



# Efficacy of Mobile **EdTech in India**

Mapping User Engagement  
to Learning Outcomes







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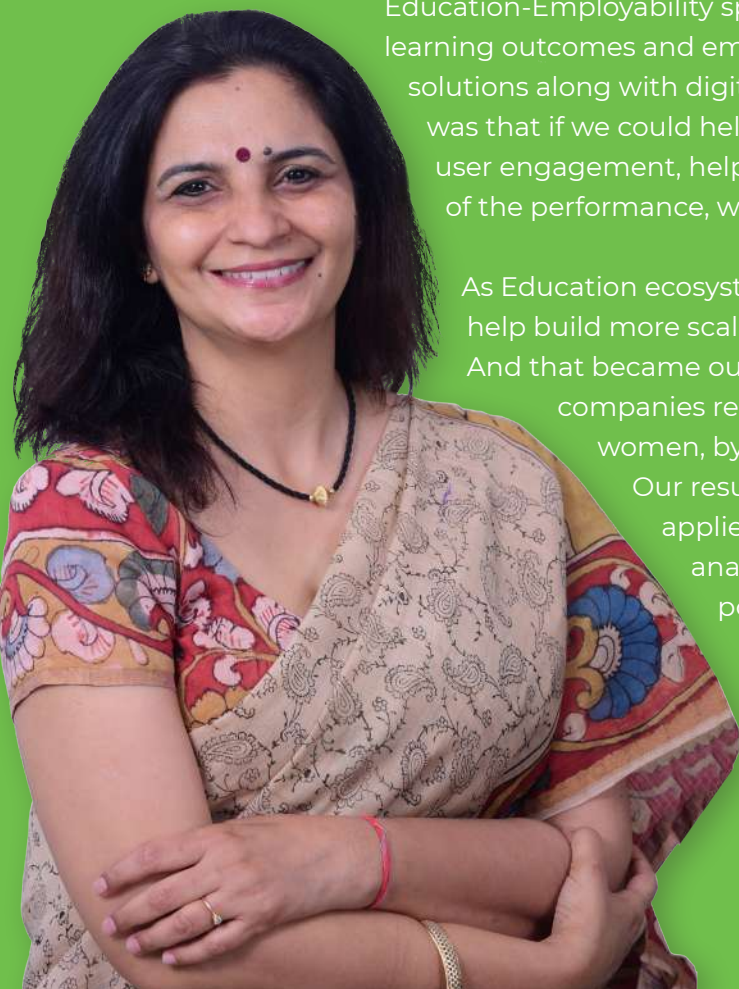
# Foreword

With increasing use of mobile Internet across our country, there is an inflection point for a lot of products and services that can reach people and solve their problems in a way that has not been possible till now. Mobile access has become ubiquitous today with lowering data costs and cheaper mobile phones. However mobile is largely used for social media and entertainment apps. At **Gray Matters Capital**, our dream is that the mobile also becomes a tool to deliver Education and Employability solutions to the next century. Mobile holds the promise of use friendly, convenient and cost effective delivery in local languages.

Yet, when we analyze user base of ed-tech companies, we see many of them struggling with low engagement and retention rates on their mobile apps leading to low monetization opportunities. The enthusiasm of mobile downloads rarely translates into effective usage or paid users. People are not completing entire lessons or dropping off at various points. In addition, Education as a sector is yet to see a number of companies scaling at a rate which matches the real size of the problem.

At **GMC Calibrator**, we work for 6 months with companies across the Education-Employability spectrum who are trying to bring improved learning outcomes and employment opportunities using both offline solutions along with digital mediums and mobile devices. Our hypothesis was that if we could help them focus on just three things - improve the user engagement, help enhance monetization and ensure optimization of the performance, we could pave the way for more scale.

As Education ecosystem investors, our search has been to find and help build more scalable solutions that can have large scale impact. And that became our quest through **Calibrator**. Our target is to help companies reach 1 million users, with 50% of them being women, by 2020, through focused support of the program. Our results have been surprisingly strong. We have applied both behavioural science and rigorous data analysis to understand the gaps from the customer's point of view and test for results post changes. Our experts have helped the companies plan out optimization and monetization strategies.







We are betting on mobile/digital technologies as enablers to democratize learning and employment opportunities and bridge the gender and opportunity gaps among the young people in India.

This report not only includes our learnings but also highlights analysis from multiple sources on the current state of the market. We reached out to entrepreneurs and customers to understand their viewpoints. We also spoke to industry experts to incorporate their thoughts. Today, we see a lack of mobile industry standard benchmarks for companies working in the education sector. With our dedicated work in the sector, and our analysis of data and behavioural inputs, this report is an endeavour to build those benchmarks over time so that entrepreneurs, investors and other stakeholders can benefit from it.

I would like to thank our mentors, cohort members and **GMC Calibrator** team, this report would not have been possible without their relentless efforts. ●

Happy Reading,  
**Ragini Bajaj Choudhary**

# #01

## Best of Times & Worst of Times With **MOBILE SELF-LEARNING TO EARNING**

Twenty year old Chandrakanta is from a remote village in the Nandgaon Block of Mathura District. Eldest of the five siblings with three younger sisters and a brother, her father was a farmer and her mother was a daily wage earner. The small two-room mud house could barely shelter the inhabitants, let alone her dreams. She wanted to become a teacher! She had taken the teacher eligibility test twice earlier but not got the cut-off marks. She was struggling to understand her level of preparedness to take the test. The village Common Service Centre introduced an online platform to her. With a second hand laptop, she started taking mock exams online, in the privacy of her home, giving her the “real feel” of the pressure of the exam. This boosted her confidence to take the exam without fear. She cleared the exam, got her appointment letter from the District Education Board. Today, her regular monthly salary makes her an asset to her family.

Meanwhile, Prakash is from Bijapur, Karnataka. Unlike Chandrakanta, he tried taking government exams at his home-town but he could not clear them. He did however have a skill which he felt could help him in finding a job. A valid driving license. Leaving his home, he came to Bangalore, driven, quite literally, to find a better future. Within a couple of weeks, he landed one. He found a mobile app for drivers, using which he could manage his livelihood, by driving. He is part of India’s growing pool of gig-economy workers now whose income and livelihood depend on their mobiles.

With increasing mobile penetration and reducing data costs, millions of Chandrakantas and Prakash’s now have digital access, often on their mobile phones. Call them “Next Half Billion Mobile Users” or “Middle India,” companies have realized their market potential. And they are finding ways to reach them, using voice and vernacular channels as two key pillars. The question we are asking in this report is does this

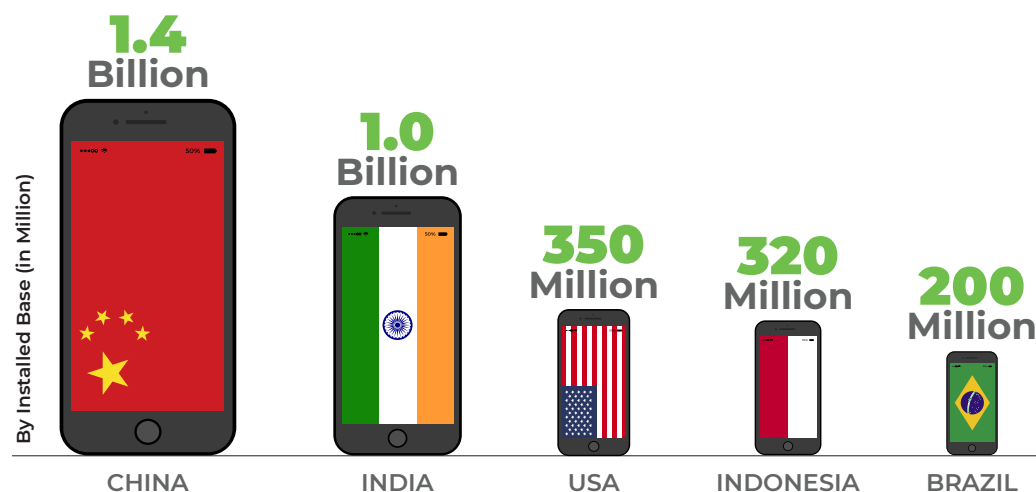


increased access really help them in finding self-learning opportunities as Chandrakanta did or earning opportunities as Prakash did? And if not, what can cause this shift to happen?

## UNDERSTANDING INDIA'S MOBILE & INTERNET REACH

It's no secret that, India, the second most populated country in the world with a staggering 1.3 billion people (World Bank) could surpass China (UN Report) to become the most populated country in the world by 2024. And demographically, we are one of the countries that houses the most young, with over 30% of our country being between 18 to 34 years of age and 260 million school going children. No surprises for the mobile boom in the country. Let's start with the basic facts. India is the second largest internet using population in the world and also is the biggest smartphone market after China (Quartz). According to a 2018 study on the mobile economy by GSMA, India had an estimated 680 million unique mobile subscribers. Out of these, more than 300 million use smartphones. This figure is expected to reach 337 million by the end of 2018, according to the latest forecast by eMarketer, a US-based market research firm.

### TOP FIVE SMARTPHONE MARKETS BY 2025



Source: The Mobile Economy 2018, GSMA

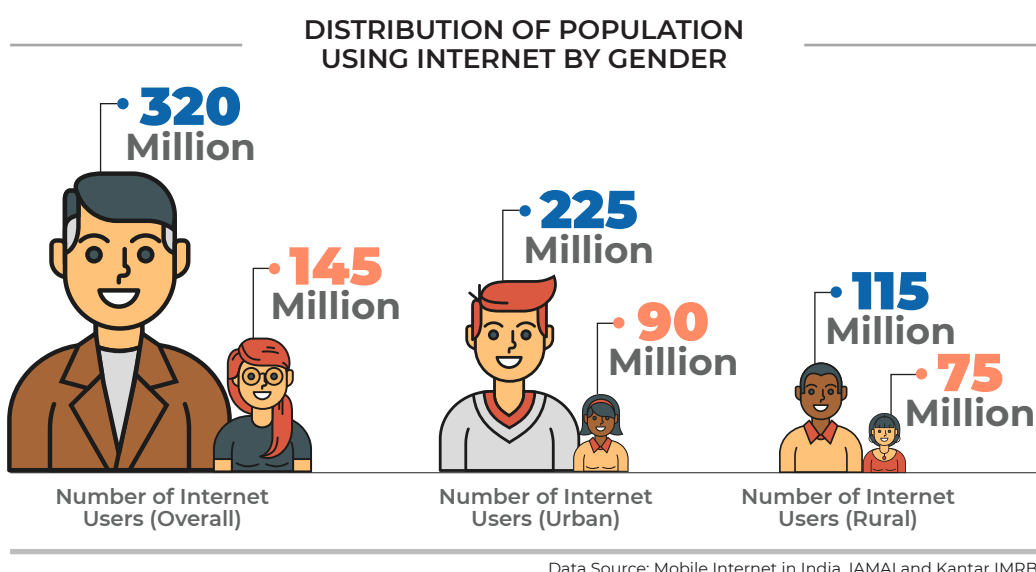
More smartphone users signify more number of internet users in the country. India has taken a major leapfrog since the days of the first publicly available internet service in India in 1994, launched by Videsh Sanchar Nigam Limited. Per a report from IMAI (Internet and Mobile Association of India) and Kantar IMRB, the number of internet users in India stood at 481 million till December 2017 (IAMAI) and was expected to cross half a billion mark by June 2018. This, by the way, is still a relatively small proportion of the population (37% approx.), so there's more scope for growth. Majority of

these internet users use internet from their mobiles. And with Reliance Jio overhauling the playing field over the last few years, all the major telecom operators in India have been bringing down internet data charges; leading to more adoption of internet via mobile phones.

## WHERE DOES THE PROBLEM LIE THEN?

### The Digital Gender Divide

As per the December 2017 IAMAI report, the internet penetration rate is low for the rural areas where the overall internet penetration was observed at 20.26%, which is anywhere not close to the penetration observed in urban areas (64.86%). The Urban-Rural gap is still visible, with 38% of the rural population having access to the internet. There is also a significant gap witnessed when we draw an analogy between internet users by gender. Out of the total number of internet users in the country, only 30% of users are female. That's about 140 million female internet users, a number that needs to see a considerable upward shift for a more swifter and better online market. This is specially significant, given the positive self-learning behaviour we observed among women we tested our EdTech solutions with. More on that, soon.



### Network Drops

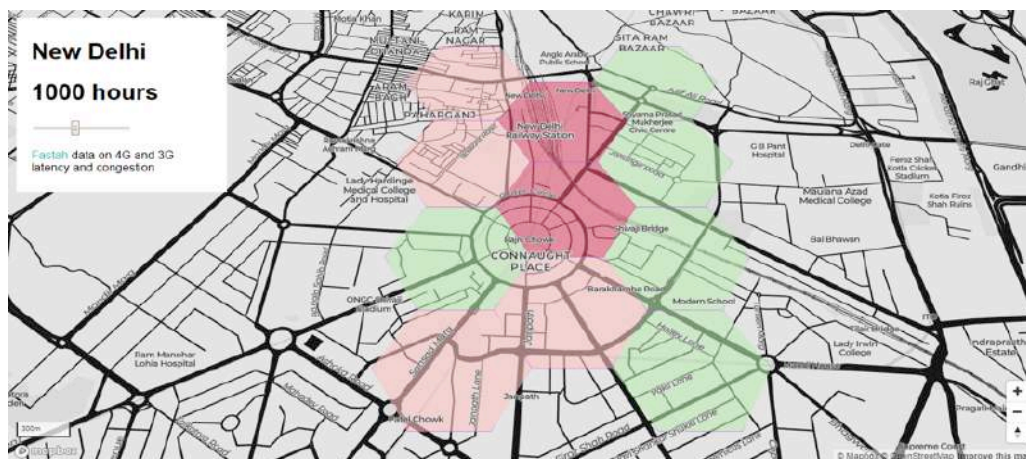
Imagine making a payment transaction on your mobile just when the network drops. Or watching a video that keeps hanging. The second critical issue which the mobile network operators should put under their radar is the problem of 'network latency' or in simple terms, network slowness. Latency is an indicator of bi-directional signal strength and hence a more reliable metric to understand network reachability. This measures the time a packet of information takes to go from its source to its destination in the system. As Internet-based businesses spread widely and grow deeper, network drops



can cause detrimental consequences, from loss of business to loss of learning and more. A look at the figures below shows the network latency and congestion across a main city like New Delhi for just one network at three different points of time during a day. The red zones depicting higher network congestion and the green zones showing lower network traffic. Add other cities, add other busy time periods and add other networks, you can estimate the size of the problem that dead zones can create when mobile Internet becomes really pervasive and when livelihoods depend on it. We will evaluate later in the report how optimization can help companies manage this issue.

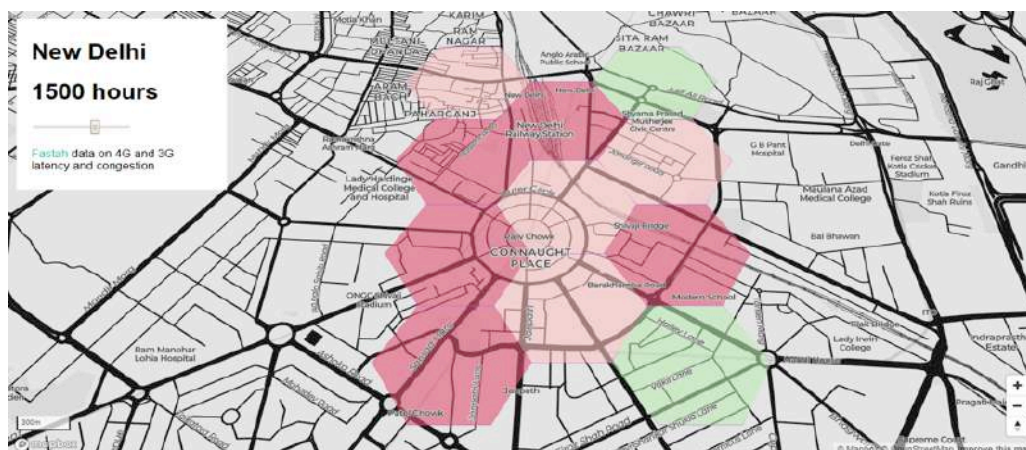
### Variation of Network Quality over the course of a typical weekday, in terms of 4G and 3G latency and congestion

Figure 1: Illustration of Network Variation Across Different Pockets in New Delhi at 10 a.m



Location: New Delhi, Source: Fastah Project

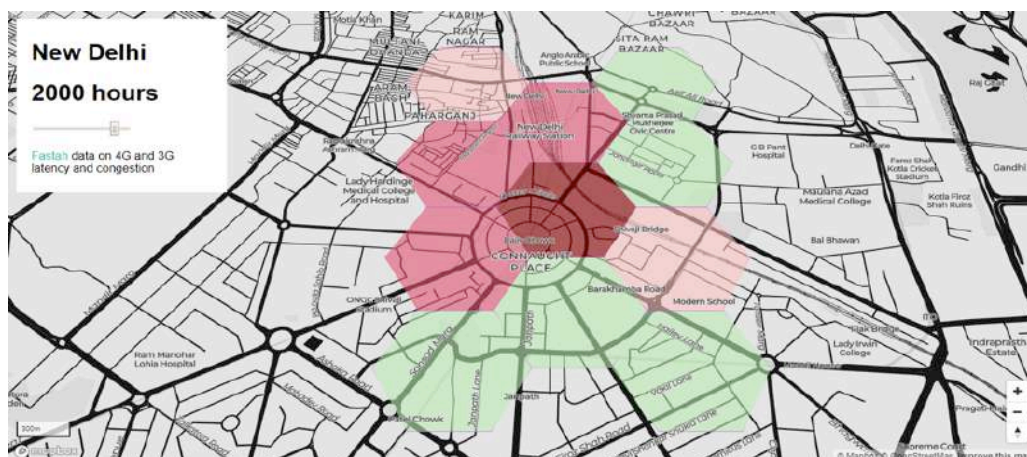
Figure 2: Illustration of Network variation across different pockets in New Delhi at 3 p.m



Location: New Delhi, Source: Fastah Project



**Figure 3: Illustration of Network Variation Across Different Pockets in New Delhi at 8 p.m.**



Location: New Delhi, Source: Fastah Project

## Usage of Mobile for Self-Learning and Earning

Now assume that the two issues mentioned above are addressed. Telecom companies are already fighting a fierce battle for access and network. In such a perfect world, how will people use their mobile time? Even if the access becomes more equitable and network becomes more optimized, will people use mobile for self-learning and earning opportunities? If not, where's the gap? Lack of awareness? Lack of engagement? Let's find out.

Let's drill down deeper to look at the problem from the customers' side. ●



*“India’ mobile first businesses need smarter networking APIs. The amplified usage of mobile networks leading to higher network latency problems should be treated no differently than a public infrastructure problem as it leads to increased economic cost experienced by people dependent on the mobile Internet for livelihoods. It is imperative to ensure a better quality of internet experience if mobile internet economy has to scale in the future.”*

— SIDDHARTH MATHUR, CEO and Founder of Fastah



# #02

## WhatsApp or Learning?

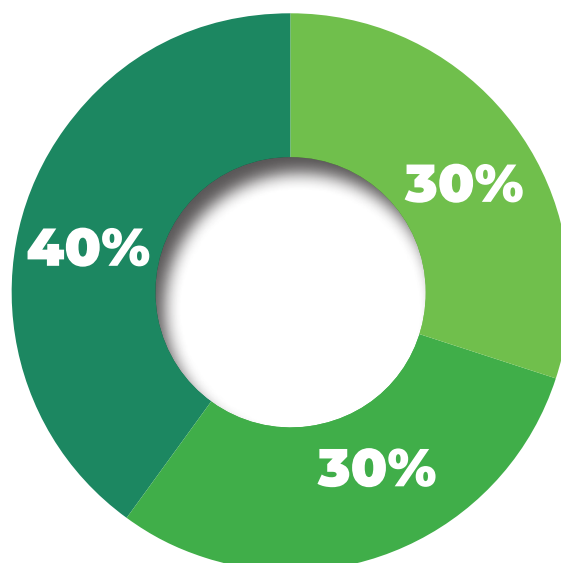
# WHAT'S YOUR MOBILE MOMENT?

Internet businesses today have come to signify a huge market in India for any kind of industry, be it, e-commerce, financial services, digital media etc. A joint report by Google and The Boston Consulting Group (BCG) said, "Indian consumers, especially women and new internet users from smaller cities, are going to drive digital consumer spending, which is expected to more than double to \$100 billion by 2020" (Livemint). McKinsey estimates that India will be home to 100 million people earning less than \$4,000 per year by 2025. These are people joining the digital world for the first time. But, and that's a big BUT, where does this time go?

The existing usage trend and pattern of the Internet and mobile-based applications in India largely comprises of social networking and entertainment applications. A study done by Omidyar Network from a sample of 3 lakh Indians reported, "An Indian mobile user typically spends 200 minutes per day on the internet on an average". 40% of this time accounts for social and communication apps (such as Facebook, Whatsapp, Instagram etc.) and 30% of this time is consumed by all the entertainment applications (such as, Youtube)."

### USAGE OF INTERNET WITNESSED ACROSS VARIOUS SECTORS

200 mins/Day  
App Usage



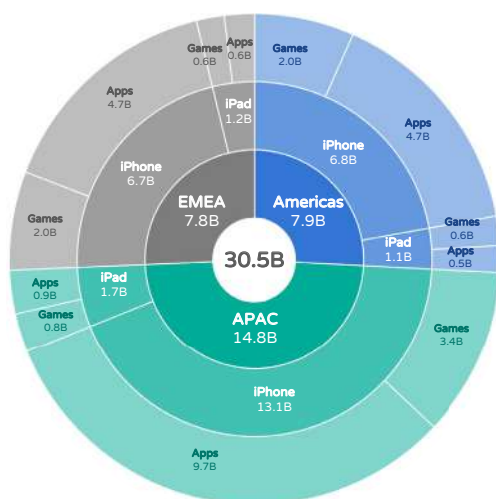
- Social & Communication:  
Facebook, WhatsApp, Instagram (38%)  
Others (2%)
- Entertainment:  
YouTube (38%)  
Others (16%)
- Other Categories:  
Utilities (11%)  
Browser (8%)  
Gaming (8%)  
News (2%)  
Commerce (1%)



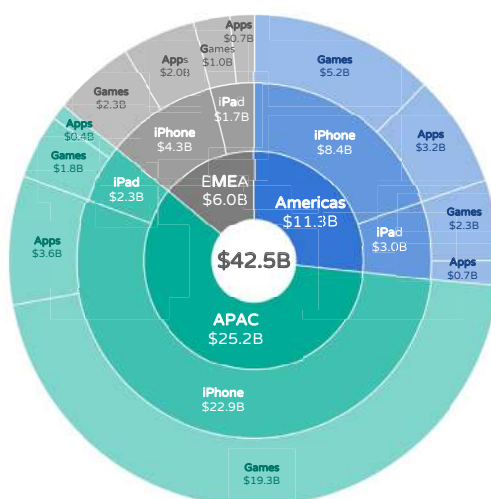
Users have a particular sense of likeability for these apps that in return drives more time being spent, which we call ‘user engagement’. This does not only hold true only for India. Mobile Entertainment applications gain the highest amount of traction across different parts of the world. A report by AppAnnie (an app market data and insights company), “showcased that gaming application constitutes 31% of the total downloads worldwide. Interestingly, the total spend over such apps was 75% globally in the report. They found that people are more willing to spend on gaming applications across different regions (Figure below).” However, this study was exclusively done for the consumers pertaining to iOS applications.

#### APPANNIE DATA ON USAGE OF INTERNET BY IOS USERS ACROSS THE WORLD

iOS App Store Downloads in 2017



iOS App Store Consumer Spend in 2017



Source: The Data Behind 10 Years of the iOS App Store, 2018-AppAnnie

***“Successful EdTech ventures call for a collaborative approach that integrates the mandates of regulators, educators, learners and institutions. Even if one is left unaddressed, the solution ceases to scale up. Add to it the larger ecosystem of technology platforms and publishers, the interconnections become very complex. Hence, while the EdTech companies start with a passion, they reach a stalemate when it comes to ‘who pays.’”***

— RISHI KAPAL, EduGild

Most reports stop here; giving a current picture of the market – “The Next Half Billion” that all Internet companies are trying to reach. Our goal is to understand how users look at learning. To get a sense of this, we conducted user labs with behavioural science firm FinalMile and did detailed user testing surveys in collaboration with Career Launcher (CL Educate) with 2,000+ such users who represent the so-called Middle India across age groups and professions – students, teachers, youth who are government job aspirants, grey and blue collar workers. Here’s what we found.



Interestingly, **97%** of these users, with **70%** of them being women, had used some mobile app, either for learning or for finding opportunities for earning.

## RESULTS FROM OUR USER TESTING

### FEEDBACK FROM PEOPLE ENTERING WORKFORCE

**1** Students in the age group of **18-25** preparing for competitive exams continue to use test preparation mobile applications in addition to class room coaching. (this was validated by over **300** students we interviewed for test preparation products)

**2** Mobile applications are today an integral accessory to test preparation, however they are not yet the sole source. These users are open to a hybrid source via a digital classroom along with a learning app.

**3** Majority (**85%**) of the test prep users are open to paying **₹100-250** per month for coaching apps.



### FEEDBACK FROM PARENTS WITH YOUNG CHILDREN

**1** All parents believe reading forms the basis of academic success.

**2** All parents in the feedback group had used or were open to using an mobile application for complementing their child's learning and development.

**3** Out of the parents surveyed, **50%** were ready to spend more than **₹250** per month for enhancing their child's learning through mobile based application, while the other 50% could pay **₹100-250** per month.

### FEEDBACK FROM HIGH SCHOOL STUDENTS IN GOVERNMENT SCHOOLS

**1** Of the **150+** high school students reached out to from government schools, **50%** of the parents did not have smartphones or were unwilling to give access to smartphones to their children.

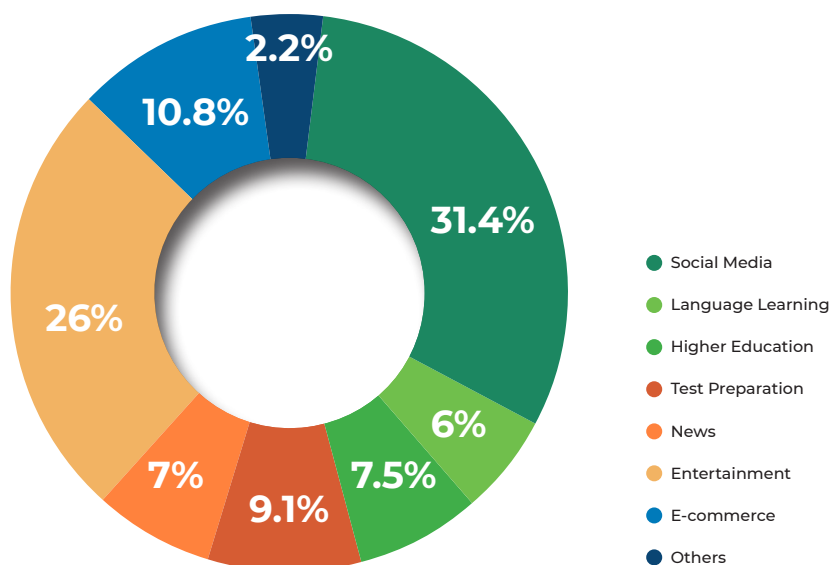
**2** Internet connection was not as widespread at homes and the users needed classroom access to download data once in a while or other methods like fire sticks for accessing data.

**3** All the users from the feedback had used a mobile application for learning and upskilling. **70%** of the users preferred content in Hindi.



### CUSTOMER SURVEY SHOWCASING PREFERENCE OF DIFFERENT MOBILE APPLICATIONS

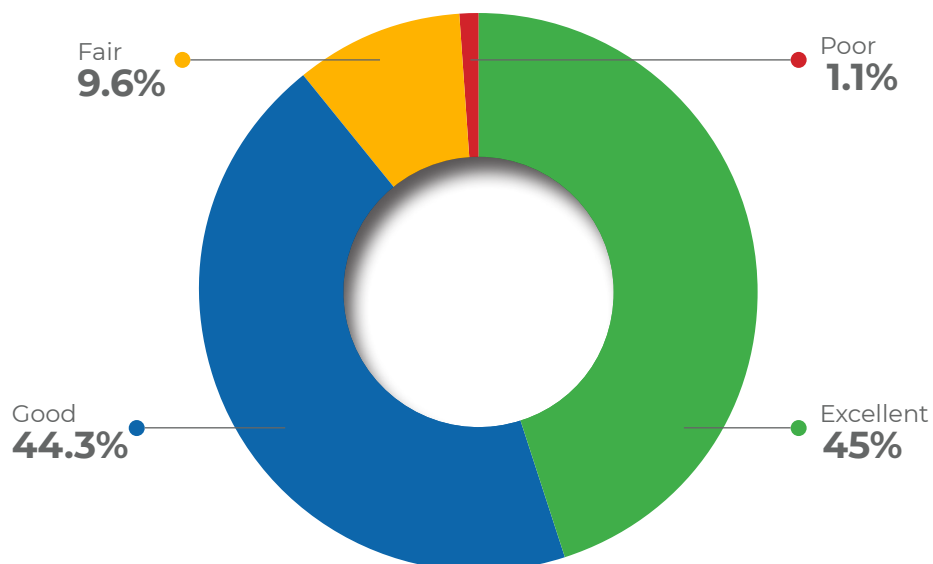
Most Preferred Mobile Applications by the Users



Source: GMC Internal Survey

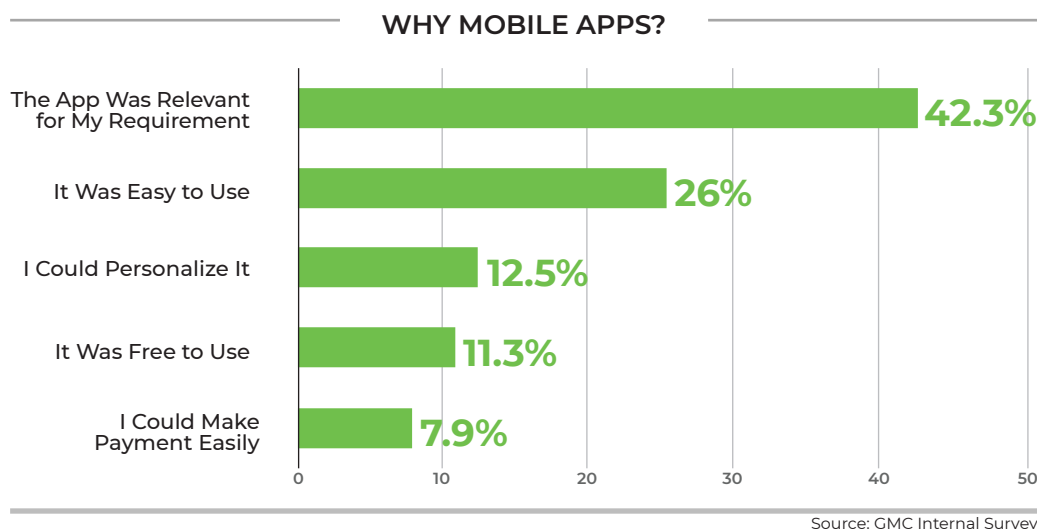
Facebook, WhatsApp, Instagram and Snapchat were amongst the preferred apps of the users. This was followed by YouTube, Hotstar, Netflix. Majority of the users reported having positive experiences with the products they had downloaded and used.

### USER'S EXPERIENCES WITH THE MOBILE EDUCATION APPS THAT THEY USED



Source: GMC Internal Survey





Relevance and ease of use were important considerations for the users. Contrary to common perception that users won't pay for such products, we actually found that if the product was relevant and easy to use, users did not mind paying a price that was affordable.

***“Given the still nascent stage in usage of mobile EdTech in the market, the findings from such detailed user testing can go a long way in driving adoption of mobile applications for learning and skilling.”***

— NIKHIL MAHAJAN, Executive Director & CEO,  
Enterprise Business, Career Launcher

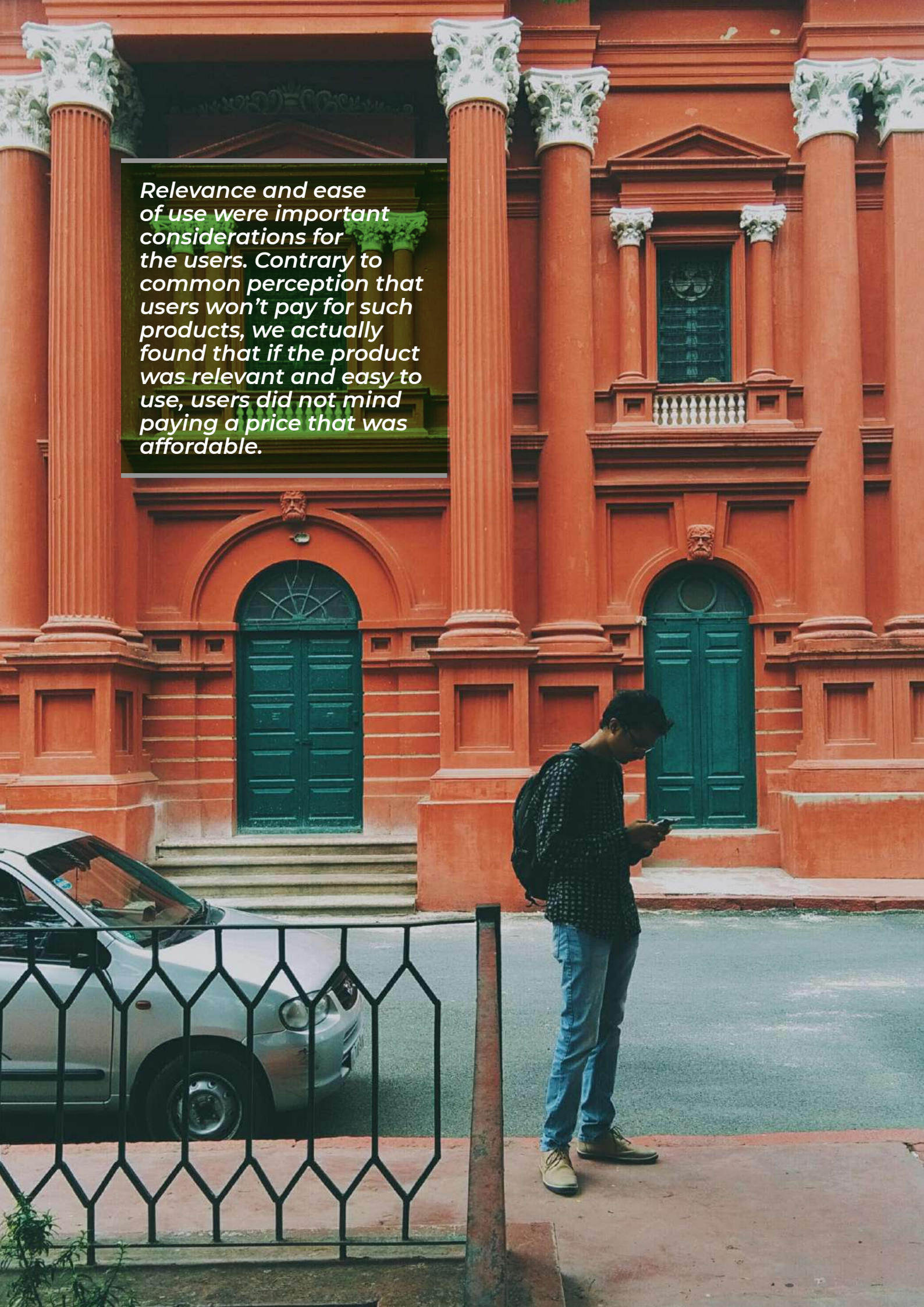
However, awareness about mobile education products is still low. The only ones our surveyed audience had used were either ones for test-preparation like Byjus and specifically, within test-preparation apps, a few for government exams as well as apps for English language skill-building like Duolingo. That shows the aspiration of the users with regard to self-learning as well. Their focus is on getting jobs or doing better in jobs with help of English, not just learning for the sake of it. On the other hand, for younger children, we found parents actively look for resources that will improve academic learning and specially reading ability.

Let's flip the question and ask how the Education industry will benefit if there is a greater shift towards mobiles and who will pay for this? ●





*Relevance and ease of use were important considerations for the users. Contrary to common perception that users won't pay for such products, we actually found that if the product was relevant and easy to use, users did not mind paying a price that was affordable.*





## #03

## Mobile Learning and EDUCATION OUTCOMES

No matter how much investment has gone into Education, fact is, we have, to some extent solved the problem of primary education access. But, we are still far away from achieving the learning or employability outcomes we need. ASER from Pratham stated that a quarter of all children in Standard VIII in rural India were unable to read a Standard II level text and a third were unable to solve a 3-digit by 1-digit division sum. We have a gap of over 6 million teachers in our country today. Over 60 million children are out of school. Only 15% of our youth are addressed by formal higher education system. Meanwhile 25% of our workforce are shifting towards on-demand work, often, using mobile as a

worktool and joining what is termed now as the gig-economy. Jobs

are changing, getting automated and making many people irrelevant. A life-time guarantee of employment is no longer a guarantee most Educators or Employers can make..

In this age of increasing human irrelevance, can digital education and employability led by mobiles become a tool for byte sized learning, certifications, on-demand jobs and more?




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*“Over the next few years, another 500 million Indians will access internet using their smartphones. This is creating tremendous opportunity for a new wave of EdTech innovations that can truly scale as well as monetize. What we need to focus on is that these innovations are truly customer and user-centric with sharp focus on helping achieve outcomes instead of just pushing “good” content. At the same time, we need continued work on our policy frameworks and other public/market infrastructure that will enable the innovation ecosystem to thrive and in turn, help improve education and employability outcomes for millions of people in the country.”*

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— NAMITA DALMIA, Omidyar Network

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As a matter of fact, according to KPMG and Google's report 'Future of Online Education in India', the online education market in India is expected to grow to \$1.96 billion by 2021, with 9.6 million users. The highest growth in online learning by 2021, according to the report, will be in reskilling and online certifications followed by primary, secondary supplemental education and test preparation. And as per a study from Zenith Consulting, by 2019, about 79% of India's internet users will be mobile. The mobile-based learning platforms are already open for public access and will become more accessible with the increased number of mobile phones and internet users.

A report by Internet and Mobile Association of India said that 50% of the mobile users are less than 25 years old, including students and young professionals. That makes it roughly 250 million mobile users who could potentially use it for education.

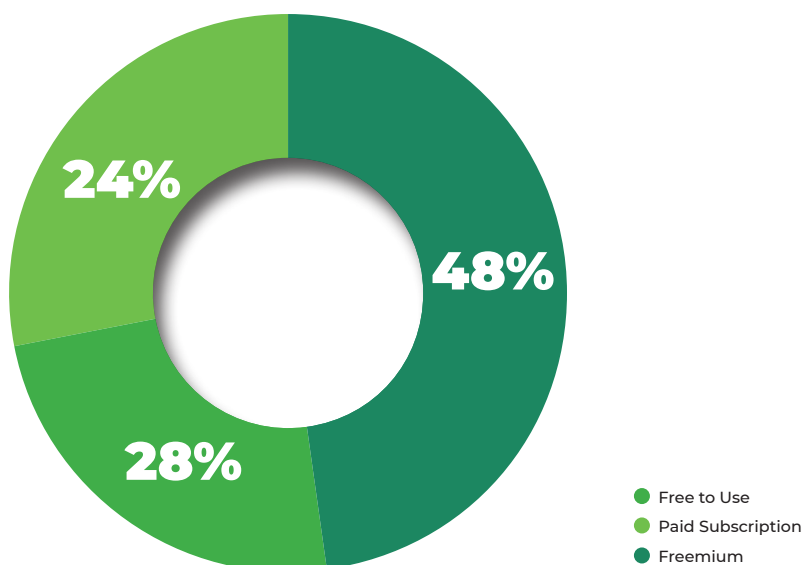
But, how can entrepreneurs help this potential number utilize their energy towards learning a new skill, be it learning languages, preparing for academic and competitive exams or any other learning tool to enhance their employability?

We spoke to 42 Education entrepreneurs to understand their views on this. 60% of them have mobile apps, while 40% do not. And their reasons to build a mobile interface vs. other choices stemmed from a need to provide a better access for their customers, improve their product visibility and also, to drive better monetization.

Interestingly, among the ones who had mobile apps, most of them are thinking of ways to monetize them; either through a freemium model or a paid model. This mirrors the customer expectations we saw earlier where we saw customers willing to pay for good solutions.

#### ENTREPRENEUR SURVEY DEPICTING PREFERRED MODEL FOR THEIR APPLICATIONS

What kind of subscription offering do you have on your mobile app?

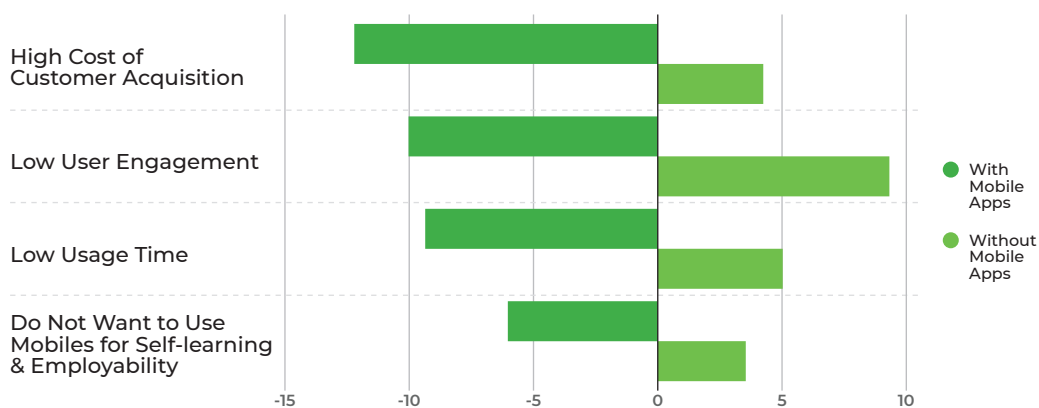


Source: GMC Internal Survey

We saw an interesting difference between companies that have mobile apps (in Light Green) and the ones who don't (in Dark Green). Those with mobile apps felt the biggest issue for them lay in the high cost of customer acquisition along with low user engagement. To a lesser extent, they pointed out that there are people who just are not motivated to self-learn. Those without mobile apps still highlighted low engagement as an issue which leads, in turn, to low usage time, but did not feel customer acquisition would be a big challenge.

#### ENTREPRENEURS WITH MOBILE APPS Vs ENTREPRENEURS WITHOUT APP

Top Two Challenges in Scaling up with Mobile Apps in Education



Source: GMC Internal Survey

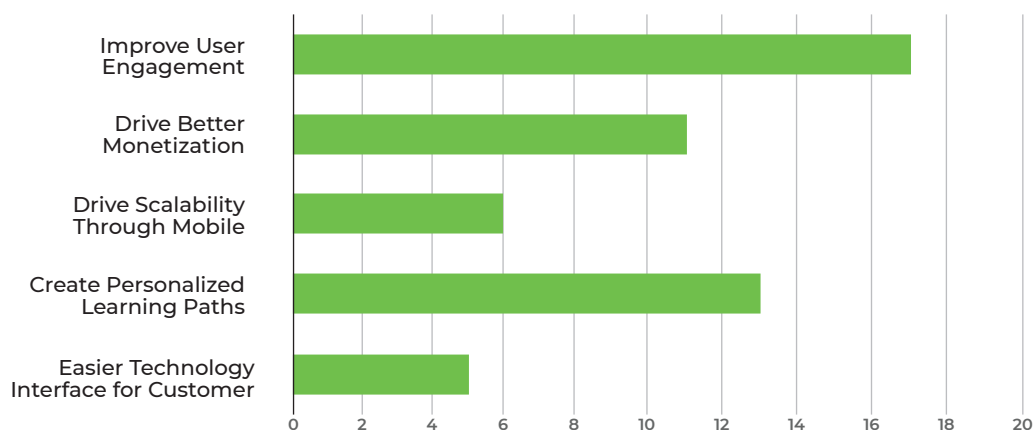


A broader look at the market data, echoes this trend. Of the 4,500 EdTech firms tracked by Tracxn, we found that 25% of them today have mobile apps. And just about 50 odd have downloads greater than 1 million. Getting customers to their app is the first hurdle. Forget acquiring customers, even if customers download the app, there is no guarantee they will pay or engage. On the other hand, the highest funded companies in Education and Employability today have all built strong mobile apps and digital presence. So where's the gap?

When we asked the entrepreneurs about challenges they face and what they would like to strengthen in their mobile apps, given a choice, most said they struggle with engaging users and would like to improve that. Using technology to create personalized learning paths and driving towards improved monetization are other asks they have.

### WHAT ENTREPRENEURS WITH MOBILE APPLICATIONS WANT TO STRENGTHEN

If you had a choice, what would you strengthen in your app? (Choose two)



Source: GMC Internal Survey

Beyond just mobile, there are enough innovations for deploying EdTech for new age learning: building neuroscience and cognitive programs for EdTech solutions, incorporating augmented reality, virtual reality, artificial intelligence, natural language programming and the like.

However, EdTech is not the end by itself. It is just the means to an end: the real outcomes needed are improved learning, skills and employability. Today, many of the EdTech solutions are building scale based on digital “content” they share and the widespread access they provide. And many current education apps have taken the route of providing information and content rather than shifting the focus to outcomes on learning and jobs.

While that gives them downloads, and growth, we believe that the solutions that will be really effective for customers and also build long-



term profitability for the companies will also enable a clear end result for the user, using both offline and online channels.

The entrepreneurs highlighted other three key perceptions they face around using mobiles for self-learning to self-earning:

- Consumers from Tier II and Tier III cities still believe in classroom based learning and to make them acquire mobile based learning will be difficult.
- With mobile based learning/skilling app, customer does not see the real value as these are not recognized or accredited, it is just used as tool to gain knowledge.
- Progressive web apps will be a bigger trend in education over native apps. The biggest reason being that one can run all the functions of a native app (including push notifications) and take less than 10% space a native app would take.

From our work with the Education companies so far, we found a few interesting points that address the perceptions raised above.

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*"I believe there is a shift which is happening where learner is using multiple modes for learning whether its book, digital, mobile, online or hands-on. This will further continue. This is the reason why we at S Chand group have transitioned from book publishing to complete education services including digital, mobile and curriculum services. I think in next few years we will see this increasing at a fast pace with mobile becoming a significant medium for personalized learning and test preparation. However the big picture will be a combination of physical with digital with each playing a complementary role. In this fast evolving market companies will need a couple of things to build scalable businesses – firstly, develop deep understanding of teaching and learning process and using technology to enhance this . Secondly, sales and distribution will be the key which has been the challenge with a lot of companies. Here they will have to build innovative ways to increase their reach."*

— VINAY SHARMA, Business Head, Digital & Services at S.Chand Group

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## OUR LEARNING

- Our user testing showed that users in Tier II/Tier III cities, specially young girls and women, sometimes find it easier to use the mobiles as a tool for self-learning. While many schools have traditional computer labs access for self-learning is restricted based on schedules and is time-bound. Older girls, in many cases, who are not allowed to leave homes, just for learning, can use their mothers' phones for a couple of hours.
- Many of them have strong mental models which are more long-term than just scoring marks. They see Education and Government jobs as a window of opportunity. The apps however, need to have a simple architecture, provide structured choices and limit the number of steps to undertake any task to seem less daunting for the users.
- Meanwhile, on the need for certifications, we found users using mobile apps for practice and for getting a sense of progress towards their goals. This is specially true if their motivation is not just exam preparation but actually ensuring jobs.
- While progressive web-apps might become more important, we found a significant need to ensure apps are optimized. For example, users are loath to download apps greater than 25MB. Vernacular voice and chat enabled apps, provision of offline content and and summary content help reduce the potential issue of network drops.

### What Does This Tell Us?

Imagine three groups of users for mobile self-learning to earning:

- Those who are self-motivated. They will learn anywhere and everywhere.
- Those who need a nudge to engage with self-learning-earning apps. Can behavioural science and data play in role in engaging such users?
- Those who do not want to self-learn. They might need multiple other ways including direct involvement, role of influencers to shift their mindsets.

Traditional viewpoint says that only the ones categorized as the self-motivated learners can benefit from mobile self-learning. We believe, the ones categorized as 'those who need a nudge' above can also engage with mobile self-learning to earning opportunities, given the right inputs and motivation. And that starts with behavioural understanding of users. In the next section, we will see how behavioural science can help improve user engagement. ●



# #04

## A Behavioral Nudge for MOBILE ENGAGEMENT

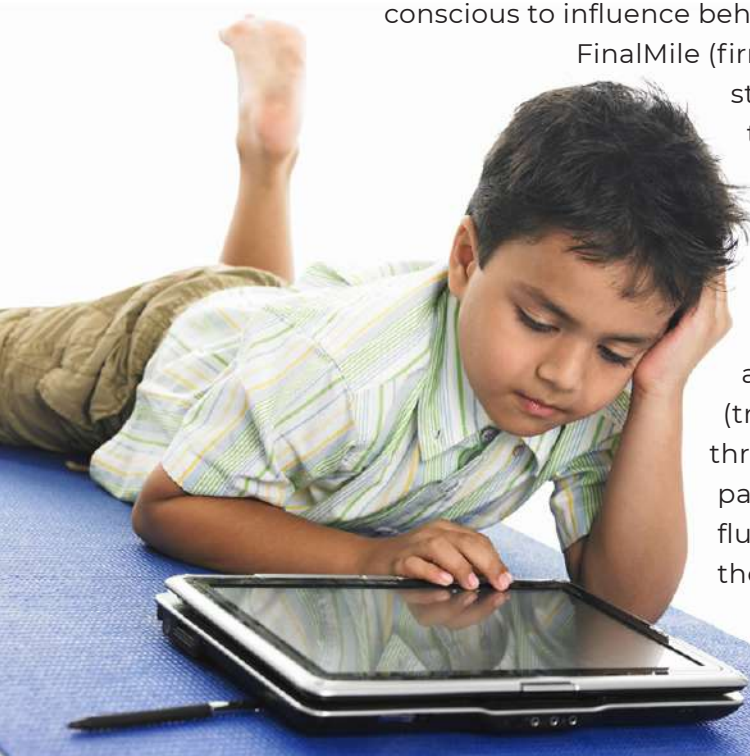
The need to drive impact in the EdTech space is imperative, and while there has been a flurry of activities, initiatives and products in the space of self-learning with high intentions and passion for change, envisioned impact has not been delivered. Self-learning mobile apps have revolutionised access, and while access to high quality educational content is important, it is not sufficient for learning and behaviour change, especially when behaviour is self-motivated.

*“Behaviour change is not easy and delivering impact is even harder. It requires a deeper understanding of the brain to design simple, yet effective interventions to influence behaviour in the desired direction.”*

— ANURAG VAISH, Founder, FinalMile

Driving behaviour change begins with decoding current behaviour. Behavioural science research elucidates that 99% of our decisions are non-conscious, mandating a need to look beyond what people say to seeing what they do, how people make decisions and more importantly why they make the decisions they make. This core behavioural understanding, informs the design of simple yet effective interventions for the non-conscious to influence behaviour, for measurable impact. For example, in a

FinalMile (firm which practices behaviour architecture) case-study of reducing accidental deaths through trespassing for Mumbai suburban railways (Eight people die every day while crossing train tracks) the key behavioural insights that informed the non-conscious design were that human beings underestimate speed of large objects and are most attentive when there is a gap/silence to break up a monotonous tone (train horn). These insights were implemented through a system of design interventions – painting alternative sets of railway tracks in fluorescent yellow to provide a reference line on the track that improves speed judgement helps



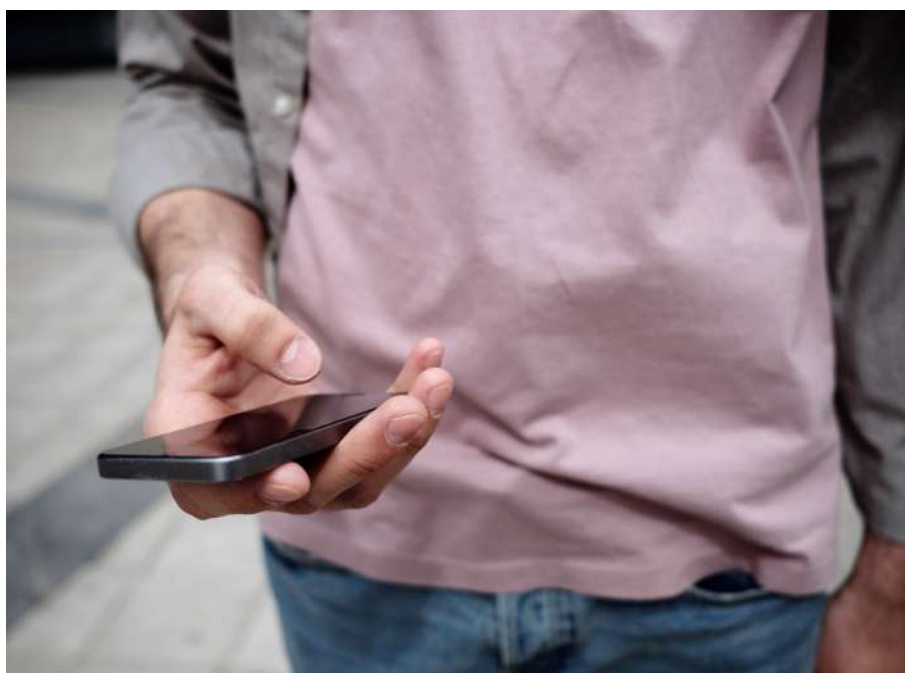


people adjust their risk perception to match reality and replacing the single monotonous horn with a staccato horn which has two rapid horn blasts that grabs attention. The interventions non-consciously nudged desirable behaviour, reducing the trespassing deaths by 30-75%.

Looking specifically at the learning – as a species, human beings are always learning from their environment and constantly adapting to survive, therefore the capacity to learn is present, however there is a need to reimagine the process, techniques and environment afforded by the self-learning platform to drive learning in line with our evolutionary pre-disposition to learn. The aim is to leverage natural intuitive offline behaviours and replicate these behaviours on an online medium with enhanced functionality afforded by the digital platform to drive engagement i.e personalised feedback or personalised interaction and categorisation of content.

FinalMile's extensive research has uncovered that while user have access and have an (stated) intention to use the application, it is not translating to actions – usage, completion and retention. This is known as an "Intent-action gap" in behavioural science literature, highlighting the need for a shift in focus to using behavioural science led design interventions to engineer engagement and reduce the gap of intent and action.

**Gray Matters Capital**, in partnership with FinalMile Consulting, has developed a 'Behavioural Science based Design Blueprint for Self-Learning', to drive engagement across education and employability. This Blueprint



is a starting point for the process of behavioural design, that needs to be customised to the context of the user and the product.

The Blueprint is off content and leverages behavioural science to help design app environments that build engagement though building commitment and motivation, driving thoughtful interactions, making learning personalised/relevant to build a learning mindset. It uses strategies from the science of learning to encourage more active participation in learning, resulting in better outcomes.

A snapshot from the Design Blueprint:



The Motivation board idea template is a snapshot of a collection of critical engagements with the application to drive continuous engagement. The idea is to aggregate engagements that are meaningful, motivating to the user and that drive action, as opposed to generic data heavy dashboard.

## OUR LEARNING

Motivation board illustration is one aspect of user engagement which we found helpful for multiple mobile EdTech firms we worked with. This needs to be customised to the context and goals of the user and can be implemented differently across various self-learning products. For a test preparation application, it is key to showcase progress towards their goal of

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*The Motivation board idea template is a snapshot of a collection of critical engagements with the application to drive continuous engagement. The idea is to aggregate engagements that are meaningful, motivating to the user and that drive action.*

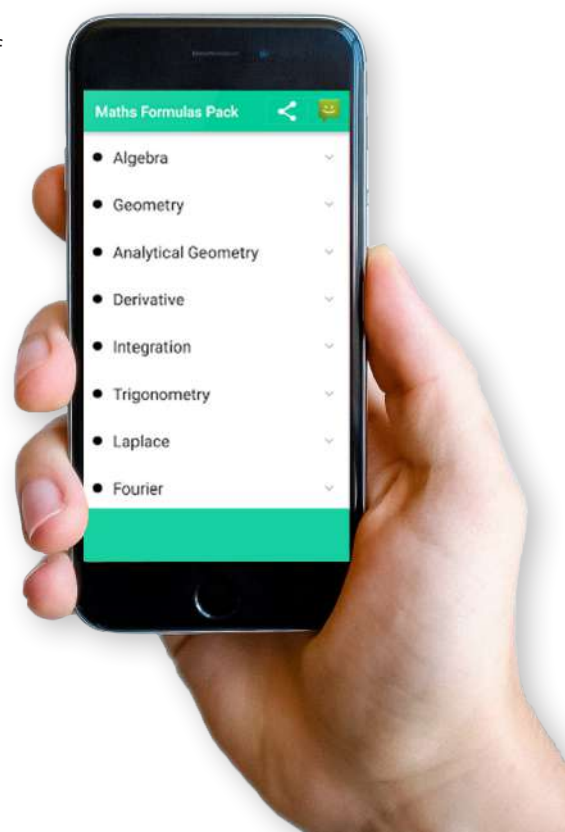
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clearing an exam and showcase improvement in their level of preparation and areas of focus. For a vocational training application, it is important to showcase an aggregation of skills learnt to motivate usage. In the context of teacher capacity building application, it is important to keep in mind the identity of the user, which comes from a position of authority and to design the motivation board accordingly.

How can such behavioural nudges be incorporated in the products systematically and be continuously tested to measure efficacy?

Let's see how data plays a role in measuring the change. ●





# #05

## The Power of Data

# MEASURE WHAT YOU ENGAGE

Even if one builds a product that cures diseases or solves complex problems, it doesn't matter until someone actually uses it. Unlike a teacher in a classroom who can ensure the students are studying, in a mobile app, the user controls the experience. You decide when to download the app, you decide when to drop off and when to delete the app. In many cases we saw, the average usage time on the app is less than 10 minutes. Which means users are not even completing a single lesson on the app, if the lesson time is more than 10 minutes. Even for some of the best known apps, people are downloading a few videos and then dropping off. So how do the companies strive for improved learning outcomes? And the ratio from downloads to active users to paying users is a slippery slope that companies need to manage constantly.

*"To know what people really think, pay regard to what they do, rather than what they say."*

— RENÉ DESCARTES

The answer lies in data. With a digital and mobile app, one can measure data at each and every step of the customers' journey. And test for outcomes. And keep perfecting the process.

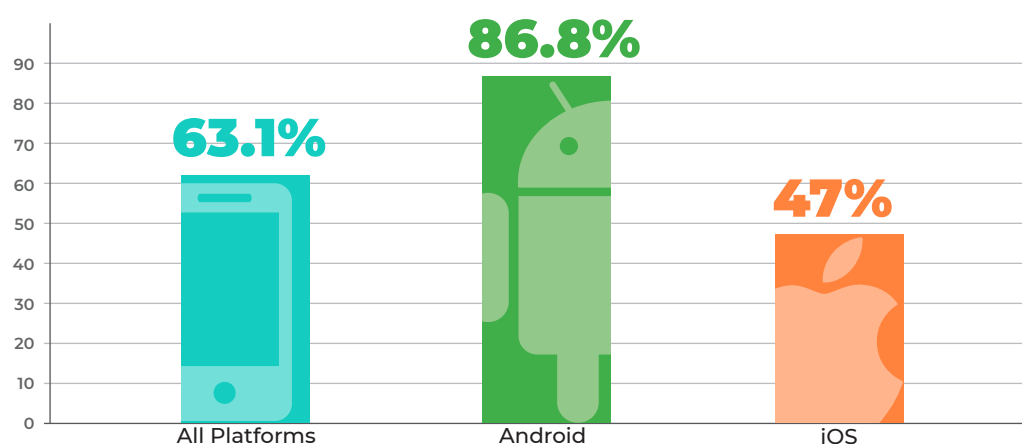
### KAHUNA'S REPORT ON CONSUMER ENGAGEMENT METRICS

An example of studying behaviour and bringing incremental changes through data was presented by Kahuna Inc. in their report "Kahuna Mobile Marketing Index". They did an analysis based on interactions with more than 39 million customers, who had collectively received billions of push notifications. Some of the findings from the report were:



- The average opt-in rate for push notifications was 62%. The average opt-in rate for Android devices was 78%, whereas iOS only saw about a 46% opt-in rate. The disparity between the two was partly attributed to the fact that users automatically opt-in for messaging on Android devices, but changes that are allowed to the Android app permission process likely had an impact on that percentage.

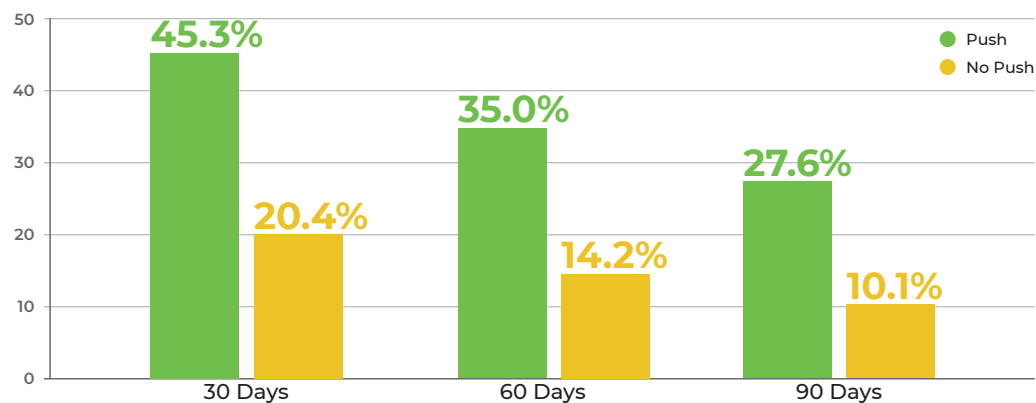
#### USER OPT-IN RATES BY PLATFORM



Source: Kahuna Mobile Marketing Index, 2015

- The average short- and long-term retention rates for users who had opted in to push notifications were more than twice as high than rates for users who had not opted in. For opted-in users, the average 30-day audience retention rate increased by 125%, the average 60-day retention rate increased by 150%, and the average 90-day retention rate increased by 180%.

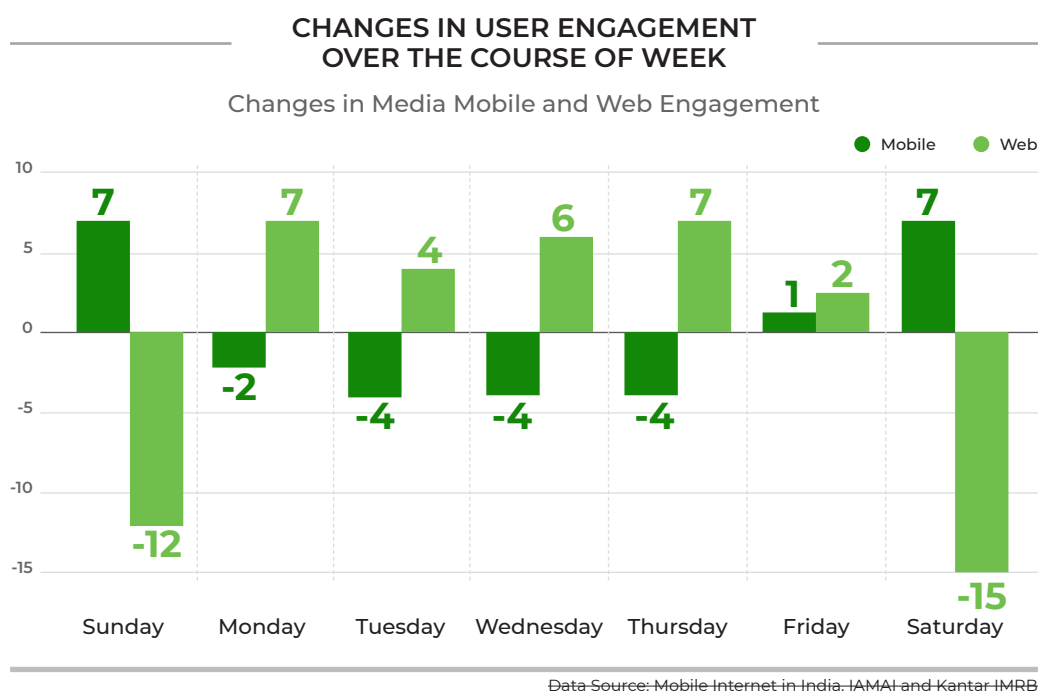
#### AVERAGE RETENTION OVER 90 DAYS



Source: Kahuna Mobile Marketing Index, 2015

Rather than counting downloads, entrepreneurs focus on maintaining the desired stickiness for the app by tracking the ratio of Daily Active Users (DAU) and Monthly Active Users (MAU) over time and by other specific insights that can enable decisions.

Let us take a look at a study done by Mix Panel presenting a Benchmark Report across four industries. One of the sectors studied was Media & Entertainment. The report showcased the engagement of user patterns across both web and mobile-based media & entertainment platforms.



The graph shows, by percentage, how much below or above average a given day's total engagement is relative to the entire week. Here, the product engagement numbers are compared to their own averages.

The results obtained stated that people do not prefer using mobile for gaming or for using other miscellaneous media services during the work week; instead, used them on big screens with high resolutions. But, it was interesting to see the spike in mobile use on the weekends implying valuable insights for the product managers while designing notifications.

The aim behind tracking the metrics is that they provide a picture of increasing growth and profitability for any company. When these are looked at together, metrics on acquisition, engagement, retention and conversion, along with behavioral insights, can bring key changes needed to make the product more relevant and useful for its customers.



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*“Various analytics tools can be used to know where and why user engagement is low and how customers can be effectively engaged. This is done by defining the funnels for various workflows to see where the drop off happens. Once identified, it becomes easier to come up with very specific solutions, and engage the end user effectively. It could be as simple as pushing the login to a later step and offer a quick onboarding for the end user on launch. Insights on usage on what days and at what time of the day their customers are most active can help the companies plan much targeted messaging or campaigns for their end users. A/B testing integrated in many of these tools allows us to measure these product changes with specific user groups and analyze the impact of these data driven decisions. From smartly measuring the smallest of the user interaction within the app to tracking and responding to external data like comments in PlayStore – everything needs to be continuously monitored and fed back into the product for understanding the real user need.”*

— VISHALINI PALIWAL

Senior Director Product Manager at Mindtickle

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## OUR LEARNING

At **Calibrator**, we worked on eight Education companies over the last six months using tools such as Clevertap, Firebase and Mixpanel to track similar data at granular levels for validating our behavioural understanding of customers and for taking decisions. For example, setting up a retention cohort and tracking their behaviour over a period of time, showed us exactly where and when the drop-off points occur. That, coupled with the behavioural understanding of their usage helped our companies design for improved engagement. Similarly, testing for notification time success rates showed us when was the best time to alert the customers by various segments. Analyzing payment behaviour was another critical action on which data gave us valuable insights on reasons for payment failure and ways to correct them while behavioural inputs helped incorporate nudges to change that behaviour. Meanwhile user segmentation data by geography and usage metrics showed us where users were finding the product more relevant ensuring the sales teams optimized efforts accordingly. ●



# #06

## The Journey from Downloads to Impact

### LEARNINGS AND RECOMMENDATIONS

Based on the extensive behavioural blueprint we created on education and employability with FinalMile combined with the work we did around data analysis for decision-making, customer journey mapping as well as on optimization of the products, we found quite a few significant learnings as we applied for the eight companies.

#### A SNAPSHOT FROM THE USER LAB WHERE WE TESTED THE ENGAGEMENT LEVELS OF DIFFERENT PRODUCTS



We have showcased the learnings here across different themes and market segments:

#### Test Preparation Apps

Government jobs are an aspiration among youth with over 70 million applying for them; 65 million from smaller towns and 30 million being women. The market is expected to reach \$2.5 billion by 2020, with online test prep reaching \$0.6 billion. Obviously, there is a plethora of choices. How do education companies really solve for engagement issues in such a scenario?

Behavioural insights showed that there is a sense of scarcity in highly coveted government job resulting in cognitive tunnelling of user on cracking the entrance exam to cope with the anxiousness. This audience tunnels on situations that are highly aligned to their goals, and reject other information that is outside their frame. Also, there is an existing strong ecosystem with mental models about coaching class. More importantly, the users journey varies based on their 1st, 2nd, 3rd attempt at the exam.

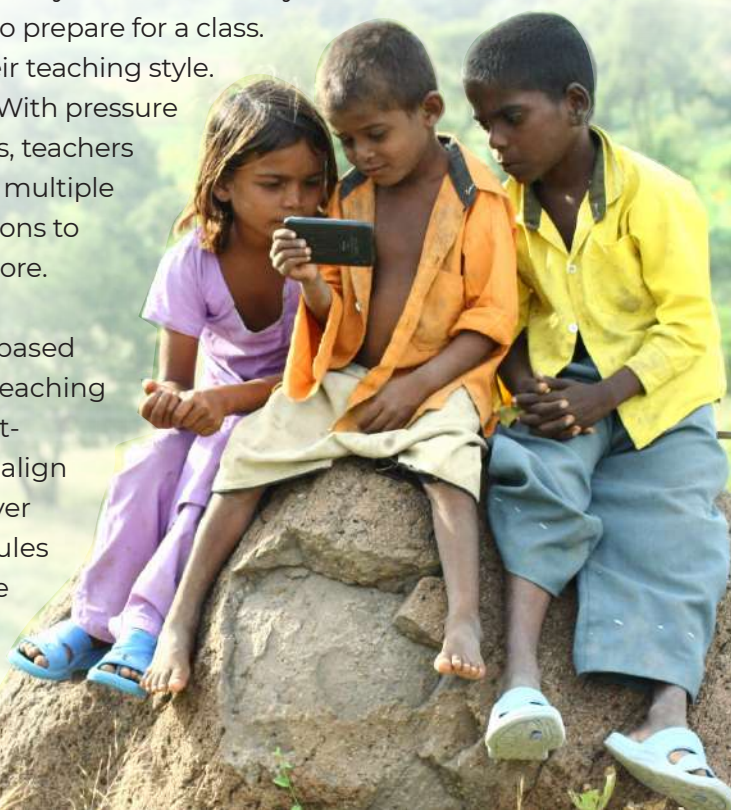
While each product is designed for specific interventions, we found some overall areas that can help. Many of the existing ones are not goal aligned. Given how important this is to the user, goal alignment is of critical importance. Also, the products need to showcase the differentiated value vs. the ecosystem. For example, do they enable personalized learning? Or help in answering questions in your native languages? The tasks can be broken down into smaller milestones to reduce the anxiety leading up to demanding exams. And finally, unlike a physical environment, the mobiles can actually make assessment a moment of learning rather than judgement.

### **Teacher Capacity Building**

In all the discussion around future of work and jobs and improving learning outcomes, one pillar that often gets missed is building capacity for teachers. Over 8 million teachers today work in the K12 education system. Unless they are trained well, how will they teach and motivate the students? Yet, teacher training is often not on the agenda and is otherwise too expensive for schools to embrace with rigor. Recent CBSE guidelines to focus on assessing learning outcomes could be a welcome move to change this.

From a behavioural input, we found that teachers believe that they are the experts in their fields and do not like being taught. Many of them feel they do not need to use anything apart from textbooks to prepare for a class. However, they look for quick tips to supplement their teaching style. There is also a desire to be seen as a “nice” teacher. With pressure on their time from teaching to administrative duties, teachers are often left with the hard task of putting together multiple pieces of the EdTech solution from classroom solutions to smart solutions to parent engagement apps and more.

Given the lack of training budgets, we feel mobile based solutions can actually be a big advantage in both reaching the teachers and in delivering the sessions in a cost-effective manner. To do this well, the apps need to align with teachers goals and give them more control over the learning. This could mean creating micro modules and optimizing on both space usage and language of delivery.





### Early Childhood Learning

With 260 million children of school going age, India has one of the largest K12 ecosystems in the world. FSGs research on preschool age kids show that parents have high aspiration, independent of income and choosing a good early childhood learning solution is a key part of that. From a behavioural point of view, learning English remains a critical aspiration. Even though children are exposed to mobiles from an early age, as they join school, parents tend to restrict phone usage. And in fact, safety is a key concern on their minds.

Our research found that most parents are surprisingly academic centric which makes building language skills a priority and phonics classes a norm. Children do get limited access to their parents' phones, especially that of mothers. The mental model is that young children learn faster through videos but as kids grow older, apps are considered as a refresher and parents are hesitant to teach from an app.

From the engagement point of view, it is important to perceive value in the product for parents by aligning with their goals. Products need to build more emotional payoffs in short periods of interactions to build continuous engagement. And content needs to be age-appropriate.

### Life-long Learning

Given the dynamic shifts in the future of work, driven by automation and technology, learning cannot stop at school and college. We believe life-learning will become an essential component for everyone. And here again, mobiles can play a critical role, given people may not be able to leave existing jobs to enrol in full-time courses but can learn on the go, during their free time, on the mobile.



From a behavioural point of view, we find users have short pockets of time available (empty moments). Many hold a strong mental model of age as a barrier for them to learn something new, even when they are aware that the skill will uplift them economically. For many users, especially those in blue and grey collared jobs, familiarity with technology is low and there is a low level of confidence in achieving learning outcomes.

From an engagement viewpoint, while the goal is to build a learning mindset, currently it is important to make learning fun and less effortful. Existing products



often expect too much time investment from the user and don't align with their specific learning goals. They need to make sure that the UI/UX is easy and technique of learning is familiar to the user. The product needs to be motivating to drive further usage and confidence when agency is low.

### **Skilling/Vocational Training**

Over 60 million children are currently out of school in India. Despite huge progress made in school enrolment, there is a high rate of dropout post Class VIII, specially among girls. Without a school leaving certificate, many of them are not eligible for jobs. That's where the dire need of vocational skills training comes in. While a lot of efforts are currently underway to solve for this, mobile based tools can play a big role, specially for girls who are not often allowed to leave their homes, just for training, in some parts of the country.

We find that the users need knowledge to be practical, not just factual as their primary goal at this stage is to get a job and not to score marks. There is a large satisfactory ecosystem of textbooks, supplements, sample papers, lectures etc. that focus on securing marks. But the lack of job knowledge, communication and presentation skills leave the users highly anxious without the ecosystem to cope.

From an engagement viewpoint, the products need to align with the job goal and change focus from an exam orientation. There needs to be meaningful motivation for the users to continue using the products. More importantly, aggregating the skills learnt can act as a motivator and great morale booster for the users at this stage.

Mobiles can be a great tool for self-learning to employability, if we can apply our behavioural understanding to design for better engagement, use data to test and learn, optimize the product for best performance, keep the focus on monetization and more importantly, on building the right story in improving the key outcomes.

## THE STORY OF OUR EIGHT COMPANIES

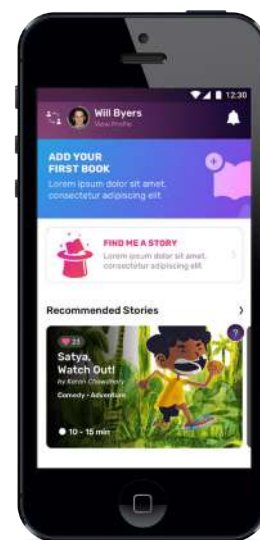
Here's a quick snapshot of the difficult challenges our cohort companies are solving and how they utilized the learnings from **Calibrator** to make significant impact.



### Stones2Milestones

A company with a mission to 'Create a Nation of Readers' launched a report on private school

English readiness that was taken by over 20,000 children and saw 9 out of 10 not being able to comprehend grade level English. From an engagement point of view, they have been able to double the average session length time and increase weekly retention on their reading app 'Freedom' by as high as 26% through simple behavioural interventions such as showing stories sequentially as well as highlighting innovative features like news which encourage both reading and critical thinking skills. The number of girls using their product increased by over 6% with 7 users being girls out of top 10. In fact, they set up an unique 100 day retention challenge to learn from users visiting the app everyday for over 100 days. Over 33 users crossed this benchmark, highest being 152 days, one of the highest numbers for EdTech, globally.



### OckyPocky

While early childhood is the foundation stage for a child, access to quality education at this stage is limited to less than 10% of children. One of the key early skills that a child learns is language learning. Further, English is the preferred language for career and medium of school, that the parents want for their kids. OckyPocky is making a huge impact in early childhood English education in the years that matter the most. An average 3-4 year-old grasps 5 new words every day. Astoundingly, every kid on OckyPocky can learn 25



new words every day by spending only 20-25 minutes on the app. This proves that mobile technology can help kids learn a new language in an extremely speedy way. Interestingly, 15% more kids used Hindi instructions to learn English than English guided voice-overs on the app – demonstrating the power of mother tongue in early childhood! The **Calibrator** program helped the team with understanding their user personas better and also introduced them to user behaviour centric design approach. The six month journey helped them in understanding the ecosystem better and to expand their pool of networks.

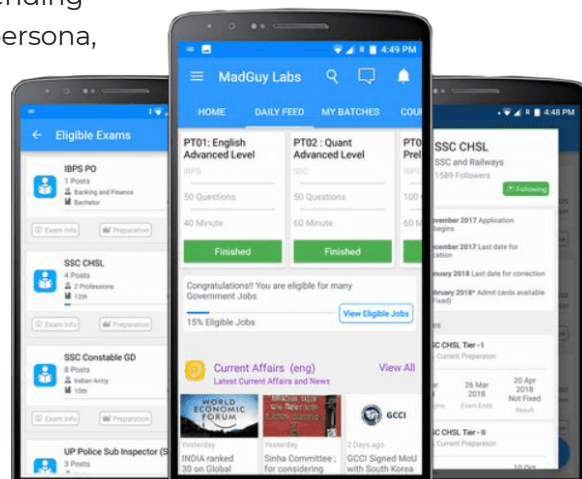




## MadGuyLabs

A personalized online learning platform for government job exam preparation in various regional languages. The firm had a 'Mobile First' approach but putting together all the elements on a relatively small screen without

distracting users was a challenge for a long time. By sending timely personalized notifications based on their user persona, their Daily Average Time Spent (Per User) went up by 30% (11 Min to 15 min). Small tweaks on payment screen helped double the number of transactions happening in the app. By enabling initial free content, Daily Active Users increased by 15% (7,000 Daily to 9,000 daily). All this reflected in the overall revenue growth by 20% within a span of few months! They believe that while teachers cannot be replaced, with the help of technology and the use of regional languages, the experience of learning can be personalized and simplified for millions of users.



**MILLION  
SPARKS  
FOUNDATION**

## Million Sparks

Teacher Training and Capacity Building is a key theme gaining momentum and like most

areas the Mobile Platform has a potential to disrupt this space too. ChalkLit – Million Sparks Foundation's mobile app centric Capacity Building Platform is being now employed by several states across India to offer tools and content to teachers and school leadership in more current and relevant pedagogical approaches. They also enable several exceptional organizations working in states to offer their content and programs on their platform in a blended or fully online mode allowing them to scale significantly. They provide both academic and non academic content to teachers with an objective to transform them into the change makers that will not only impact student learning outcomes but also educate them on Sustainable Development Goals which are of key importance for the future. They have made three releases of their application since joining the **Calibrator**. They witnessed their app engagement grow by more than 9 times with average session durations increasing more than 4 times (from 1:36 in June 2018 to 6:50 in Nov. 2018). They performed several surveys where 88% of users said that there is an improved experience and ease of use progressively over the duration of the **Calibrator**.





## Sarkari Pariksha

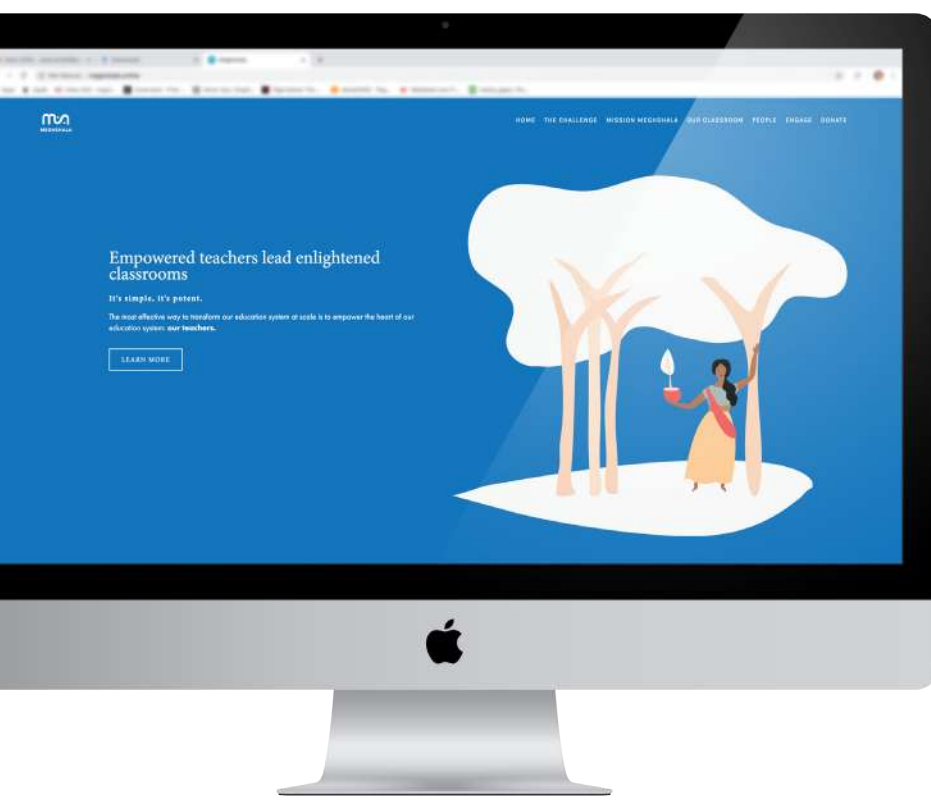
Set up with the mission to bridge the last mile gap in students aspiring for government exams across small cities and towns of India. They were already reaching over 1,00,000 students across remote districts in over 35 states when they joined the **Calibrator**. Over the last six months, the team found two critical insights – a) there is a big underserved opportunity for girls from smaller towns who can use mobiles to self-learn and reach their dreams where physical coaching access is a challenge for them, b) the preparation for the job also brings a mind-set change and increased confidence in the students; one which empowers them for a better future. With these learnings, their mission now has greater magnitude and faster speed. The team has launched “Beti Padhao Online” under this mission and are committed to reach and serve a “Million Girls” predominately coming from small towns and villages. Their new mobile product now is available both online as well as in 2,100 offline physical centers across the country who have become partners in this mission.



## Meghshala

Engaged in building teacher capacity across government schools by helping teachers upgrade their knowledge of content and pedagogy. They do this through providing easy access to technology that delivers learning material which is completely mapped to the national or state curriculum. After working in many schools

throughout Karnataka, they are getting ready to roll out the program for CBSE. They used their time with the **Calibrator** to comprehensively inform them on the complexity of construction of a brand new app to carry their lessons out. They are exploring expanding to the North-East of India hoping to make the far-flung areas in the country engines of capacity building and hope.



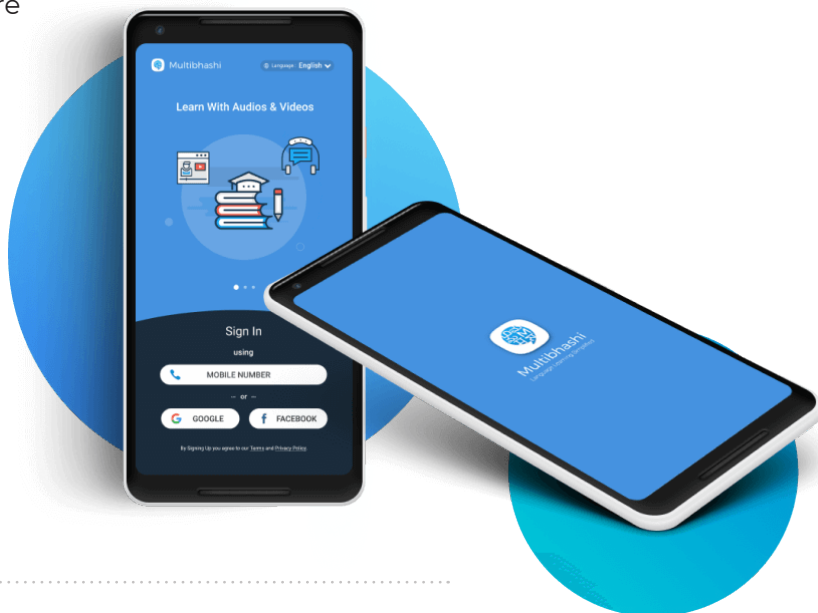


## Multibhashi

### Multibhashi

Focusing on the difficult challenge of adult learning, Multibhashi tries to

arm blue and grey collar workers with job-ready, contextual English across 12 regional languages. The company already had over 1 million downloads when they joined the program but they were trying to improve the retention on the app given their users had short pockets of time available. During **Calibrator**, user labs were organized based on the user group the company was targeting and behavioural insights were drawn on their specific usage patterns. These insights helped the company re-design critical screens of the product that resulted in 8-10% reduction in the drop-off rates. Taking the learnings forward, the team has now also developed the next version of their product featuring a voice-bot.



### LAQSH

Vocational education was introduced in schools to enhance the employability of youth. LAQSH offers a blended learning experience to its students (over 485 government schools) with face to face training supplemented by curated digital content. LAQSH initially depended on school labs for their courses. Through **Calibrator**, they decided to shift to a mobile-first approach and

changed the design of their product to simplify access and improve stickiness. One critical change that worked for them was getting a commitment letter from the parents for the students to use mobiles so that they were aware and involved in this process. They have rolled out the new program to over 5 states with 1,000 students and plan to reach 45,000 students across 11 states over the next few months. They also incorporated a robust analytics engine into the app that allows them to track every stage of the implementation and identify potential roadblocks.



Education and Employability are hard challenges to solve and there can be no easy fixes. Our 8 cohort companies are on their road to create huge positive learning and employability impact for their customers and this was just a small step in that journey. ●



# CONCLUSION

Now, with mobiles, the windows are smaller and can be more easily opened and more importantly, closed with just a click. Hence, the need to engineer engagement and learn from behaviour and data to solve for scale becomes critical, to keep the windows open, long enough to drive real impact.

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*“The whole purpose of education is to turn mirrors into windows”*

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— SYDNEY.J.HARRIS.

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The humongous size of India's Education and Employability market is a no-brainer. The promise is huge. But unless the users are engaged, the road to self-learning and earning will not be smooth. Let's illustrate that with a story.

Michael Faraday was born the son of blacksmith. Born in late 1700s in London, a life of poverty and some kind of manual trade seemed to be his destined future. But Faraday had an extremely active and curious mind. He was hungry for knowledge and frustrated by the lack of ability to get it. One day, he walked into a book shop. The owner, impressed by his worship for books gave him a job as a delivery boy and later as an apprentice bookbinder. He read every moment he could. He read books like “Improvement of Your Mind.” The book advised that learning had to be an active process. You had to recreate the experiments you read about. Faraday started making notes. He was invited to attend a series of lectures by famous scientist Humphry Davy. He found his next goal. He wanted to work with Davy, in any capacity possible. He kept writing letters but no openings were available. He sent Davy a beautiful booklet of his notes and experiments putting his book-binding skills to use. One day, the existing lab assistant of Davy was sacked and Davy reached out to Faraday. Faraday learnt everything he could and later far outshone the fame of his mentor.

There are many such Faraday's across corners of India. We call them Chandrakanta and Prakash. For them, providing relevant access to the right solution in a way which is optimum is enough to start them on their journey.



Meanwhile there are millions who are not yet natural mobile self-learners. They are not sure whether mobiles can play the role of the teacher, the mentor, the job-finder. That's where the combined role of behavioural science, data and optimization comes in. Even a small nudge in behaviour can create big impact in user engagement for the companies. And that can lead to more usage, better payment conversion and more impact for the companies beyond just providing content, online. Not just mobile, this change is possible across a wide range of digital technologies. Specially, for girls and women, where even basic mobile internet access is still at a premium today, the world of mobile-led self-learning and earning can open up a new world of possibilities. We see mothers comfortable in speaking in vernacular languages joining in with their children to co-learn English and students looking for opportunities to practice and improve their skills, but in ways that they can easily understand and which do not daunt them. India's huge demographic divide can be democratized and united for self-learning, on the mobile.

And if that happens, for the EdTech companies, scale and investments are natural byproducts that will follow. Today, with government investment at a low 2.5% of GDP, private investment is needed more than ever from both CSR funds and risk capital investors. Scale, use of technology, personalization of learning paths are important parameters for investors to assess today.



But scale alone does not drive impact. Computer labs may exist in schools and colleges but access may still be severely restricted, much like happy hours for learning. Copy-cat products from other countries will not be able to solve for ground-level challenges across villages and small towns such as how to involve parents in the learning process, how to evangelize teachers as change-makers and how to bring both inspiration and aspiration to the learners and job-seekers.

For the Education and Employability sector, we feel that these kind of specific learning and employability outcomes are becoming increasingly important questions to answer. Mobiles can play the role of the enabler, with technology. If companies are able to first improve the engagement and retention of their products and through that solve for deeper social outcomes like skill-building and earning opportunities, the sector will see the real change we need.

Let's engage to solve this challenge, at scale and remove the learning divide, together. ●

# ABOUT GRAY MATTERS CAPITAL

**Gray Matters Capital (GMC)** is an Atlanta based impact investor with a gender lens that is on a mission to support “An education leading to a more purposeful life for 100 million women by 2036.” In India, it is focused on making investments in for-profit enterprises in the ‘Learning to Earning’ space which provide access to affordable quality education and on employability leading to a future job ready workforce with 21st century skills.



The four pillars of its investment strategy in India include: Direct investments via education sector focused funds and co-investments; funding early stage education enterprises to pilot breakthrough innovations and help established education enterprises in business line innovation with its edLABS initiative; collaborating with stakeholders of India's Budget Private Schools (BPS) for improving school quality and creating access-to-market opportunities through its Ecosystem Development initiative; besides helping education and skilling enterprises with mobile based solutions to achieve scale through improved user engagement with its six month accelerator program – **GMC Calibrator**, all with an eye on bridging gender gaps in education and at the workplace.

Translating investments to impact, **Gray Matters Capital** delivers Value Beyond Capital to its portfolio companies by conducting periodic workshops, identifying and facilitating opportunities for collaboration, effective portfolio management and providing access to its high impact network.

**Gray Matters Capital** is the anchor investor in CBA Capital's \$20 million education sector focused fund – Education Catalyst Fund which has invested in EdTech start-ups such as Buddy4Study, Simulanis and Kopykitab. ●

To know more about **Gray Matters Capital** and its journey of creating impact across the globe, visit: <http://graymatterscap.com/>









# ABOUT GMC CALIBRATOR



The **GMC Calibrator** is India's first Accelerator Program focused on improving 'User Engagement' on Mobile Apps and Digital Platforms of organizations in the 'Learning to Earning' space through understanding and implementing end-user 'Behavioral Insights'.

Launched in April 2018 with 'Self-Learning to Self-Earning' as its guiding theme with an objective of bridging gender gaps in education and at the workplace, the Six-Month Blended Accelerator Program, helps organizations achieve scale, monetize better and optimize EdTech solutions to improve retention rates.

The program is meant for global organizations (for-profit as well as not-for-profit organizations) which bring positive impact for women including but not restricted to improving 21st century skills in education, skill building, preparing learners for the future of work, catering to the growing 'gig economy', and those facilitating lifelong learning. ●

To know more about the **GMC Calibrator** and its cohort of 2018, visit: <http://graymatterscap.com/gmc-calibrator/>

## OUR KEY PARTNERS





## KEY DATA SOURCES

- World Bank, <https://data.worldbank.org/country/india>
- India's population to surpass that of China around 2024: UN, [http://timesofindia.indiatimes.com/articleshow/59257045.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://timesofindia.indiatimes.com/articleshow/59257045.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)
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