A Comprehensive Guide to Artificial Intelligence Chatbots in Higher Education

Artificial intelligence (AI) chatbots have re-defined the student experience by enabling higher education institutions to link all of their departments into one enterprise platform. AI chatbots possess the ability to process natural language questions and a variety of other inputs that put them far ahead of other chatbots available. This guide will explain the origins of AI chatbots, in addition to the many benefits they provide for colleges and universities.
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Most of us have heard the warnings. Artificial intelligence or “AI” is here and is expected to rapidly impact the ways in which we live and work. Every industry and organization ranging from healthcare, entertainment, business and of course, education seems to be talking about AI.

But it’s time we invested a few moments into preparing, understanding and responding to the impact AI will have on education. The topic of AI can certainly conjure up lots of intimidating thoughts that involve killer robots, and how they could replace jobs or even control humanity, but that view is primarily due to science fiction.

The reality of artificial intelligence is that it can be used on the premise of improving lives. While some may argue that the use of robots has replaced some jobs, that could not be further from the truth in the world of education.

If you are optimistic about the future of AI, you should be eager to learn about how AI may compliment your teaching, research, and scholarship activities. If you have more concerns than hopes for AI, you might be worried a robot may replace you in the near future.

In either scenario, there is no better time than the present to become more familiar with AI and its potential impact. Leadership in education is needed to chart a course for AI so its function will be to positively impact learning outcomes. Education is built upon personal interactions and making provisions for social settings. So, while the education system is experiencing more use of technology than ever before, properly harnessed, AI’s purpose could be to assist educators, not replace them.

But first, let’s define what AI is and is not.
1. What Is Artificial Intelligence?

Artificial intelligence is defined as “the creation of intelligent machines that work and react like humans.” The research contained in artificial intelligence involves the programming of attributes that replicate the human ability to include problem-solving, accumulation of knowledge, perception, and planning.

The feasibility of incorporating common sense and reasoning skills into machines is quite difficult and requires immense supervision to ensure proper classification and analysis.

Bottom line, in order for artificial intelligence to be possible, it must have access to necessary information in order to get the correct answer. This is true in regard to a mathematical equation, answers to geographical questions or the solving of any problem.

Computers have largely been a part of our lives for the past four decades and during that time the advances in machine learning have quietly integrated artificial intelligence into our lives. AI has made an entry into education, both in theory and in practice.

When the use of AI is not accepted into our educational system, ultimately it will be students who pay the price.

An absence of student career readiness and instructional personalization are already degrading the quality of education today. Overall, AI’s main benefit is found in the time-saving nature of the technology in action. Through careful utilization of AI, low value, time-intensive tasks can be automated.

This paves the way for higher ed institutions to let students engage in self-service, a must for the new world of asynchronous learning. As a result, students will rely less on teachers and Staff to answer questions, allowing for a deeper connection they’ve always wanted.

Higher ed institutions are now primed to re-focus their energy on personalizing education and improving the total student experience. There is a logical fear that AI will strip us of meaningful human interactions.

Yet, the advent of artificial intelligence has increased conveniences and sped up an array of processes, affecting us in all aspects of life. And, with the ever-growing urge to make improvements in experiences, and also enhance methods and efficiencies, there is no sign of it stopping.

With this in mind, it is crucial that we resist the tendencies to reject the inevitable and risk missing out on a multitude of opportunities. Here are a few use cases for how AI is already impacting the future of education.
Personalization Bridges the Gap

The use of artificial intelligence can help bridge this gap between teacher and student, designing a better experience for the remote learner.

As institutions of higher education grapple with attracting students across the country, professors will have more pressure to deliver a personalized experience despite asynchronous learning. AI can help professors spot trends such as an increase in the number of questions on a given week to hint at whether he or she needs to spend more time reviewing the material or should extend office hours.

Imagine, if teachers had an assistant that would be available to send out information and reminders to students, or answer common questions regarding the course syllabus at all hours, day or night? Or, what about an assistant that posed questions to students that would spark alively discussion during the next class session? Such an assistant would not only reduce the teacher workload but would also make a positive impact on the experience of the student.

AI can also make it easier for professors with large classes to find struggling students so they can provide the necessary support before it’s too late. While detractors may critique bringing this emerging technology to higher ed, it actually enables a higher level of personalization for larger classes than would otherwise be available.

When you consider how AI affects our lives on a daily basis, such as Netflix suggesting shows based on the history of what we have watched, we welcome that and perceive it as a convenience. Basically, Netflix personalized recommendations according to viewing habits, which reduces the amount of time spent searching for something to watch.

Most of us view that as a positive experience. So, why not incorporate that technology into the educational system? By personalizing the learning journey of each student based on their needs and interests, educators can not only provide more value, but also prep them for a career with little, if any, time in a physical office.

Customer Service Enhancements

Artificial intelligence also helps streamline many processes that improve customer service. From the teacher’s assistant, Jill Watson being available to answer student questions 24/7, to the admissions process being simplified with other AI programs, response time is shortened, and questions are answered immediately; offering an optimal experience for students and parents.

Educational institutions including private schools, primary schools, and colleges are frequently overburdened with immense administrative tasks. Consider the number of students that may attend a single school and then account for the masses of paperwork required for each student from admission paperwork, applications for enrollment and the time-sensitivity involved.
Whereas much of the work is performed by individuals, universities and other institutions have adopted an AI platform similar to what human resource departments use in managing job applications. The system works by filtering through batches that meet certain criteria at which point, hired staff steps in to complete the process.

Just as teachers are immersed in numerous responsibilities, administrative staff are also consumed with taskwork. With the assistance of AI, some of this workload is reduced.

ASU Taking the Next Step

The AI assistance present on college campuses is not limited to helping teachers and administrative staff. Some are also using it in a way that helps freshmen settle into the new life of attending a college. For example, Arizona State University is using AI-enabled Voice Assistants. Students are equipped with their own Amazon Alexa device that uses an app specifically designed by the institution to address common questions and also provide information about events and other pertinent campus details.

Data Mining Works Towards Student Selection

Data mining is already used by companies that focus on retail, communication, marketing, etc. by compiling information about consumer purchases, pricing preferences, and product interests. This process equips businesses with a way to target specific audiences and cater to their interests as a way of increasing sales and customer loyalty.

Now, it is also being used in the educational field as a way of selecting students for specific courses based on individual grades and academic goals. Colleges are embracing this technique of smart-data gathering and using the information to target prospective students as well as help engage existing students.

Additionally, these data mining systems are being used experimentally as a way to provide transitional training to students that will ease them away from the high school classroom environment to the college setting.

Not only will artificial intelligence help students, but educators have access to courses directed towards personal development which can be attended via virtual global conferences. AI may not be as entangled into the educational sector as it is in other areas, but the adoption of it in several areas of the learning culture is well on the way.
This post will delve into the details of what chatbots are, how they work and how they can help the higher ed industry.

2. An Introduction to Chatbots

If you’re noticing that much of your customer service interactions are more automated, you’re not alone. The days of packed call centers have long been a thing of the past (and it’s not because of COVID-19).

Most customer service offices have substantially diminished their physical footprint by replacing call centers with live agents, who can communicate with multiple customers simultaneously, in addition to chatbots.

Through the advent of chatbots, businesses have successfully helped more customers with fewer employees while customers get the answers they need without spending time on-hold.

Over the last few years, higher education has undergone a similar transformation, where innovative schools are easing their administrative workload through the implementation of chatbots and live agents. Some may have heard of chatbots, but are unsure of their value and how they work.

a. What is a Chatbot?

A chatbot is a program that mimics human conversation through spoken and written communication. Bots can converse with humans 24/7, and are programmed to respond to certain keywords or prompts.

They are also called intelligent virtual assistants, virtual customer assistants, conversational agents, or similar terms. They have varying levels of intelligence, from answering frequently asked questions to providing advanced features like personal shopping recommendations.

In higher education, chatbots can help students complete financial aid processes, sign up for classes, gain admissions information, and more. In this post, we’ll focus on chatbots in the context of higher education.
**b. Why are Chatbots Valuable to Higher Education?**

Today’s students are considered digital natives, which means they grew up with the internet, social media, and mobile devices. As a result, students expect to receive information at their wish.

Since students can do almost anything, from ordering pizza to furnishing an apartment, all from their mobile device, they simply do not want to deal with antiquated processes when it comes to higher education.

Universities and colleges traditionally waded through dense websites to find relevant information. A bot allows them to ask a question at any time, from anywhere.

Students are no longer reliant on traditional communication channels such as email or calling an administrative office to get the information they need. Instead, they prefer to text or chat, just as they have grown accustomed to interacting with customer service departments in other areas.

**c. How do Chatbots Work?**

Humans initiate a chatbot interaction by speaking or inputting text. Some chatbots are text-only and use some type of messaging service to analyze the input, find the appropriate response, and deliver that to the user.

Bots may have difficulty understanding the human’s request if the input doesn’t match the pre-programmed answers. As a result, more simplistic, rules-based bots may use a decision tree to provide relevant information almost instantly.

The disadvantage of this type of bot is that it’s only helpful for basic requests, such as frequently asked questions or relevant status updates, and may frustrate the user to the point of preferring to speak with a human.

For advanced information requests, artificial intelligence helps plug the weaknesses of basic bots through national language technologies.

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**Natural Language Processing:** This principle enables a bot to understand the context behind a user’s sentences, including sentiment and when something is singular as opposed to plural. It also allows it to reply correctly, even when the sentence is grammatically incorrect or has a spelling mistake.

**Natural Language Understanding:** Given that academia has its own lexicon, bots use this ability to understand what users are saying. For example, some students may refer to their first payment at an institution as a down payment rather than a deposit. The bot can learn that they are the same and still provide relevant information.

**Natural language generation:** Since bots don’t really understand English, they use this process to translate data points into content that users understand. Simply put, it provides the bot with the tools it needs to converse in sentences and paragraphs.
3. The Role of Artificial Intelligence in Chatbots

Over the past several years, businesses have rushed to implement this technology to streamline customer communication. However, many chatbot experiences leave much to be desired, especially within higher education.

DIY chatbots fail to deal with more nuanced questions and require a large amount of conversational data to train. They can also struggle to handle topics outside of the few areas for which they’ve been trained.

Innovative higher ed institutions are buying chatbots powered with artificial intelligence so they are better equipped to handle student questions on a variety of topics ranging from financial aid to student housing questions, and everything in between. The key to successful AI implementation is that it must understand the student’s request, possess highly specific knowledge and deliver a personalized experience.

Here are a few ways AI currently impact chatbots:

<table>
<thead>
<tr>
<th>Cognitive Thinking</th>
<th>This includes the chatbot’s ability to interpret various student questions and pull from previous interactions, in addition to other pieces of information to provide contextually relevant information.</th>
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<tbody>
<tr>
<td>Memory</td>
<td>AI helps a chatbot remember relevant details to assist students throughout a conversation. It can also store information from a previous conversation so that users can provide less information to get the answers they need.</td>
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<tr>
<td>Persistence</td>
<td>In higher education, maintaining student deadlines is a big task for higher ed administrators across the country. AI technology helps users pick up a conversation where they left off, even on a different device, and lets bots follow up with students when deadlines are fast approaching.</td>
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<tr>
<td>Topic Switching</td>
<td>Allows users to go off-topic without throwing the bot off track. An AI chatbot can follow a student switching from something like university housing information to course selection, and even bring him or her back on track if the bot lacks an answer it’s looking for.</td>
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<tr>
<td>Personalization and Personality</td>
<td>The advent of artificial intelligence allows humans to converse with bots casually using humor, empathy, sarcasm or a wide range of emotions. In addition, it enables the bot to understand which inputs of information can answer specific questions to deliver a more personalized experience.</td>
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Breaking Down the Technology of AI Chatbots

In order to fully leverage AI chatbots, it’s crucial to understand some of the technology used to help it outperform DIY chatbots. Artificial intelligence helps the bot understand language, and learn over time.

The chatbot receives data and interprets, contextualizes and translates it so that it can provide the appropriate answer when prompted.

At a more granular level, here are some different techniques AI chatbots use to improve performance.

- **Machine Learning** – The ability for the system to improve functionality based on a variety of algorithms including pattern and text recognition. Over time, as it has more reference data, the machine learns to become more efficient.

- **Natural-language Processing** – A process that deals with a bot’s ability to analyze language through speech recognition, semantics and syntax. Just like a human learns a language through listening and reading while understanding the context, computers can attain a similar capability.

- **Deep Learning** – A broader version of machine learning, deep learning is the ability for a computer to process various pieces of information the way a human would to make informed decisions and judgements. Deep learning uses neural networks to prioritize data by assigning a numerical value to each data point or using true/false logic analysis.

- **Neural Networks** – Neural networks refer to the vast clusters of data within a computer system that leverage their proximity to other related clusters of data to increase each cluster’s ability to learn from the other, much the way the human brain and nervous system do.

- **Support Vector Machines (SVM)** – SVM technology allows machines to identify optimal solutions when faced with multiple options. Machines are typically fed a small set of data samples to help it find an optimal solution.

- **Supervised/unsupervised Learning** – Machine learning often contains three types of learning: supervised learning, semi-supervised and unsupervised learning. In supervised learning, the machine’s output that it is supposed to learn for understanding rules are given as ground-truth during training. For unsupervised learning, the intended answers, or equivalently machine output, is not provided. Any rules or inferences the machine learns are determined strictly using machine learning algorithms, independent of having been provided the answers beforehand.
While many researchers hold out hope for a completely intelligent chatbot that can talk to a human in the same manner as a live agent, AI technology is not at the point where this desire is feasible.

Instead, chatbots are best utilized when there are predetermined topics for which the bot can gain expertise and address before passing more sophisticated topics to a human. However, we can expect that in the coming years, that gap will continue to shrink as bots grow the capacity to handle more complex decision-making capabilities.

The History of Chatbots

The creation of robots and artificial intelligence dates back to 1950 when Alan Turing asked a question that led to a paper, known as the Turing Test. It may seem like chatbots have only been around for a few years, but they actually have a relatively long history.

The paper proposed a test to determine whether humanity could tell the difference between a human and machine. This question is still performed regularly today as a critical benchmark in understanding the capacity for bot performance.
Here is a list of other landmark events that helped define where bots are today.

**ELIZA, 1966:** Named after Eliza Doolittle in George Bernard Shaw’s Pygmalion, the first bot developed at MIT by Joseph Weizenbaum aimed to fool humans into thinking a psychotherapist was interviewing a patient. The project was ultimately successful in being the first machine to use natural language processing.

**PARRY, 1972:** Psychiatrist Kenneth Colby took ELIZA a step further by creating a more conversational chatbot, that allowed it to converse with ELIZA. PARRY was intended to represent a paranoid schizophrenic and had greater language capabilities compared to ELIZA.

**JABBERWACKY, 1981-1988:** British programmer Rollo Carpenter created the first chatbot with a goal of creating artificial intelligence capable of passing the Turing Test. The bot could emulate natural human chat while being interesting and entertaining.

**Dr. Sbaitso and ALICE, 1991-1995:** Dr. Sbaitso was another psychologist chatbot with a digital voice, powered by AI to show off an impressive range of digitized voices. It could ask questions similar to a therapist, such as “Why do you feel that way?” ALICE was a chatterbot that took the natural language processing ability of ELIZA to a new level.

**Elbot and Smarterchild, 2000-2005:** Elbot was the first chatbot to successfully use sarcasm and wit to converse with humans through AI. In 2008, it came close to successfully passing the Turing Test. Smarterchild was a bot for AOL Instant Messenger that offered personalized conversation and could offer information on movies, weather or current events.

**IBM Watson, 2006-2009:** Watson was designed as an AI chatbot meant to compete against humans on Jeopardy using natural language processing and machine learning. It is now arguably one of the smartest systems in the world with use cases in healthcare, weather forecasting, advertising, tax preparation and much more. Watson is used to reveal a variety of insights with a large amount of data.

**Google, Siri, Alexa and Cortana, 2010-2015:** Amazon, Apple, Google and Microsoft launched their first voice assistants, which allowed the user’s device of their choice (mobile, PC, tablet) to provide information to answer questions and make recommendations. Alexa was the first smart home speaker that enabled these capabilities, in addition to powering a variety of devices through a voice command.

**Messaging Bots, 2016-present:** Facebook launched its first messaging platform growing to over 300,000 active chatbots in 2018. It has since captured the imagination of industries like e-commerce, retail and higher education, with Ivy.ai launching an artificially intelligent self-service chatbot to help students across the country access the answers they need.

The future of chatbots holds great promise, both for higher education and society at large. Between advances in technology, a change in student preferences and the COVID-19 pandemic, bots have become a necessity.

It’s not a stretch to state that in the not-too-distant future most of our customer service interactions will be carried out by a bot.

When preparing to add a chatbot to your website, you will likely face the decision over when to keep the chatbot live and when to switch to live chat. But for those who are new to the world of chatbots, the differences might not even be apparent to the untrained administrator.

This post explores the differences between live chat and chatbots, plus when it's time to switch apps.

a. The Benefits of Chatbots

Chatbots are best for fielding simple questions that can be answered through decision trees. The best chatbots can even interpret natural language questions. They can provide basic customer support or handle FAQs where there is a pre-filled answer mapped to those questions.
Here are the main benefits that chatbots have over live agents:

**Chatbots Have a Faster Response Time**
Because it does not need to think or type and is preprogrammed with responses, a bot that understands a question can provide a response almost immediately. The bot is also not bombarded with inbound questions, so a single bot can respond to an unlimited number of students. This reduces the overall workload and keeps inquiries from piling up over nights, weekends and holidays.

**Chatbots Are Always Available**
A bot can respond to students any time, seven days a week, including outside of normal business hours. That way, parents and students can get the information they need without having to wait on hold. They can also help your team identify the most qualified leads on your website to enhance your office’s efficiency.

**Chatbots Can Answer More Accurately Than Humans**
While humans need to memorize dozens of facts related to the institution, a chatbot just needs to pull that content from a single source of truth, to know the right answers. Bots are ideal for fact-based inquiries such as deadlines, procedures or relevant stats. As long as the bot’s library of knowledge is up-to-date, it will never provide inaccurate information.
Despite the fact that there are several strong use cases for chatbots, they should not be used as a stand-alone solution. Live chat fills the void chatbots leave by offering intervention when chatbots alone aren’t enough.

With live chat, visitors can ask more complex questions that a bot can’t answer. Humans are typically more equipped to understand specific queries relevant to your school and that require problem solving.

But beyond the obvious human connection, there are some obvious advantages that live chat has over chatbots. Here are the main benefits of live chat:

**Live Chat is More Personalized**
Chatbots are limited in their ability to show empathy or make judgement calls. In a more nuanced situation, such as granting a deadline extension for payment, live agents are more appropriate. Another advantage with live chat is that an agent can escalate the situation to a phone call or video chat if the student isn’t getting the information they need.

**Live Chat Can Help Students Problem Solve**
Throughout the student lifecycle, students will need consultative problem solving, but they might prefer text to calling the office. Live chat can assist students in making decisions such as whether or not to drop a challenging class or how studying abroad might affect their graduation timeline. These are problems that are too complex for a bot, but excellent for an agent to handle over live chat.

**Students Might Prefer Talking to a Live Person**
Most students don’t have an opinion on whether they prefer speaking with a bot or a person, but some will prefer a human connection. If you make students chat with a bot all the time, they’ll get frustrated and be turned off. Give your students the option to chat with a live person if they feel that a bot isn’t sufficient to answer their questions.
c. Chatbot vs. Live Chat: Which Gets the Best Results?

Both chatbots and live chat are valuable to improving the student experience. While it may be tempting to choose one or the other, the truth is that higher ed institutions need both. In fact, they actually make each other work better.

Look at chatbots as the initial gatekeeper. It will answer basic questions and handle inbound inquiries after hours. This gives agents more time to provide consultative service while guiding students with more recommended responses to create a faster, more consistent delivery.

The handoff between a chatbot and live agent helps higher ed institutions gain a superb ROI which allows employees to perform more meaningful work.

Integration with Virtual Reality: Virtual reality has come a long way in recent years. While researchers dabbled in it as long ago as the 1960s, it was launched to the public in 2012 with the Kickstarter Oculus Rift headset. Since then, VR has been incorporated into various fields, not only on the entertainment scale but also in the learning aspects of the medical, health, physical therapy and architectural environments.

The learning possibilities with virtual technology are vast, allowing individuals to visit places and participate in experiences in a 3D virtual world that fills the senses while expanding knowledge.

Streamlining Repetitive Tasks: When AI is used to complete repetitive tasks, such as grading assignments, instructors can use that time instead to focus on teaching.

End-to-End Personalized Experience: AI learning programs can be customized to accommodate the individual personalities of students, based on the pace and style in which they learn best. From the teaching standpoint, the consistent analytical data compiled within these courses provide better insight to the instructor about each student.

24-Hour Access: Students have access to AI teaching assistants around the clock. This is a major benefit for students with varying schedules, as each one of us has our own personal biorhythm.

Class-Student Fit Evaluation: Specialized classes for students who are more academically driven have existed for decades; being selected through testing, which requires time from instructors. With AI, talented and motivated students can be selected through data assessment that is automatically compiled. For example, suppose an instructor is seeking a few individuals who are particularly driven or possess specific qualities available to perform a difficult task, yet he has six separate classes of students. Rather than evaluating each student from all six classes, the AI technology is able to produce reports for easy selection.

5. The Future of Artificial Intelligence in Higher Education

Many technological advancements have made a positive impact in our lives, from the added convenience of voice recognition and the virtual personal- and teachers’- assistants to self-driving cars, as well as the reactive machines used in games for our entertainment. Some forms of artificial intelligence indeed make our lives easier.

However, there are some hesitations about it as well; many of which stem from misunderstandings or unrealistic views developed because of science fiction. The overall hope of the researchers dedicated to expanding the uses of artificial intelligence is motivated by the sheer desire to produce applications that can improve lives, not replace jobs or the people that use the AI applications.
Closing the Language Barrier: Artificial intelligence provides a way to close the gap of a language barrier with real-time translation. Having this accessible in the classroom would improve interaction among a group and prevent the individuals learning a new language from feeling isolated.

There is never a perfect scenario with anything. All in all, if artificial intelligence is developed so that it provides students with more opportunities and assists instructors by alleviating much of the repetitive work, then it is conceivable, the pros will far outweigh the cons.

a. What’s Next for Higher Education?

Computers have largely been a part of our lives for the past four decades and during that time, the advances in machine learning have quietly integrated artificial intelligence into our lives. AI has made an entry into education, both in theory and in practice.

When the use of AI is not accepted into our educational system, ultimately it will be students who pay the price. An absence of student career readiness and instructional personalization have degraded the quality of education today. AI’s main benefit is found in the time-saving nature of the technology in action.

Through careful utilization of AI, low value, time-intensive tasks can be automated. This grants teachers and support staff a new advantage that may help them re-focus their energy on personalizing education and improving the total student experience.

There is a logical fear that AI will strip us of meaningful human interactions. Relationships are crucial to human development and teachers play a major role in that growth process. AI won’t steal our personal relationships, in fact, AI will offer a means to improve them.
6. BONUS: How Covid-19 Accelerated the Adoption of AI in Higher Education

The onset of the Coronavirus forever changed higher education as close quarters and socialization suddenly turned universities and colleges into petri dishes.

Almost overnight, higher education faced a point of reckoning. With 100 percent remote learning for the near future, students began to question the value of higher education and delayed or put their college education on hold.

This created immense financial strains as institutions tightened their belts and either furloughed or laid staff off en masse. But it wasn’t all doom and gloom.

Higher education institutions began to embrace digital transformation by automating menial tasks and communicating better through technology.

As we approach one year since the pandemic forced higher ed to embrace remote learning, here’s a look at the short and long-term impacts the previous year had on institutions.

a. Short-Term Impact

Making information available remotely - Many institutions understood the limitations of how they communicate information the minute that Covid-19 hit. Student Services offices were inundated with requests from parents and students alike regarding whether classes would be remote, social distancing protocols, and building access availability.

With none of this information readily available on the website, higher education dove head first into live chat technology to communicate changes that developed as a result of the pandemic. This advancement was especially critical as students went home or to a destination in order to create a more desirable remote learning experience.

Moving forward, higher ed institutions will need to provide the technology for students to text or chat at their convenience on any question. Even when students return to physical classrooms, universities and colleges alike will have to accept the reality that some students will prefer asynchronous learning.
b. Long-term impact

More competition for higher education - With in-person learning suspended, students elected to take a non-traditional route, either by attending community colleges or opting for a gap year program. In order to be competitive in the future, higher education will need to invest in new programs that meet the needs of an evolving student population.

This means institutions need to think about how they can make education more accessible to students from different walks of life, including communication tools and virtual classrooms. With prospective students being exposed to alternative experiences, many will be reluctant to give that up for a more traditional higher education experience in the near future.

Enabling virtual classrooms - Prior to Covid-19, online graduate programs were slowly gaining popularity as an alternative to in-person learning. Yet there was still healthy skepticism over whether or not asynchronous learning could provide similar value to in-person learning.

Once the pandemic transitioned nearly every university across the country to remote learning, students and professors alike were challenged to make it work for them. Now, with two or three semesters worth of trial and error, institutions will need to take online learning to the next level.

It won’t simply be enough to teach a class over Zoom. Institutions will also need to create personalized learning experiences for each student and even use data to evaluate class-student fit evaluation to ensure students are following an optimal journey.
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**Growing continuing education** - The pandemic has accelerated the need for higher education to scale continuing education. With the increase of students deferring or opting out of college altogether, higher education will need to find new revenue streams in order to stay in business.

As a response to these challenges, flagship universities are creating new, affordable, and highly modular courses providing continuing education opportunities for students. Institutions can attract more students into continuing education programs when the experience of enrolling is intuitive, fast, and simple.

Asynchronous learning offers limitless opportunities to increase class sizes while meeting the most pressing educational needs of the population.

Covid-19 laid bare a long-held belief that higher education needed to undergo a drastic digital transformation. But rather than having the luxury of bringing this change along slowly, the pandemic forced colleges and universities alike to adapt immediately.

Once in-person learning can continue, there is no looking back. While most students will likely prefer being in the physical presence of the classroom, institutions will need to provide greater flexibility and keep up with student preferences.
About Ivy.ai

Our service makes information more accessible, increases productivity and modernizes systems. Our clients are relieved and delighted that the most current campus information is available easily and quickly leaving everyone more gratified and empowered. We believe that harnessing AI technology to serve the needs of higher education will elevate the learning experience and lead to greater academic achievement.

To learn more, go to ivy.ai or schedule a free consultation to learn more about AI chatbots.