



# State of Digitization in Education and Examinations - India

A snapshot of the transformation of education  
through the eyes of the stakeholders - institutes  
and students

**2021**

# Abstract

The need for digitization in education and online learning has been clearly felt by all, as educational institutions have been forced to adapt to new ways of working since March 2020. Even though there has been an increase in adoption of video conferencing platforms for digital classrooms, we still do not have a sustainable solution for critical parts of the educational journey, such as examinations.

We at Cerebranium have taken the lead to conduct an in-depth analysis in the education sector to understand the state of education in today's world, and what the future outlook is. We have reached out to 300+ individual participants from different spectrums of the educational sector across 124 institutes across India; key decision-makers such as college registrars, deans, heads of departments, faculty members, as well as students - all the major stakeholder groups in the education domain. Cumulatively, we have been able to collect data representing more than 400,000 people across the entire domain.

Based on participant feedback, we were able to see several prominent challenges and risks on both sides - institutes as well as students. We have also explored possibilities in the solution space for these challenges by proposing to use compassionate technology as a sustainable foundation for the future of digital education for all.



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# 01

**Technology as a foundation  
for rebuilding education in  
the new world**



# Technology as a foundation for rebuilding education in the new world

The evolution of technology has shaped every aspect of human life. Technology has now become an integral part of society, and its infusion into education is therefore inevitable. The Covid-19 pandemic has forced us to rethink the traditional school model and has demonstrated why online education is now a vital part of the teaching and learning process.

It is safe to say that the virtual classroom model has enabled learning beyond the four walls of the classrooms. Faculty members can harness online learning as a powerful educational and instructional tool.<sup>[1]</sup> With the effective use of digital learning tools and platforms, teachers can improve their lesson plans, teach fundamentals in a better

way and also facilitate personalized learning, thereby increasing meaningful student engagement and growth.<sup>[2][3]</sup> Online learning can help students become independent learners, pursue learning programs tailored for their needs, possibly even college-level courses at their own pace. This, combined with well-crafted assessments can be highly beneficial to their learning progress, autonomy and personal evolution.

How is online education implemented today?

**58% of institutes** are currently conducting their classrooms completely online (Fig. 1.1). **95.4% of institutes** are currently conducting their examinations online.

Current mode of teaching

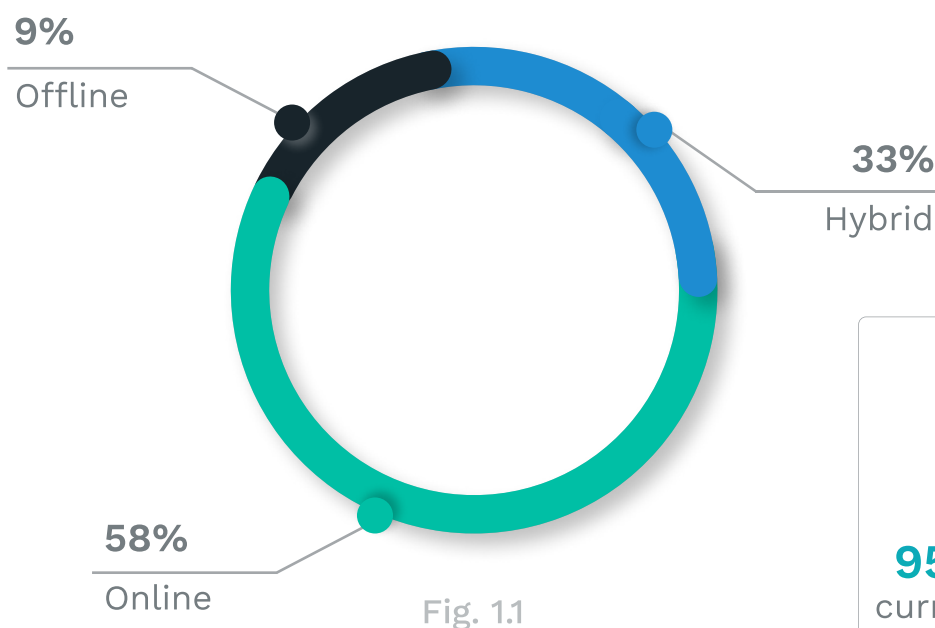


Fig. 1.1



**95.4%** of institutes are currently conducting online examinations.

# 02

**Then and now - The transition  
from offline to  
technology-driven Learning**



## Then and Now - The transition from offline to technology-driven Learning

Until recently, the entire education sector was a very traditional form of an establishment, where the preferred and widely used mode of communication was the in-person, face-to-face mode of teaching and learning. Traditional learning systems emphasize the need of regular attendance and also have been proven to help in the holistic development of students by helping them build their social ties and social understanding.

While there might be a significant difference in the number of COVID-19 cases across the globe, there are currently more than 1.2 billion children in 186 countries affected by school closures due to the pandemic and from the way the situation has been unfolding globally, it might be that the current measures might be

here to stay.<sup>[4]</sup> Due to safety concerns, many institutions have already planned to continue the online mode of education post-pandemic. As universities develop their own digital competencies, what has started as an impromptu response to a crisis will possibly become an ever-lasting digital transformation of higher education. It can therefore safely be said that the future of education is technology-driven.

Though the transition from traditional school model to online classrooms has been challenging, **91% of faculty members** have reported that they are comfortable with the online mode of teaching. However, among students - the primary stakeholder group - only **55% have reported** that they are comfortable with online education (Fig. 2.1).

### How Comfortable Is Online Education For Faculty And Students?

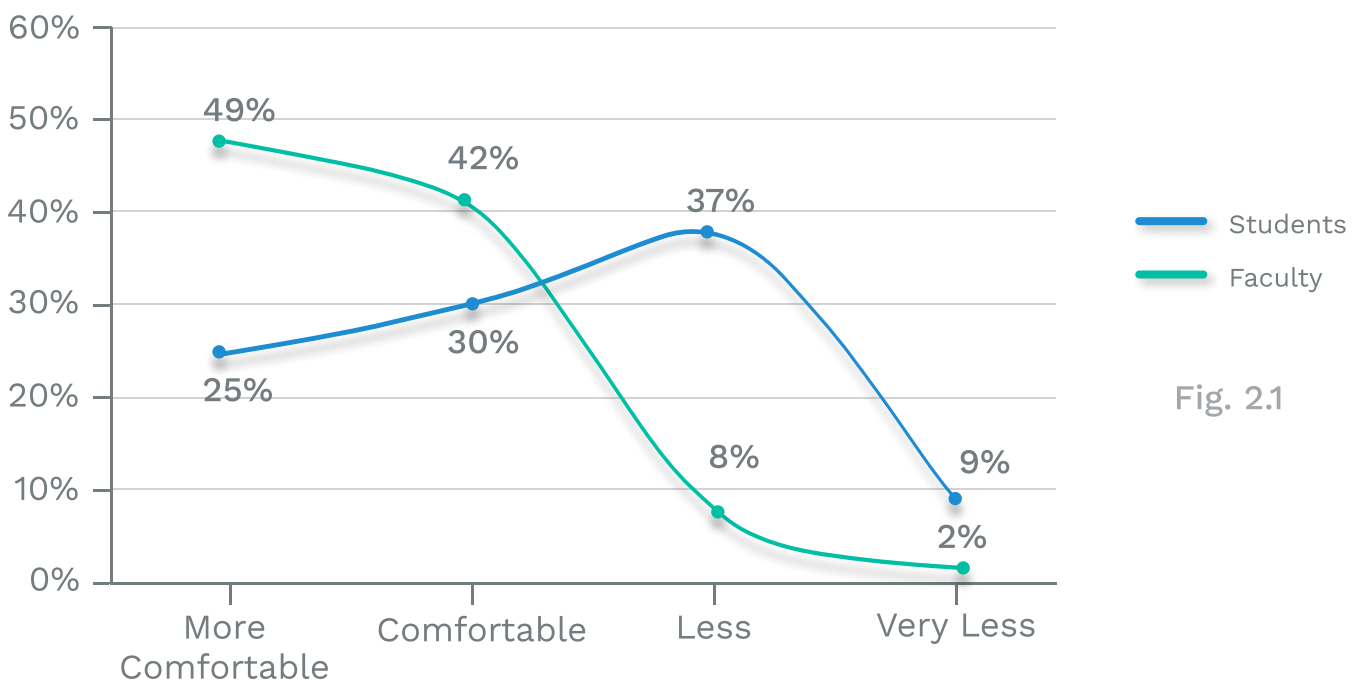


Fig. 2.1



Educators have an opportunity to think differently about how to empower their students in the virtual learning space, how to develop structures and routines that encourage students to learn and promote meaningful engagement, and how to augment their learning journey while considering their emotional well-being.<sup>[5]</sup> Online learning goes beyond taking a lesson through a video conferencing application. It involves a paradigm shift in pedagogy through an understanding of the online learning model for teachers, parents and students.<sup>[6]</sup>

Also, institutions need to develop a strong foundation to move the existing education system online for a smooth teaching-learning process, efficient conduction of day-to-day

tasks, and seamless conduction of online assessments and examinations.

In response to significant demand, many online platforms are offering access to their services and are attempting to upgrade their capabilities to provide a one-platform-for-all solution for teachers and students. However, most platforms have been successful in catering to only a few sections of online education and are mainly providing a platform to schedule and conduct online classes and provide access to learning resources and content.

Many institutions have opted for such online learning platforms for their teaching-learning process, which can be seen in the following chart (Fig. 2.2).

### Applications used by institutes for online classrooms

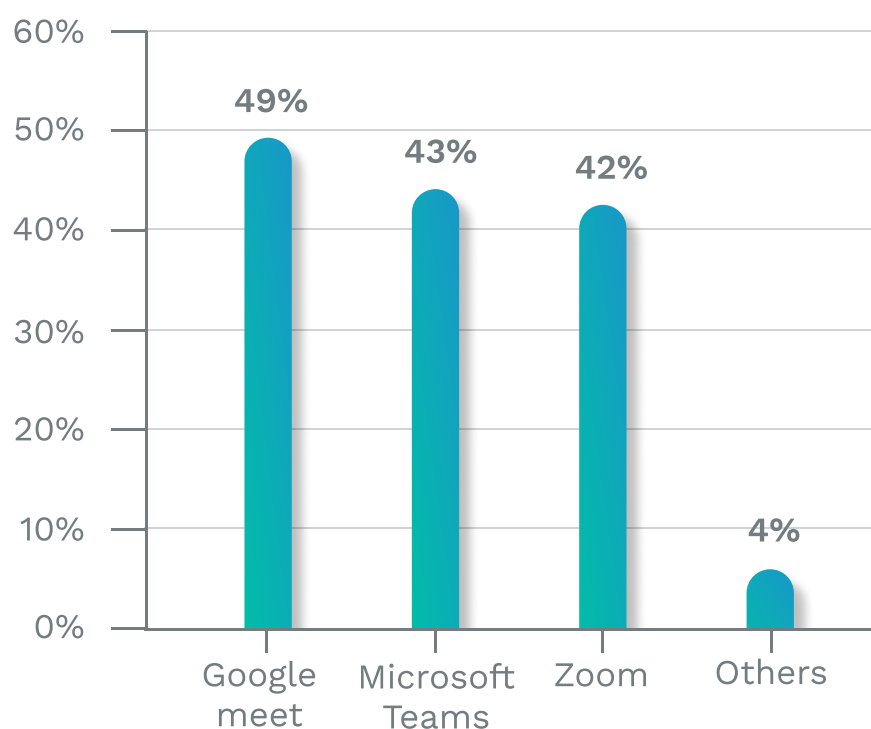


Fig. 2.2

However, the participant responses suggest that they are struggling to keep up with their examination management requirements - a critical path of the educational

journey. It has been due to the lack of effective features available in these widely used applications as seen in the table below.

### Difficulty faced with the currently used online applications/platforms

Features NOT available/offered by the applications currently in use	Overall
Internet-independent exam conduction	55.91%
Write-&-scan for subjective exams	37.10%
Proctoring solutions	33.87%
Subjective question format	30.11%
User friendly interface	19.35%
Objective question format	18.82%
No Issues with app	5.38%

# 03

Is the playing ground equal?



## Is the playing ground equal?

When we talk using technology to bridge the gap between the current state of education and the pragmatic future, we often forget to address the very important question; 'Is the playing ground equal?'

An alarming 4 out of every 5 students have reported to have faced connectivity issues during critical parts of their online learning experience. Examination management, being the quality gate of the education system, is a key case to consider in this discussion.

**83.6% of students** currently use laptop or desktop devices for online classes and exams. Among them, **78% respondents** face major internet connectivity issues, and **54% of them** feel that there are high chances of examination malpractices (Fig. 3.1). 1 out of every 3 students faced problems with their examination software while appearing for their online examinations on such platforms, forcing us to ask if the tools currently employed for these tasks are meant to be used for them.

Difficulty faced with the currently used online applications/platforms

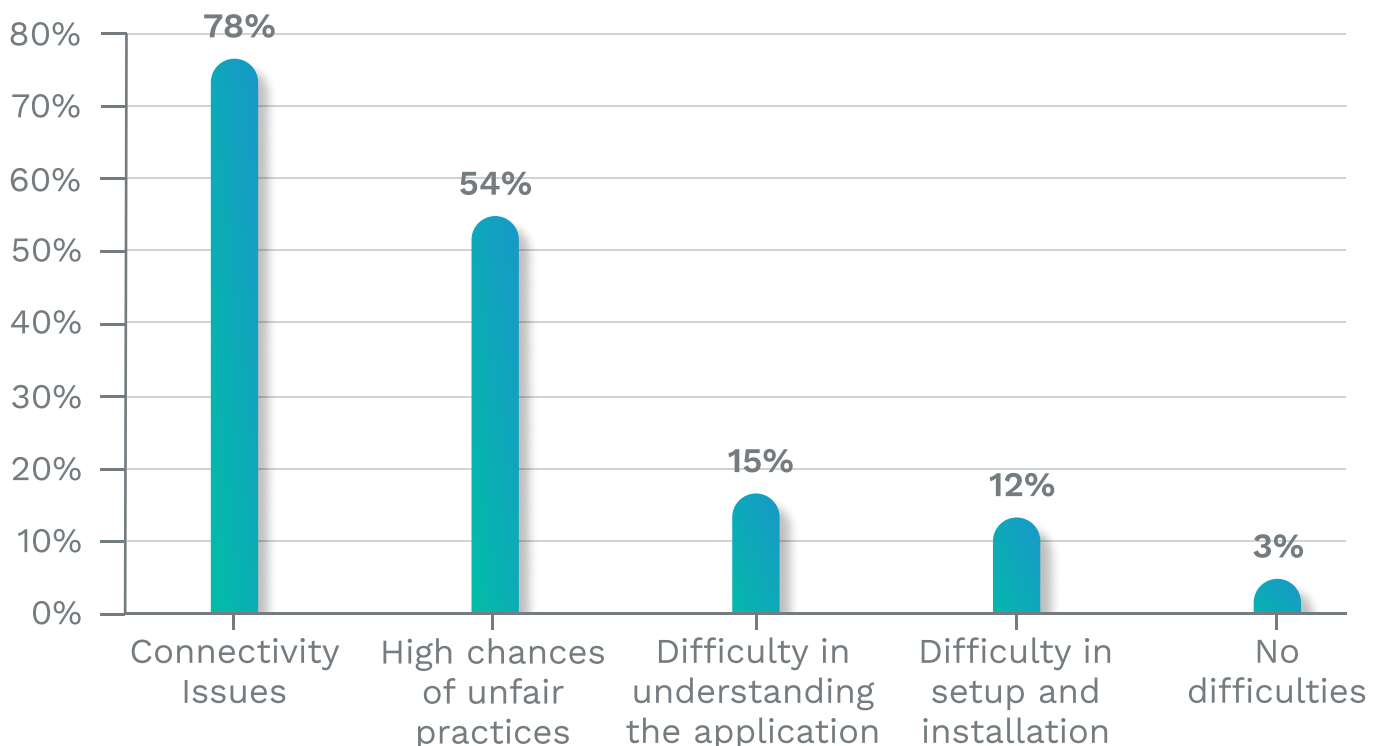


Fig. 3.1



**4 out of every 5** students have faced connectivity issues during their online learning.

These glaring challenges in examination management are a cause for concern. Exam management is one of the most operationally heavy and psychologically demanding parts of the educational journey for institutes and students. These challenges only serve to worsen these pressure points, and this can lead to disastrous consequences. Examination stress has been reported to be a leading cause of students ending their lives worldwide.<sup>[7][8]</sup>

These consequences are hidden, and are highly dependent on individual background, environment and personality, but with the mental health crisis that Covid-19 has brought only serves to make the bad even worse.<sup>[9][10][11][12]</sup>

Finally, every other student (1 out of every 2) has reported that they feel uncomfortable with the current online mode of education overall (Fig. 2.1).

# 04

## Drivers of change for the future



## Drivers of change for the future

The move to online education has changed the concept of education overnight, and technology driven online learning has emerged as an absolute necessity to sustain education. However, with this sudden change, there are some problems that need to be addressed for an efficient teaching-learning process.

To understand the problems and propose probable solutions for a remote future, we group remote education into two categories - Remote Classroom Learning and Remote Examinations.

### A] Remote Classroom Learning

When it comes to using online platforms for conducting remote classes, it is observed that **96% of the institutions** were using 3 main platforms, namely, Google Meet and Classrooms, Microsoft Teams and Zoom.

Though a few of these platforms like Google Classroom and Microsoft Teams offer services like scheduling an assignment, recording online classes and sessions, uploading class notes, etc., most of these platforms are primarily a video conferencing platform.

### Applications used by institutes for online classrooms

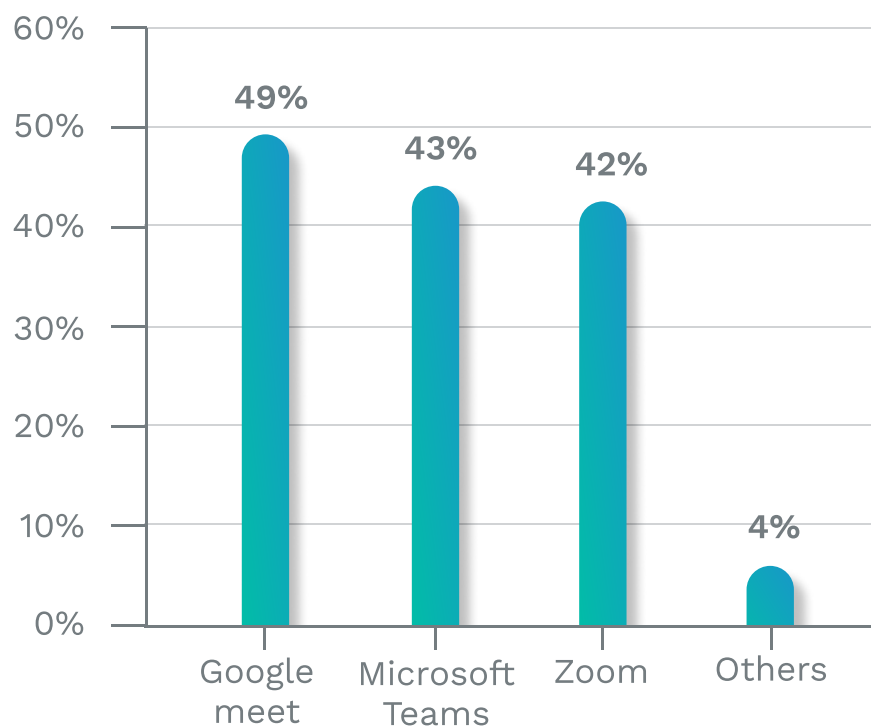


Fig. 3.1



**95.4%** institutes are conducting online exams currently.

## B] Remote Examinations

Remote examination management can be broadly expanded into exam scheduling, exam conduction, exam validation, and exam result generation.

### Examination Scheduling:

Most applications do not have a feature of scheduling examinations automatically. The faculty members have to manually add students to an examination room (as in Microsoft Teams) or need to manually send them platform login details, exam

questionnaires, etc. (as in Google Meet and other platforms). This process is not only inefficient but also time consuming, tedious, repetitive, error prone, and prone to integrity loss.

It is observed that Microsoft Teams and Google Meet are the two major platforms used by institutions to conduct remote examinations (Fig 4.1). Though these applications provide various features, the services generally revolve around online class scheduling and conduction, and primarily serve as a video conferencing tool.

### Applications used by institutes for online examination conduction

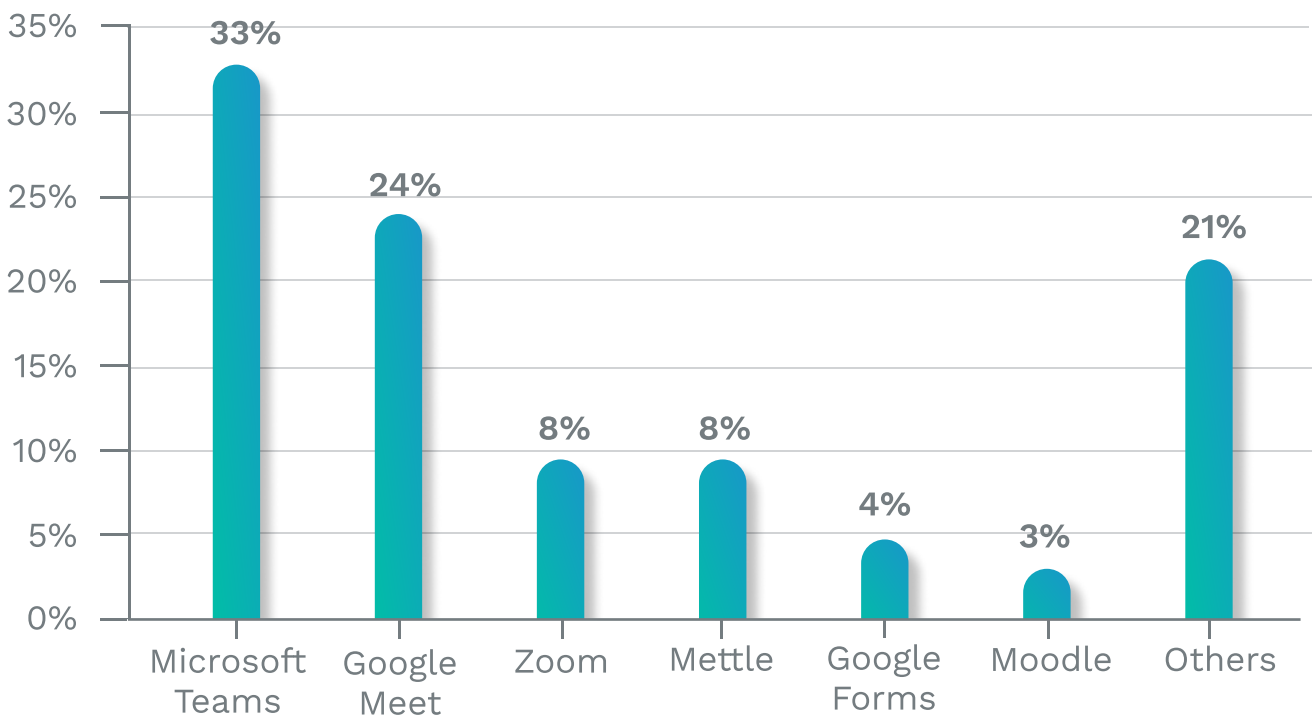


Fig. 4.1



**54%** of respondents say that online examinations have high chances of examination malpractices



Almost all these platforms rely on real time human supervision which turns out to be ineffective in preventing cheating majority of the time since it is very difficult to supervise up to 60 students all at once. Even though some of these applications provide a facility of recording a particular session, it is extremely challenging, inefficient, repetitive and time consuming for the faculty members to go through the recording of each student for every examination to detect exam malpractices effectively. However, relying only on visual cues to understand what is happening in the environment of an examinee is inadequate to conclusively identify exam malpractices.

Further, **78% of students** face internet connectivity and bandwidth issues (Fig. 3.1) and 1 in every 3

students faces platform instability problems while appearing for their exams. Smooth conduction of examinations is crucial but connectivity and technical issues can prove to be a major hindrance, thereby degrading the examination experience as well as integrity. A direct consequence of this is reputation loss for the institution, the damage from which is likely irreparable.

As seen in (Fig. 4.2) and (Fig. 4.3), **45% institutions** rely on human supervision for student authentication and exam malpractice detection and prevention. Human supervision during examinations does not inspire a lot of trust because 3 in every 5 respondents are of the opinion that the current measures are ineffective in detecting and preventing examination malpractices.

### Student Authentication Methods

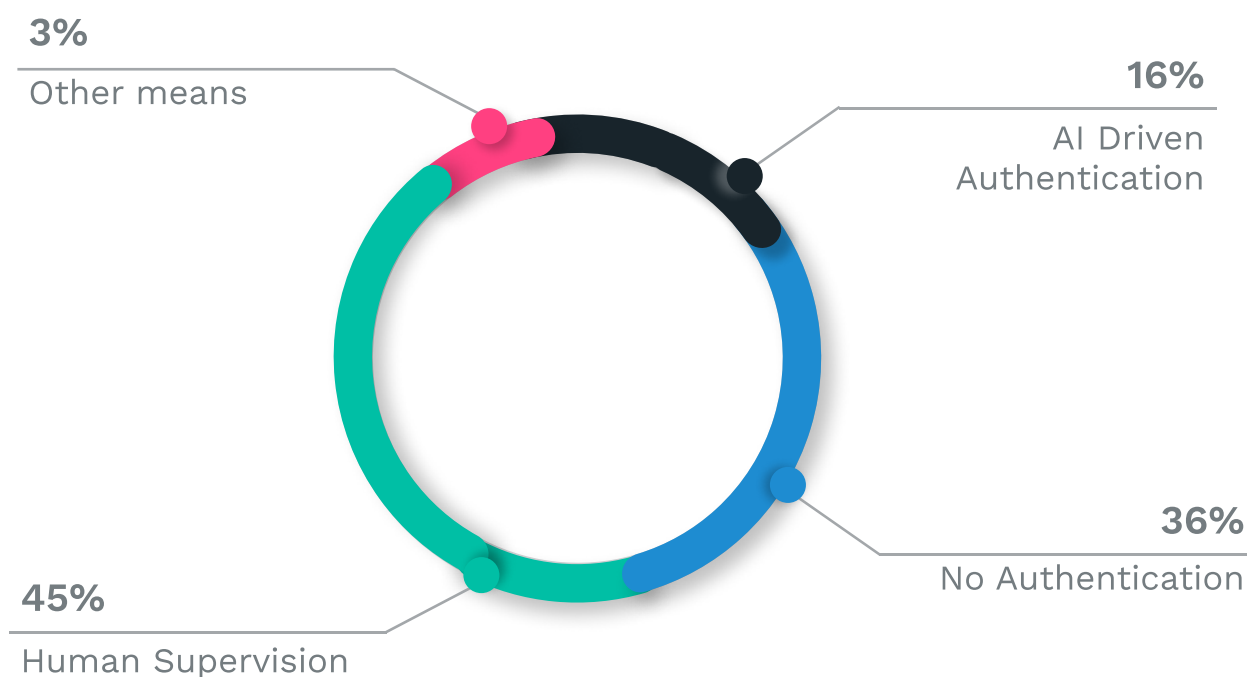


Fig. 4.2

Most institutions seem to have carried forward the tradition of using a classroom as an examination room, by using remote classroom tools as remote examination tools. However, the current situation highlights a

need for better tooling for the remote examinations use case. Moreover, a sustainable approach for the new world would suggest choosing specialized tools for specialized tasks.

### Measures for examination malpractice prevention and detection

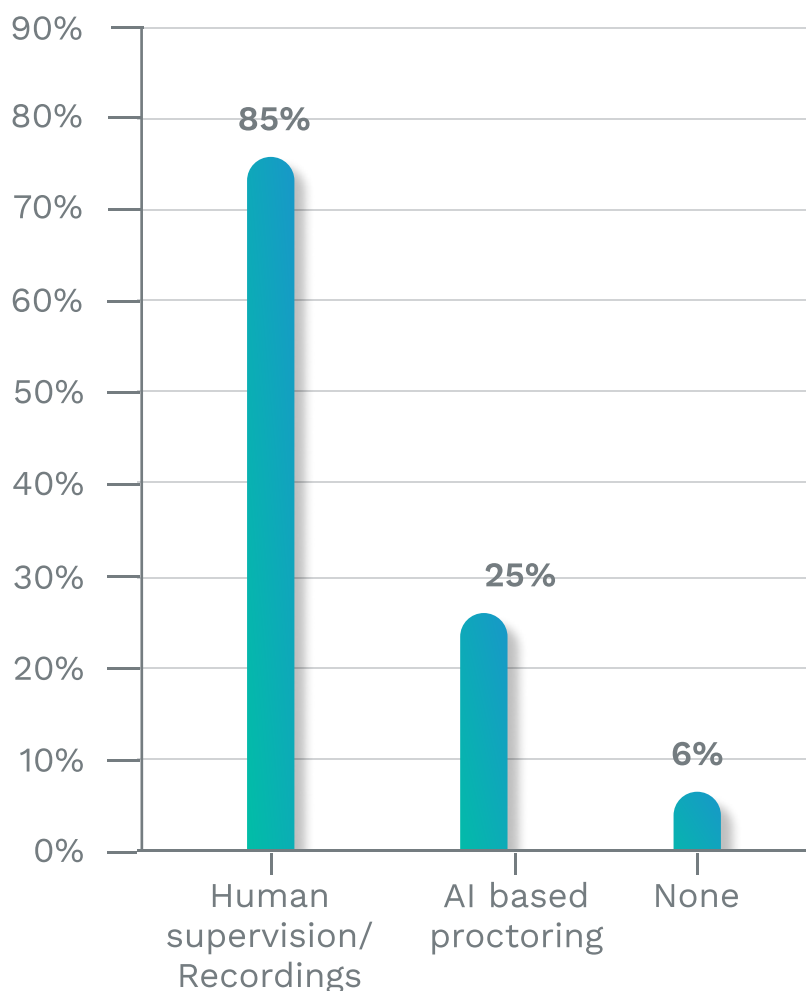


Fig. 4.3



**3 in every 5** students feel that their application is inefficient in detecting and preventing examination malpractices

## Result Generation:

Automatic result generation and analysis is one additional area that has a lot of scope for improvement. Currently, most examinations need to be accessed manually by the faculty, thereby increasing the workload, effort and time cost, which can otherwise be easily reduced with efficient automated result generation tools. Also, there is no facility of automatically generating a comprehensive analysis of the performance of students, to assist the faculty in understanding their students' strengths and weaknesses. This task also needs to be done manually and needs high investment of time and effort.

In a society like India where grades and results are considered paramount, it is surprising to see that there are barely any actionable decisions around examination results. Most institutions are unable to look beyond the scope of the current semester for the individual student, purely because current operations do not leave any bandwidth for activities such as personalized education counseling. Over time, this also runs the risk of students choosing alternative means of education where their individual needs may be served better. After all, they are the 'customers' of the education economy.

# 05

## Conclusion



## Conclusion

Though **91% of the institutions** are currently conducting online classes, only **33% of the students** prefer the online mode of education. In a time where going back to centralized education may no longer be a viable option, the urgency for finding the right solutions for the most pressing challenges mounts rapidly.

Countries like India are geographically, culturally and financially diverse, with several critical factors skewing heavily to extremes. Any viable technology solutions attempting to address the challenges faced today need to consider a multi-perspective approach - a perspective that reflects that of the people involved - from different regions, age groups and financial backgrounds.

Not every student may have consistent internet access. Some might simply not have the surroundings that are conducive to tasks that require focus, such as examinations. Some might not be able to afford laptops and might only have basic smartphones as their primary means of education. Moreover, the two stakeholder groups - faculty members and students - tend to be from vastly different age demographics, which may lead to differences in perception of the current reality.

Students - being the drivers of the education economy - have several alternative means of education

becoming more and more accessible for lower and lower costs. Alternative education has been growing at a fast pace, with platforms like Coursera having seen year-on-year growth of **60% globally**.<sup>[13]</sup> Alternative education in India has been seeing a compounded annual growth rate (CAGR) of **38% from 2016 to 2021**.<sup>[14]</sup> Institutions retain one significant advantage - reputation and recognition. However, there is a large risk of reputation loss due to the low levels of trust in remote examination management, as our research has uncovered. Revenue loss is a natural consequence of reputation loss. Adding operational inefficiencies to the mix only worsens the outlook for institutes that hesitate towards taking the necessary steps to adapt to a world that is evolving every day, many of which may not survive to see a post-pandemic world.

If we are to envision a future with digital education for all, we need to look for holistic solutions that address the core challenges for all groups - irrespective of their location, age and financial background. Therefore, an ideal solution must have the following characteristics - be resilient to connectivity failures; have a compassionate, personalized user experience that provides first-class support for all stakeholders; and automates tedious and repetitive processes to improve operational efficiency of institutes, helping them utilize their resources to serve their students better.

Educational institutions have a rare opportunity to take a long, hard look at what needs to be changed in a system that has a legacy of several centuries. The institutions that will take the steps to build the future of

digital education for all will be well positioned to recover and retain their reputation, and to lead this change into a new world where a sustainable technology foundation is the only certain reality.

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# 06

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# About Us

Cerebranium is an education technology company headquartered in Berlin, Germany. Cerebranium is built on a foundation of two pillars - deep expertise in building secure software platforms, and a background in academic research in Data Science and AI. We have set out to solve the most challenging problems in education that have been amplified during the Covid-19 pandemic.

Cerebranium's work and journey is covered by leading science journals like [Springer Education and Information Technologies](#) as well as leading media houses like [The Media Bulletin](#) and [Sifted.eu](#).

Our flagship product Promexa helps premier educational institutions prevent reputation loss with automatic examination malpractice detection and analytics in remote examinations.

We at Cerebranium believe that a sustainable technology foundation is key to building the future of digital education for all.



## CEREBRANIUM

We sincerely thank all participants from all 124 colleges and universities who took the time to share their valuable views with us.

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