

PART - II

- CONTEXT
- EDUCATION & LEARNING
- COHERENCE
- THE PEOPLE
- PARALLEL DIRECTIONS
- TRENDS
- REDEFINING THE BRIEF

## PRE-WRITTEN HISTORY

Education was achieved orally and through observations. Knowledge was transferred through rituals, stories and songs

3400 BC

Egyptians started to use fully formed hieroglyphs on papyrus and wood often for religious purposes



500 BC

Chinese philosophers inspired by Lao Tse began to teach using case studies in the form of parables



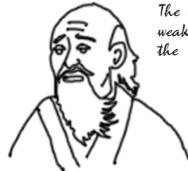
385 BC

Plato founded what is said to be the first university, near Athens. It was his academy.



2000 BC

Egyptians created the first form of apprenticeship for scribes



*The submissive and weak will overcome the hard and the strong*

400 BC

Hippocrates wrote the Hippocratic oath, saying that those learning medicine should respect those who have passed on their knowledge to the next

*As for me, all I know is that I know nothing!*



64 AD

In Israel and Judah, public schools were opened in every town and hamlet



1755 AD

A dictionary of the English language was published by Samuel Johnson



1930s

First modern preparatory tutoring centers opened in the western world to train students for higher education



300 BC

Socrates encouraged his learners by pretending that he knew nothing and asking questions



1000 AD

Pedagogy or preparatory instruction was first used in organized schools. Knowledge was "poured into the students" who were known as empty vessels.



1800s

Prussians taught their military by applying gaming situations to training.



2000s

The widespread use of computers and internet became common place and people start learning online

# CONTEXT

## How have we approached learning so far?

Learning and education are two words often confused with each other. We learn all the time. Learning often happens inadvertently, education isn't always as spontaneous. In fact learning isn't even something that is exclusive to human beings. Even animals learn spontaneously or through imitation taught by other animals [3]. This process is generally meant to exclude evolutionary skills like swimming for ducks, galloping for deer, building nests and hives for ants and bees, etc. These are products of adaptations and mutations over several generations of each species that automatically allow their young to attain proficiency in some of these skills after a certain age. Especially in invertebrates like cephalopods learning is a much faster way to contextually adapt to changes in their surroundings within a short period of time, critical to ensuring their survival, we can call them survival shortcuts. Higher vertebrates display much more evolved capacities to learn; cattle learn to avoid electric fences, dogs can learn tricks and chimpanzees can even imitate human behavior.

For learning to become a tool of transferring these survival shortcuts to subsequent generations animals require to conduct two basic parts of an exercise. Cognition -, which allows them to process information themselves and adapt their own individual existence according to it - and communication - which lets them convey the information they have to other members of their species. Primates have extensively developed systems of processing information through the above exercises and building knowledge for their communities. Monkeys living together in a cage are able to exhibit a common knowledge and behavior patterns which are shared among all residents. New monkeys born to such communities are also able to pick up these behavioral patterns through imitation.

Human learning is different in that the amount of information we can process is thousands of times that the second most intelligent animals on this planet can. This makes us neurobiologically more curious than any other species, and also gives us the capacity for creativity and of inspiration. We can process information that is not blatantly made available to us in person. We can process

**Image across:** *A brief history of learning through the ages from a western perspective. It does not document or account for ancient learning systems in other parts of the world, like India, Native America, Tribal Africa etc.*

Source: Illustration adapted from Kaplan International Colleges ([www.kaplan.do](http://www.kaplan.do))

complex hypothetical concepts without ever having experienced them on our own. For instance we were able to theoretically discover phenomenon in nature without ever having experienced them firsthand. Man knew there was gravity on the moon, 300 years before the first individuals landed onto it. Our capacity of creating several informational layers out of the observed evidence, allowed us to learn from more than our individual experiences. We've used experimentation as a means of validation rather than solely as a tool of firsthand inquiry. This ability to be inspired, combined with a social trust that allows us believe in the verity of the knowledge gained by our ancestors, catapulted mankind forward in a way that was unprecedented. We combine cognition, communication AND inspiration to continuously build a vast repository of human knowledge. This has been taught and learned by civilizations through methods and cultural systems that have had to evolve with the knowledge itself. We've had to continually develop several new paradigms of learning; simple imitation or personal experience was not going to be enough.

# EDUCATION & LEARNING

## What are the systems of learning that have existed?

Learning has been a part of human society ever since man developed language as a means of communicating and storing knowledge. While most of the writing on learning practices around the world looks back only a couple of centuries, learning systems have been in place since the Egyptians started using hieroglyphs as long back as 3400 BC.

The concepts of learning and education are often seen as analogous to each other but are actually different; learning is and has always been spontaneous. Education has been an attempt to plan and deliver standardized knowledge. Children from hunter-gatherer communities (the pre-agricultural human societies) learned through their observations, experience and play, [4][5] much like the monkeys discussed previously. Education however, became a tool to expand the human capacity of knowledge by presenting information, that had been distilled through the opinions and learnings of previous generations, for direct consumption as facts. Several different schools of thought grew, relying upon their proponents' ideologies. These schools of thought kept questioning each other and were always oscillating in and out of popular acceptance, depending upon the strength of the social groups behind them. Education became widely accepted as the "proper way to learn".

According to educational progressivist John Dewey "The chief business of traditional education is to transmit to a next generation those skills, facts, and standards of moral and social conduct that adults consider to be necessary for the next generation's material and social success." [6]

This gradual shift from open learning to institutionalized education came with several benefits but it also set our civilization on a path that would ultimately lead to economic commodification of knowledge and change the role of learning in human society. The widespread adoption of education was the beginning of "learning as a service" (LaaS) as a part of our society.

A lot of different forms of education have been observed across the globe with geographical and cultural variations, over time.

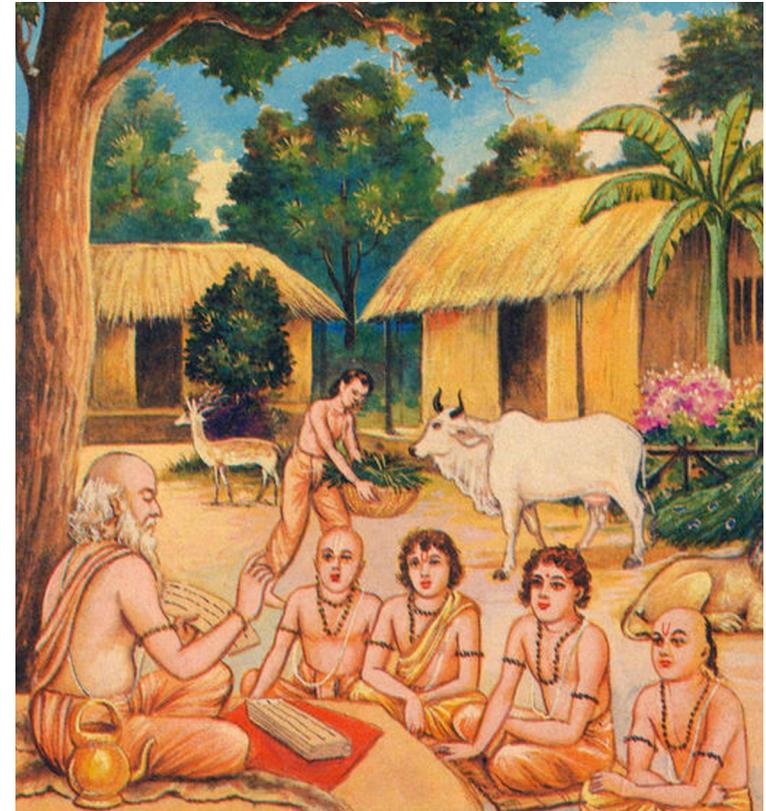
# DECENTRALIZED SYSTEMS

## INDIAN TRADITIONAL GURUKULS

*Gurukul* is a Sanskrit word which is a combination of *guru* and *kula*. It literally means the home of the *guru* or the master. In this system of residential schooling, all children above a certain age are required to go live with a *guru*, learn about academic subjects, life and society. After this depending upon their occupational *varna*, they would be further taught the skills of their profession (academia, warfare, trade, civic maintenance etc.) till they achieved a level of proficiency that meets the *Guru's* standards. Different *gurus* specialized in different subjects and skills and the *shishya* (student) would have chosen his career path accordingly. *Shishyas* would also learn para-academic skills like music, cooking etc.

The relationship of the *guru* and the *shishya* has been traditionally considered sacred[7]. Like the mother is not paid to raise a child, a *guru* was not paid to fulfill his duties towards his students. A non-monetary debt was owed voluntarily out of gratitude and respect by the students to their *guru*, called *gurudakshina*. For the duration of their stay at the *gurukul*, the students were the *guru's* family and would help out with household chores and duties. Upon leaving the *gurukul*, the *gurudakshina* would amount to an offering in the form of material assets or a even task that would please the *guru*.

The bond between a *guru* and his *shishyas* didn't end with the schooling period. Even after the *shishyas* took their place as members of the society, they were extremely reverential and proud of their teachers. They used to be lifelong learners, often going back to their *gurus* in times of anxiety or dilemma over issues related to their personal and professional lives, to seek their counsel. The



*Illustration of a class at a Gurukul*  
Source: India Spectacular Print Art

*Illustration of glyphist and his apprentice in ancient Egypt*  
Source: Egypt Education



society acknowledged the *guru's* role in the construction and evolution of its intellectual fabric and would contribute towards his sustenance, providing for all his material needs and requirements.

While there was no centralized syllabus, gurus represented various schools of thoughts. There was a voluntary adoption of standardized scriptures, which were used as baselines for the education. However what a student would learn at his *gurukul*, would rarely be exactly the same as what was taught by other *gurus*. The system prided itself on its diversity of thought. *Gurus* and academics from all over the land would convene periodically at academic and skill based symposiums organized by the governing rulers, to debate, prove and update the veracity of their knowledge. Such *shastrarthas* would be grand events, and would help maintain standards across various gurukuls.

## APPRENTICESHIP IN ANCIENT AFRICA

Learning in ancient African tribes and societies was not regarded as a task exclusive of day to day life. While initial schooling for basic knowledge of societal norms and customs took place at home, young members of the society were expected to pick up trades and roles in the society from their predecessors by becoming their apprentices[8]. Boys and girls were taught separately to learn their appropriated roles in their communities. Boys would often learn about farming, hunting, carpentry etc. from their male elders while girls would learn pottery, cooking etc from their mothers and aunts.

Every member of a society was responsible for educating the young ones. The paths for the young were often chosen for them through heredity, but they were free to pursue other professions that interested them. They would seek out accomplished practitioners within their societies, proficient in their field of interest and start working as their assistants. The learning was very hands-on and experiential. The education process would culminate in a rite of passage upon adulthood, which would then finally induct the apprentices into the society as practitioners themselves. They would

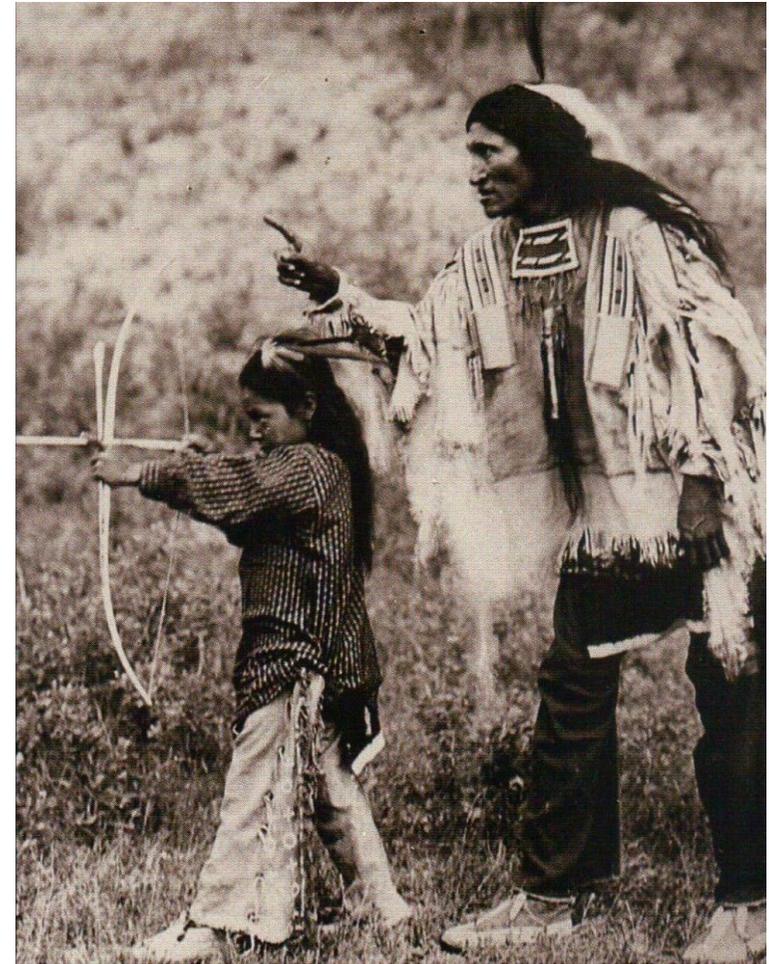
thereafter be allowed to practice the trades independently and take up the educational responsibility towards the next generation.

Since learning was very much a part of the trades, sustenance was never a problem. Education in arts, music and other non-essential trades was largely informal and hobby-based. There was no centralized syllabus and different tribes and geographical communities specialized in their own sets of skills and trades. This method went on for several centuries even in the Egyptian empire where it was finally influenced by European learning systems through greco-roman influences. After this the more influential members of the society would have their young schooled in mathematics and the sciences through private tutors.

## INDIGENOUS AMERICAN EDUCATION

Indigenous American Education primarily refers to the pre-colonial educational and learning practices prevalent in the native north American populations. It was in a lot of ways similar to the apprenticeship practice in ancient Africa. The major difference is in the range of subjects and occupations covered. Native Americans were primarily a hunter-gatherer society and were often nomadic/migratory.

Children learned through active participation in the social and communal tasks. They were not directed by their parents to do something and were eager to participate in the tasks to earn their place in the community.[9] All children were given the opportunity to contribute to a plethora of everyday social and cultural activities. They demonstrated their inclinations towards particular interests and developed proficiency in them, through observation, imitation and practice. Children across various age groups would learn alongside each other while contributing to and accomplishing important everyday societal tasks and activities.



Opposite: *Mato Wanarsaka teaches son to shoot the bow*  
Photo By: Hyen Photography

Below: A multi-generational banquet depicted on a wall painting  
from Pompeii before 79 AD  
Source: Wikimedia Commons



The purpose behind involving the youth through active immersion as opposed to direction, was to allow them to freely build upon their own knowledge through self motivation. It developed in them a need to ensure the continuity of social and cultural customs and practices. Children learned through observation and got involved in ongoing activities. In the process they also informally learned to socialize and gain a sense of duty towards their communities. The children were encouraged to self-assess their proficiency, and emulate the levels of performative ability in the respective skills exhibited by their elders and peers. They would often self critique their work and seek guidance on how to improve upon it, to a level that would match up to or even supersede their predecessors.

## **PATRIA POTESTAS IN ANCIENT ROME**

Learning and education in ancient Roman society, before private tutors became commonplace, was heavily guided by the principle of patria potestas, which would roughly translate to father's responsibility. This system of familial learning was very similar to home schooling, except everything from the syllabus to the proficiency levels, to the choice of skills was left entirely up to the head of the family[10].

Especially because of the immense power wielded by the patriarchs over their families, the quality of education received by roman children varied immensely from family to family. The only thing motivating the fathers to uphold the standards of education for their children, was their own commitment to gaining popular respect in the society. All the children who wished to get into politics (mostly the sons of senators and officials) would have to compulsorily receive advanced and expensive tutoring.

## GREEK DIALECTIC PHILOSOPHIES

The Greek society was one of the first societies to actively encourage academic dialogue and debate as a part of its culture. Also known as the Socratic method, after Socrates the famous philosopher, dialectic learning, or learning through dialogue between scholars with their own philosophies and schools of thought was a common practice in ancient Greece. It was not uncommon for crowds to gather at the agoras and listen to scholars debate among each other or proclaim their philosophies.

Dialectic learning was directed by the personal inquiries of the more scholastically inclined members of the society. Everyone was free to learn and debate with these scholars in public. The scholars would specialize in various subjects, like literature, psychology, science, astronomy and alchemy. These scholars would be active experimenters, and were even sometimes looked upon as social outcasts or psychopaths by large sections of the society, especially because of their eclectic ideas and lifestyles[11]. They would however also inspire legions of impassioned followers who would buy into their ideologies and become pupils and proponents. A lot of these philosophers also faced persecution from the state because a lot of their ideas were considered subversive.

These scholars would often live in relative poverty, with the bare minimums provided for by their followers. Before the institutionalization of education, dialectic learning made up the majority of the formal/informal educational resources available to the citizens.

Sparta differed from the rest of the Greek society in that their entire education system was designed around developing the best army. Young spartan kids would be taken from their parents and trained hard and ruthlessly to become warriors. After they reached a certain age they would have to undergo a test of their skills and strengths, and those who would pass it would get enlisted in their army and granted citizen rights. Those who failed would be allowed to take up other occupations and trades in the society, but they had no legal rights or claims as spartan citizens.

Image Opposite: *Scribe figure of Dersenedj*, 2400BC  
Below: *The Death of Socrates*, Jacques-Louis David 1787  
Source: Wikimedia Commons



# STATE DELEGATED SYSTEMS

## MIDDLE EASTERN SCRIBES

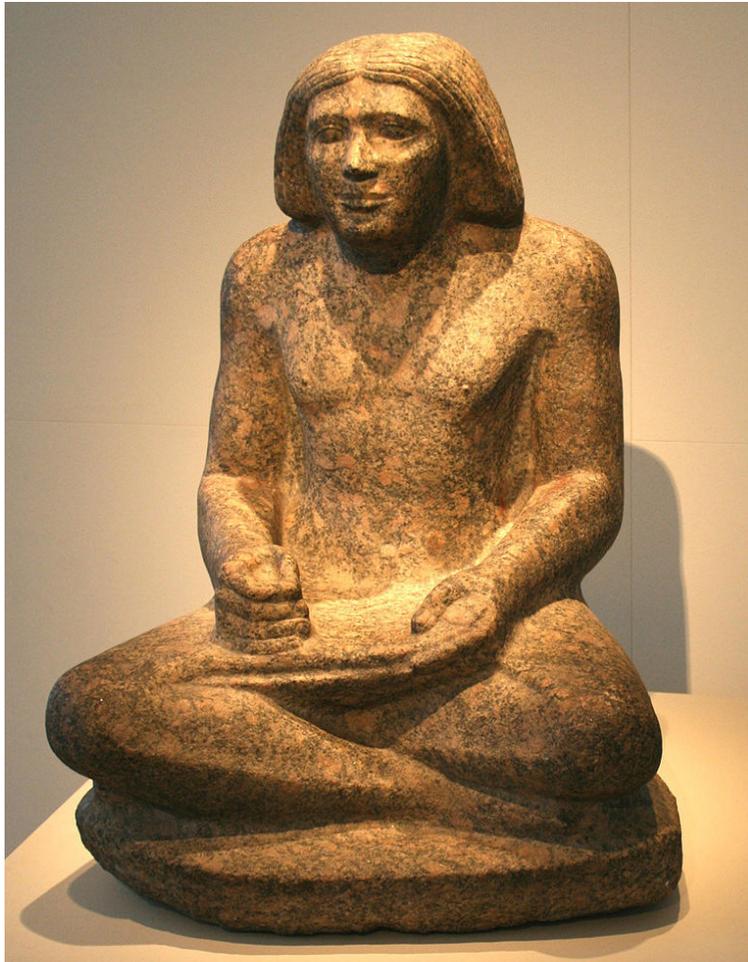
Scribes were professional copyists employed by the state to replicate manuscripts in ancient Egypt and middle eastern countries. They were integral to the continuation of the societal knowledge. A lot of what we know today of ancient Egypt and Mesopotamia comes from the works of these scribes that were curated in state sponsored libraries. The scribes would often be sent to other lands to observe and document their experiences or to bring back copies of works of other scribes.

Due to their close proximity with knowledge, their abilities to understand various languages, and a societal trust in their work, the scribes were ideally placed to become source of knowledge and information for the masses. [12] The people would be able to read those clay books or stone tablets the scribes had prepared, that were allowed by the rulers for circulation.

The content of the scribes' works was however heavily vetted by the state. Material that was found offensive to the ideas of the rulers was expunged. This did not mean that there was a centralized prescription for what could and what could not be included. The scribes largely used their own discretion and experiences to create these clay books and tablets. Being a scribe was a respected skill as it was uncommon even for rulers to be able to read and write. They lived on allowances from the state. Scribes also set the stage for the eventual onset of religious teachings.

## INCAN AMAWTAKUNA

The Incan Amawtakuna were a class of the learned men of the Incan society who were tasked with teaching the children of the nobility. Their prime task was to make sure that every new generation was educated and proficient in the cultural knowledge of the Incan civilization. The teachers, also called Amautas, were accomplished philosophers, poets and priests.



Their task was to keep the Incan histories and traditions alive through an oral record that would be taught to the royal children and the children of the nobles from the conquered cultures. The Amawtakuna largely acted as a self governing body of members under the patronage of the emperor. The content they taught often varied depending upon the tastes of the ruler, but throughout the empire they were left free to teach their own versions of the Incan history[13]. Social discrimination was reflected in education throughout the Incan empire with only the upper classes getting access to the proper education, the masses were supposed to be schooled by their parents.

## THE BARDS OF GREAT BRITAIN

In medieval Britain and Gaelic cultures, Bards were professional storytellers who would compose verses, songs and tales to celebrate the great socio-political and military figures of their times. In those times it was considered suitable that all the citizens of the society be made aware of the glory of the rulers. Bards were employed by patrons and nobles who tasked them with propaganda meant to gain influence and respect with the populace.

The bards would have their own “tribe” of understudies who they would train using methods they felt apt. The bards in making would often be schooled in dark desolate cells, to “keep out the distractions of light and other subjects”, so they might focus on their rhymes and dedicate their souls to glorifying their patrons. Sustenance of the bards and the tribes was directly dependant on their patrons so their compositions were in a way commissioned.

The purpose of the bard tradition in its original form was not as much to develop skills or



*Inti Raymi Inca Sun Festival at Sacsahuayman*  
Source: Don Forster, Globetrotting Blog

proficiency as it was to instill a sense of awe in the minds of the young population towards the rulers. This would help with their political agendas. The bardic tradition inadvertently developed cultural narratives, which were riddled with inconsistencies and hyperbole.

*Woodcut of a Bard playing the harp*  
Source: Glastonbury's Bardic College



# INSTITUTIONAL SYSTEMS

## GRECO-ROMAN SCHOOLING

With heavy influences from the Greek, the Roman educational system evolved from the informal, familial form prevalent in the early Roman republic to a more formal tuition based format towards the later phase of the empire. This involved private tutors, many of whom were Greek slaves. The curriculum of the Roman schools was copied and standardized in all of its provinces. This would provide a base for the development of several education systems in the western civilization.

The education system was tiered in a manner to allow academic progression. The most basic tier or moral education incorporated the older practice of learning at home from the family. It differed from the Greek system as the burden of a Roman child's primary education would fall upon the paterfamilias (highest ranking males in the family) instead of the community. The parents would teach essential skills like agriculture, basic combat, moral and civic responsibilities etc. A child would typically acquire the bare minimum proficiency in reading, writing and arithmetic, which was just enough for them to participate in day to day transactions, to count, keep time, weight etc. [15]

### The Ludus

While the Roman empire never in its extensive history compulsorily mandated that education was a requirement for its citizens, it did institutionalize schools for the plebeians (commoners) who'd wish to have an education. The children of the patricians (the aristocrats) would typically receive tutelage from private Greek tutors and the children of the masses would be allowed to attend a primary school called Ludus Litteratus. Teachers at these schools were called litterators or litterati and would command respect in the society. Each teacher could in principle set up their own school, but it would mean that they would earn much less than they could in a Ludus. The Ludus didn't have established locations and classes could be held anywhere, from a private residence to



*Relief found in Neumagen near Trier, a teacher with three discipuli (180-185 AD)*

Source: Wikimedia commons

*Opposite: The Orator, c. 100 BC, an Etrusco-Roman bronze statue depicting Aule Metele (Latin: Aulus Metellus), an Etruscan man wearing a Roman toga while engaged in rhetoric*

Source: Wikimedia commons



the street. The syllabus was focused on reading, writing and elementary subjects. They would read poetry not to contemplate the subject but as material to gain language proficiency till they point they were able to dictate text. There was no formal structure like a class or a grade, and students came and went throughout the day. There were no formal exams or tests. They were evaluated through exercises, and were either asked to correct or appreciated for their performance. Such public adulations often fostered a sense of competition among the students. The education for most students would end here, as higher education was quite expensive for common households.

### **Grammaticus**

Once the boys from affluent families were between 9-12 years of age and were interested in higher education, they would seek the tutelage of a Grammaticus. The Grammaticus would focus on refining the writing and speaking proficiencies of his students. They would be taught poetic analysis in Greek. A lot of the poetic work like Homer would already be something that the students were familiar with from their Ludus, but the context of study would now be analytical. Lower class boys would at the same time be working as apprentices, and the girls would direct their energies towards becoming suitable brides and good mothers. The bilingual (Greek and Latin) curriculum would include expressive reading and analysis of poetry, and students would be assessed on-the-fly according to the Grammaticus' standards. Evaluation methodologies were same as that in the Ludus. Students would continue their studies till the age of 14-15 at which point only the most wealthy and promising students would continue onwards to rhetoric studies.

### **Rhetor**

The final stage of education in Rome was reserved for a select few. Boys interested in pursuing careers in law or politics would undertake rhetoric studies which would involve self-motivated learning through observation of the elders. Originally a Greek practice, rhetoric took a lot of time

to be accepted in the Roman society. The students of rhetoric would be called Orators and they played pivotal political roles in the society. They would not only limit their learning to public speaking but would also study geography, literature, mythology, geometry etc. The Rhetor level was not necessarily available to study at a school. Most Rhetors were private tutors and they had a huge say on their students actions and learnings. The roman government maintained strict regulations for Rhetors and philosophers and also on occasion expelled the ones who did not adhere to their prescribed curricula.

The study primarily revolved around two fields, deliberative study and fields like criminal law. Young men would be trained to advise the senate or get into judicial oratory, a profession which helped a lot in gaining public respect and following, both of which were essential for a career in politics.

## THE AZTEC TELPOCHCALLI AND CALMECAC

The Aztec institutional education system was mainly a military schooling system. After primary education at home in the basic activities, customs and general theories in life, Aztec boys would start training at the telpochcalli or the calmecac depending upon their societal standing. The calmecac was reserved for the children of the nobility, while the telpochcalli was available to the commoners. Essentially running the same curriculum, training at the telpochcalli would be harsher and more oriented towards combat. At the calmecac students would also learn about military strategy, religion, policy and inter-society relations. Some students at the calmecac would also study religion extensively and train in practices and traditions to become priests. On occasion promising commoner children would also be allowed to attend the calmecac to train as a priest, if the elite saw an aptitude for spiritual studies[16].





*“The Eighteen Scholars” by an anonymous Ming Dynasty artist.*  
Source: The Epoch Times

Opposite: *Aztec Illustration of Ritualistic Schooling*  
Source: latinamericanstudies.org

The calmecacs would be located at the ceremonial center of the Aztec establishments and would serve as the students home for the duration of their education. Children would enter training at the age of 5-7 years and study reading, writing, the calendar, etc through songs and rituals. At 15 their military training would commence and they would be considered ready for battle whenever a military emergency would arise.

## ANCIENT CHINESE EDUCATION

In ancient China after institutionalization of learning, education was considered a symbol of power. During the Xia, Shang and Zhou dynasties, the governments formed five national school to teach the students six major arts, namely, rites and rituals, music, archery, charioteering, calligraphy and mathematics. These arts later became a part of Confucian philosophy and were practiced by the 72 disciples of Confucius. Typically these schools catered to junior nobles. The schools were divided in two tiers, lower and upper.

In China the government maintained records of household and citizens through a system called Hukou. Education in the schooling system was the simplest way to get the urban Hukou status. The system had difficult entrance examinations, which more often than not proved too advanced for rural Hukou status from advancing. Every successful student would get recognized as urban Hukou when they would get admission into high school. Attendance of high schools would give the children a better shot at college entrance exams and eventually a greater likelihood of a good well-paying job. Students who would fail to gain entrance into colleges would often have to go back to their rural Hukou status and continue their lives as peasants. This was meant to ensure that the society would remain meritocratic, with the more educated citizens getting access to better life and opportunities.

Numerous different schools enrolled students following the similar patterns prescribed by the

government. Confucianism was perhaps the most famous and advocated education for all without discrimination. It believed in teaching according to the students' abilities and the leader Confucius is regarded as one of the greatest teachers of all time in Chinese history. The schools would often be fronts of political movements and entities, aimed at gaining social influence. Scholars would be invited to courts to compete and advise under government sponsorships.

During the Han dynasty, Confucianism was made the national educational doctrine. Around 124 BC the five classics of Confucianism were taught to students who were primarily coached to become civil servants for the state. Government posts were given to students who would master a classic. The Taixue or the imperial school by 25 AD enrolled 30,000 students, 7000 teachers with 240 building and 1850 schoolrooms. At the time it was the largest institutional education system to have ever existed[17]. Confucian scholars were also allowed to run private schools.

Between 8-12 AD several other schools including the Pear Garden school and the national military school were established. During the onset of the Qing dynasty, education had become very provincial. The schools in provinces didn't require tuition fees and also offered scholarships and stipends to students selected beforehand. These schools undertook an agenda that was different from the imperial schools focusing on the study of classics and literature, rather than a curriculum designed to prepare government servants. Lectures from professors were rare and they mostly offered advice and critique of the student work. The almost blanket neglect of engineering, mathematics and applied sciences had caused a vast gap in military dominance of China and the European industrial empires which were now industrial nations. The Qing dynasty established the Togwen Guan in 1861. The Guan employed foreign tutors who taught, English, French and other European languages alongside mathematics, astronomy and chemistry. This marks the beginning of mainstream adoption of the western educational philosophy in the Chinese society. Other notable efforts were the establishment of the Peking University, which taught a curriculum closer to the Japanese System. By 1905 imperial examinations and controls on education were abolished.

*Late 19th Century Schooling in China*

Source: [www.emblematica.com](http://www.emblematica.com)



# RELIGIOUS EDUCATION

## JEWISH EDUCATION - CHINUKH



*Gathering of Rabii and students*  
Source: [www.edupioneers.wordpress.com](http://www.edupioneers.wordpress.com)

Education is a valued commodity in the Jewish culture. Jewish education revolves around the tenets of the Torah and mostly is concerned with learning values for proper conduct in life. The children are mostly taught basic prayers and what are the things they can and cannot do according to their religious tenets.

Jewish children have traditionally been segregated for formal education based on their sexes. The boys are taught about scriptures like the Torah and the Talmud and the girls are taught both Jewish and other secular subjects. According to the Talmud, formal Jewish education was introduced by Joshua ben Gamla, a first century sage. Before this the parents were responsible for the informal education of the children. Gamla installed schools in almost every major town and education was made mandatory once children hit the age of 6 or 7. The immense importance attributed to education among the Jews is evident from the Talmud which states that the world exists for the learning of the students and their education must not be interrupted even for the rebuilding of the Jerusalem temple.

Young men in the Talmudic and Mishaic times were associated to the Jewish court where they studied the practices of Jewish law till they were finally elevated as members of the court. After the abolition of the court, the yeshivot became the primary institutions for the study of the Torah. Even today yeshivot are central to the orthodox Jewish community, and young men as recently as the 19th century have studied under the local rabbi. The community of the rabbi allocates funds for his sustenance and their education requiring him to maintain a certain number of students[18].

In the 1700 rabbis like Moshe Chaim Luzatto started writing plays on traditional Jewish themes. While not prevalent in traditional education, drama based education was prevalent till the 1930s with the students and the faculty playing roles based in extensive study of the Hebrew bible and

the Talmud. Drama is still being used as an education tool and there are theaters dedicated to Jewish teaching in several cities like in Detroit[19]. Sports have been used as another methodology to foster strong bonds between the Jewish youth and their cultural heritage and Israel. There are sports volunteering programs that meant to inspire young leaders to promote interest in their communities about Judaism and Israel. Such movements have also been related to instances of Jewish rights activism.

## CLASSICAL CHRISTIAN EDUCATION

In the Christian society, education has always used biblical stories and parallels to get important life lessons through to the youth. It is based on the trivium model, which is made up of three parts, grammar, logic and rhetoric. Developed by early Christians, the trivium model was the primary method of instruction for all kinds of biblical teaching. Learning methodologies from biblical times can still be seen in place at Sunday schools and missionary masses.

In this system children start learning languages and about themselves right from birth. Between 2 to 4 years of age, the child learns social skills, mobility and basic dexterity. From the age of 5 onwards the emphasis is laid on grammatical and linguistic studies. Also referred to as the parrot stage, this stage has children reciting songs, rhymes etc to memorize information. The basics of reading, writing, math and observational science begin to be introduced. Schools also teach a Christian catechism which becomes a foundation for intensive teaching in biblical structures and texts. [20] By the time a child reaches the 6th grade, he/she already starts to develop an argumentative demeanor. At about this time they are taught about logic and debating skills. They learn how to compose ideas and their defense. In high school the rhetoric phase starts, which blends the previously learnt skills with a more specialized curriculum targeted at college preparation.

*A catechism lesson in a Madras Presidency village (India), 1939*  
Source: Salesians of Don Bosco, India Collection



## ISLAMIC EDUCATION - MADRASAS

A madrasa could refer to any type of educational institution; a school, college or a university. The meaning of the word itself doesn't imply a religious nature of education and there used to be a lot of secular madrasas as well. However through time and prevalence, it has come to mean a center of Islamic learning.

Maktabs were elementary schools in the medieval Islamic world around the 10th century. Maktabs were traditionally attached to mosques under the patronage of the local nobles. The famous Persian teacher Ibn Sina (Avicenna) wrote that children can be better in classes as groups instead of individual private tuition. He cited the importance of competition, group discussions and debates in his classes.

He advocated that kids be sent to maktabs as early an age as 6. Until the age of 14 they would be coached in the verses of the Quran, Islamic metaphysics, Arabic literature, Islamic ethics and a variety of practical skills. After 14 the students would begin to learn manual skills irrespective of their familial standing in the society. They were allowed to pick a specialization that interested them. They could pursue manual skills, literature, medicine, geometry, commerce, craftsmanship, preaching or whichever profession they wished to pursue a career in. This transitional stage was meant to take pressure off the children regarding graduating, allowing them freedom for emotional development and identifying their choices and interested.[21]

In its initial years, the term madrasas designated institutes of higher education which was primarily concerned with only Islamic religious sciences. Other subjects like philosophy and other secular sciences were by definition excluded. However with time the curriculum began to become more diverse, including studies of logic, mathematics and philosophy. Some madrasas even started including history, political sciences, ethics, musics, metaphysics, medicine, astronomy and

alchemy in their curricula. There was a consistent importance given to the study of fiqh or Islamic jurisprudence. The system of ijazat al-tadris or the license to teach and issue opinions is one of the oldest educational qualification systems in the world. It is also believed by some to be the origin of the European concept of doctorate. However the ijazah was issued by individual scholars without formal parameters of competency, while the doctorate was a collectively issued title. A combined education of at least 14 years was required before an ijazah would be issued after oral examinations of the candidate's thesis.

Islamic medicine was another subject which was mainly taught at bimaristans or teaching hospitals much like modern day medical institutes. There were also madrasa colleges that would have specialized faculty to teach medicine. Despite medicine being taught for long, standardized licensing exams for physicians only became mandatory after 931 AD.



*A madrasa in the state of Maharashtra*

Source: Getty Images

# MODERN EDUCATION

## FACTORY SCHOOLS OF THE INDUSTRIAL AGE

With the onset of the industrial revolution in Europe and expansion of the Imperial empires to various parts of the world, manufacturing became a mainstay of the global economy. The colonies would supply resources, manpower and raw materials to the ruling European nations where the industry would manufacture goods that would be consumed locally and often sold back to the colonies. Education in such times became something that only a few members of the society would choose to take up. Formal education would require years before a young student would be in a position to contribute economically to the needs of his family. Schooling for the masses therefore adopted a factory like system where classrooms started to become assemble lines rather than center of learning[22].

The nobles, the elites and the rich would choose to have their children home-schooled by private tutors, and the quality of public education was maintained at a bare minimum. However, the more academically inclined students would often reject the formal educational system and continue their education through experiential learning in their respective subjects or areas of interest, mostly science. These independent scientists together pushed the boundaries of human knowledge and are recognized as some of the greatest minds to have walked this earth. In the medieval times while such scientists often faced ostracization from the society and persecution by the church, the industrial age was more welcoming of their research and discoveries. Science and technology grew by leaps and bounds and some of the most famous universities of today were founded during these times.

Primary and secondary schooling was still an issue with inconsistencies in syllabus and teaching methodologies, although boards were established in an attempt to standardize education. A majority of people would prefer taking up manual/skilled work in manufacturing industries without much education. Dropout rates were very high and the government responded by making

*A Victorian "schoolroom" during the industrial revolution*  
Source: www.bbc.co.uk





predominantly given as they are industry serving professions. While the curricula are quite diverse when compared to earlier education system, the emphasis is still determined by the industry and prospective careers.

Teaching and educational boards are established by governments that regulate teaching practices, qualifications for teachers and their pay. The teachers are paid employees of the schools and the schools charge a fees from the children. In a lot of countries, public education is being made free. However the quality of education despite a standardized syllabus is highly variable in public schools. The skills and motivations of the instructors vary greatly. Since the instructor is the main mode of communication for the students, the efficacy of the system boils down to their competence.

This system might start with pre-schooling for children from the age of 2-3 years. For the next 15 years of their lives, the children attend primary, middle and high schools almost every day, barring vacations, after which they seek higher education, postgraduate course etc. At every stage there is a teacher or a guide whose job it is to help the students through their studies. Standardized examinations grade the student based on their proficiency levels each year and these grades are often scrutinized by prospective employers. Courses span several years and qualifications hold a lot of weight with regard to job opportunities. For the first quarter of their lives, members of the society are dedicated to full time learning.

## **SMART CLASSROOMS**

Smart classrooms are becoming increasingly prevalent with improving technology and reach. Almost the entire world now has access to hi-speed internet and devices to host such classrooms. While still available only to economically strong societies, smart classrooms bring an unprecedented level of standardized interactivity with the education content. Various public and private organizations develop educational content like animation, video, interactive games etc to

help with the teaching of simple and complex concepts. Large interactive touch boards, mobile devices and projection systems are used to deliver a wide range of content to the students. Smart classrooms are meant to make the monotonous nature of book-based learning obsolete and thus get children more interested in K-12 education.

A modern smart classroom relies heavily on content that is streamed, broadcast or delivered as a package to the class. The teachers in a lot of cases, tend to use these packages as is, for their classes. While this methodology seems to limit the contingencies with individual teachers, it also has the potential to make their role less important in a student's learning life. The student often begins to see the teacher in class as an ancillary resource instead of the primary source of knowledge. The dependence on the person is reduced and in a lot of cases, the teacher might also be reduced to an operator of technology.

Smart classrooms are becoming increasingly mainstream because of their potential to convey complex ideas and subjects with clarity. A lot of private content providers are even developing AR/VR friendly material and holographic content to further provide an immersive experience to the student.

## COACHING CENTERS

In countries like India, coaching centers for college entrance exam preparations have become omnipresent. A majority of students who enroll with these coaching classes do not find their regular schooling satisfactory or adequate for developing proficiency levels required by entrance exams. The insecurity of the wards of the students has also led to a booming industry in test-preparation based tuitions. Multi-city chains of coaching centers have come up which charge exorbitant fees and enroll thousands of students in each preparatory cycle. These chains have become so powerful and coveted that they have started conducting entrance exams of their own. It has been inevitable



*Smart Classroom for “distance learning” in Taipei, Taiwan*  
Source: Banyan Global Learning

since then that preparatory tuitions for these entrance exams would also gain prevalence. Several cities have emerged as college preparation hubs with their local economies revolving around them.

Such coaching centers started by employing faculty members who have taught at senior secondary level for several years. Due to the limited number of available candidates, the fees they were paid increased exponentially. Gradually these centers began to hire faculty that was less experienced and qualified, but specialized in teaching only the syllabus for entrance exams. Classes are often crowded with often a single teacher taking a lesson for up to 120 students at a time. There is no standard control over syllabus other than what has been known to come up in the previous years' examinations. There is little to no personal attention to each individual student. Students typically move temporarily to the cities with these coaching centers for anywhere up to a couple of months to 4 years. Central board based education and examinations are carried out but are sidelined.

*Coaching Center classroom in Kota, Rajasthan, India*  
Source: HT Photo [www.hindustantimes.com](http://www.hindustantimes.com)



## PRIVATE TUTORING

Private tutoring has been around since the times of the Roman empire. It has steadily evolved to its current form in the modern era. Today private tutoring is used as an add-on to regular standardized education systems to increase competency in certain subjects. Private tutoring is also one of the most popular ways to pick up subjects that are not taught in a formal framework at a large and pervasive scale, like music, art, etc.

Private tutors often have city-wide reputations for their excellence in particular subjects and domains. Individual tuitions normally take place when the tutor visits the student's residence. Groups are normally taught at the tutor's home. The groups tend to be small 5-10 students, and the tutor finds time to individually scrutinize and help the students with their academics. Originally meant to help students who weren't able to keep up with schoolwork, through additional classes, tuitions have become more acceptable as a necessity to keep up with the curriculum.

The tutors largely follow the subject specific syllabus recommended by educational boards. They also develop unique methodologies, tips and tricks to accelerate the learning process for the students. Their classes run all year round, mostly on evenings of school days. Private tuitions are also illegal in certain countries like Saudi Arabia.

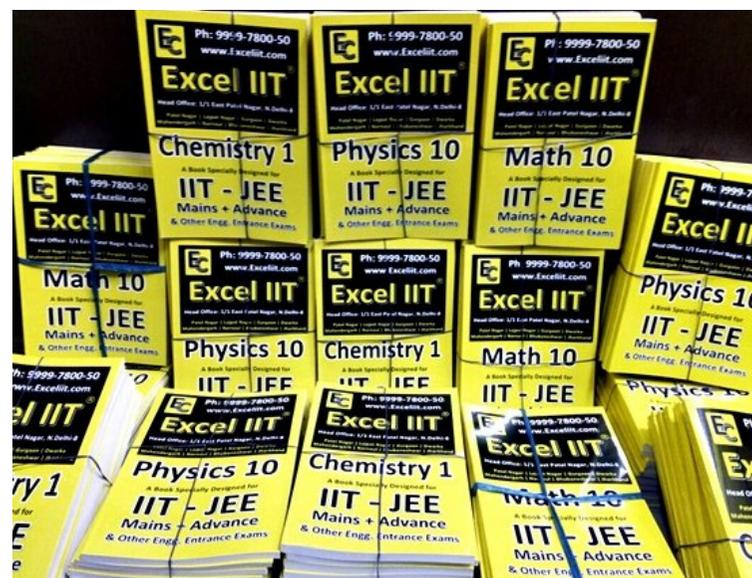
## DISTANCE LEARNING

Distance learning came into vogue based on postal correspondence courses. Universities realized that it was not always possible for students to relocate to a different city for higher education. This happened mainly because the students had faced familial issues, economic challenges or were simply occupied full time in a job or another course, and wanted to pursue an academic qualification nevertheless.

Courses would be conducted by providing the student with the study material required through post. The student would also be given periodic tests which they would have to complete and post back for evaluation. Semester exams at universities would have to be given in person only twice an year at any of the multiple centers set up across several cities. Very few courses required the student to physically attend any number of hours in a classroom. The model gained immense popularity and open universities were established even giving out professional graduate and postgraduate qualifications.

The student is free to choose their learning hours and time commitments. They also have a variety of courses available to them to pick from at each qualification level.[24] There is no instructor and the student has to rely on self learning. The fees for such courses are also much lesser than those of full-time courses offering similar qualifications. The nature of learning however limits the subjects that can be taught, excluding highly technical or skill based courses. The student needs high levels of self motivation to keep pursuing the course without accountability for several months, and dropout rates are often quite high.

*Study material of distance learning course for IIT-JEE preparation*  
Source: [www.exceliit.com](http://www.exceliit.com)



## e-LEARNING AND MOOCs



*Collage of logos of various MOOC and e-Learning services*  
Source: [www.prehospitalsearch.eu](http://www.prehospitalsearch.eu)

As internet reach and speed grew over the last decade by leaps and bounds, it replaced a lot of traditional systems with smarter, faster and cheaper methods of communication. Online information sharing solved a lot of problems with physical postal services, and quickly replaced them in distance learning systems. This led to the establishment of online courses which were structured identically, but delivered through e-books, emails and interactive real time online tests.

Over time the internet based courses also became smarter and a lot of media content like videos and audio books were introduced. Students could now stream videos of instructors at universities teaching their classes at “attend” them remotely at any point of time. Interactivity was still limited though and it has been primarily a one way street. The price of running such courses has been reduced to such an extent that the best courses taught at institutes like Harvard and MIT are freely available for everyone across the world.

This also marked a shift in the purpose of learning after a long time. These course would not necessarily focus on qualification, but rather on helping interested students learn the subject matter better. Qualifications would be made available, require a more rigorous course and cost money. But a student could learn from these materials free of cost. This opened up possibilities for lifelong learners for people looking to expand their knowledge base across disciplines. Massive Online Open Courses (MOOCs) have today changed the way we look at education and learning.



# COHERENCE

## How to make sense of all these systems?

*Artwork by my 13 month old niece, that won't make the same sense to anyone who doesn't have an insight into the grammar of her thoughts.*  
Source: Adira



The 21 education systems that have been discussed have been popular at different times in human history. There are however common threads that connect them. All of them have been intended as a medium of instructing the next generation in information that has been deemed useful.

To be able to understand what an ideal learning system today must look it is important to break these down into understandable parameters. It is also essential to study the people for whom new systems are going to be designed. A study of prevalent solutions available in the market today and the problems or advantages associated with them needs must be undertaken.

## RIVETT FRAMEWORK

The RIVETT framework aims to break down the education systems in to parameters that are critical to the success of learning systems and methodologies. These parameters are arrived at through a study of various learning theories and methodologies that indicate that the efficacy of any education system can be understood in terms of the equation between the stakeholders, the diversity and quality of content, the amount of time required to gain proficiency, level of involvement in the learning process and the economic accessibility of quality education across all sections of the society.

The framework helps to give an overview of the education systems that have existed to be able to easily arrive at the merits and disadvantages built into each one of them. This should help understand the needs from an ideal learning system.

# R. I. V. E. T. T. FRAMEWORK

## RELATIONSHIPS

How important is the relationship between the instructor and the instructed? The closer and more respectful it is, the greater impact the delivery of information has. A higher score signifies a close bond.[25]

## INTEREST

What are the subjects or the interests a student can pursue? How diverse is the curriculum in terms of learning opportunities? A higher score signifies flexibility and more options.

## VALUE

What is the value of the education received for the student and the society? What is the veracity of the content they are being taught? How does it equip students for life/trade?

## ENGAGEMENT

How engaging is the medium of instruction? Does the student actively participate with interest and follow through? A higher score signifies greater levels of engagement.

## TIME

What is the rigor of the course? How much time must the student devote exclusively to learning? A low score means extended time commitment spanning multiple years.

## TRANSACTIONS

What is the nature of economic exchange between stakeholders? A high score means that even the economically challenged students have access to quality education.

**R** ELATIONSHIPS

**I** NTERESTS

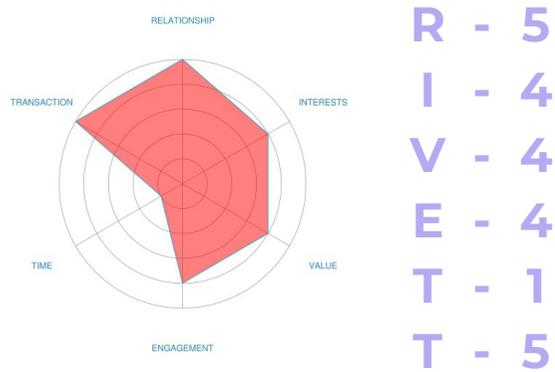
**V** ALUE

**E** NGAGEMENT

**T** IME

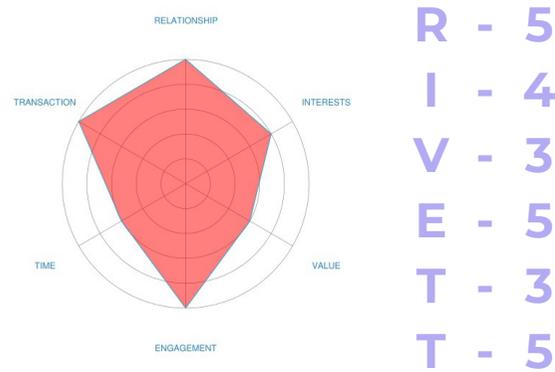
**T** RANSACTIONS

## INDIAN GURUKULS



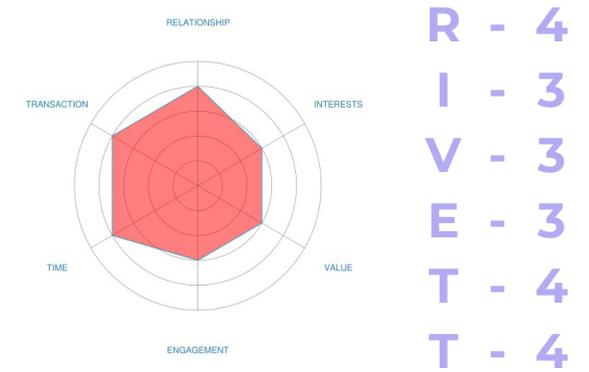
- Deep Guru-Shishya bonds for life
- Extended time commitments required
- Temporary exclusion of student from society

## NATIVE AMERICAN LEARNING



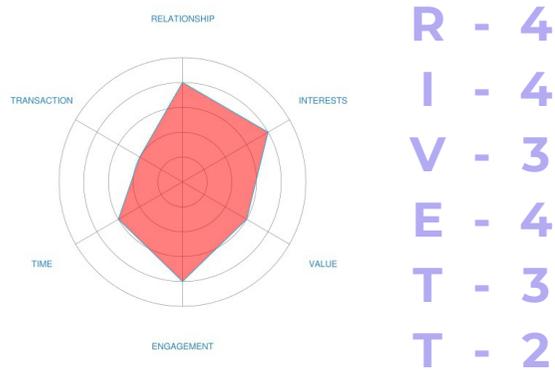
- High involvement experiential learning
- Complex subjects mythicized, not studied
- Ongoing participation through the youth

## GREEK DIALECTIC LEARNING



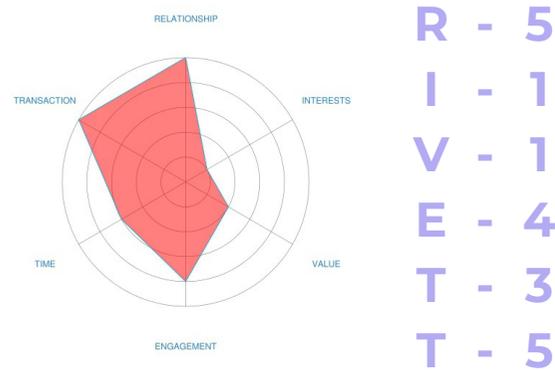
- Little or no practical skills and learning.
- Learning on the go, with dialectic sessions
- Veracity of content varied widely

## AFRICAN APPRENTICESHIP



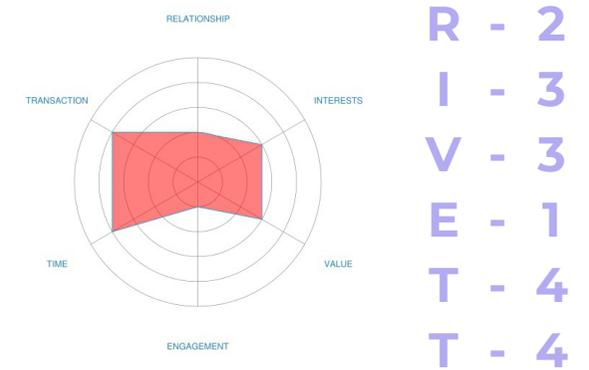
- Master-apprentice had professional bonds
- Not everyone had access to well paid skills
- Required years of practice as a student

## PATRIA POTESTAS IN ROME



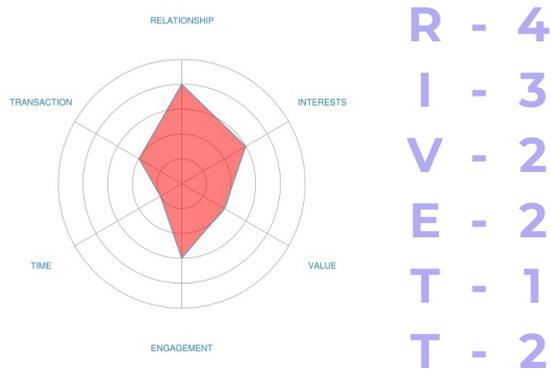
- Only taught what was decided by the heads
- Value of teachings was highly questionable
- Was akin to parental rearing of child.

## MIDDLE EASTERN SCRIBES



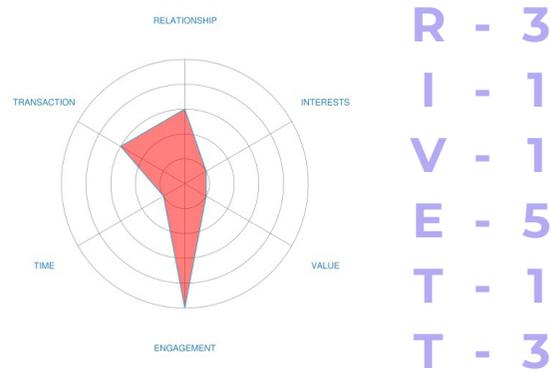
- Less time and money required
- Very low level of engagement in learning
- Limited bonding between student-teacher

## INCAN AMAWTAKUNA



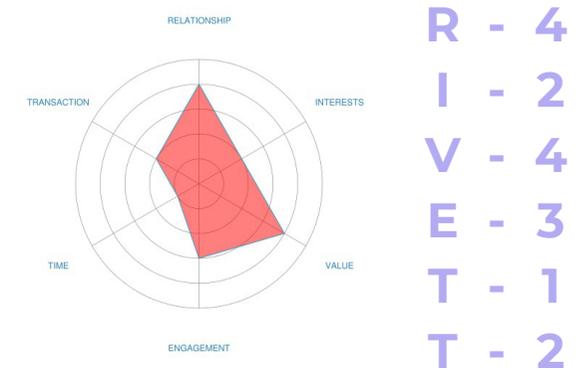
- Lot of inconsistencies among instructors
- Took several years to attain proficiency
- Education was expensive for commoners

## BRITISH BARDS



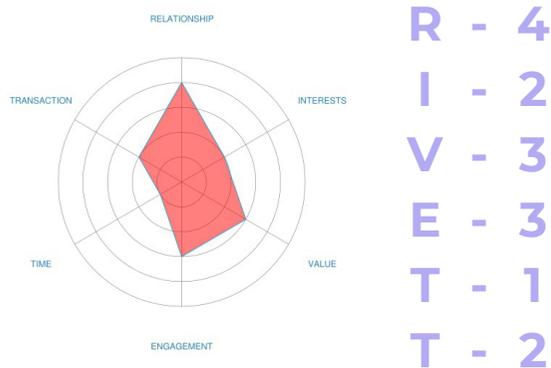
- Subjects were mostly praise of rulers
- Bards had to study and practice for years
- Highly engaging and entertaining medium

## GRECO-ROMAN SCHOOLING



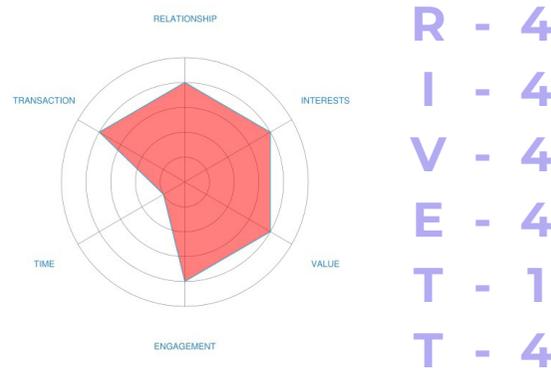
- Foundation of Modern Schooling Systems
- Centrally controlled but limited curriculum
- Expensive and time consuming education

## AZTEC SCHOOLS



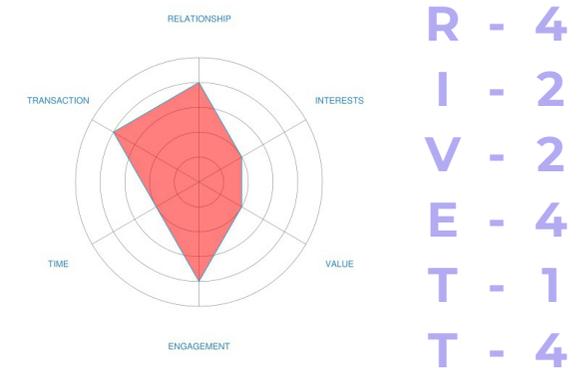
- Strictly regulated curriculum by rulers
- Extended schooling period for students
- Good education was expensive for commons

## SCHOOLS IN ANCIENT CHINA



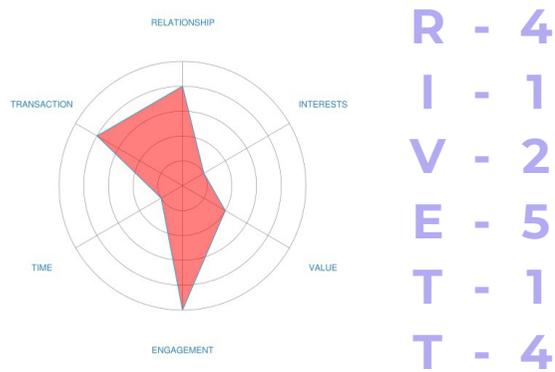
- Well regulated and diverse curriculum
- Active engagement in classrooms
- Schooling and higher education took time

## JEWISH EDUCATION



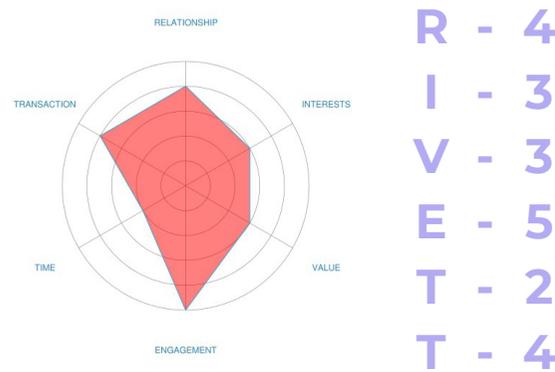
- Religious subjects dependant on the Rabii
- Children were indoctrinated from early age
- Very economical and supported by society

## CHRISTIAN EDUCATION



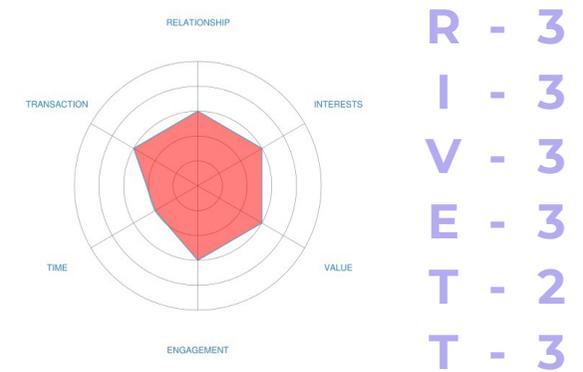
- Subjects limited to the catechism
- Sciences were widely abhorred for centuries
- Time consuming requiring regular classes

## ISLAMIC MADRASAS



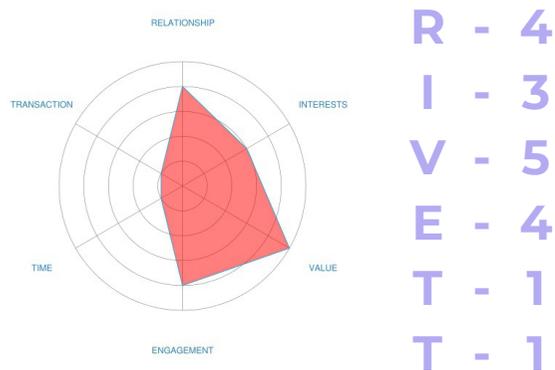
- Greater diversity of subject than others
- Very engaging and rigorous classrooms
- Required extended studies for qualifications

## FACTORY SCHOOLS



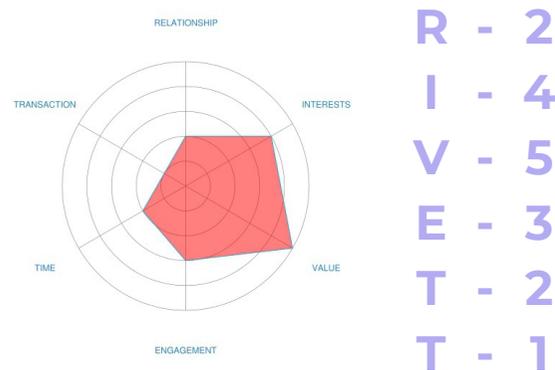
- Detached and mechanical classrooms
- Complexity and diversity of subject reduced
- Education not feasible economically for mass

## POST COLONIAL SCHOOLING



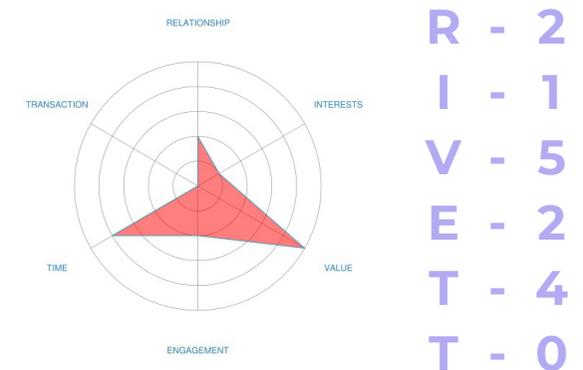
- Teachers actively involved in education
- Nearly 20-23 years of mainstream education
- Commodification of education, costs rise

## SMART CLASSROOMS



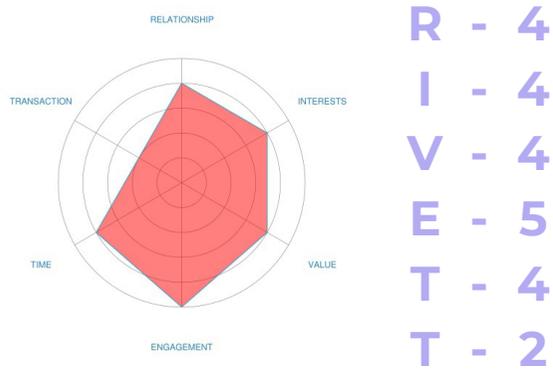
- Diverse and standardized content accessible
- Role of Teacher reduced significantly
- Costs of setting up infrastructure are high

## COACHING CENTERS

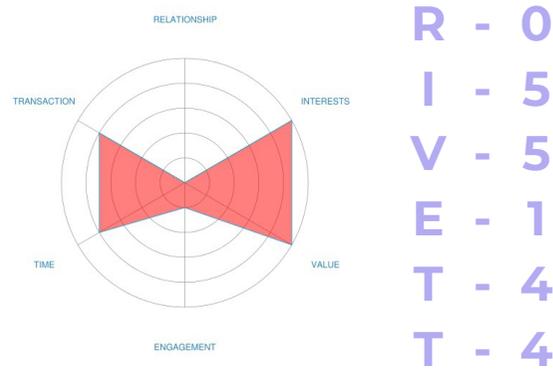


- Highly populated impersonal classrooms
- Extremely high costs of preparation
- Focused only on entrance examinations

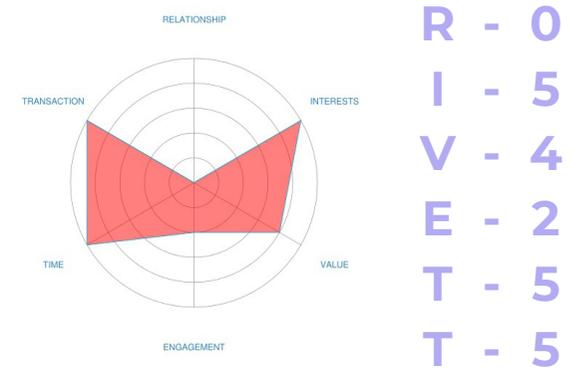
## PRIVATE TUTORIONS



## DISTANCE LEARNING



## E-LEARNING



- Academically feasible system to supplement school based learning
- Cost of tutoring varies greatly with person

- Absence of connection and engagement between student and instructor
- Anytime-Anywhere-Anything model

- Engagement slightly higher with video streaming, but still no personal bonding.
- Learning becomes free, qualification doesn't.

## MORE CONTENT LESS CONNECTION

It is clearly noticeable that the modern education systems with the advent of technology and easy access to education have made the value of information gained higher than the earlier ages. However in modern conventional systems the variety of interests are still limited to those required for college education or jobs. These are also the most expensive forms of education available today, burdening the students financially even before they step out into the world.

E-learning seems to offer a great alternative to these systems as it is both free and provides verified and valuable information to students, virtually free of cost. Self paced learning also takes out the need to attend extended school hours to gain knowledge. However, the traditional bonds between and instructor and the instructed are missing and the perceived value of such education and the importance that could directly relate to long term retention for the student goes down.

# THE PEOPLE

## Who uses these education systems today?

This people in consideration are residents in modern Indian societies. Education has been recognized by most of middle class India as the golden ticket to a successful life. All kinds of resources, economic, emotional, are invested leading to knowledge being assigned a price that is getting higher everyday.



### ONE DIMENSIONAL EDUCATION

### ONE DIMENSIONAL EDUCATION

The students from most households, with the possible exception of those lucky few who've studied at expensive private schools in large cities, have been brought up in an academic world whose sole purpose has been to equip them to clear college entrance exams. They have seldom held diverse and multidimensional interests.

In such a context, it is safe to assume that the exposure to e-learning facilitated by technology and widespread access to internet, would be welcome and beneficial. Indian students now have the best academic content across the globe at their fingertips. As of 2016 up to 15% of all users across MOOC platforms like EdX and Coursera were Indians. However, only 10% of all the users to ever start an online course completed it. 90% dropped out [26]. Something was amiss.

### EDUCATION AS A HUMAN EXPERIENCE

The youth in India has been brought up to study among our peers. They've always looked up to an instructor for guidance; a real person who responds and talks to them. They've had their hands held and their queries answered by patient and wise teachers with personalities that have had an impact on their lives.

Students often remember school days more for the friends they made and the inspiring teachers

who taught then, than for what was taught. Their biggest lessons, both academically and in life have come closely linked with people. It has been these people who made the world wars sound interesting in history lessons and who could ignite passions for organic chemistry through their animated enthusiasm.

## EVALUATION SYSTEMS

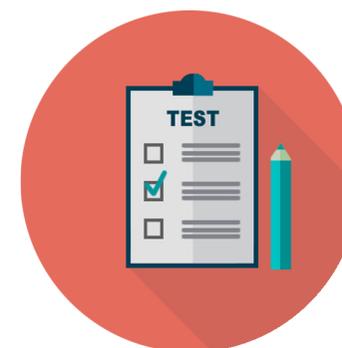
People have also come to regard examinations as benchmarks for learning. Peers have held each other to high academic standards, providing both competition and motivation. After decades of learning within such a system, it seems difficult for students to adopt self-motivated, lonesome modes of screen-based instruction, without cross-examination and accountability. Indian students must find it difficult to not feel lost in such situations. A population that had grown up on years of personal and continuous instruction from a supervising educator, has been finding it hard to adapt to the “self motivated” learning model of MOOCs.

## BEHAVIORAL CHALLENGES

A population that had grown up on decades of personal and continuous instruction from a supervising educator, has been finding it hard to adapt to the “self motivated” learning model of MOOCs. The lack of personal engagement, accountability and third party evaluation is proving to be a barrier to deeply rooted learning behaviors the people have grown up with. The sudden shift enabled by technology and adopted overseas, is a lucrative idea that a lot of the Indian students seem to gravitate towards, but as a society that has its roots in deep and meaningful bonds between the *guru* and the *shishya*, the very concept of learning without being under another person’s tutelage is behaviorally alien.



## HUMAN EXPERIENCE



## EVALUATION SYSTEMS



## BEHAVIORAL CHALLENGE



## OMNIPRESENCE

## OMNIPRESENCE OF BEHAVIOR - NOT JUST US

The lack of personal engagement and guidance is not a problem limited to India however. It is akin to taking away all the people, signage, information boards and directions from a silent airport, and expecting the passenger to board on time based on a map they have on their phone. Technically possible, but improbable.

Human beings are wired to respond to human social contact. A positive emotional state has been proven to be essential to successful learning. While interactive media, and live video conferencing might seem to sufficiently replace human contact, the biochemistry of human beings doesn't respond the same way to electronics. Skilled teachers have historically had the capacity to read and respond to micro-expressions, body language and stress levels of their students, adapting their delivery in real time and making the learning process more productive for students. Such interactions are not specific to one culture or country and are pervasive through all of mankind.

The presence of these exchanges or the lack thereof, creates behavioral jumps that might prevent a smooth transition of learning despite active adoption of technology.

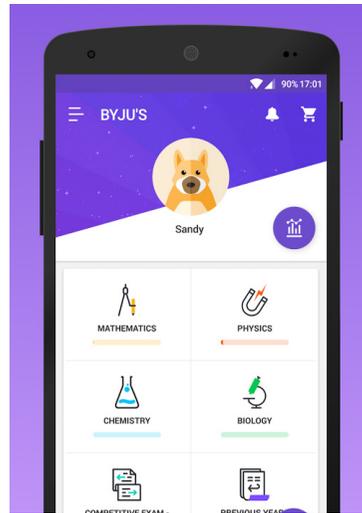


# PARALLEL DIRECTIONS

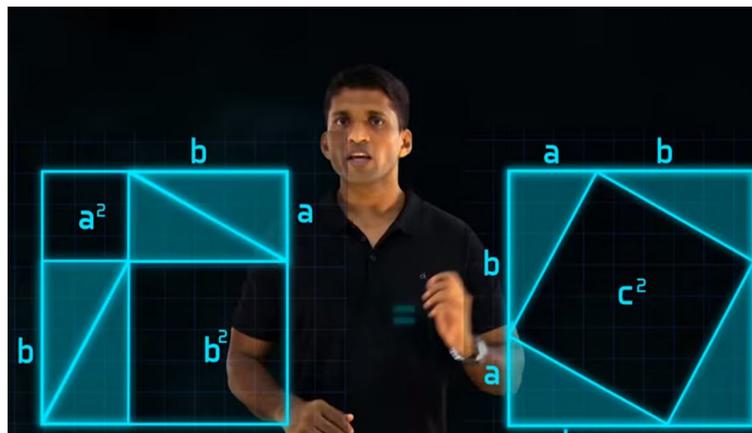
What are the Modern Alternatives available ?

## LEARNING APPS

### BYJU'S LEARNING APP



Clockwise: BYJU'S App Icon, Mobile interface, Lesson screenshot  
Source: www.byjus.com



### Summary

BYJU'S is India's No 1 Education Company with over 4.5 lakh paid subscribers and one of the world's fastest growing Ed-Tech companies. Stay on top in every subject with classes from India's best teachers including Byju Raveendran, using state of the art technology for visualization. Understand and master all concepts right from High School Foundation Class 6-12 Math & Science to Competitive Exam Prep like JEE, AIPMT, CAT, IAS, GRE & GMAT. With 6.5 Lakh+ likes on Facebook, we are the most liked Education Company on Facebook

### What's on Offer

BYJU'S offers K-12 learning content in the form of multimedia packages delivered through its mobile app. These packages use original content, watch-and-learn videos, rich animations and interactive simulations that, are supposed to, make learning contextual and visual, not just theoretical as opposed to rote memorizations.

### Pros

- Brings the smart classroom to the mobile devices for a fraction of the cost.
- Standardized and extensively researched content in sync with board syllabi.

### Left to be Desired

- Actual classes are still video lectures.
- Focus on K-12 syllabus and subjects only
- Extended course durations
- Costs are quite higher than MOOCs

# MASSIVE ONLINE OPEN COURSES

## EdX & COURSERA

### Summary

EdX is a massive open online course provider created jointly by MIT and Harvard. It hosts online university-level courses in a wide range of disciplines to a worldwide student body, including some courses at no charge.

Coursera is a VC funded, ed-tech company founded by Stanford professors. It works with universities and other organizations to offer online courses, specializations, and degrees. As of October 2017, Coursera had more than 28 million registered users and more than 2,000 courses.

### What's on Offer

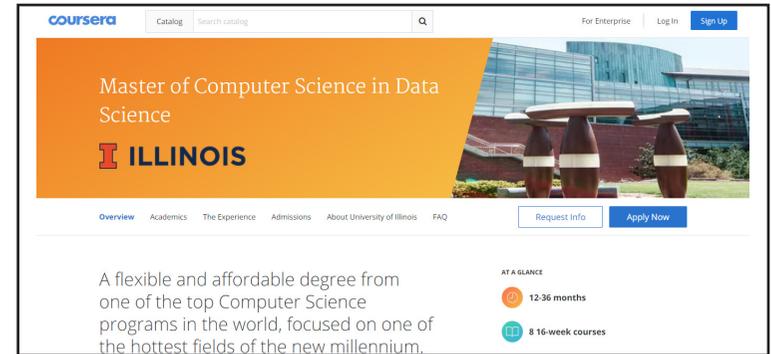
Web based MOOCs offering free classes, certifications nano-degrees and remote masters degrees in a variety of subjects, such as engineering, humanities, medicine, biology, social sciences, mathematics, business, computer science, digital marketing, data science, and others. Courses are provided by leading universities & organizations around the world.

### Pros

- Open access to university level courses free of cost. Fees only for degrees/certifications.
- Self-paced learning in diverse subjects
- Distance learning style qualifications

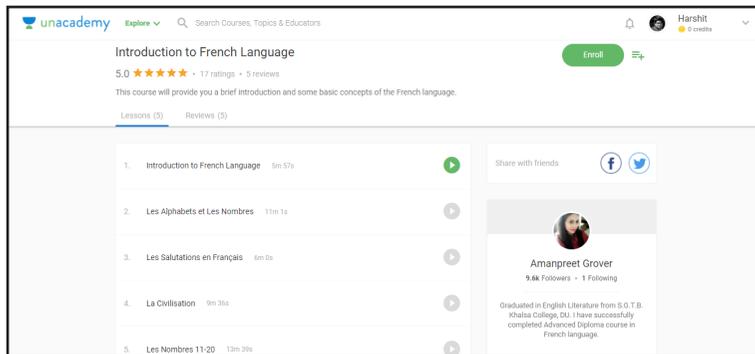
### Left to be Desired

- In order to complete degrees/ certifications, one has to follow time cycles and pay fees
- There is no interactivity, one sided content and tests. Content is not adaptive.

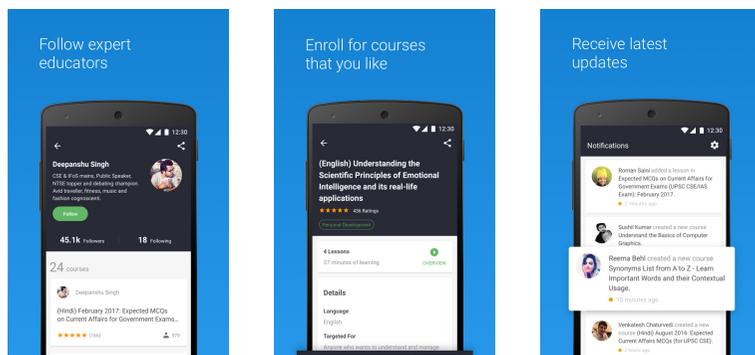


Clockwise from top: Masters course on Coursera from University of Illinois, Free course on EdX from Universidad Carlos III Madrid, EdX logo





Above: Structure of a typical language course on Unacademy  
 Below: Screenshots of the Unacademy Learning App from PlayStore  
 Source: www.Unacademy.com, Google PlayStore



### Summary

Unacademy, India’s largest education platform has in a span of few months seen about 300,000 students taking over 2,400 online lessons and specialized courses on cracking various competitive examinations. Unacademy boasts of some top educators in the country, including Kiran Bedi, India’s first woman IPS officer. They have about 2 million visits to their website each month and their vision is to partner with the brightest minds and have courses on every possible topic in multiple languages so the whole world can benefit from these courses.

### What’s on Offer

MOOC style courses in the form of short videos. All content is generated by users registered with the platform according to their guidelines. Users get paid for their courses and students can access generic features free of cost but some courses require credits on the platform to access. The subjects include test prep, language, programming, engineering, etc

### Pros

- User generated diverse content
- Easy learning, short downloadable videos.
- Incentive for users to share their knowledge
- Gamification with inclusion of streaks

### Left to be Desired

- Focuses on preparatory courses
- One sided content
- No evaluation or testing process included
- Certification not available for most courses

# OTHER SOLUTIONS

## ALTERNATIVE SCHOOLS

### Summary

Alternative schools like the Riverside school in Ahmedabad are centered around a curriculum that which provides an alternative model focusing on quality of learning and student well being, over test based proficiency and preparation for entrance exams. Such practices have been recognized worldwide. Schools like Riverside claim to be consistently outperforming students at same academic level from conventional schools on both mainstream (entrance exams, board exam percentage) and alternative (student wellbeing, holistic growth) benchmarks for a successful education. Several startups have also followed suit.

### What's on Offer

The schools promote concepts like empathy in education, creative learning and a greater level of societal awareness. The classes are a blend of theory and practice, and the students partake in a lot of experiential learning, practicing a plethora of trades and skills from the real world before picking an interest. The curriculum also supports experimental research.

### Pros

- Holistic all round development of student
- Learning first, study second ideology
- Pushes teachers to be creative in class
- Participatory education for students

### Left to be Desired

- Largely centralized and geographically limited
- Demands extended schooling
- Model unproven beyond middle school



Above: Riverside School in Ahmedabad  
Below: Learning while doing, experiential classes at Riverside School  
Source: Design Ahmedabad, Ashoka India



## ED-TECH & EDUCATION STARTUPS

### Summary

Education and Ed-Tech have become hot areas for India's entrepreneurs. A number of startups and initiatives have sprung up across metro cities which are trying to innovate on learning systems and methodologies. Startups like Nayi Disha focus on building educational games, while others like Plastic Water Labs from Bangalore are using VR to generate immersive content. While still other startups provide monthly "education activity boxes" which are meant to provide interesting and interactive learning based products and material to the students.

### What's on Offer

Startups are trying to bridge the major gaps in Indian education systems. Consistent quality of curriculum, accessibility of education and cost of learning. They focus on what the Indian society values most; quality K-12 education and preparation for competitive examinations at a fraction of the cost students would otherwise pay to coaching centers.

### Pros

- Innovative content-based solutions
- Learning is moving out of the schoolroom
- Parents in Metro cities are eager to participate more in their wards' education

### Left to be Desired

- Almost complete focus on content- Subjects concerned only with test prep
- Changes only the channel of delivery, core values same as conventional schools.



Above: Screenshot of educational game from Nayi Disha Studios  
Below: Educational activity box from Magic Crate  
Source: tikulicious.wordpress.com, Twitter - @Magic\_Crate



# GOVERNMENTAL EFFORTS

## PORTALS AND INITIATIVES

### Summary

All governments have been conscious of the literacy and education needs of India for decades. It has come up with several portals, policies and initiatives to facilitate learning and education in our country. While often mired with institutional problems, a lot of these solutions have provided a guiding framework to a lot of private initiatives from NGOs and businesses, if only to seek favor with the government. Avenues that the government has introduced like the UGC educational programs on Doordarshan have for a long time been a mainstay for additional learning for millions across the country.

### What's on Offer

Educational portals like SWAYAM provide a govt. backed MOOC like solution with courses from top academicians from the country's top universities. Initiatives like Each One, Teach One have encouraged people to undertake the education of a fellow citizen. In the past, educational programs have been televised on free national television networks.

### Pros

- Fosters a sentiment of learning and improving the literacy of nation as a whole
- Far-reaching and pervasive channels
- Affordable and accessible to all students.

### Left to be Desired

- Mired with institutional problems
- No concrete follow-through on programs
- Education is still largely about being able to become employable members of society



Above: Swayam.org govt. backed MOOC style educational portal

Below: Each one Teach one CSR initiative by Canon India

Source: www.swayam.org, Canon India





# PROBLEMS SO FAR

## 01 TIME

One must enroll in lengthy courses and there are no quick hack solutions to smaller problems.

## 02 MOTIVATION

Learners are not able to persist through courses. Most people also stop trying to learn after college

## 03 ADAPTABILITY

Ready made content can't adapt with the learning styles and needs of each individual students

## 04 INTERACTIVITY

Students often hit a dead-end on a topic, as the absence of interactivity can't support real time

## 05 PEER ABSENCE

In independent learning, the critical feedback and competition from peers is missing.

## 06 SCRUTINY

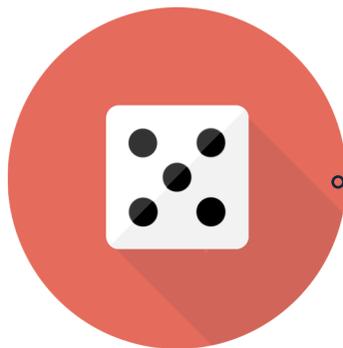
Tests and lessons are self-supervised, allowing the students to slack or cheat or simply ignore content.



# TRENDS

## What are the upcoming trends in e-learning?

eLearning has made a place for itself in the mainstream education industry over the last 10 years. Its easy availability, global participation and low cost make it one of the best learning systems the world has seen thus far. This is a pivotal period in the e-Learning industry as Ed-Tech companies strive to become the mainstay of a new technology drive education system. We are seeing reforms and methodologies that are changing the landscape of education for the first time in centuries. Schools, businesses, private companies are all vying to seek the top spot in this revolution. These are some of the trends that have gained momentum in the past year and are set to explode in the coming few.



### GAMIFICATION

### GAMIFICATION

Gamification is becoming increasingly popular as a way to get learners engaged with content[27]. Introduction of skill levels, badges, streaks, experience points etc has been around for a while. The newest wave includes learning the format of online board games designed to follow threads of thought and decision making. Players are put in realistic scenarios and different decision paths on board games bring out different learning outcomes. An AI on the back-end dynamically adapts and adjusts tactics as each learner progresses.

### MICROLEARNING DELIVERS BITE-SIZED CONTENT

Microlearning is one of the biggest trends in digital learning landscape today. While it has been traditionally known that concise and smaller sets of information, which are complete on their own are easier for our brain to process, It is only in the past years that people have begun to move away from the extended study systems for day to day learning [28].

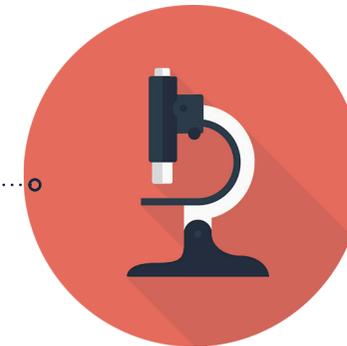
In 2015 researchers from Dresden University published a study [29] that proved that knowledge

retention was made much easier when information was spaced and not delivered relentlessly. Subjects were provided 20 vocabulary based flash cards. A control group was asked to memorize all the cards, while a test group was asked to go through the cards in smaller stacks. The following day, words were displayed on screen, and each time a word that the participant had memorized showed up, they had to indicate the same. Subjects who memorized all 20 in a go took a significantly longer time to identify the words than those who studied them in smaller stacks. They latter were also more accurate.

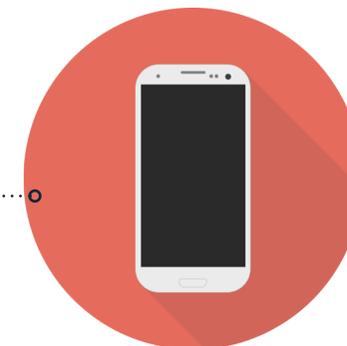
Microlearning allows students to process bite-sized information or snippets, that are wholesome independent lessons on their own. Lessons are spaced out and lead to better overall learning in the long term. It is delivered through short videos, visuals, exercises, and presentations that can go on for a couple of minutes. A lot of MOOCs are adopting microlearning.

## INFORMAL LEARNING GOES MOBILE

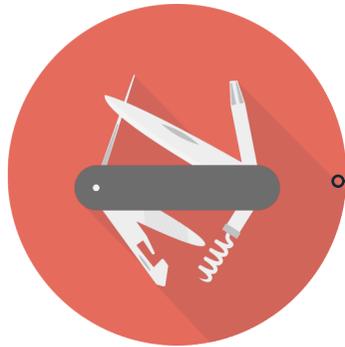
Over 2/3rds of all professionals today obtain knowledge in social and informal contexts. The resource pool of other professionals and peers around us is a storehouse of untapped potential. They often have the skills and knowledge that we seek. This format of informal education is seeing increased adoption in eLearning in other countries.[31] With unique content from the participants, collaboration and interactive exchanges, informal learning can meet a lot of needs of traditional learners that would normally require a formal course setting to resolve. Tools to track and keep record of the interactions like digital whiteboards are becoming popular as such exchanges between participants also become a references.



**MICROLEARNING**



**INFORMAL LEARNING**



## REAL WORLD SKILLS

## REAL WORLD SKILL ON VIRTUAL PLATFORMS

Experiential learning or learning by doing, is something that has been ignored for a long time in the eLearning industry. This has led to professional skills that require practice and dexterity being largely left out of these learning paradigms. Industries prefer professionals who have done more than read and memorize information, people who have actually practiced and developed the skill under an instructor. With technology leaping forward in a big way, today real world training is being integrated into learning material through task based simulations. [32] As these virtual simulations become better each day (they are also now used for training airline pilots) learners begin to face scenarios and problems they would face on job, and start preparing from them beforehand.



## WEBINAR BOOTCAMPS

## THE WEBINAR BOOTCAMP

Webinars have been around for quite some time. They have been lengthy, boring and sleep inducing at the best. That is however set to change with new organizations changing the format to a more fast paced and dynamic boot camp approach.

For example, a webinar boot camp can be designed to increase proficiency or for compliance training. It can have sessions spread over several days with multiple speakers, forum discussions and online mini-games. The “live” atmosphere enabled by video streaming, real time interactions and a variety of immersive virtual discussions creates a more engaging experience for the participants.

## MENTORING, NOT TUTORING

The difference between tutoring and mentorship is that the latter allows the coach to be responsible for the progress and knowledge growth of the student. In the eLearning industry, mentorship is gaining prominence because it allows for long-term attention and follow ups that are required to retain learners or employees and meet learning objectives. The learner becomes more than a consumer of content, especially within professional scenarios, employees develop bonds within an organization owing to the guidance and relationship with their peers and seniors. eLearning allows people to connect even remotely, making sure that in a pool that is stretched thin for experience and proficiency, people from other geographical locations can take up the mantle of mentoring.

## AR/VR + AI BASED IMMERSIVE LEARNING IS IN DEMAND

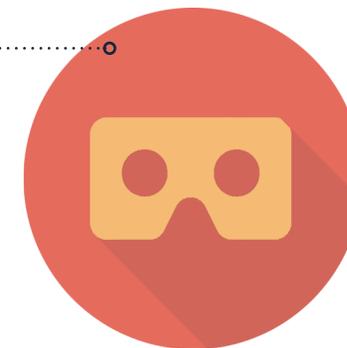
The use of augmented reality (AR) is on the rise. It's cheaper than developing virtual reality programs and can be used on just about any device. Demand is growing for AI powered AR/VR mobile apps in the education industry. Through superimposed images and text, users can learn more about the world around them. The possibilities are endless when the applications of AI are integrated into visual simulations.[32]

## SOCIAL LEARNING GROWS EVEN MORE

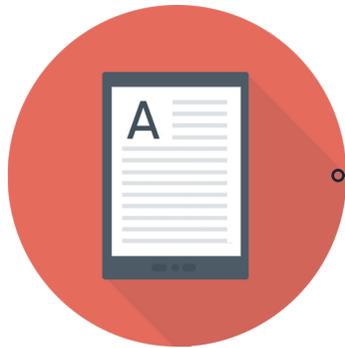
Learning has been behaviorally a social exercise. Online learning while isolated for a long time is now beginning to incorporate this social aspect. Thinkzoom LMS campus, an E4 initiative tested the pilot for The Quad in 2017. The platform lets learners build informal social networks with their peers. All the shenanigans of a regular network like badges, leaderboards, conversations, course activity, etc. are built into it. It brings the peer experience of a offline campus alive.



**MENTORING**



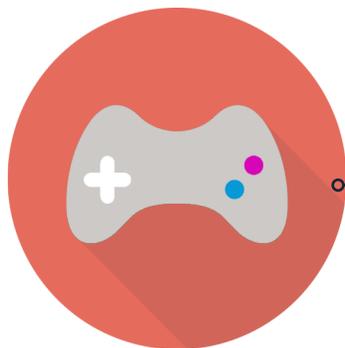
**AR/VR IMMERSION**



## e-TEXTBOOKS

### DIGITAL STATIONERY FOR REAL-WORLD CLASSROOMS

Digital textbooks are meant to improve the experience of a student. Digital formats allow easy search for content, research citations and referencing. They also take up much lesser space than hard copies, reducing the storage space and wastage in schools. Students are also encouraged to prepare their homework and assignments as digital content, making it easier for review and feedback. All of this information can be accessed over the cloud.



## SERIOUS GAMES

### SERIOUS GAMES FOR LEARNING

Games that create virtual open worlds often get categorized as serious games. Second Life for example allowed gamers to do more than just play; they could build businesses and large scale economies. Learning management systems have started to use similar ideas to streamline knowledge creation and sharing. In 2015 Project Discovery was one of the first to introduce serious mini-games in the popular MMORPG (Massively multiplayer online role-playing game) Eve Online. Players were given real astronomical observations and DNA samples to categorize for scientists at the University of Geneva. Similar models are also coming up to simplify research based education in high schools.

# REDEFINING THE BRIEF

Reorienting to address concerns identified

College students have day-to-day learning needs that do not warrant extended full-time courses.

Students find ease in learning online, but seldom end up finishing a course. They also hit roadblocks in online learning that they cant get past

Learners enjoy learning when they can also relate to the instructor. They want to interact and learn from people outside their immediate social groups.

“Serious” learning for Indian students is often limited to their classrooms and young professionals often stop actively trying to learn new things after college.

Learners are unsure about spending money on non-traditional sources for learning and often avoid them, or don't hold them to the same standards..

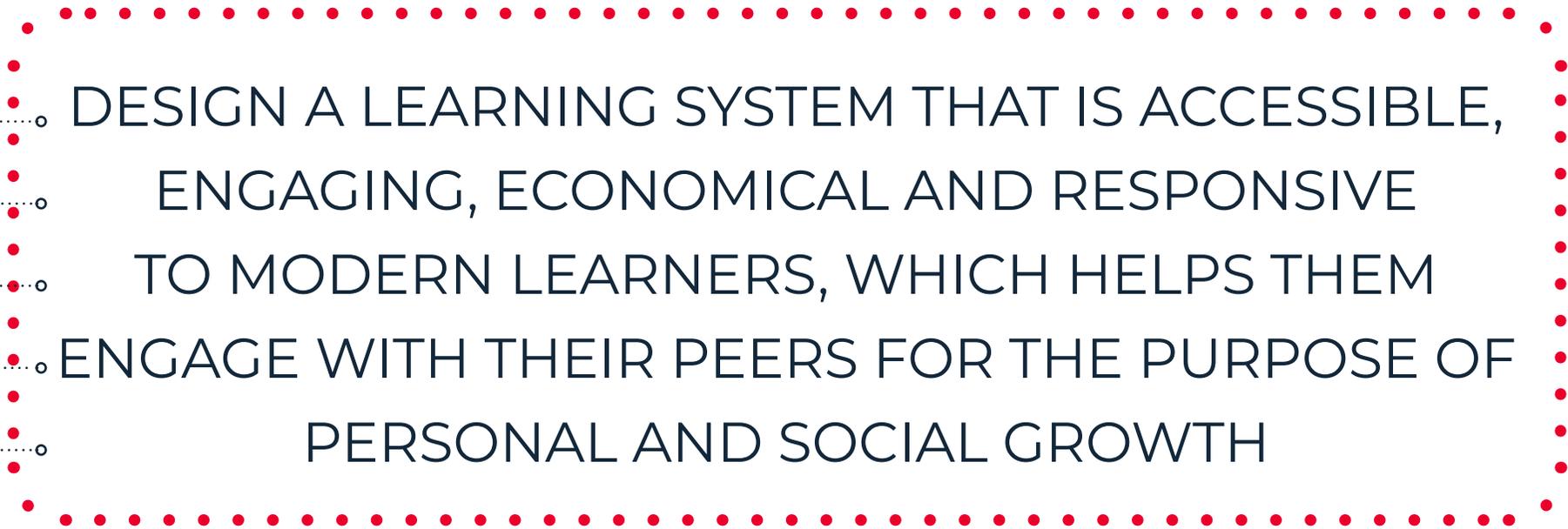
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DESIGN A LEARNING SYSTEM THAT IS ACCESSIBLE,  
ENGAGING, ECONOMICAL AND RESPONSIVE  
TO MODERN LEARNERS, WHICH HELPS THEM  
ENGAGE WITH THEIR PEERS FOR THE PURPOSE OF  
PERSONAL AND SOCIAL GROWTH