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## A Study on Skill Development Through Open and Digital Learning

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### ABSTRACT

In the present era of the learning and education ecosystem, open and digital platforms play a vital role in improving skills efficiently. This research paper describes the impact of open and digital learning on skill improvements, highlighting accessibility issues and solutions. Literature-based research is conducted to describe how open and digital learning support skill improvement and life-long learning to reduce the skill gaps between learners with different background profiles. The results of the study show that sharing open education resources on digital platforms provides flexible access, improved quality, and personalized experience to individual learners resulting in reduced costs. However, it is still difficult compared to academic learners to access open resources from academic repositories especially those developed by industry professionals. Challenges in using open resources are also discussed along with policy implications for government organizations.

**Keywords:** Skill development, digital learning, digital platform, digital skill development

### INTRODUCTION

In this world of modernization, learning new skills and being updated with their knowledge has become ever more necessary for individual and professional development. Conventional classroom education has been useful for quite a long period, but it is often unable to fulfill the needs of modern learners, many people have busy schedules, different ways of learning, or limited access to schools and colleges. As industries change and require more specialized skills, people are looking for new ways to gain the knowledge they need. This is where open and digital learning platforms come in. These platforms such as Coursera, edX, and Swayam, provide a flexible, accessible, and convenient way to learn. Learners can take courses at their own pace, often from the comfort of their own homes. With just an internet connection, people can access a wide range of courses, from technical subjects such as programming to soft skills. This shift to online learning allows individuals to customize their education based on their needs, goals, and schedules. One of the biggest advantages of these platforms is that they cater to people from all walks of life. For example, a student in a

rural area can now take high-quality courses from famous institutions like Harvard or IITs. This opens up opportunities that might not have existed previously. Also, many online platforms work with industries to create courses that are aligned with job market demands. This means learners can develop skills that are directly useful for their careers.

This paper looks at how open and digital learning platforms help in developing skills. It shows how these platforms offer flexible learning, engaging content, and certifications recognized by industries. Through real-life examples, the paper will examine how websites such as Udemy, Coursera, and NPTEL have successfully helped people close the disparity between traditional education and the skills needed in today's job market.

## LITERATURE REVIEW

**(Kulshrestha, n.d.)** This paper looks at how important it is for digital learning platforms to support employees' ongoing skill development in the digital age. It looks at the growth of employee training over time and presents ongoing skill development as crucial to business success and workforce flexibility. This study offers a comprehensive examination of digital learning platforms, including their various kinds, attributes, and capabilities. It also tackles the difficulties associated with putting these platforms into practice by proposing workable integration techniques.

**(Singh et al. 2017)** E-learning will become increasingly important as a self-study platform for skill development and as a tool for classroom instruction in the future due to the advent of virtual learning centers that provide students with online courses and degrees, as well as the quick development of digital technology. In order to build job-specific abilities, this research focuses on identifying important e-learning variables. An analysis of multiple regression was done step-by-step. The outcome implies that, from the standpoint of the student, flexibility in Online education is essential component for acquiring career-specific abilities, aside from other considerations.

**(Naresh, 2021)** This article attempts to discuss the advantages and problems associated with digital learning in India in the twenty-first century. Education in India has a substantial effect on a wide range of factors, including the population, level of poverty, pedagogy, teaching methods, and money. Among the educational methods most impacted is digital learning. Digital education schooling is modeled by a novel dimension. Our strength as a nation is our education. Primary school, secondary school, higher secondary school, and university are the several educational stages in Indian education.

**(Gulati et al., 2021)** The aim of the current study is to compare SWAYAM and Coursera in particular, as well as to learn about the perspectives and levels of satisfaction that users have with MOOCs. In this contribution, we aim to address a number of sentiment analysis research questions pertaining to the Coursera and SWAYAM mobile apps. MOOCs offer users broad coverage through their mobile app versions in addition to their web platforms. Mobile apps are another way that MOOC platforms like Coursera and SWAYAM make their courses available. The useful information in the user reviews can be applied in a variety of ways by many stakeholders to enhance the curriculum, pedagogy, etc.

**(Begum & Venkatesan 2024)** The researcher finds the important aspects influencing skill development, such as accessibility, flexibility, individualized learning, and interaction engagement through investigation of the body of existing literature. Additionally, it looks at how platforms available online can benefit develop the

technical, soft, and cognitive abilities necessary for success in both the classroom and the workplace—finding, self-directed learning, and continuous improvement, customized learning experiences offered by online education platforms significantly enhance interpersonal communication and problems with quality control are also covered.

## **SCOPE OF THE STUDY**

This research focuses on understanding how open and digital learning contributes to skill development and exploring its effectiveness, benefits, challenges, and future potential.

## **OBJECTIVES**

1. To know the effectiveness of open and digital learning platforms in developing skills.
2. Key factors influencing the success of these platforms in skill development.
3. To know the challenges of learners when using these platforms, and how they can be mitigated.
4. To present the case studies on online platforms for skill development.

## **RESEARCH METHODOLOGY**

This study used a descriptive approach that gives an inside view of the impact of open and digital learning on the development of skills. This research is based on secondary data, and data was collected from many sources, such as journals, websites, books, research articles, etc.

## **LIMITATION OF STUDY**

This study aims to offer insightful information about the effectiveness and impact of open and digital learning on skill development. This research is based on only a few online platforms, in the future research can be done through more online platforms and comparative analysis can be done in between these platforms.

### **I. EFFECTIVENESS OF OPEN AND DIGITAL LEARNING PLATFORMS IN DEVELOPING SKILLS**

Open and digital learning platforms have proven to be highly effective in developing skills for a diverse group of students. These platforms give users flexibility so they can study at their own pace, which is especially beneficial for people who have hectic schedules or limited access to traditional education. With courses available on topics ranging from technical skills like programming and data analysis to personal development areas like leadership and communication, Students are free to choose the courses that best suit their interests and objectives.

One of the key strengths of these platforms is their ability to reach a global audience, providing access to high-quality education regardless of location. A student in a remote village can access the same courses as someone in a big city, breaking down barriers to education. Furthermore, the courses are often designed in partnership with industry experts, ensuring that the abilities being imparted are applicable to current job market needs. This makes learning through these platforms practical and directly applicable to real-world careers.

Another important factor is the interactive nature of many digital courses. Learners can engage with multimedia content, participate in discussions, and complete assignments, making the learning experience more engaging than traditional lectures. Additionally, many platforms provide certifications upon completion

of courses, which can be valuable for career advancement or job applications.

## II. KEY FACTORS INFLUENCING THE SUCCESS OF OPEN AND DIGITAL LEARNING PLATFORMS IN SKILL DEVELOPMENT

The success of open and digital learning platforms in skill development is influenced by several key factors. These factors make these platforms attractive and effective for learners of all ages, backgrounds, and career stages.

### **Flexibility**

Flexibility is one of the most important elements contributing to the success of digital learning platforms. Online learning allows people to study at their own pace, in contrast to conventional classroom instruction, which has a set schedule. For people who are managing a family, working a full-time job, or have other responsibilities, this is quite beneficial. It is simpler for students to incorporate education into their hectic schedules when they have the freedom to choose when and where to learn. This flexibility is a key reason why so many people choose online learning to develop new skills.

### **Accessibility**

Accessibility is still an important component; courses can be accessed from any location in the world, provided that a user has internet access. Therefore, high-quality learning resources are still accessible to those who live in rural places or in nations with limited educational prospects. Students can now enroll in courses from prestigious universities and institutions through platforms such as Coursera, edX, and Udemy, which remove geographical restrictions and give everyone the same chances to improve their skills. Those who might not otherwise have access to education are increasingly choosing digital learning because of its accessibility.

### **Variety of Courses**

The wide range of courses offered on these platforms is another key factor. Digital learning platforms provide courses on almost every topic imaginable. Whether someone wants to learn about programming, business management, or even photography, there's likely a course available online. This wide variety allows learners to select topics that are pertinent to their personal interests or career goals. Can acquire both technical skills, like coding, and soft skills, such as leadership and communication, all from the same platform.

### **Industry-Relevant Content**

The relevance of the courses to real-world job markets is crucial to the success of these platforms. Many online learning platforms partner with industry experts to create courses that teach skills currently in demand. This means learners are getting up-to-date information that they can apply directly to their jobs. For example, platforms often offer courses in modern domains such as data science, AI, and digital marketing, which are places where demand is high for skilled professionals. This focus on practical, job-related skills helps learners become more employable and better prepared for the workforce.

### **Certifications**

The ability to earn certificates after completing courses also adds to the appeal of digital learning platforms. These certificates provide tangible proof of the skills a person has learned, which can be added to their resume

or LinkedIn profile. Many platforms offer certifications from respected companies like Google, Microsoft, and IBM. Having a recognized certificate helps learners demonstrate their skills to potential employers, making it easier for them to stand out in a competitive job market.

### Interactive Learning Experience

One more important component is engagement. Online learning platforms frequently incorporate discussion boards, quizzes, assignments, and multimedia content to enhance the interactive and captivating nature of learning. Learners are better able to remember information and maintain motivation while using this active learning strategy. Interactive features in online courses, as opposed to boring lectures in a classroom, improve student engagement and lead to higher learning objectives.

### Cost-Effectiveness

Cost is another factor that affects the success of these platforms. A large number of online courses are either free or available for a fraction of the price of traditional education, enabling those who might not have the money to pursue a full-time degree. Even paid courses are often made available to a wider audience through subscription models or financial aid options.

## III. CHALLENGES FACED BY LEARNERS ON OPEN AND DIGITAL LEARNING PLATFORMS AND MITIGATION STRATEGIE

	Challenges faced by learners	Mitigation strategies
1.	<b>Digital Divide and Accessibility-</b> Limited access to reliable internet and technological devices can hinder participation, particularly in underserved or remote areas.	<ul style="list-style-type: none"> <li>• Develop offline access options, such as downloadable content or mobile apps that allow for offline viewing and interaction.</li> <li>• Partner with local organizations to provide access to technology and internet services in underserved areas.</li> <li>• Optimize content for low-bandwidth environments by offering lower-resolution videos and text-based materials.</li> </ul>
2.	<b>Engagement and Motivation-</b> Learners may struggle with maintaining motivation and engagement, leading to lower completion rates and ineffective learning.	<ul style="list-style-type: none"> <li>• Incorporate gamification elements such as badges, leaderboards, and progress tracking to enhance motivation and engagement.</li> <li>• Utilize interactive and multimedia materials to keep students engaged, such as discussion boards, simulations, and quizzes.</li> <li>• Offer personalized learning experiences and tailored recommendations based on learners' interests and progress.</li> </ul>

3.	<p><b>Quality and Credibility of Content-</b> The variability in the quality and credibility of course content can affect learning outcomes and learner trust.</p>	<ul style="list-style-type: none"> <li>• Ensure courses are developed and accredited by reputable institutions or industry experts. Provide clear information about the credibility and recognition of certifications.</li> <li>• Implement peer reviews and ratings for courses to help learners assess content quality and relevance.</li> <li>• Keep course content regularly updated to reflect current industry standards and practices.</li> </ul>
4.	<p><b>Technical Issues-</b> Technical problems, such as platform bugs, slow loading times, or compatibility issues, can disrupt learning.</p>	<ul style="list-style-type: none"> <li>• Provide robust technical support and helpdesks to assist learners with technical issues promptly.</li> <li>• Conduct thorough testing of platforms across different devices and browsers to identify and resolve compatibility issues.</li> <li>• Implement mechanisms for learners to report technical issues and provide feedback on their experiences.</li> </ul>
5.	<p><b>Lack of Personal Interaction-</b> The absence of face-to-face interaction with instructors and peers can lead to a sense of isolation and limited opportunities for personalized feedback.</p>	<ul style="list-style-type: none"> <li>• Facilitate peer interaction and discussion through online forums, chat rooms, and group projects.</li> <li>• Offer virtual office hours and live question-and-answer sessions where learners can interact with teachers and receive personalized feedback.</li> <li>• Implement mentorship programs where learners can connect with experienced professionals for guidance and support.</li> </ul>
6.	<p><b>Self-Discipline and Time Management-</b> Online education necessitates a high level of self-discipline and effective time management, which can be challenging for some learners.</p>	<ul style="list-style-type: none"> <li>• Provide structured learning schedules and reminders to help learners stay on track.</li> <li>• Encourage them to set goals and track their learning journey through different tools and features designed for this purpose.</li> <li>• Offer resources and tips on time management and self-discipline to help learners develop effective study habits.</li> </ul>

7.	<b>Assessment and Certification-</b> Uncertainty about the recognition and value of certifications earned through digital learning can affect learners' motivation and career prospects.	<ul style="list-style-type: none"> <li>• Provide detailed information about the recognition and value of certifications, including partnerships with industry organizations and employers.</li> <li>• Offer career services and job placement assistance to help learners leverage their new skills and certifications in the job market.</li> <li>• Collaborate with employers to create industry-recognized certifications and provide learners with real-world validation of their skills.</li> </ul>
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#### IV. TO PRESENT THE GROWTH OF ONLINE PLATFORMS ON SKILL DEVELOPMENT

##### 1. Swayam

- **Overview:** Swayam is a platform established by the Government of India, which promotes free access to education online. The site also offers MOOCs from some of the best institutes in India such as the IITs, IIMs, and central universities.
- **Skill Development Focus:**
  - A variety of subject areas covered by courses includes an increased number of engineering, management, humanities, and science programs.
  - Focuses on the enhancement of basic as well as higher level skill.
  - Certification opportunities are useful in employment as well as in academic institutions.

**Growth chart of SWAYAM platform**



**Source: (Manash Pratim Gohain, 2021)**

The chart indicates a significant increase in SWAYAM enrolments since its launch in 2017. The number of enrolments has grown exponentially, with a particularly sharp rise between Jan 2020 and October 2021.

##### 2. NPTEL (National Programme on Technology Enhanced Learning)

- **Overview:** The NPTEL is a collaborated effort of IITs and IISc to impart education and offer certification in engineering, sciences, management, and humanities through the online method.

- **Skill Development Focus:**

- The target audience is mainly engineering and technology students as well, including courses on management and soft skills.
- Provides rigorous academic content with certification exams that are recognized in the industry.

### Growth chart of NPTEL platform



Source: <https://nptelindia.wordpress.com/>

The chart shows a significant increase in NPTEL enrolments and exam registrations from March 2014 to July 2019. The following years show a very strong rising tendency.

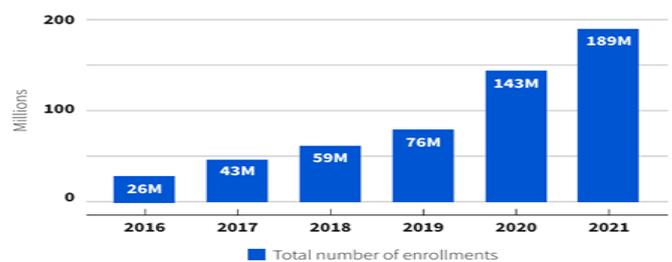
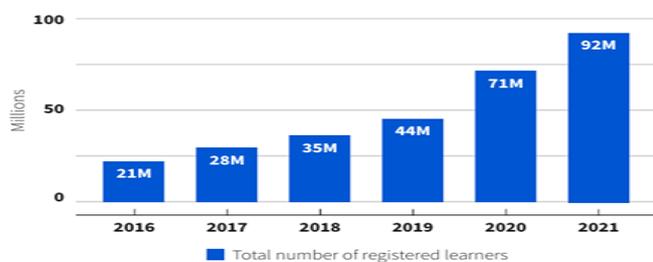
### 3. Coursera

- **Overview:** Coursera partners with Indian institutions such as IIT Bombay and global universities to provide a variety of online courses and degrees.
- **Skill Development Focus:**
  - Offers professional certificates and specializations in areas such as data science, computer science, business, and healthcare.
  - Courses designed to meet industry standards, with practical projects and hands-on learning.

### Growth chart of the Coursera platform

#### More learners are accessing online learning

The demand for online learning on Coursera continues to outpace pre-pandemic levels.



Source:

<https://about.coursera.org/press/wp-content/uploads/2021/11/2021-Coursera-Impact-Report.pdf>

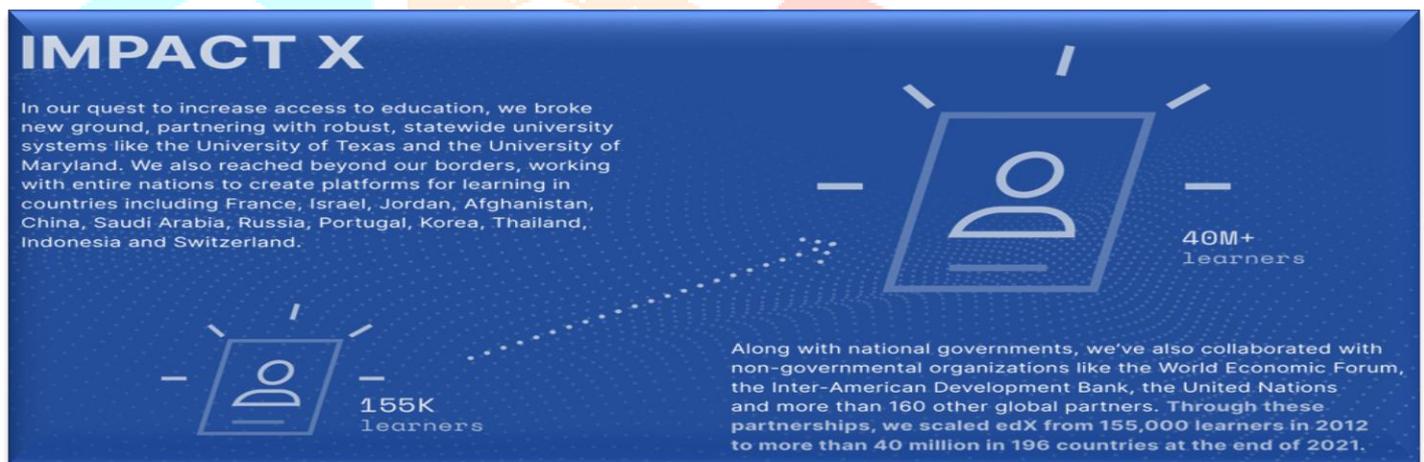
The first chart shows that the total number of registered learners on Coursera has exhibited a consistent and significant increase from 2016 to 2021.

The second chart shows that the total number of enrolments has also seen a substantial rise during the same period. This indicates that registered learners are actively engaging with courses and taking advantage of the platform's offerings.

#### 4. edX

- **Overview:** edX which was launched by Harvard and MIT allows learners to enroll in courses from leading universities and institutions around the world including several universities in India.
- **Skill Development Focus:**
  - Courses that are technical and professional include computer science, business management, and engineering among others.
  - MicroMasters programs that provide advanced education and are often accepted as credit toward a master's degree.

**Growth chart of the edX platform**



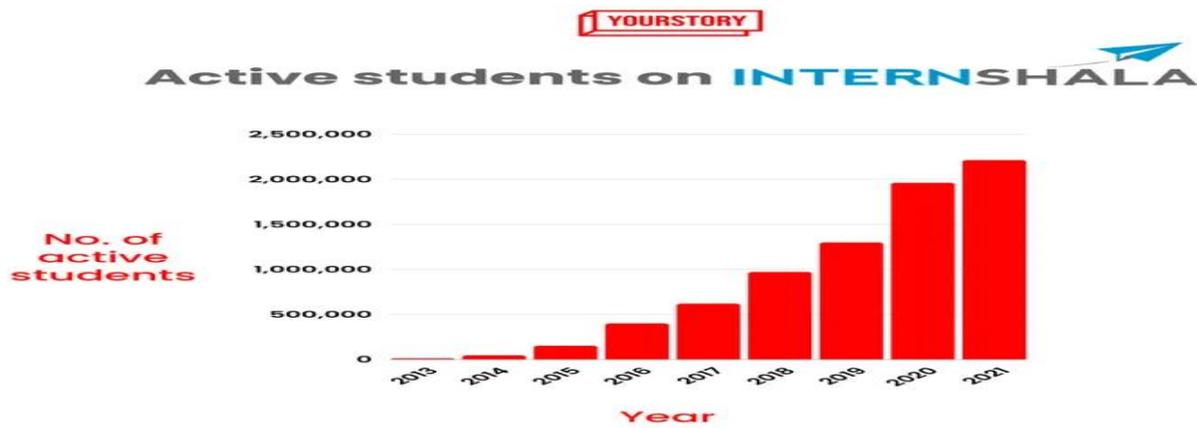
Source: <https://impact.edx.org/>

A significant increase in learners is emphasized, from 1,55,000 in 2012 to over 40 million in 196 countries by the end of 2021. The chart also shows that emphasizes the importance of partnerships with national governments, non-governmental organizations, and other global partners in achieving the organization's goals.

#### 5. Internshala

- **Overview:** Internshala is an online portal that offers training options together with internships, mostly with target audiences of students and graduates.
- **Skill Development Focus:**
  - This school provides computer courses, programming, digital marketing, data science, and so on that emphasize more on skills.
  - Assists students in finding internship opportunities that ground students in practical experience which increases opportunities of being hired.

### Growth chart of Internshala platform



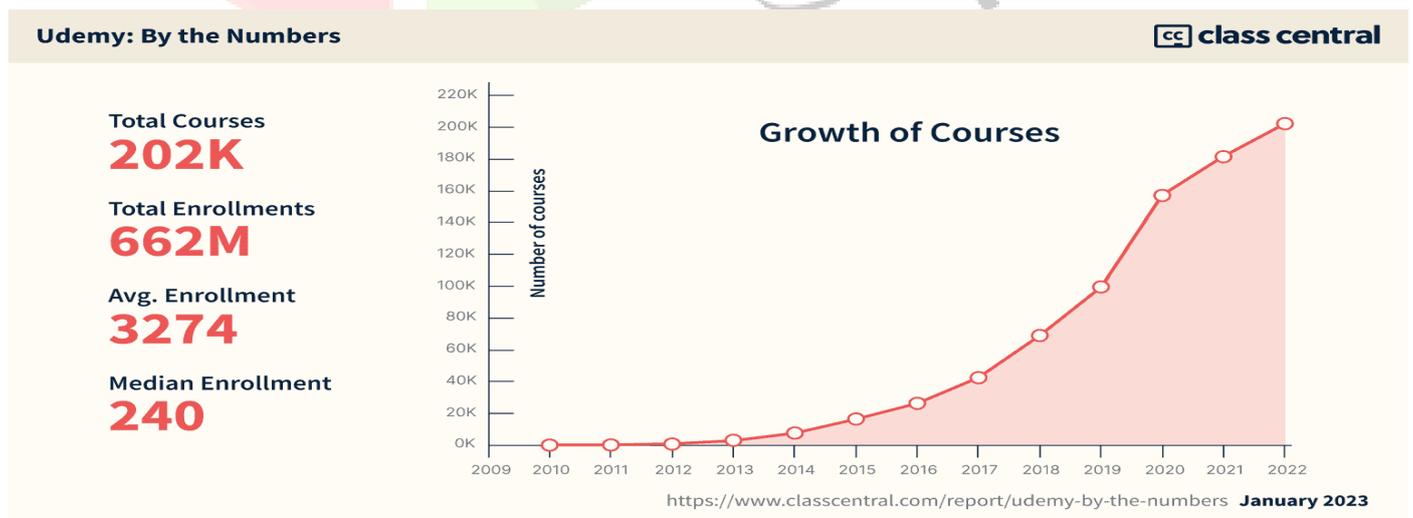
Source: <https://yourstory.com/2022/07/internshala-blog-profitable-intership-skilling-career-tech-startup>

The number of active students on Internshala has experienced a remarkable and consistent increase from 2013 to 2021. This rapid increase indicates a significant rise in the popularity and effectiveness of the platform for student internships.

#### 6. Udemy

- **Overview:** It is an international platform for education and training through the Internet and has several courses with a huge number of subjects that can't even be contemplated.
- **Skill Development Focus:**
  - Provides low-cost education in programming, business activities, self-improvement, and arts & crafts.
  - Let students build their programs by taking up any of the thousands of available courses.

### Growth chart of the Udemy platform



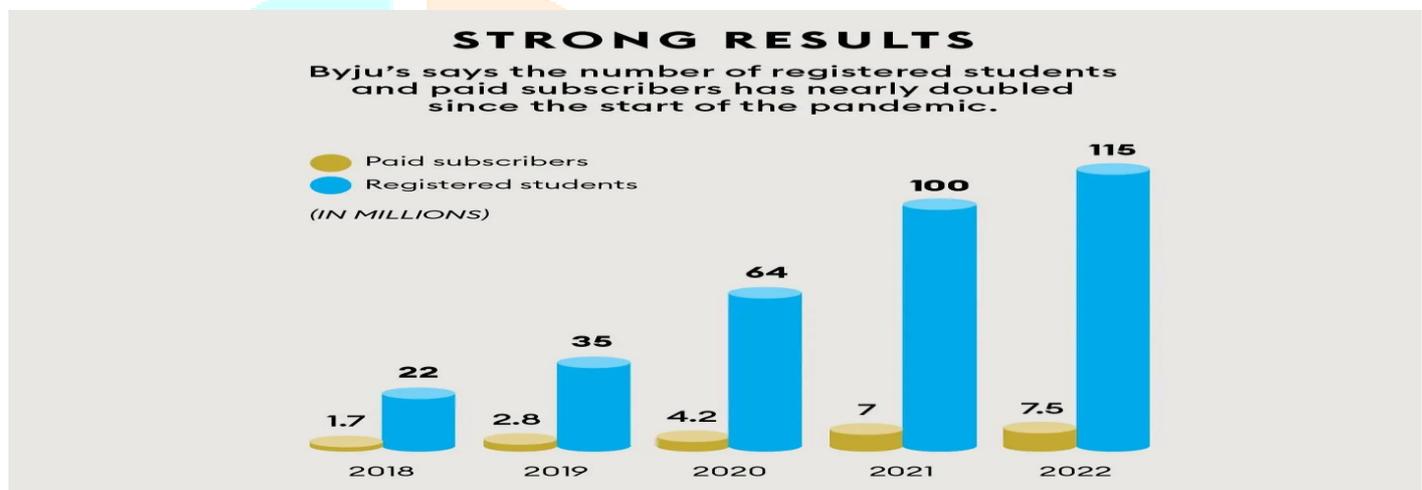
Source: <https://www.classcentral.com/report/udemy-by-the-numbers/>

The number of courses on Udemy has experienced a significant and consistent increase from 2009 to 2022. The total enrolments have also increased during the same period, reaching a staggering 662 million and the average enrolment per course is relatively high at 3274, indicating that courses tend to attract a significant number of students. However, the median enrolment is much lower at 240, suggesting that a large number of courses have relatively few enrolments.

## 7. Byju's

- **Overview:** Starting with pursuing the K12 education market segment, Byju's today has branched out into offers that include coding, maths, and other similar skills necessary for tomorrow's jobs.
- **Skill Development Focus:**
  - Learner-centered skill acquisition in the division through interactive game-like activities.
  - Very strong focus on basics, particularly STEM subjects.

Growth chart of Byju's platform



Source: Byju's

The number of both registered students and paid subscribers for Byju's has grown exponentially since 2018, with a particularly sharp increase starting in 2020. This chart also clearly indicates a significant acceleration in growth coinciding with the start of the COVID-19 pandemic. This suggests that the pandemic was a major accelerant for Byju's rapid expansion.

## FINDINGS

1. Open and digital learning platforms allow learners to study at their own pace, fitting education into their personal schedules, which is especially helpful for working professionals and busy individuals.
2. With an internet connection, learners can access courses from anywhere in the world, giving people in remote or underprivileged areas the opportunity to pursue high-quality education.
3. These platforms give a variety of courses on diverse topics, from technical skills like coding to soft skills such as communication, catering to different learning needs and interests.

4. Many courses are developed in partnership with industry experts, ensuring that learners acquire skills that are in high demand in the job market.
5. Learners can earn certifications that validate their newly acquired skills, helping them showcase their expertise to potential employers and improve their career prospects.
6. Multimedia content, quizzes, and assignments provide a more engaging learning experience, helping learners retain information and stay motivated.
7. Many courses are either free or available at low cost, making education more affordable and accessible to a wider audience.
8. Learners can enroll in courses from top universities and institutions around the world, giving them access to the same quality of education as students in major cities.
9. The ability to learn at one's own speed helps individuals understand complex topics better without feeling rushed.
10. Discussion forums and peer interaction features enable learners to share knowledge, ask questions, and solve problems together, enhancing the overall learning experience.

## CONCLUSION

The open & digital learning platforms have come subsequently as one of the effective ways of promoting skill development with a lot of benefits to learners. These platforms can promote the acquisition of certain skills, fill the skill gaps, and boost the chances of getting employment. The available stakeholders provided case studies regarding different success stories from different parts of India and the world. Growth in the number of users and course enrolment trends is witnessed on online platforms such as SWAYAM, NPTEL, Coursera, edX, Internshala, Udemy, and Byju's. This growth trend shows the growing relevance and impact of the online mode of learning in skill development. But threats are still there, learners may experience the digital divide, the lack of engagement and motivation, content and quality-related issues, and lack of engagement from the learners. Such conditions would necessitate the developed strategies for bridges and lowering or eliminating such barriers as bridging the digital divide by building systems for offline access, Enhancing Content engagement and interactivity with that seems to be changing continuously. Gamification, ensuring that content presented to learners is factually correct, and enabling the building of both Spoon feeding and hands off instructional communities and expectations.

Engaging with this threat and with their exceptional characteristics, open and digital learners' tools will continue to help people learn the skills necessary to help them excel in the workplace.

## SUGGESTIONS

1. Implement robust quality assurance processes to ensure that digital learning content meets high educational standards. Accreditation bodies should set precise standards for evaluating course content and delivery.

2. Design courses with a strong emphasis on real-world applications and hands-on projects. Align content with industry needs and career goals to ensure that students gain useful and usable skills.
3. Keep course materials current by incorporating the latest industry trends and technological advancements. Regular updates make certain that students receive relevant and up-to-date information.
4. Utilize AI-driven adaptive learning technologies to personalize educational experiences. Implement systems that adjust content based on individual learner performance and preferences to optimize learning outcomes.
5. The use of augmented reality (AR) and virtual reality (VR) to build engaging and dynamic learning environments. These technologies can enhance practical skills development and provide engaging learning experiences.
6. Use blockchain technology to securely store and verify educational credentials. This approach can enhance the credibility of digital certifications and prevent credential fraud.
7. Incorporate gamification elements such as points, badges, and leaderboards to increase learner engagement and motivation. Ensure that gamified features align with educational goals and enhance the learning experience.
8. Create opportunities for collaboration and interaction among learners through peer review, group projects, and discussion boards. Creating a feeling of belonging can improve engagement and reduce dropout rates.
9. Offer timely and constructive feedback on learner progress. Implement support mechanisms such as virtual office hours, tutoring services, and mentorship programs to assist learners in overcoming challenges.
10. Ensure that digital learning platforms are accessible to learners with varying levels of technological access. Provide alternative formats and offline options for Learners with devices or limited internet connectivity.
11. Offer training and resources to improve digital literacy among learners. Educate users on effectively navigating digital platforms, utilizing online resources, and protecting their privacy.
12. Design platforms and content that accommodate diverse learning needs and preferences. Implement features such as adjustable font sizes, screen readers, and multilingual support to enhance inclusivity.
13. Adopt strong data protection protocols to safeguard learner information. Make sure platforms adhere to data privacy regulations and use encryption to protect sensitive data.
14. Communicate data privacy policies and practices to learners. Provide information on how data is collected, used, and protected, and obtain informed consent from users.
15. Incorporate career development resources and services into digital learning platforms. Offer guidance on job searching, resume building, and interview preparation to support learners' career goals.

16. Design platforms that support ongoing education and skill development throughout individuals' careers. Provide access to advanced courses, certifications, and professional development opportunities.
17. Collaborate with industry partners to align educational content with current job market demands. Develop partnerships that provide learners with internships, job placements, and real-world project opportunities.
18. Get input from students regarding their own experiences using online learning platforms regularly. To learn about their requirements and preferences, do focus groups, surveys, and analytics.
19. Use feedback and performance data to make informed decisions about course design, platform features, and support services. Implement iterative improvements to enhance the overall learning experience.

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