

# The Development of Online Education: An Analysis Based on Four Countries

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## ABSTRACT

Since 2020, as the COVID-19 pandemic has swept the globe, most schools and offline education institutions around the world have been forced to close indefinitely and shift educational activities to online platforms. As different countries have different characteristics, this paper selects China, the United States, India and Nepal, which are four representative countries for specific analyses, to judge the current situation and future development trend of online education in the world. Firstly, this study makes detailed analyses of the current situation, positive factors and constraints of online education in four countries and its future development direction from the aspects of social background and user preference. Then, this paper discusses the development of online education in different regions of the world and its limiting factors. Finally, this paper gives the future development trend of global online education industry.

**Keywords:** Online education; China; the United States; India; Nepal

## 1. INTRODUCTION

Since the end of 2019, Covid-19 has become a serious problem faced by the world. It damages economic and political condition in many countries, and people have to work or study at home. The change of education system became one of the most important things for colleges all over the world. Many universities and colleges change their rule or original educational system to adapt the new condition. For example, China is the first country faced Covid-19 in December 2019, and the online educational platforms have thrived from 2020 to 2021.

Online education provides many benefits for the society. For instance, people can learn knowledge from all over the world, therefore, getting various resources become more convenient than before. On the other side, online education also has disadvantages. As the students learn the classes remotely, the ability of using internet, time-management, and honesty become challenges for both students and schools.

This article selects different countries including both of the developed and developing ones such as China, the

US, India, and Nepal, to analyse the opportunities and challenges of online education faced by each country.

## 2. THE ONLINE EDUCATION IN CHINA

### 2.1. Status Quo

By the end of 2019, the outbreak of new coronavirus virus pneumonia in Central China. On January 23, 2020, the Chinese government realized how serious the problem was. They closed the whole city of Wuhan to better control the virus. Therefore, the virus was quickly controlled. In order to cope with the potential impact of covid-19 on school education, distance online learning is the only feasible solution so far. In fact, from February to March 2020, almost every educational institution launched online teaching activities, which is unprecedented in world history. Online education can enable students to learn on the platform through real-time live broadcasting or video recording, so online education has also developed very well in China. In order to ensure the safe implementation of online education, China's Ministry of education has also issued relevant positive policies [1]. At present, most of these studies take

technology as the propeller to promote the transformation of teaching from teacher-centred to student-centred.

**2.2. Opportunities**

In developing countries like China, economic development is still uneven. Due to the poor family economic background, many students can't buy expensive electronic products to ensure that they can safely take online classes. Therefore, before students study online, it is very important to investigate which part of students cannot buy and provide financial support for them. Therefore, the way to solve these problems is to set up a special fund for these poor students to reduce the impact on the quality and effect of online education classes due to economic reasons. For example, Harbin Medical University provided about \$400,000 to support students to buy electronic products and Internet services. Therefore, online education and appropriate policies can decrease the disparity of education and wealth in China. Through the survey, in online education, a considerable number of teachers, parents and some students who do not love learning actively participate in the online learning of the course.

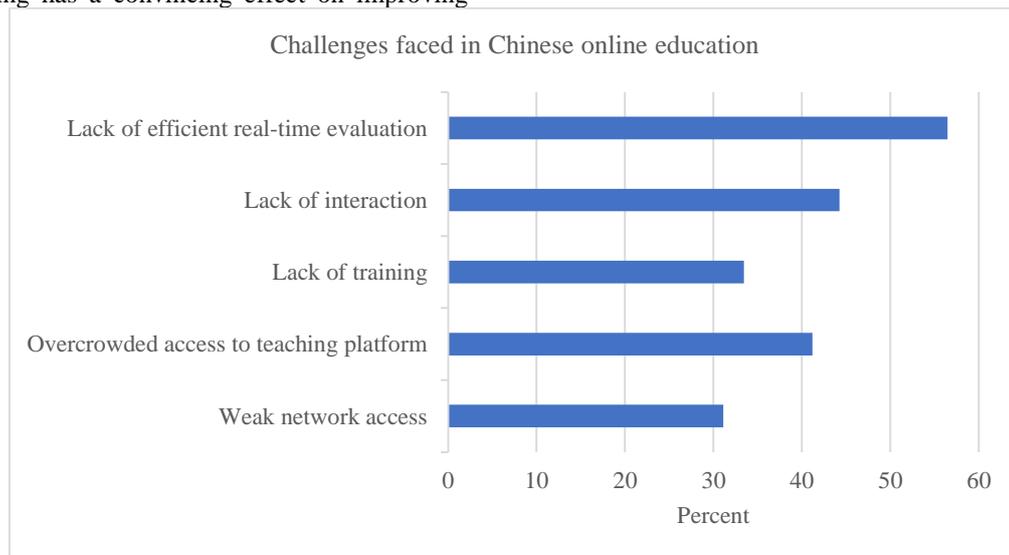
The teaching manager is mainly responsible for the quality and operation evaluation of the whole class. Teachers mainly provide students with experienced learning methods. Parents have the responsibility to supervise students' learning. Students need to broaden their horizons. Researchers believe that online education can optimize the national knowledge system, improve national competitiveness, and have good social service benefits, which is worthy of attention and promotion.

In recent years, more and more evidence show that online teaching has a convincing effect on improving

students' performance. The systematic evaluation and analysis of published data show that almost all technology used has played a role in improving students' academic performance. Other studies have found that the use of information technology can also improve students' performance and help reduce educational inequality. Among them, teachers can use information technology to help students improve their academic performance and give students more learning autonomy.

**2.3. Challenges**

There is a survey about problems of Chinese's students' challenges in online education from Harbin Medical University. According to the survey results in Figure 1, it is found that more 33 percent of students and 20 percent of teachers do not get enough preview and preparation before formal class, resulting in very low efficiency of teachers and students in class. Therefore, it can be inferred that the effectiveness of teachers' and students' pre-class preparation is closely related to the quality of online education. In addition, the percentage of students who did not receive preview before class was greater than that of teachers. The survey shows that the school's training of teachers is sufficient, while the training of students is ignored. There are nearly 33 percent of students believe that they are lack of training. Moreover, Internet access and conveniency are serious problem, as more than 30 percent of students agree. In addition, 44 percent of students indicate that they have less interaction with others in online teaching than offline teaching, so they will have a little sense of strangeness and anxiety. If educators want to continue or carry out online education, this issue should be a key consideration.



**Figure 1** Challenges Faced in Chinese Online Education [1]

Although the development prospect of network education industry is very good, it also breeds some

problems in the development process, especially in the emergency period of some events. For example, since

MOOC was widely used in 2013, people began to understand online teaching more and more. At the same time, online education has received a lot of attention from the outside world because it can be free from local restrictions and improve educational equity. In addition, according to the research, MOOC teaching model can further improve teachers' professional development and improve teachers' teaching skills. Unfortunately, due to the limitations of current technology, online education is mainly concentrated in some extracurricular counselling classes, and does not involve the basic courses and professional courses of the school. Most schools still use traditional offline teaching methods. Therefore, in the event of sudden public health events such as covid-19 virus, students' immediate vacation and suspension is the most common risk avoidance measure in most schools. This teaching mode has been reformed and make online education suddenly change from an alternative to a main scheme because of the epidemic. This change has brought significant difficulties and challenges to the online education platform, including the changes in users' attention to online education. Users will have new requirements, and the ways to meet these requirements need to be constantly explored [2].

### 3. THE ONLINE EDUCATION IN INDIA

#### 3.1. Status Quo

As of April 22, 18,985 confirmed cases and 603 deaths have been reported from 31 States and Federal districts in India since the country's first COVID-19 case emerged on January 30, 2020 [3]. Various measures have been taken to control the COVID-19 infection, such as the first curfew announced by the Prime Minister of India on 22 March 2020. Later, India's prime minister announced a 21-day lockdown to contain COVID-19 cases. On 14 April 2020, the Government of India further extended the lockdown until 3 May 2020 [4]. The decision affected all sectors of the country, including the education sector. All schools, colleges and universities have been forced to close under the government's directive, and offline education is rapidly moving online.

India is the second most populous country in the world, with a total population of 1.38 billion in 2020, roughly close to 1.44 billion in China. In terms of demographic structure, India has a high birth rate, presenting a "pyramid" model of declining population with increasing age. According to statistics, the population between 10 to 45 years old accounts for 63.4% of the 860 million people in India. About 500 million of them are between the ages from 5 to 24, which has the largest population in this age group in the world. In recent years, with the popularization of the Internet and the development of science and technology, the Internet economy, including online education, has been booming in India.

As a federal country, there are significant differences in education development between states and between urban and rural areas in India. Urban schools scored an average of 10 points higher than rural schools. As the table below shows (Tables 1 and 2), the difference between the highest and lowest scores in English was 96 points, and the difference in math was 51 points, with large differences between states. It follows that there is a serious imbalance in educational resources. Schools with high quality and large quantity are mostly distributed in central cities and economically developed areas, while in the vast rural and remote areas, there are few schools and teachers, and the school educational facilities are old and shabby, and the dropout rate of children is high. The student-teacher ratio is a widespread problem in Indian schools. There are about 1.5 million basic education schools across India, but they house 253 million students. Studies show that students perform best when the teacher-student ratio is 1:15 or 1:20. In 2019, it was only 1:24 in India, and higher in rural and remote areas.

**Table 1.** Top five Indian states in Math and English

District	Math scores	English scores
Goa	244	299
Nagaland	237	303
Mizoram	245	279
Karnataka	260	259
Odisha	265	245

**Table 2.** The bottom five Indian states in math and English

District	Math scores	English scores
Daman & Diu	229	235
Tripura	228	234
Himachal Pradesh	232	229
Gujarat	231	225
Punjab	226	226

#### 3.2. Opportunities

The rise of The Internet economy in India has attracted a lot of venture capital, which has a positive effect on online education. The number of Internet users in India has been expanding in recent years. In 2017, 34.5% of the population went online, covering about 450 million people. In 2018, there were 390 million mobile Internet users in India, and Statista predicts that number will reach 500 million by 2023. The education market in India will continue to grow as funding increases, online education R&D (research and development) expenditures increases, and online education platform technology and scale increases. As in the context of the COVID-19 pandemic, the pace will be accelerated.

According to investment data in the past six years, the amount of investment in Education and technology in India increased by a factor of two year-on-year in 2018, and the total amount of investment reached a peak of 6.17 billion yuan in 2019. By 2021, the volume of online education will reach us \$1.96 billion with a 50% CAGR. At the same time, the average single financing amount has a significant increase trend, rising from 20.68 million yuan in 2015 to 192 million yuan in 2019, indicating that the investment cycle is moving later, and the “fundraising” ability of India's leading online education companies is enhanced. The main reason is the COVID-19 outbreak in the world, traditional face-to-face education is facing difficulties, online education is popular, including overseas capital, local enterprises have a strong investment interest in online education.

The Indian government is also supporting online education because of its potential to improve the quality and reach of education in the country through the Digital India initiative. This is embodied in a project called SWAYAM (Study Webs of Active-- Learning for Young Aspiring Minds), jointly launched by the Indian Government and the Ministry of Human Resources, which aims to achieve the three fundamental goals of education policy i.e., access, equity and quality. The main purpose of this effort is to provide quality teaching and learning resources to all, including those who cannot afford education. SWAYAM's project aims to educate students who are unaware of the digital revolution taking place and still unable to join the knowledge economy mainstream. Currently, SWAYAM offers nearly 2,000 courses online, with about 150 million students worldwide studying different courses.

An online survey in India was conducted agricultural students to understand their perception and preferences towards the online learning among 307 students. The findings indicate that 70% of respondents are prepared to opt for online courses in order to manage courses during this pandemic [5]. The project also explores student preferences for various attributes of online classrooms, which will help design effective online learning environments. Analysing the sample data, they found that students preferred to take recorded tests at the end of each class to improve learning efficiency [5]. Students believe that the flexibility and convenience of online courses make it attractive.

India is a multilingual country with the vast majority of its population coming from rural areas. However, most online courses are in English. As a result, it is difficult for students who do not speak English to obtain usable language content. Therefore, providing a workable framework and standard solution for learners will be one of the main directions for the next development of Indian education, which will be the shared responsibility of computer professionals, educators, administrators, language content creators and content disseminators.

Education in India suffers from a serious resource imbalance due to the low number of schools and teachers in vast rural and remote areas, dilapidated school facilities and high dropout rates among children, as opposed to the high quality and large number of schools in central cities and economically developed areas. India urgently needs to change this. As a link, the Internet can connect cities and villages, remote areas and developed areas, realizing educational information exchange and educational resources sharing. Online education can meet people's demand for high-quality education, effectively alleviate regional differences, and thus solve the problem of uneven distribution of educational resources.

### **3.3. Challenges**

For developing countries like India, questions about the readiness, design and effectiveness of e-learning remain unclear, with high-speed Internet and stable electricity supply being the biggest issues. Technical limitations such as suitability of equipment and availability of bandwidth pose serious challenges to the popularization of online education, especially in rural areas. India ranks 89th in the world for Internet speed and stability. According to the report of WEF (World Economic Forum), only 15% of households have access to the Internet, while mobile broadband subscriptions remain very low, at 5.5 per 100 people. In addition, there are only about 600 broadband corridors in India, mainly in the country's top 50 to 100 cities, leaving rural areas with poor connectivity. 5G network technology is the demand today, which will improve the speed of data download [6].

Since online education can take place at home or any other convenient place, there is only a very limited amount of course interaction with teachers and students. According to Dhirendra Kumar (2010), especially those self-paced courses, there is little discussion among peers. Most students discuss via email, chat rooms or discussion groups. Not only does it not have any campus atmosphere, it does not improve or increase the social interaction between students and students or between students and teachers. Under these conditions, you won't be able to make any social connections that will help you advance your career.

While the education industry has gradually accepted online degrees, there are still a large number of fake and unaccredited degrees available online [6]. Today, the number of scammers offering fake certificates without any proof of identity is on the rise, and the virtual nature of the Internet itself facilitates fraud. The credibility of online degrees is steadily declining. These scams will not only make online certificates lose credibility, but also make potential customers lose confidence in online education, thus reducing the use of online education and limiting the development of it.

## 4. THE ONLINE EDUCATION IN NEPAL

### 4.1. Status Quo

Estimating the effect of COVID-19 on education, UNESCO’s report in May of 2020 shows that 8,796,624 students are affected due to school/university closures as preventive measure against the pandemic. Out of this number, 958, 127 (11%) are in pre-primary, 2,466,570 (28%) are in primary, 3,463,763 (39%) are in secondary and 404,718 (5%) are in higher education. Colleges which open online education before the pandemic promote the technology and online program. For some other universities, such as Far-Western University or Kathmandu University, they also open online educational program.

### 4.2. Opportunities

There is research using an online survey with exact questions for colleges teachers and students to complete.

This survey contains 150 students and 150 teachers from Mid-western University, Far-western University, Pokhara University of Nepal Tribhuvan University, and

Kathmandu University. There are 280 people respond the survey.

From the survey results in Figure 2, we can get that more than 80 percent of people believe that the online education connects people to global village and promote online research. Then, there are 76.9 percent of people think that online education can increase independency in learning. In addition, 69.2 percent of people think that online education can make them self-disciplined and work in their own places.

Moreover, there are nearly 60 percent of people believes that online education offers flexibility, provided updated information, and provide huge number of resources. Additionally, there are 46.2 percent of people believes that the online education is convenient and promote life-long individual learning.

On the other side, there are only 38.5 percent of people reveals that online education offer financial benefits, 30.8 percent of people reveals that online education is helpful to meet interesting people, and only 23.1 percent of people indicates that online education give students real world skills.

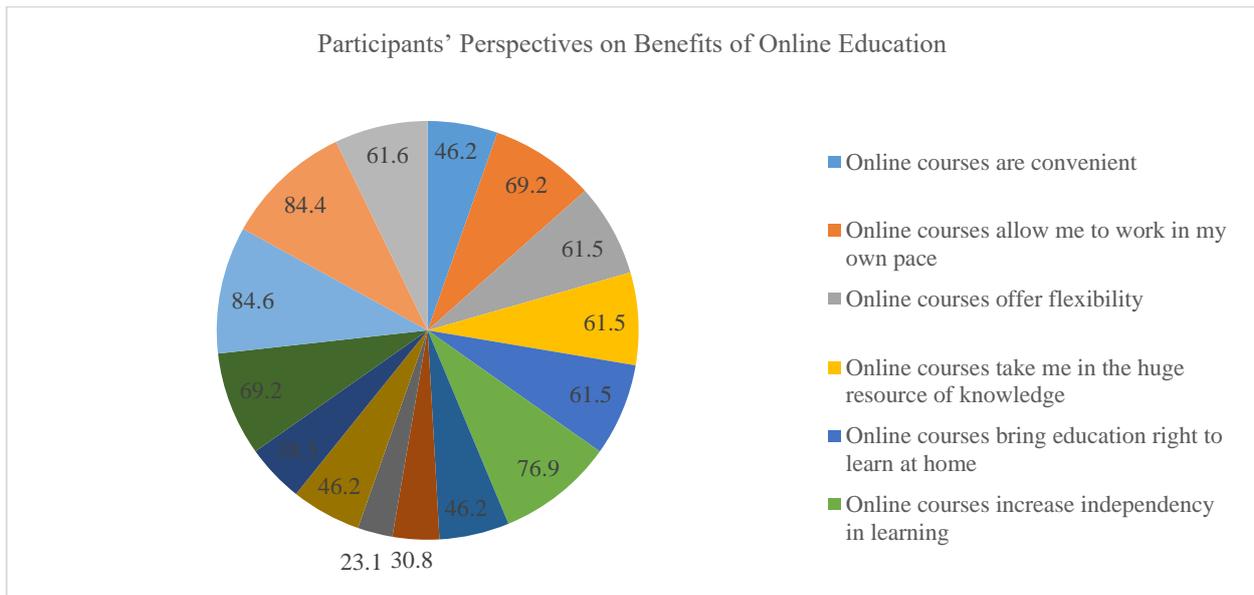


Figure 2 Participants’ Perspectives on Benefits of Online Education [7]

Figure 3 shows participants’ face challenges of online education, there are 85.7 percent of participants indicates that the online education needs more time, give more freedom to students, and requires reliable internet. In addition, there are 84.9 percent think that they must find path of own learning, and 71.4 percent think that the online education creates social isolation.

Moreover, 42.9 percent of participants think that online education limits the feedback and creates habit of

plagiarism, and 35.7 percent of them reveals that online education can make learners independent to resources and difficult to meet the deadline to submit assignments.

In addition, less than one third of participants indicates that online education is limited to certain discipline, cannot promote practice or enhance quality of learning, make students lazy, and lack an instructor to hound them work on tasks.

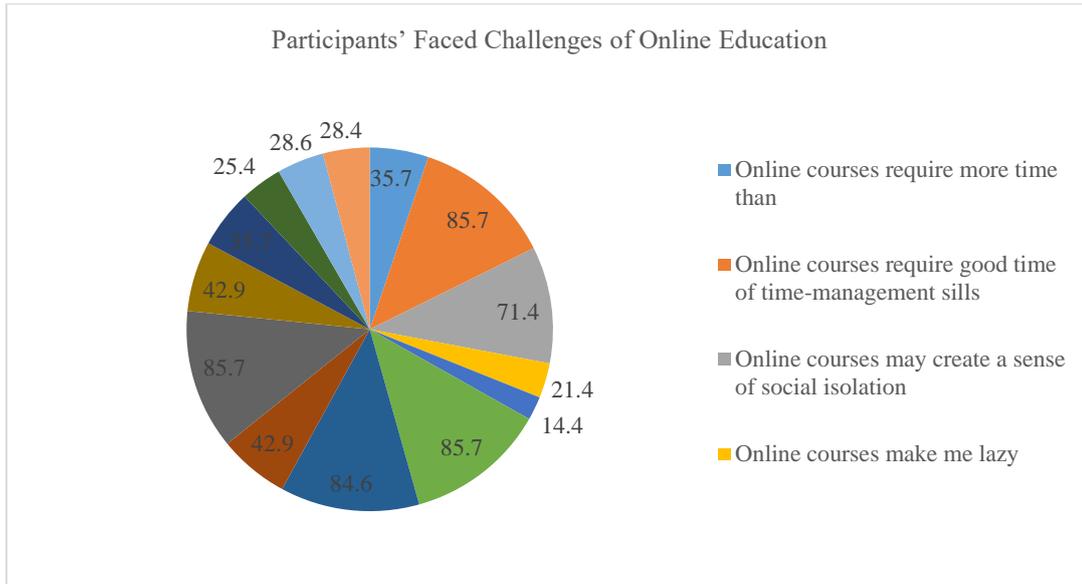


Figure 3 Participants' Faced Challenges of Online Education [7]

Students respond to the question whether they can accept online education in the future. All of them respond that they will, but the reason for their acceptance is different due to their background and perspectives on online education. More than 60 percent of students think that “online” is the most important factor of online education. For some students who live in country area and seldom use internet, online education is easy for them to get information and communicate other from all over the world. Nearly 55 percent of students reveals that they accept the learning style of online education due to its flexibility. They can learn knowledge not only in classroom but also their home or anywhere over the world. Therefore, online class can satisfy different students' demand in Nepal, and the future of it is transparent and positive.

### 4.3. Challenges

Figure 4 reports the survey results of “Participants' Qualities Required for Online Education”. From this figure, almost all participants online education needs their time management skills, computer literature, and technologically prepared. In additional 71.4 percent of them reveals that good work ethics, and self-motivated characteristics are important, and 64.3 percent shows that goal oriented and effective communicator are necessary. Moreover, half of participants indicates that independency/responsibility, personal commitments, and academic readiness are imperative qualities for online education.

In summary, online education offers students chances to be close to more resources, because people can learn

knowledge and connect others in any places over the world. With high college tuition and expenses, online education can also remove the difference of educational resources between classes. Poor students can learn college level class online, and the tuition for them is much lower than normal class. While this kind of education can make students have more good characteristics, such self-disciplined and independent, it also causes some serious problems for students in terms of cheating, delayed work, and social isolation.

One of the most important problems faced by school administration is the payment of house rent and salary in light of obstruction. Student may not study in school and that can cause the loss of income for university. In addition, as the COVID-19 hurt the life condition of middle-class and poor people, so that it can cause the dropout rate and hurt the university's income deeply. Moreover, the low attendance of online class is a problem. Because the teacher cannot easily record students' attendance and difficulty of training teachers how to prepare for online classes are also burdens for administrators.

In addition, parents also face many challenges in the specific time. Usually, parents have online work as their children have online. Therefore, they may suffer the low standard of insecurity and worksites. In addition, working with their children can make parents hard to pay attention on doing one thing: do the work or take care of children.

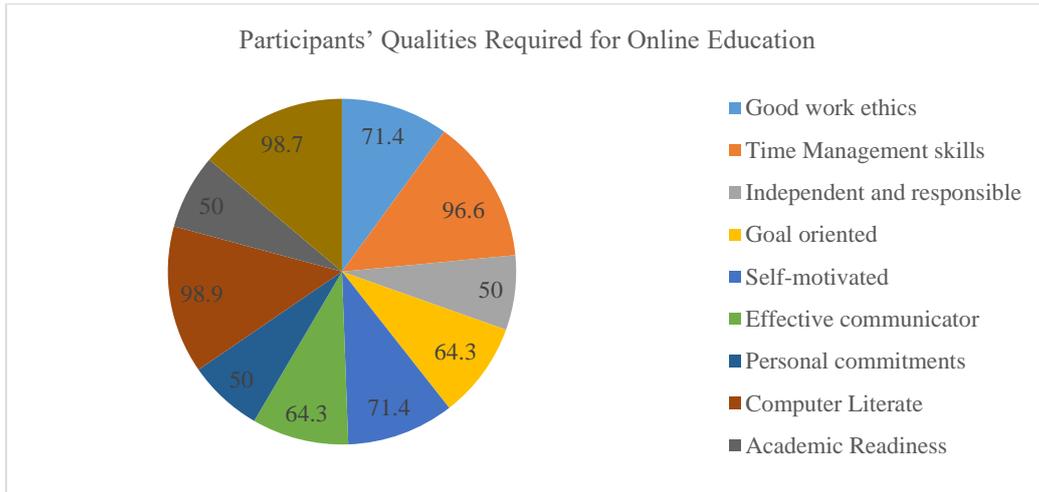


Figure 4 Participants' Qualities Required for Online Education [7]

## 5. THE ONLINE EDUCATION IN USA

### 5.1. Status Quo

The United States has been at the forefront of online education, and has a significant share of the market. In the 2014, online learning services and products reached \$1.6 billion, and it predicted that in 2019, this number would reach \$2.1 billion. In 2016, the value of the US online learning market was \$27 billion, and the share of the market was around 50%. In 2019, the value of market size was \$3.97 billion. North American online education market accounted for over 35% market share in 2020. It

is estimated that the US online education market will grow by \$21.64 billion in 2024. Comparing to other countries, the growth rate of US online education top at the list [8].

### 5.2. Opportunities

In Figure 5, the statistics about “Top 10 Factors Students Consider When Choosing an Online Program” show that in a 2019 survey, the top reason why people choose to study online is affordability [9]. Many people in US cannot get good educational resources because of the economic reasons. Since online program relatively costs low, it can fill this education gap.

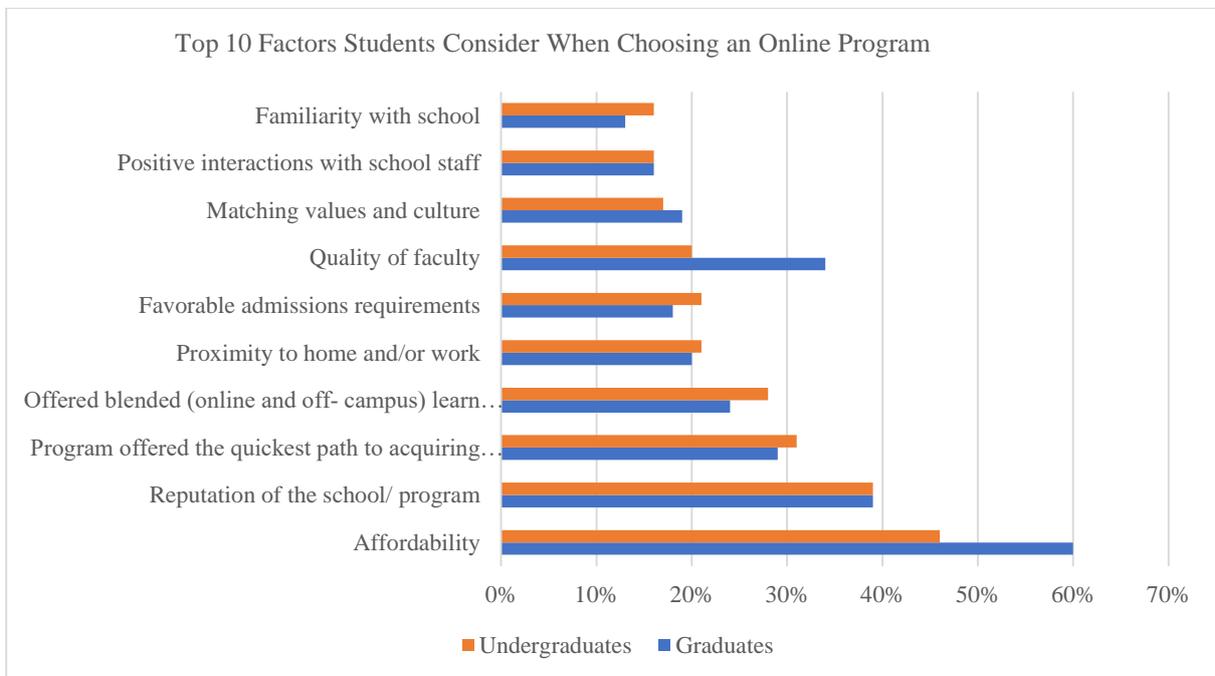


Figure 5 Top 10 Factors Students Consider When Choosing an Online Program [9]

Big crises can make people think what is wrong with the status quo. After the coronavirus crisis, policymakers

should grasp this chance to modify the problems of education system and create and develop new accesses of

learning. It is in urgent need of setting up a complete system to meet the needs of students and teachers, in order to provide a fair and equal educational environment for all students, especially for the people who have no access to have good education. To handle the problem of educational inequality, the first thing is to cope with the wide disparities in student achievement by social and race class, since the different opportunities provided to different classes of people. On this occasion of coronavirus crisis, government should recreate a system that every child is available to high quality of education.

For the sake of ensuring each student has socioemotional and cognitive skills, the system should include how to make it balance of what to teach and how to teach, and the reward and punishment mechanism towards each student. This change should begin with realizing that the two skills support each other.

### 5.3. Challenges

Since the pandemic forced the shut down of the traditional school, students can only choose to study at home, using the online platforms. This brought challenges not only to teachers and schools, but also to parents. Because teacher cannot monitor the tests done by students at homes, so the test scores' authenticity and credibility are uncertain. Meanwhile, families also faced difficulties. Families with low sanitary conditions and have work crises may unable to provide their children a safe and comfortable environment for studying online at home.

Just like students need to adapt to online education in order to study efficiently and effectively, teachers also need some trainings and supports. Firstly, the teacher's teaching plan is leg out. Schools and teachers have inadequate time to outline an effective instruction. According to existing studies, schools and teachers need to distinguish the concept between online learning and offline learning, in order to adapt the remote learning circumstances quickly [10]. Secondly, teachers lack relevant skills to perfectly use computers to teach during the pandemic. Although about two-thirds teachers in US have announced that they got the professional teaching on using the computers for instruction, the outcome still less than satisfactory. In this reason, online education needs some supports towards teachers.

## 6. CONCLUSION

This article has summarized the general status quo in China, India, Nepal and America. There is evidence to show that online education can be used as a main means to replace traditional classroom education in emergency situations and online education platforms have good prospect. However, difficulties cannot be ignored. For instance, the powerful network infrastructure is not

widely covered, the poor outcome of online learning of some students.

Then this article analyses the current situations, opportunities and challenges in the four nations, and this article predicted the possible development direction of online learning. Firstly, content is the most important thing. The functions and Settings of today's online education platforms are all in the form of text, video and live broadcast, which leads to the key of course content. After all, good course quality is conducive to good academic performance. Therefore, only the platform that can continuously provide high-quality educational content and good service can finally stand out and make profits. Secondly, enhancing the sense of interaction during online learning. At present, the interactive sense of online education is far less than that of offline classes, and the communication between teachers and students cannot be "more communication" as in school classes. However, with the arrival of 5G network, this situation may be improved. Finally, this article should mix offline and online education system. Whether online classroom or offline education, education is the most important thing. The combination of online and offline education, can truly optimize and strengthen education.

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