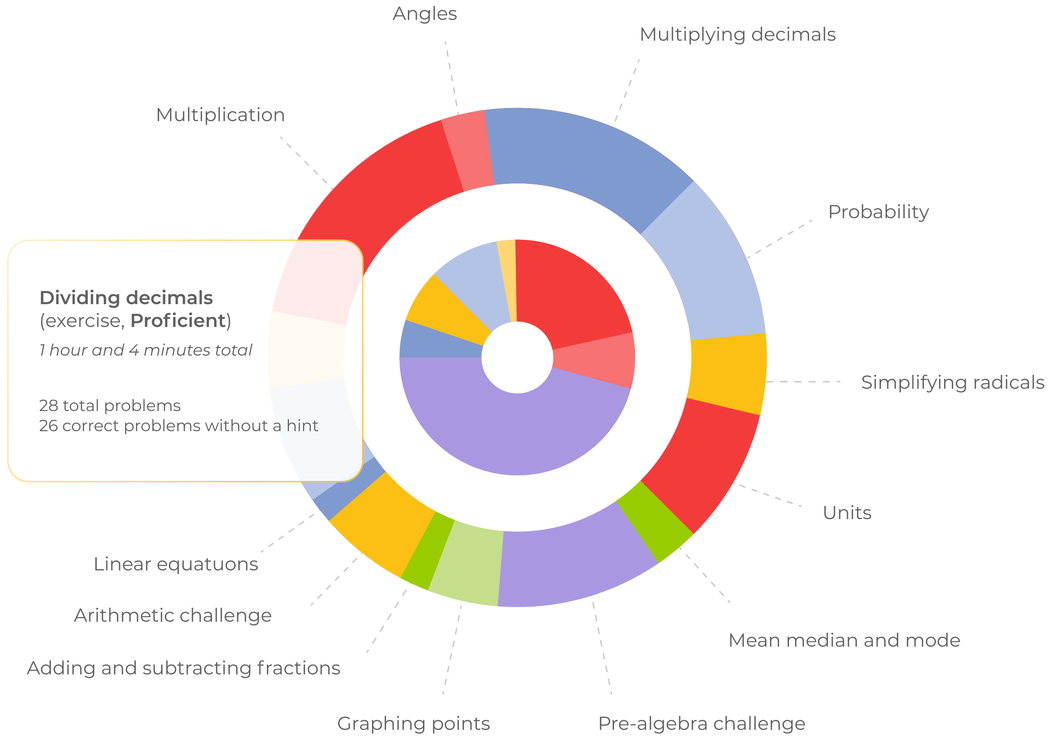
With this solution, teachers can easily decipher which kids need their active participation or, even better, which can be tutored by their “green-area” peers. Interestingly enough, it seamlessly flows into another education tech trend – peer-to-peer learning. The idea is not cutting-edge in itself, but with the help of technology it has reached a whole new level. Peer-to-peer learning goes beyond the classroom and becomes a global platform where students from different corners of the world can tutor each other, expanding their minds.



Getting back to flipped learning, it’s worth mentioning that with so much data about students wrapped into comprehensible dashboards, educators can make the process as productive as possible. Teachers know exactly what students are up to: how long they’ve been spending watching videos, when they pause videos, when they stop watching, what exercises they do, the areas they focus on. The data is pretty granular so that the teacher can see where a student’s Achilles’ heel is.

As valuable as this model is at secondary schools, imagine what it does for adult learners who might be embarrassed to learn stuff they think they should have learned ages ago or to a kid from a disadvantaged community, who doesn’t have the opportunity to attend a brick-and-mortar school on a daily basis.

Furthermore, in a traditional model, teachers spend most of their time doing lectures, grading, and whatnot, whereas in a flipped classroom, the student-to-valuable-human-time-with-the-teacher ratio increases.



Scaling up personalization with adaptive learning

The model of education we have now is a mass production model, a factory model. It doesn’t provide any individualized experience.
In a personalized school, each child defines their own learning path in a way that feels natural. Technologies play a foundational role here versus a superficial role in a traditional model.

Adaptive learning software uses Artificial Intelligence to move students up and down through a grade's level content based on their performance.

For example, in AltSchool, there are two main tools that enable personalization. The first one, called "portrait", is a student's profile. It is a representation of all things that are important about each child, with the data being constantly updated to curate the day-to-day education experience. The second tool – "playlist" – is kind of a basis for each child's day. It contains a to-do list and a calendar, and allows each child to decide in what order they want to do things, and, as they get older they are allowed to choose what's on that playlist.

Apart from significant academic progress validated by national tests, kids advance in their ability to work with others and manage their time, set goals, and think critically so that they can successfully enter a working world that demands these characteristics from them. Adaptive learning is a win-win both for teachers, who get the possibility to refocus their attention from simply giving instructions to curriculum design, motivation, mentoring, and students as they are given the chance to explore the subject through the prism of their personal interest and abilities.

The idea of eliminating the one-size-fits-all approach and 'meeting students where they are' can be applied to learners of different ages. But the earlier it's integrated in the learning process, the better and faster results can be expected.

The recipe for a groundbreaking educational platform

The reason why a lot of outstanding education ideas fell on deaf ears was not so much in the reluctance to change something, but rather in the impossibility of realizing the change. After all, it is only a technological breakthrough that makes these ideas feasible.

Unleash the potential of cloud-based infrastructure

Cloud technology gained its momentum in education during the lockdown, as lots of schools didn't have infrastructure built to support remote learning. Admittedly, ***cloud-based environments*** provide hassle-free solutions for deployment, management and safety administration, leaving more room for consistent learning experiences instead.

Speaking of safety, it wouldn't be amiss to mention that back in the pre-pandemic times, many schools used to store their data in-house in file cabinets, and it was easy enough for someone to take a file and walk out with that data. Now, when adopting the cloud and partnering with reliable cloud vendors who adhere to the strictest security guidelines, school tech directors can be sure that school data is adequately protected.

The up-and-coming EdTech trend of cloud adoption is not likely to stop growing in popularity. On the contrary, it'll maintain its foothold in education thanks to its ability to access work from any device and the ease of scaling deployed applications to meet students' needs.

Ensure data privacy

Cybersecurity has been a hot topic in the education sector since the ‘record-breaking’ 2020. Cyberattacks have hit schools and colleges really hard and cost educational institutions millions of dollars.

Some of the most popular cybersecurity tools to surface in response to these cyberattacks are next-generation protections powered by AI and ML. These include endpoint security solutions and next-generation firewalls. Security orchestration, automation and response tools specifically use automation to detect and remediate possible cybersecurity breaches. The automated component in SOAR (Security Orchestration, Automation, and Response) helps make cybersecurity more manageable for understaffed IT teams in K–12 environments. Incorporating multifactor authentication is also strongly recommended.

Not only has the number of cyberthreats increased greatly, but the requirements to educational institutions in terms of data protection have become more rigid too. As schools and universities process many types of data, they need to comply with requirements that also apply to healthcare, financial, and government organizations. FEPRA, HEOA, PPRA, GDPR are just some of the regulations that educational organizations have to follow. And, yet, the authorities go even further to mitigate the risks of exposing personal data. In October, 2021, the US President Joe Biden signed the K-12 Cybersecurity Act, which is the first cybersecurity-focused law for secondary schools.

This type of regulatory compliance is becoming more challenging for educational institutions of all kinds, which makes it extremely important to choose a tech partner able to protect your software from breaches and data losses as well as develop solutions in strict compliance with the current data management regulations and major quality standards.

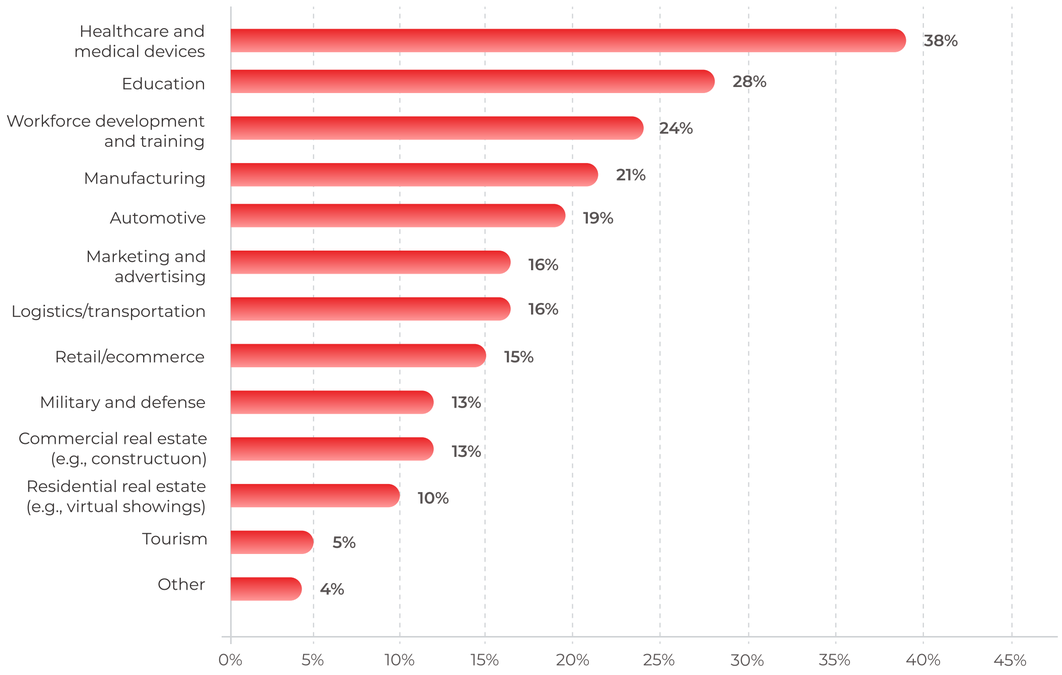
Add value to the learning process with Extended Reality (XR)

While more people have got access to knowledge, the current approach to education has two significant problems. First of all, teaching is still based on fact retention, whereas being informed is not the same as being educated. And, secondly, the old ways of providing information make it difficult for some students (especially those with ADHD, that is 9.4% of children in the US according to the latest data) to comprehend it. Struggling to process and memorize large amounts of information can become extremely disengaging. This applies to all types of learners, whether it’s in a school setting, on a workplace training course, or in lifelong learning.

The possibilities of XR, an umbrella term that covers Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR), empower students to stay inside their learning process with full control over their experience.

AR/VR technologies are a promising addition to the EdTech space due to their immersive nature, ability to share information in new and engaging ways, and potential to offer virtual experiences that can mitigate barriers from cost or distance.

Sectors expected to witness the most discruption by immersive technologies over the next 12 months according to XP/AR/VR/MR industry experts in the United States in 2020



The concept of the traditional educational classroom has gone stale and will eventually be swapped with the idea of a ‘global class’. Students will hardly opt against an opportunity to learn science on the International Space Station with their peers from all over the world, or shrinking to the size of a DNA strand to collaboratively manipulate molecules in a virtual hands-on way, or traveling back in time to explore ancient Rome and role-play out important historic events.

The role of XR in K-12 and higher education is going to grow exponentially but it won’t be limited to school or college environments alone. Workplace training will be enhanced due to this technology as well. For example, the Australian company FLAIM Systems has developed a VR learning solution for training firefighters in hazardous and emergency situations. The same works for lifelong learning. Whatever you want to learn in your everyday life, AR or VR could improve the experience. Take public speaking for example. Award-winning VR provider VirtualSpeech has created a VR tool to help people practice public speaking in a near-real way.

Understanding the impact these technologies have on the learning process, EdTech companies spare no expense in VR/AR solutions. According to Statista, the investments in augmented and virtual reality in the education segment will have more than doubled by 2025, and made 700 million dollars, compared to 300 million in 2020. And that’s not to mention, that only in the US, the number of residents who will start using VR is going to increase to 60.8 million people in 2022 and the number of AR users will jump to 95.1 million. If that is not the reason to bolster your education solution with some form of XR, then what is?

Make the educational process easier and more efficient for both teachers & learners with Artificial Intelligence (AI)

AI-powered solutions have been among the top EdTech trends for quite a while. A plethora of opportunities, from task automation and smart content creation to personalized learning and 24/7 assistance, have become available for both students and teachers. Despite drastic shifts having already been done so far, Artificial Intelligence shows no signs of slowing down its rapid

transformation of education, bringing even more promising developmental perspectives to the table.

AI-assisted immersive classrooms

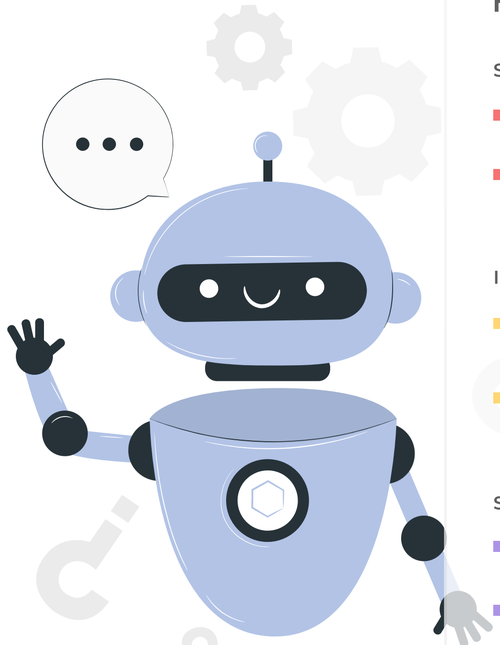
The combined power of Artificial Intelligence and the technology of extended reality allowed IBM Research and Rensselaer Polytechnic Institute to create a next generation teaching environment, providing a study-abroad-like experience with no travel required. The students learn Mandarin Chinese by conversing with AI avatars that can recognize not only what they say but their gestures and expressions, all against a computer-generated backdrop of Chinese street markets, restaurants and other scenes.

> ***"Students in the immersion lab mastered Mandarin about twice as fast as their counterparts in conventional classrooms,"*** *assures Shirley Ann Jackson, the president of Rensselaer.*

Chatbots

Designed to simplify the interaction between the participants of the educational process, chatbots provide a wide range of benefits, including spaced interval learning, immediate feedback, performance tracking, and, in the case of schoolchildren, communication with parents. AI assistants are also being used to watch for signs that students might be struggling, and to alert their academic advisers.

> ***"If we could catch early signals, we could go to them much earlier and say, 'Hey, you're still in the window' to pass,"*** *says Donna Kidwell, CTO of the university's digital teaching and learning lab, EdPlus.*



How Chatbots Improve Learning

SPACED INTERVAL LEARNING

- By reviewing material repeatedly over time, student are better able to remember what they've learned
- Software algorithms can predict when you'll start to forget what you've learned and time reminders to optimize memorization

IMMEDIATE FEEDBACK

- Learners who receive feedback immediately show greater improvement than those who get delayed feedback
- Teachers can't always grade an essay, but an AI can - AI can evet score papers within 92% accuracy, compared to human graders

SELF-PACED LEARNING

- Chatbots can track student performance and adjust the curriculum to better meet their individual needs
- Chatbots serve as a guide to help pace learning, not a replacement for a teacher or professor

COMMUNICATION WITH PARENTS

- Preprogrammed answers to routine inquiries
- Auto replies to messages outside office hours

AI grading

Neural networks can boost online education by providing automated feedback to students. Although these techniques are a very long way from duplicating human instructors, it is a "step in an important direction." Automated feedback is better than none at all. It can be applied to online courses with thousands of students studying simultaneously.

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Stanford researchers built a neural network that spent hours analyzing examples from old exams on computer programming, learning from a decade of possibilities. When given just a handful of extra examples from the new exam offered, it could quickly grasp the task. After the new exam had been taken, the system provided 16,000 pieces of feedback, and students agreed with the feedback 97.9 percent of the time. To compare, students agreed with the feedback from human instructors 96.7 percent of the time.

Turn to gamification to engage young learners

Adults are often puzzled as to if children are able to store whole databases in their heads about a universe within a computer game, then why do they have so much trouble with the multiplication table? The trick is in constant practice and gamification, that makes the process truly engaging.

Education has long had, in a sense, elements of a game: good and bad grades for completing an assignment are like points in finishing a quest. And at the end of a school year, everyone has a Level Up, the transition to the next level of difficulty.

Speaking of gamification, as one of the trends in education technology, we no longer mean basic stuff that has existed for quite a while.

In online projects, gamification is much more complex. Originally structured programs, coupled, for example, with a detective story, make the learning process more engaging, children want to return to classes regularly and learn new things. For completing tasks, achieving goals, as in a computer game, they can receive points, additional rewards, and enter new levels.

The theoretical knowledge that students gain in class, can be immediately applied when they complete game challenges. This helps children look at knowledge and learning in general from an entirely different perspective.

The main benefit of gamified online learning is the motivation to learn. Students can see and self-evaluate their progress and achievement of the goals set. This helps nurture such qualities as independence, responsibility, and decision-making. For example, at the University of California, one study found that students who participated in an educational cybersports program showed much more impressive learning results than their peers, who are not involved in esports.

Drive the mission of learning with mobile technology

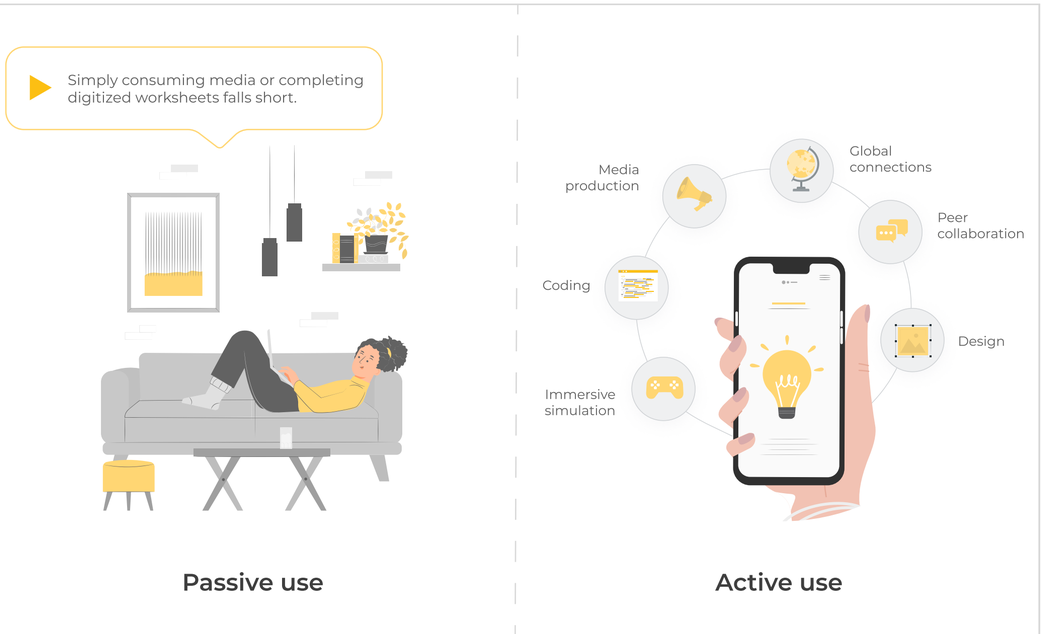
According to figures from the tech research company, Technavio, the education apps market is poised to grow by $46.88 billion by 2024 at a CAGR of 26%. All signs point to a permanent shift in how people access education.

For Generation Z, also known as generation digital, who learnt how to type before they learnt to write, using smartphones or tablets for their studies is as natural as breathing. They value the freedom that comes with mobile apps to study whenever and wherever, and willingly pay for it with a high level of engagement.

However, the education technology trend of mobile learning applies not only to Zoomers.

For the past few years, mLearning has flipped the view of delivering quality content.

You've probably heard of MasterClass, an online learning platform that allows taking classes from some of the biggest names in the business. It offers a multitude of options to consume their courses, you can watch it on a desktop, TV, phone, or tablet. Still, being more about "edutainment" rather than strictly education, MasterClass is something you're not going to turn on your computer for (unless it's already turned on), but are more likely to open on a smartphone or tablet sitting in a traffic jam, lining up in a coffee shop, or passing that quarter of an hour before falling asleep at night. A great-quality mobile application, Android and iOS users have rated the apps with great feedback (4.8 and 4.9 respectively for the platforms), is definitely one of the clues that contributes to the success of this costly platform.



Moreover, mobile learning complements the idea of bite-sized lessons that can seamlessly fit into your schedule, which in turn makes the subscription-based educational model more attractive. When students don't have to wait for that perfect time (which may never come) to start or continue the course and can study "right here right now", they won't feel as if they are blowing their money.

In addition, mobile technology not only makes learning more comfortable for those who can't imagine their lives without a smartphone or tablet, but also makes it the only option for people who otherwise wouldn't have access to educational resources.

"Education is the mission and mobile is the means," *Shobhit Bhatnagar, Gradeup Co-Founder and CEO*

Smartphones are now available to a large part of the world's population, in the future perhaps to the majority, even in the least developed countries. The spread and cheapening of technology, as UNESCO notes, "gives marginalized people and communities, people with disabilities, refugees, those out of school, and those living in isolated communities access to appropriate learning opportunities'', making education global and crisis-resistant.

What’s next? Applying EdTech Trends

Engaging, sophisticated, and, most importantly, effective education will always resonate with learners. But it’s not enough. A VUCA world (short for volatility, uncertainty, complexity, and ambiguity) gives us little faith that things will stay the way they are, which means the only correct strategy is to be flexible and agile. Education – at all levels – must evolve to teach people the skills they need to thrive in our changing world.

*instinctools helps you get a better grasp of your students’ needs and adapt to how, what and where people want to learn. By taking a custom approach to online learning, we can work with your team to provide the best strategies for development and implementation of any course you have come up with.

Revealing EdTech trends that shape the future of education

*instinctools has been a reliable technology partner in various industries for over 20 years. We advise our customers on the path of digital transformation and turn their visions into reality. As an international team with headquarters in Germany fueled by more than 350 experts and ambitious growth plans we focus on Software Development, Cloud Computing and Business intelligence. We build on our strong Partnerships with the likes of Google, Microsoft and Bechtle to be able to create state-of-the-art solutions and solve our customers' challenges, building relationships that last.

Learn more: ***instinctools.com***