

# Building Tech Skills Before College

## A Look at Pre-University Ed-Tech Resources

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### **Introduction**

In the ever-evolving digital landscape of the 21st century, high school students need to keep themselves up-to-date and learn useful tech skills. Technology is used in every field today, be it science, agriculture, transportation, education or any other field. Students with prior digital knowledge and tech skills get an upper hand against others when they join college or go for higher education. A report by Mercer-Mettl reveals that only 42.6% of Indian graduates were employable in 2024. The main reason behind this is the lack of employability skills in today's youth. To survive the tough competition, it becomes necessary to develop tech skills at the earliest.

The easy access to education technology at an early age has made students curious to learn more and develop tech skills from a young age. Nowadays, students can learn courses like digital marketing, graphic design, web development, and cybersecurity even from the comfort of their homes. These skills can help them develop their start-up as well as get jobs. Over the years, due to developments in the ed-tech industry, students are becoming more reliant on free education resources on the web instead of schools or other institutes. Cloud-based development environments like Gitpod, GitHub Codespaces, and Microsoft Visual Studio allow students to experiment with programming languages without any expenses. Online platforms and coding

academies enable any enthusiastic learner to start building tech skills at their own pace and time. Furthermore, online internships help them refine and utilise their skills. Educators and parents are increasingly recognising the role of pre-university technological skills and encouraging students to learn them.



### **How did Ed-Tech come up?**

Integration of technology into education, often referred to as Ed-tech, is not a very recent concept. It can be traced back to the 20th century when audio-visual aids like projectors and educational television programs were introduced in classrooms. However, Ed-tech gained momentum in the 1980s with the invention of the computer. Since then, computers have been used to aid the traditional way of learning in a lot of ways. The rise of the internet in the 1990s was a pivotal milestone in the Ed-tech sector. The Internet provides people with endless resources and information. People could now educate themselves on a variety of subjects just with the help of their computers and the internet. Over the years, online learning tools and virtual classrooms have evolved, making it possible to deliver lessons and resources to remote locations. The University of

Phoenix 1989 became the first in the world to open an online collegiate institution, offering both bachelor's and master's degrees.

The COVID-19 pandemic in 2020 acted as a catalyst for Ed-tech, as education in schools and colleges across the globe shifted to an online mode. The whole pandemic period, lasting for two years, saw a massive increase in the use of video conference calling platforms like Zoom and Google Meet. Thus, the world saw a huge development in the education technology sector. Numerous online educational institutions like Byjus, Physics Wallah, Vedanta, and Unacademy gained popularity. Even when the world came back to a normal routine, online education and technological advancements in educational fields did not cease. Rather, people got used to the comfort and flexibility of education technology and adopted it in their daily lives. A survey by Brainly in 2022 reveals that over 70% of Indian students preferred digital learning platforms over physical classrooms.



## **Tech Skills to Build Before College**

**Programming:** Programming is giving the computer instructions in the form of code to perform tasks. It is the backbone of technology as apps, websites, and software are built by using programming languages. Mastering programming languages like C++, Python, and Java helps us to explore areas like website and app development. Students should learn programming, even if they want to pursue any non-technical career, as it boosts logical thinking and problem-solving abilities. Knowing coding before joining college helps us stay ahead of our classmates and grab good placement opportunities. In today's tech-driven world, programming is a very valuable skill, especially for tech enthusiasts.

**Web and App Development:** Web development involves building sophisticated websites and web applications. Creating appealing mobile applications comes under app development. By gaining expertise in programming languages, students can design their websites, develop applications, games or even their start-up. Technical skills like proficiency in JavaScript, Java, HTML, and CSS are crucial to become a web or app developer. High school students can easily learn web development from free resources like YouTube or other ed-tech platforms.

**Cybersecurity or Ethical Hacking:** Protecting networks, systems, and data from malevolent attacks and illegal access is the main goal of cybersecurity. Learning cybersecurity helps students to secure their personal data and online activities, avoid fraud and cyberbullying. Moreover, mastering cybersecurity and ethical hacking at a young age opens up high-demand career opportunities. A good command of programming languages like C, C++ and Python is essential for this field. Several Ed-tech platforms offer courses in ethical hacking and cybersecurity. websites like Udemy, Coursera, Cybrary, and TryHackMe are widely used by students.

Graphic Designing: Using typography, colours, and images, graphic designers create visually appealing materials such as posters, brochures, logos, and book and magazine covers. Platforms like Adobe Photoshop and Canva are some mainstream platforms for graphic design. Graphic design is also valuable for students who want to pursue careers like marketing, UI/UX design, web design, and content creation. Using education technology, enthusiastic students can learn this skill for free at home.



### **Student-friendly Ed-Tech Platforms**

Coursera: Coursera is an online learning platform based in California, US. This software offers a range of certificate courses from top universities like Stanford, Harvard, and MIT in fields like programming, data science, and AI. It is popular among pre-university students as it offers beginner-friendly content in a flexible learning schedule. The interactive quiz sessions, real-world projects, and global accessibility in different languages make learning fun and easy for students.

edx: EDX collaborates with over 160 universities and organisations worldwide to provide students with the best instructors in their respective courses. The futuristic courses they provide on AI, machine learning, data science, and cloud computing benefit students and help them to prepare for competitive college programs and future careers in tech. To ensure inclusivity, edx provides courses at an affordable rate or even free of cost.

Khan Academy: Khan Academy is a non-profit organisation providing lessons on various topics for free. Courses on JavaScript, HTML, CSS, and SQL help students to become web developers without any formal degree. Pre-university learners benefit from their easy-to-understand content sitting in their homes. With pre-recorded video tutorials, students can learn useful skills whenever and wherever they want.

Apna College: Apna College is an Indian ed-tech start-up to help students crack good placements and internships. University as well as pre-university students benefit from their free YouTube tutorials and lessons on C, Python, Java, Machine learning, and AI. Along with free YouTube videos, Apna College also has paid online batches called Alpha, Delta and Sigma, teaching DSA and Web Development. Apna College also motivates pre-university students to choose a career path in technology and helps them by providing guidance and mentorship.

Codecademy: Codecademy provides interactive coding lessons for beginners, covering programming languages like Python, JavaScript, Java, app development, web development and machine learning. Pre-university learners can work on small projects, track progress, and earn certifications from

Codecademy. Their structured coding courses, divided into bite-sized lessons, help students learn coding fast in a fun-filled way.

### **Mark Zuckerberg: The Role of Early Tech Skills in His Journey to Success**

Mark Zuckerberg, the co-founder of Facebook and one of the most influential tech entrepreneurs of the 21st century, began his tech journey at a very early age. In his childhood, Mark was a curious child obsessed with video games. When all his friends played video games just for fun, he would try to understand how they worked and even wanted to create them on his own. Understanding Mark's curiosity and interest in technology, his father bought him his first computer, the Quantex 486dx. They even hired David Newman, a private tutor, to teach him programming.

At the age of 12, Mark found out that his father, a dentist, was looking for an easier way to contact his receptionist in the office downstairs without moving from his chamber. That's when he put his coding skills to the test and built an instant messaging platform- Zucknet. The program allowed seamless communication over short distances.

Mark's passion for technology never ceased; rather, it grew stronger as he grew up. In high school, he created video games for fun. He also built music streaming platforms called Synapse, similar to today's Spotify. During his second year at Harvard University, Mark Zuckerberg and his few friends created Facemash, a dating platform exclusively for Harvard students. Over time, its popularity grew and spread to other colleges as well. Understanding the potential of Facemash to be a global platform, he and his friends dropped out of Harvard to focus on their start-up. Facemash evolved into Facebook, the most popular social media platform within years.

However, the life of Mark Zuckerberg highlights the significance of nurturing technological skills at a young age. His story motivates students to embrace technology with curiosity and never stop learning. We do not need to wait for university to learn and use technology. "The best time to start was yesterday. The next best time is now." With the rise of education technology, it's easier nowadays to start building technical skills before college. We should make the best use of that opportunity and prepare ourselves for a tech-driven future.