



Contextual Education

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Abstract

When the knowledge gained over centuries has to be presented to students through a 12-15 year study, it has to be abridged and organized elaborately. This process of encapsulating all knowledge into an educational course often results in fragmentation of knowledge and a mental divorce from life. Life knowledge that is reduced to objective principles may be intelligible to the intellect, but is incomprehensible to the imagination, creativity and emotional intelligence, all of which are important to the full development of personality. A study of Economics without the human and social dimensions, industrialization detached from ecology, or science devoid of moral accountability results in problems. Education of each part must be in the context of the whole. Knowing the whole context helps one get the right perspective to address the issue effectively. In the education of the future, the gap between abstract concept and social relevance must be bridged. The following article explores the need for contextual education and the ways in which it can be implemented.

1. Our Education Today

Watching a tiny seed sprout and grow into a plant, early humans stopped foraging for food as they had been doing for tens of thousands of years before. They found when the sprouted seed flourishes, when it shrivels, what makes the plant bear flower and fruit, what makes it wilt, how much water a plant needs, how much sun helps this bush, and what type of soil that tree grows best in. Then they perfected this art over thousands of years, which resulted in agriculture that feeds seven billion people today.

When people traded their nomadic lives to a more settled one, they stayed in caves and trees. Then they fashioned crude shelters with mud, stone, animal skin, wood. Small settlements grew into villages. People began to produce what they required—food, clothes, vessels, tools—and traded them with each other. Roads were laid, connecting people. This networking of people and their ideas set off an explosive growth of civilization. Towns and cities developed. Countries, governments and the rule of law came to be. Money, banking, financial systems and trade evolved. Today as we look down from our glass and steel skyscrapers to see megacities develop, we continue our attempts to create perfect organizations, and learn.

We have seen tides rise and fall, and traced them to the impact of the moon. We have sent people to the moon, and brought them back safely to earth. We spoke to people on the other

side of the earth, first through wires. Then we began to do the same without the wires. Now we have virtually fitted the entire world in little devices that fit in our palm. We have split the atom and decoded the DNA. We have lengthened life spans, made human life more comfortable, and continue to make marvellous inventions. But among all the greatest achievements of humanity, education ranks close to the top.

Universal education, schools, colleges, distance education, MOOCs and education reforms draw so much debate that the wonder of their origin and evolution is often lost. When something soft and cold fell from above, the early man, or woman, looked up to find where it came from, and could not find anything. What fell on them seemed like the same substance that they found flowing, or stagnant, in different places around them—water. It made them wet and uncomfortable. But they needed to consume it every now and then, just as the animals and birds did. Also, plants seemed to do better with it. You never knew when it suddenly fell from above. At times, you could tell somewhat in advance. When dark clouds were above, it fell. Sometimes, it kept falling for many suns and moons. Then there was a long gap, after which it began again. There were also other times when it was accompanied by strong winds. People told each other what they knew about it, one generation taught another. Slowly, the occurrence, rain, was connected to the water that was in the lakes and rivers that the sun heated. Patterns were detected. People sowed their seeds in sync with the pattern, and planned their travel and stocked up on essentials keeping it in mind. Superstitions as to the causes of rain were weeded out. The cleansing power of water was found and used. Connections were detected between diseases and stagnant water. Methods to purify water and transport it over long distances were developed. All this that a primary school student learns from a science text book today, as the simple concepts of clouds, water cycle, rain, weather and seasons, was discovered over thousands of years of living and learning, sometimes consciously, sometimes unconsciously. This knowledge, along with a large dose of misinformation and superstition that was regularly pruned, was transferred first orally and then by the written word, over generations and across regions separated by journeys that were often weeks or months in length.

As a far cry from our age of information overload, knowledge was such a precious commodity that it came to be treasured, even hoarded. Schools were set up by the Church to train young monks and nuns. Kings established universities to train scholars who would serve the royalty. Books were chained to libraries because of their rarity. Education was at first only for the aristocracy, then it included all the wealthy. Hesitantly, it reached women. It spread horizontally, to include more and new academic disciplines. To the traditional 3 Rs of education—*Reading, Writing and Arithmetic*—were included science, literature, history, philosophy, law. From the university towns and the ‘developed’ world, it moved to every town and village, and to all the ‘developing’ countries to varying extents. It grew vertically, and delved into each subject more and more. Beginning from kindergarten up to the post doctorate level, education has been classified and organized most elaborately.

Through this marvellous system of education that we have devised, we take all the knowledge that humanity has learnt in the past few millennia, weed out mistakes and superstitions, organize all the componential elements within a comprehensive framework and

multi-layered structure, encapsulate everything into a 15 or 20 year study, and offer it to our youngsters. Anyone who enrolls in school today has a fair chance of being equipped, at the end of a 12 or more year long period of study, with a gist of all that has been accumulatively learnt by all people, all over the world, from the first instance of recorded history till date. For those with the inclination and means to pursue education further, it is possible to specialize in one or more topics, and learn all that there is to be learnt on the subject, and carry out research to find out more.

Added to this system is the few-years-old phenomenon of online education that is accelerating the spread of education, while erasing the horizontal and vertical limits in unimaginable ways. Though the UN Millennium Development Goal of Universal Primary Education by 2015 has been missed by a gap of 58 million children, aided by communication technology, education is well on its way to becoming universal, accessible, affordable and lifelong.

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2. The Problem of Abstraction

A cartoon that did the rounds on the internet had a man looking at a lengthy calculus problem from a high school Mathematics textbook and declaring, ‘I’m still waiting for the day when I will actually use this in life’. There are many similar statements one hears from students, such as

What is the use of learning about the French Revolution?

Will I get a job because I can quote Shakespeare?

Why should I read another man’s biography?

Why should I memorize the Latin names of plants? Who speaks Latin these days anyway?

Why history, isn’t it the future that is relevant?

After graduating, does anyone use Pythagorean theorem or recite lines from Macbeth?

Why are we still following the pattern that our colonial rulers set?

Why do we still use a curriculum that was designed for the Industrial Revolution?

When it is forecast that 60% of today’s youth will work in jobs that aren’t invented yet, what am I preparing myself for by reading this textbook?

and so on. Marvellous as the system of education is, many students do not connect to it any more than they need to, which is simply to pass the grade and get on with the next, with exams appearing to be hurdles that need to be cleared along the way. The fascination of discovery and the joy of learning are no longer real to many. How and why did this happen?

All those who have seen a famous beautiful painting, or any painting for that matter, from very close know the difference between the big picture that one can admire from a distance, and the apparently rough brush strokes that appear when the same painting is viewed from a few inches away. A digital version of the same phenomenon can be experienced when a person's photo is zoomed to 1000% of its actual size, to show the pixels that make up the photo. The beauty of the face is no longer visible, in its place is a jarring mix of dots in different shades. When one sees the close-up and the close-up alone, there is nothing beautiful or admirable there. Similarly, with education.

When all the knowledge that humanity has collected over millennia is to be presented to every new generation in one or two decades, it has to be abridged and organized elaborately. Knowledge is broken into different parts, what we call subjects. The spoken and written word become Literature. Everything connected with the living world we call Biology. The study of the world and natural phenomena is Geography. The world of numbers and computations is called Mathematics. Within each subject, we again classify knowledge into smaller parts. That part of Geography that studies the earth is Geology, the weather is classified under Meteorology, outer space study becomes Astronomy. Then there are those parts of knowledge that are subsets of two subjects, and we name them accordingly—Biochemistry, Behavioural Economics, Geopolitics, Marine Biology. In thus partitioning knowledge into smaller and smaller portions, we begin to stare at the large picture from closer and closer, losing sight of the beauty of the whole. This horizontal divorce of knowledge from the real world context is described by Marilyn Ferguson, American author and speaker, when she says that our educational institutions “*break knowledge and experience into subjects, relentlessly turning wholes into parts, flowers into petals, history into events.*”

Another process by which we have accomplished the organization and abridgement of all knowledge into educational courses is by condensing knowledge of life experience into a series of generalized mental abstract principles. When we do this, the divorce is vertical—it leads to the separation of mind from life. It divides whole perceptions of truth into partial aspects of reality in which the sum of the parts is far less than the whole and each partial truth remains incomplete when divorced from the wider context of which it is a part.

Take the topic of the French Revolution or the Indian independence movement, for example. The injustice in French society and the poverty and hardship of centuries that the lower classes had faced reached a point where they could be contained no longer, resulting in the French Revolution of 1898. A lot of concurrent and subsequent events that transpired in different parts of the world were a reaction to this violent means to equalize society and usher in liberty, equality and fraternity. A hundred years later, shunning all violence, against a better armed colonial ruler, Mahatma Gandhi awoke the dormant aspiration of all Indians, channelized their energy and obtained independence for India. This event was followed by three dozen more countries obtaining political independence in Asia and Africa. Gandhi's life and struggle inspired and continues to inspire movements for civil rights and freedom across the world. But when such complex and multidisciplinary themes are reduced to facts that students are required to memorize—*King Louis XVI ruled France from 1774 to 1792, and was executed in 1793, during the French Revolution, a period of social and political*

*upheaval that lasted from 1789 until 1799, and M.K. Gandhi (2 October 1869–30 January 1948) employed nonviolent civil disobedience and led India to independence from the British on August 15, 1947—*profound ideas are condensed into definitions and formulae, such as the algebraic formula $(a + b)^2 = a^2 + 2ab + b^2$. In this process, the student is lost, and so is much precious knowledge.

It is this horizontal and vertical fragmentation of knowledge from life, the abstraction, the divorce of the part from the whole, this breaking of flowers into petals that creates the disconnect that students experience from education. No wonder students quip, “Dear Algebra, Please do not ask me to find your x, I don’t know, and don’t ask y”.

3. Contextual Education

That we are all connected to each other and to this universe is not some metaphysical idea, it is a truth of life. Every particle in the universe is connected to every other particle. Each galaxy is connected to all the other galaxies. All living systems on earth are part of a web of relationships. Symbiotic relationships begin at the microorganism level onwards. Plants and animals engage with each other, and their environment. Humans influence and are influenced by their environment. The power of the internet comes from its web of connections. Alienation, for anything, anyone, is a theoretical impossibility. Therefore, to understand any part, we also need to understand the whole and the relationship of the part to the whole. In other words, we understand anything when we see it in a context.

Poetry and art can be appreciated better if one knows the period when it was created. Literature can be understood to a greater depth when the environment in which the author wrote is known. Understanding population explosion requires a knowledge of the economic realities and religious sentiments of communities. Pollution can be checked when we understand all about industrialization. Fundamentalism can be tackled only when its root causes, such as illiteracy, unemployment, poverty and marginalization, are addressed. Even a bodily ailment can be treated more effectively when instead of treating the diseases, the whole person is treated. Nothing exists in isolation. Everything needs to be seen in a context.

In the same way, our education acquires meaning and comes to life when we make it contextual.

Contextual education is a method of teaching and learning, based on a constructivist theory, where information is presented in a way that students are able to construct meaning based on their own experiences. Everything is studied within the physical, social, cultural, political, economic and personal circumstances characterizing real life situations, the subjective mental and emotional processes that prompt human action, and the creative role of individuals in the collective social process. Students are able to process new information or knowledge with reference to their memory, experience and to knowledge already acquired. The opinions and perspectives of students are valued, and so are the student’s life context and prior knowledge. Along with teaching the subject, there is a constant emphasis on establishing relationships—between the subject and all other subjects, between the data and

the circumstances in which it was generated, between the lesson and the learner, between knowledge and life.

The concept of contextual education is not new or uncommon. Maths problems such as “There are two apples and three oranges, how many fruits are there in all?” and “A tree is 17 feet from the wall, and forms an angle of 45° from it. What is the height of the tree?” are common in school. But in higher education, teaching becomes more abstract and detached from the student’s context, and with increasing specialization, becomes divorced from all other academic disciplines. Some institutions attempt to contextualize education through

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teamwork, discussions, peer learning, project-based learning, internship and service learning. However, contextualizing education is not systematized in the curriculum, and remains highly dependent on the creativity and innovation of the individual teachers and institutions. An organized, collective effort to add context to the information imparted is needed. This way, we can put the petals back together so the flower comes to view.

4. Support for Contextual Education

Contextual Education parallels nature. All universe is contained in a web of relationships, its very meaning is derived from these relationships. Robinson Crusoes do not exist in nature. After twenty four years, even they need a Friday. Individuals are the content, our relationships with each other are the context: It is the context that gives meaning to the individual existence. Similarly in education, no subject or topic can in isolation provide any meaningful knowledge. Meaning emerges from the relationship between the content and its context. The context gives meaning to content. The broader the context within which the learner makes connections, the more meaning the content, the text book, the lesson holds. Physicists and biologists have discovered that the three principles of interdependence, differentiation and self-organization infuse everything in the universe. Contextual education that is also based on these three principles, therefore corresponds to the way the universe works, and is the most natural way for anyone to learn.

Austrian psychiatrist and Holocaust survivor Viktor E. Frankl said that ‘Man’s main concern is not to gain pleasure or to avoid pain but rather to see a meaning in his life’. Contextual education answers an innate longing for meaning that is characteristic to all humans. It also satisfies the brain’s habit of connecting new information with existing knowledge. The brain naturally seeks meaning in context by searching for relationships that make sense and appear useful. Neuroscientists show that making connections is a natural human activity. The brain tries to give new information significance by connecting it with existing knowledge and skills. When we are asked to do something we have not done before, we immediately try to recall whether we have done anything similar before. Much as a child who is learning to read, reads the word ‘dome’ that he sees for the first time based on his knowledge of the familiar word ‘home’, or the student tries to understand the flow of electricity with the flow of water, the brain tries to connect to the new task with the task it already recognizes.

Einstein used this principle when he explained his Theory of Relativity humorously, ‘Put your hand on a hot stove for a minute, and it seems like an hour. Sit with a pretty girl for an hour, and it seems like a minute. That’s relativity.’ Analogy bridges the gap between the familiar and the new. It personalizes learning and lets students learn intuitively. Comparing sound waves to ripples in water, aerodynamics of a plane to the shape of a bird, earth to a magnet, animal or plant cell to a city, DNA to a blueprint—analogy teaches effectively because it builds on the existing foundation, so the resulting building is stronger.

The brain’s connection with the environment shapes its physical structure, its neurons connect in different patterns in response to stimuli from outside. To help the brain become more powerful requires that it make connections, so it can weave patterns that generate its own sense of meaning. The more connections the neurons make, the more the brain is stimulated. When these connections are used more often, they become stronger. On the other hand, if these pathways are not used, they eventually disappear. So making different kinds of connections and strengthening them increase the learner’s chances of learning more and better.

Studies show that memory is best when we process an item deeply, rather than simply superficially. Learning and remembering are maximum when we relate the things we are trying to learn to each other, and see what common features they share, and how they differ. When we group them into categories and find links among them, our learning is more efficient. The essential principle is that education is at its best when it is progressive, building up on the basis of old knowledge.

Instead of accentuating the dualism between thought and action, contextual education unites concept and practice. When the parts are united, the resulting whole is greater than the sum of the parts. Teachers are discovering that most students’ interest and achievement in math, science and language improve dramatically when they are helped to make connections between new knowledge and old experience and knowledge. Their engagement in work, motivation and comprehension increases when they are taught why they are learning what they are learning, and how the lessons can be used in real-world contexts. It eliminates the question, ‘Why am I learning this stuff?’. It helps the discouraged and disillusioned student who is accustomed to fail, as well as the eager student who earns ‘A’s’.

Currently, most of our courses teach concepts and theories, but not the way these relate to the workplace, society and our lives. That is left out of the syllabus, for the students to figure out on their own, outside the classroom or once out of school. Its consequences are seen in the workplace as skills shortage.

According to the UNESCO Background paper prepared for the Education for All Global Monitoring Report 2012, CEOs from around the world consider unemployability or the skills gap as one of their top five pressing concerns.* Not only are skills in short supply, but there is a skills mismatch among fresh graduates. They lack the skills to fill a position, due to a misalignment of the education system to the needs of the labour market. *The Harvard Business Review* article ‘Employers Aren’t Just Whining – the “Skills Gap” Is Real’ shows

* See UNESCO Report Education for All Global Monitoring Report 2012 <http://unesdoc.unesco.org/images/0021/002178/217874e.pdf>

that the skills gap cannot be dismissed as ‘employer whining’ anymore.* It quotes the Manpower Group ‘Talent Shortage Survey’ that found that 35% of 38,000 employers in 42 countries reported difficulty filling jobs due to lack of available talent in 2013.†

In fact, top companies in the technology industry like Google do not care about hiring top college graduates. Google’s head of People Operations, Laszlo Bock, says that graduates of top schools lack ‘intellectual humility’, a quality without which one is unable to learn, and which is essential in the work place. Google receives 2 million job applications every year, and Bock who has seen some 25,000 resumes says that college grades predict performance for the first two years of a career, but after that, do not matter. Leadership skills, sense of responsibility, problem solving ability, focus and persistence are important, what is least important is expertise! Google’s newly appointed CEO, Sundar Pichai, is said to be a natural diplomat. He avoids making enemies, and is responsible for maintaining smooth ties with partners. He is known to navigate internal politics in such a way as to make his team succeed while inflicting the least possible damage on others. There isn’t a single person at Google who doesn’t like him. Computer science courses do not teach good manners and behavior, but Pichai has obviously learnt that they are needed, to rise all the way to the top. How many of our students are taught that ‘humility’ is essential to get an ace job? Or to get into a much envied company, what is needed is a sense of responsibility, not high grades? Our universities are producing graduates who are not only not ready for the workplace, but have a totally different impression of what is needed to succeed. There is huge gap, the skills gap as the employers see it, between the competitive, knowledgeable graduate available and the responsible, humble, team worker needed. Contextual education helps bridge this gap.

5. Teaching a Subject Contextually, with Reference to all Other Subjects

So how can the context be added to content? One way of doing it is to teach and learn a subject, not in isolation from all other subjects, but with reference to them. Take history. Names, places and dates are an essential feature of history education. The names are mostly the names of kings, queens, and leaders of countries or mass movements. The places and dates are details related to their life and work. In that way, history often tends to be the study of 0.001% of humanity, in chronological order. We begin at the beginning, with the stone age, bronze age, iron age, and then move to the ancient civilizations—Mesopotamian, Indian, Egyptian, Chinese, Greek, Roman. The Middle Ages, Reformation, Renaissance, Age of Discovery, Colonization, World Wars—history is thus a line connecting the major events that have occurred, a uni-dimensional study of the what, when, where and how. In order to make the study of history contextual, it could be related to all other subjects and made multi-dimensional.

The student of history can be taught why the cavemen made those paintings, some of which have survived to this day. What did they paint? How is art important? Inherently, are we all artists, although science and technology rule the fort today? Cave paintings are predominantly on animal and hunting themes. What was painted in India, China, Rome?

* See <https://hbr.org/2014/08/employers-arent-just-whining-the-skills-gap-is-real>

† See http://www.manpower.com/wps/wcm/connect/587d2b45-c47a-4647-a7c1-e7a74f68fb85/2013_Talent_Shortage_Survey_Results_US_high+res.pdf?MOD=AJPERES

Has art always reflected our chief preoccupations? What was the impact of Renaissance on art? What are we painting today, and what does it tell about us? How much did religion influence art, positively, negatively? How lucrative was art as a profession? What was the social position of artists? How did different art forms evolve? In this way, art can be taught, through history.

Not only art. Were the crude figures that the caveman made on the walls an attempt to express himself? How did writing evolve from art? When did writing become the predominant way of expression? How and where did the various forms—sonnets, ballads, drama, novel—evolve? Do writings reflect the sentiments of the period? What do the writings of Socrates and Plato show about the Greeks? What was written during the dark ages? What is the power in books that some people regarded them as a threat and ordered book burnings at different times? How does literature show the changing attitudes towards slavery, colonization, rights of women, segregation? Did books shape the course of history, or at least influence it? What was the effect of the printing press on books and knowledge? How has digitization impacted writing? This is a study of literature, branching from history.

When Gutenberg invented the printing press in 1495, how did it alter the course of history? How have inventions, beginning from the wheel, shaped history? In the absence of instant communication or fast travel, how did news of discoveries spread? With mobile phones and social networking today, can we expect more and powerful Arab Springs? How did science clear itself of superstition and misinformation? When, how did Science part ways with religion? Why did some rulers patronize science, while others stymied its development? Which places and peoples were advanced in their knowledge of science? Did the Age of Discovery provide an impetus to the maritime industry, or did increasing knowledge of sea travel and ship building along with inventions such as the chronometer and sextant result in exploration? How did science play a role in the industrial revolution? How have new inventions and theories been received? Is there any difference between the attitude of scientists to a radically new idea in the 18th century and today? Is science responsible to society? Should scientists be morally responsible? Why did the American physicist and the father of the atomic bomb, J. Robert Oppenheimer, oppose the hydrogen bomb? Why was he accused of being a communist and tried by the US government? Is there a parallel between that and treatment meted out to Galileo by the Catholic Church when he supported the Heliocentric theory? Heliocentric theory is easy to comprehend in principle, but the social and psychological process Copernicus went through in contemplating and pronouncing heretical ideas in the face of the entrenched knowledge of the times, is as relevant today as it was during his own lifetime. Is any of this of relevance to students of science today? Why did Sir Joseph Rotblat leave the Manhattan Project on the grounds of conscience? Science, studied from a historical perspective, is as equally informative as the scientific principles themselves.

Resistance to change and new ideas is a common phenomenon. The French Revolution was due to the French aristocrats' inability to give up their privileges and accommodate the aspirations of the rest of society. But when both France and England had monarchs and an aristocracy, why was there no English revolution? How has society changed since the time of the hunter-gatherer, in what ways is it essentially the same? How have the different

components of society organized themselves? How has human psychology evolved with evolution of society? How did so many thinkers and writers develop in Greece? Why were Roman sports so violent? How did the concept of universal human rights develop? How did industrialization and urbanization affect the family, values and living standards? What was the impact of women's liberation and civil rights movements? What were the lessons not learnt from World War I that resulted in World War II? What were the lessons learnt from World War II that have resulted in elimination of large scale warfare in Europe? How can this be emulated in the rest of the world? How has immigration homogenized populations? Instead of history being the study of a miniscule part of the population, it can be a study of the entire society. Sociology can be a part of study of history.

How did law come to be? What were the early governments like? How did different political systems develop? When was monarchy overthrown in most places, why and how does it still survive in some? What gave and in some regions, continues to give religious groups the power to govern? What circumstances create dictators? Is the European Union a predecessor to a World Government? What gave rise to Communism? Did anyone win the Cold War? That will be studying politics from a historical perspective.

Gorbachev was instrumental in winning the Cold War. Extensive studies have covered the process of Soviet liberalization that culminated in the break-up of the USSR and the end of the East-West confrontation. But how many history books answer, or even ask the question, why did Gorbachev do it? He stood to lose from dissolving his own post, which he willingly did. What went into moulding his personality? How are leaders created? Lincoln had in his cabinet his bitter critics. Was it shrewd political stratagem or profound wisdom? When Churchill said, 'We will not surrender' in the face of a better manned German air force, what was he thinking? What inspired Mahatma Gandhi to call on all Indians to make salt, in defiance of the British salt monopoly? Did he believe Indians could gain independence by making their own salt? Biography and the psychology of individual leaders can be a part of study of history.

How has the environment been affected through history? Which animals have become extinct, and why? Which are endangered, and how can they be saved? What have been our past superstitions, have we overcome them today, or replaced them with new ones? Do we see patterns in our history, and use them to anticipate the future? There is no limit to contextualizing education, by teaching a single subject in the context of many others.

6. Teaching Everything Contextually, with One Subject

All for one and one for all, the motto of the title characters in Alexandre Dumas' novel *The Three Musketeers*, perfectly suits contextual education too. Just as one subject can be taught in the context of all others, all subjects can be taught in the context of one.

We normally regard literature as fiction and rarely resort to literary examples to illustrate scientific principles. But life as depicted in literature is not merely the product of a writer's imagination. All great literature reflects realities of human character, society, values and aspirations. Literature can be used to complement the study of any academic discipline.

Many students and practitioners of psychology have said they have learnt about the human mind more from reading Shakespeare than from Freud and Jung. There isn't a single characteristic, personality trait, behaviour or manner that one does not find in literature. Studying Shakespeare is like studying a cross section of humanity. A strong woman ruled by passion in Lady Macbeth, a lady with a heart of gold in Juliet's nurse, the incorrigible old rogue Falstaff, the great old man Prospero, the quintessence of evil Iago, Hamlet with his internal struggles—Shakespeare has them all. Reading all great literature increases the vocabulary of thoughts and ideas, and gives a vicarious experience that one may never have otherwise. As we read literature and charge at the enemy on the battlefield, cross the ocean and weather a storm, follow a family's fortune over generations or the protagonist's life from beginning till end, solve a mystery or laugh over a romance, as we love some characters and hate some, empathize with some and wonder at others, our study of human psychology becomes more rounded.

Plato, the Greek philosopher, was apparently familiar with contextual education, he used parables and conversational prose to teach his principles, his characters asked questions and generated discussions. His Analogy of the Sun, Allegory of the Divided Line and the Parable of the Cave teach principles of philosophy such as goodness, psyche and perception. He tells the story of prisoners chained facing the wall of a cave, who have only seen the shadows of objects behind them fall on the dark cave wall. They mistake these shadows for reality. When one of them is forcibly dragged out of the cave, the sunlight hurts him, but he gradually begins to see reality. But if he were taken back to the cave, he would be unable to see in the darkness, and his fellow prisoners would be convinced that being freed from the cave would only harm them. Profound, abstract principles of philosophy can be simply illustrated and explained with a short story. 'Sour grapes' and 'the emperor's new clothes' are terms inspired by stories that convey a message succinctly.

Values cannot be taught effectively without literature. This is why we have a huge repository of folklores, fairy tales and fables in every society. Difficult thoughts can be communicated easily, boring topics can be made interesting and values can be made live through stories. Panchatantra is an ancient Indian collection of stories, somewhat similar to Aesop's Fables. The collection is attributed to the 3rd century BCE writer Vishnu Sharma. Legend has it that a strong and scholarly Indian king had three 'dullards' for sons. The king despaired of the princes' inability to learn, when his minister advised him that rather than teach science, politics, diplomacy—all limitless disciplines that take a lifetime to master—formally through texts, the princes be taught the wisdom inherent in them. Vishnu Sharma promised to make the princes wise to the ways of politics and leadership within six months. Conventional ways of teaching them would be ineffective, so Vishnu Sharma used fables to accomplish his purpose. Stories are not just for educating children while entertaining them. Any good piece of literature can give insights into life, as the writer is a seer of life. Rather than study the huge canvas of life, the same can be studied in miniature in a story. Anthony Trollope, one of the most prolific and successful novelists of Victorian England, has created 47 novels with hundreds of characters, each of which is a treatise in human values. The title character in the novel *Dr. Thorne* is a good hearted, selfless country doctor who values people above money. He is blessed with people who love him, and eventually, with unimaginable wealth. Lizzie

Eustace, in *The Eustace Diamonds*, is at the other end of the human spectrum, cunning, calculating and unscrupulous. All her schemes backfire, and she finds herself married to a man who is more than her match in wiliness. In *Ayala's Angel*, Ayala is a poor orphan dependent on her relatives, but with a strong sense of her destiny. She rejects suitor after suitor because of her aspiration for the perfect angel she has envisioned. Common sense, her relatives tell her, requires her to accept any marriage proposal that comes her way, but she clings to her dreams, and sees them come true. In *Can You Forgive Her*, Lady Glencora is forced to marry Plantagenet Palliser, though she loves Burgo Fitzgerald. Palliser sees Glencora is unable to give up Fitzgerald, and gives his wife the freedom to choose her own future, something her relatives had not given her when they forced her to give up her lover. When all circumstances are suited for Glencora to elope with her lover, she chooses to stay back. Palliser, in return, gives up his cherished hope of becoming the Minister of the Exchequer, and takes his wife on a tour of Europe. When he returns with a happy wife and successful marriage, he also finds the post of the Prime Minister of the country waiting for him. Patience, selflessness, integrity, falsehood, individuality, conventionality, and the response of life to these values come out through these and all other great works of literature.

Literature reflects people and society. Sociology studies can be aided and enhanced through a study of literary works. The gradual movement of status and prestige, from land and estate, to trade and money, is seen throughout the literature of the 18th and 19th centuries. The question raised earlier, as to why there was a French Revolution but no English Revolution is answered through a love story by Jane Austen in her *Pride and Prejudice*. The simple romance depicts with profound insight how England avoided revolutionary war between the classes by permitting upward social mobility and marriages between members of the different classes. The story is a simple romance, a wealthy gentleman is attracted to a country girl of humbler means. He sees the intelligence, strength and goodness in her, but is unable to accept the difference in social class. Eventually, his good nature overcomes the sense of social superiority, and he marries her. The same movement is seen among other couples in this story that was set at the time the French Revolution was unfolding in all its brutality across the channel. There the French aristocrat refused to part with his crown, so his head was forcibly cut off. Darcy gave up his pride, accommodated the aspirations of those below and voluntarily erased class barriers, thus saving his head. Darcy's act symbolized the movement prevalent in English society, where class boundaries were gradually erased through the acceptance of trade, dilution of class consciousness, and inter-class friendships and marriages. This resulted in a peaceful social evolution, and spared it a violent revolution. Such ideas and movements in society and peoples can be traced in all books. Society's conception of virtue and vice, and its hold on people are brought out in Nathaniel Hawthorne's *The Scarlet Letter*. The growing opposition to slavery is depicted in Harriet Beecher Stowe's *Uncle Tom's Cabin*. The book is even credited to having influenced the course of the country. When Abraham Lincoln met the writer during the American Civil War, he is reported to have said, "So you're the little woman who wrote the book that started this great war." The human side of the Industrial Revolution is seen in *David Copperfield* and *Hard Times*.

Though literature does not directly focus on Science, it traces the development of the subject over time. The comic adventure of Phileas Fogg and Jean Passepartout in Jules

Verne's *Around the World in Eighty Days* shows us what an immense accomplishment it was, in 1873, to complete a trip around the world in 80 days, and how far we have come since. Technology happens to be an essential part of plots in writings today. Literature exposes us to new cultures, something much needed in today's shrinking world. It awakens in us a sense of the aesthetic. Knowledge of any subject can be enhanced by a study of literature.

What is true of literature is more generally true of other forms of contextual knowledge including case studies, cinema, history, biography and art which can offer similar benefits to students of economics, politics, law, business, sociology and even the hard sciences. Everything can be taught with reference to one subject, completing the contextualization of knowledge.

7. Educating the Person, not the Subject

A student of English literature was writing his term end paper on Shakespeare. He hurriedly scanned the first question, read only the first three lines of an unidentified passage, 'recognized' them as coming from Hamlet, and wrote for 90 minutes on what the passage expressed, of Hamlet's dominant themes. After completing the exam, he had time to go over the question paper a little more carefully, and found to his consternation that the passage was from King Lear, and not Hamlet. At the bottom of the answer booklet, he scrawled in a hurry, "The lines come from King Lear. I am sorry for being so careless and writing on the wrong play. I really do know, and could have written about Lear." The English professor, Dr. Elizabeth Pope of Mills College, Oakland, California returned the booklet with an 'A'. She had added a comment, 'Your closely reasoned, detailed argument very nearly persuaded me that the passage from King Lear would have served very well in Hamlet'!

In her 2002 book *Contextual Teaching and Learning: What It Is and Why It's Here to Stay*, author and education consultant Elaine B. Johnson recounts this incident about her English professor Dr. Pope, who was interested in her students' depth of understanding, more than anything else. She saw that mistaking King Lear for Hamlet was a slip, but she appreciated the student's understanding! While teaching Shakespeare and other great authors and poets, Dr. Pope showed her students how the poets urged all to think about how they perceived others, how others perceived them, made decisions, resisted or succumbed to peer pressure, faced humiliation, handled power, exercised compassion and maintained integrity. She connected the centuries-old works to the modern day and the students' lives. She helped them see meaning in what they learnt. She taught them, not Shakespeare!

Education has to be person-centered. Wholesome medicine treats the patient and not the disease or just one symptom. Similarly, education must be for the person, not one part of him. Enterprise Rent-A-Car, an American car rental company, is one of the top recruiters of entry-level college graduates in the US. It hires college athletes because sportspeople know how to work in teams and multitask. Marie Artim, Vice President of Talent Acquisition at Enterprise, says that there are a lot of transferable skills in athletes that make them effective employees even in a field unrelated to sports. Just as the technology company Google considers technical expertise as the least valuable skill, the car rental company knows that a wholesome personality is needed to excel at work, not just grades or specialized information.

It is not the MBA that prequalifies a CEO. Business Management students are taught project management, strategic management, risk management, human resources management, and so on. The human resource is assigned to one exam in one semester, whereas every part of business management, be it project, strategy, risk or marketing is about people!

A progressive school that is centered around the person rather than subject, course or expertise is New Technology High School in Napa, California. It has re-imagined education and created a model that educates the person as a whole, imparting not only textbook knowledge but life skills. A culture of respect, trust and responsibility is inculcated in the students. There are no bells that ring signalling the end of class periods. Students are trusted to keep track of their own time, just as they would need to do later as adults. They can organize their own projects, or work in groups of their choice. They are included in the decision making process in school. The curriculum is project-based and the teachers lead the activities, and not give lectures to students. One criterion on which students' answer papers are graded is work ethic. Communication is considered important, even while solving Maths problems. Traditionally, students have been encouraged to compete with others and come first. But at the workplace, they need to totally reverse, and work in teams, in mutual cooperation. Somewhere between college and career, the students are required to pick it up. But New Technology High School makes students help each other and see the benefit there is to be derived when competition is replaced by cooperation. The exceptional skill sets and life knowledge that a dynamic CEO possesses can be taught to everyone in this way. Imagine an organization where everyone possesses the skills and capacities of the CEO!

Organization is a concept integral to all disciplines. It is a fundamental principle behind social evolution in every field of life—commercial, economic, social, political, religious, educational, scientific, etc. A family is organized, with different roles and responsibilities to each member. The market, city, government, health care, education—all these are organizations of people, structures and the relationships between them. But the true power of organization is rarely brought forth with sufficient clarity and emphasis in courses. To understand the idea in its entirety, the teacher has to be one who thinks contextually and teaches creatively. There are many teachers, at all levels of education, who use props and technology tools to make the classes more interesting and effective, analogies to explain, biographies to inspire and movies to make ideas clear. Movies can be a very powerful educational tool. A five minute clip from the opening scene of the movie *Gladiator* brings to life the power of organization. It depicts a fierce assembly of fearless German tribesmen fighting for their very survival against the quiet disciplined orderliness of the Roman military machine and being quickly annihilated by organizational precision more than strength, courage or determination. The Romans have many specialized divisions—infantry, archers, cavalry, the signal bearers. In the background, they are supported by physicians, blacksmiths, cooks, drivers, those who take care of the animals. They even have a man whose assigned duty is to fire the oil, so each archer can light his arrow at once. The Germans have a lot of courage, energy and determination, but cannot match the organization of the Roman army. The Roman side has a clear hierarchy, starting from the king down to the foot soldier. The fighters are grouped into specialized divisions, each performing a different task. The organization, co-ordination and specialization of tasks give the Roman army its power.

Films and documentaries are part of the curriculum followed by some progressive school and teachers. There are resources such as www.teachwithmovies.org that recommend movies and corresponding lesson guides for teachers. The Department of Education in Alberta, Canada includes feature film in the minimum requirements for text study. Many teachers, mostly in Europe and America, use movies in their lesson plans. The concept of class differences is brought out in *Titanic*. *Cast Away* is a tale of isolation and perseverance. *Matrix* is about conformity, self-discovery and the influence of technology. *Chocolat* talks about the longstanding debate of Change vs. Tradition. A 21st century student in Asia or Africa, or even Italy itself, may find it hard to recreate in his mind the Roman streets and palaces while reading Shakespeare's *Julius Caesar*. Watching the movie adaptation of the play makes the story more real. Otherwise, even the thought of a man in a toga would make them wonder how the Romans managed to move around, let alone have a flourishing civilization!

Like movies, biography is another field that serves contextual education by looking at the whole instead of the part. The study of an individual's life can be a great lesson. How their actions altered history and how historical events shaped them, how personalities are formed and how a formed personality acts, are lessons that students of history or psychology need to fully understand the subject, educators need to understand students, politicians need to handle issues, leaders of organizations need to lead, business people need to negotiate—all those who receive an education can benefit from the study of biography. The great men and women can inspire the young and act as role models. Watching the movie *Gandhi*, or reading his biography, one can learn what is it in an individual that made an ordinary man a Mahatma, or great soul.

The biography of Lincoln shows how honest he was, to be called Honest Abe, and how that honesty served him. Lincoln, when a young legislator, ran for the senate. He and two others, Joel Matteson and Lyman Trumbull, were in the fray. Matteson had 44% of the support, Trumbull just 9%. Lincoln, who had 38% of the support knew that Matteson was not a straightforward man. He and Trumbull shared a common vision for the country. So he withdrew from the race. Rather than splitting the votes and allowing Matteson to win, he withdrew, and supported Trumbull. He asked all his supporters to do the same too. Trumbull at first could not believe it was happening. This man was actually giving up his huge advantage, because he wanted the right person, not himself, but a right person in the senate instead of a man of questionable character. So he sacrificed his chances for the greater good. Trumbull won the seat. When Lincoln later contested the elections at the national level, Trumbull was one of his loyal supporters, and Lincoln rose to the post of the US President. It is not so much a moral lesson as an insight into the workings of life. Honesty and political aspiration do not often appear to be the closest of allies, but when they do form an alliance, they take one all the way to the top. Values have been recognized as an essential driver of professional excellence. Biographies bring the principle to life.

Centering on the whole person, the ills in today's education can be eliminated. ADHD, Attention Deficit Hyperactivity Disorder, is a term that is heard increasingly with reference to children today. In the US, some 9% of all children are diagnosed with ADHD, and treated with different kinds of medications. The percentage of children with ADHD in France is less than 0.5%. In the US, child psychiatrists treat ADHD as a biological disorder, and treat the

brain's neural functioning. French child psychiatrists see ADHD as being linked to the child's psycho-social circumstances, and focus on the issues that cause the child stress and underlie the ADHD. They treat the children with different forms of counselling. Hence the difference in numbers in the two countries. Similarly, a comprehensive, person-centered approach in education makes youth complete, and prepares them to face the challenges of the 21st century.

8. Educating the Part in the Context of the Whole

When the President of a country is faced with the largest crisis ever in the nation's economic and banking history, what does he depend on? The opinion of the economists? The advice from the bank presidents? His cabinet colleagues? Does he bank on the economic theories propounded by the elite universities in the country? This is the dilemma Franklin D Roosevelt faced, in 1933. The US banking crisis led to the closure of more than 6000 banks. There was a sense of panic among the people. They began to withdraw their deposits from the remaining banks, which led to an escalation of the crisis. The President put his finger on the issue when he declared on public radio that there is nothing to fear except fear itself. He rejected the monetary principles he had learned in Economics at Harvard and appealed directly to the emotions of the American people. He addressed them on radio and asked them to reject the sense of panic that was destroying the financial system, to exhibit courage and trust in themselves, and pride in their nation, and leave their money in the banks. His appeal halted the panic and paved the way for legislation that ensured the stability of the system for the following seven decades.

Economics touches people's lives directly, but the study of the subject rarely brings out the human and social dimensions. Similarly, industrialization detached from ecology, financial systems divorced from the real economy, and science devoid of moral accountability result in problems. Education of each part must be in the context of the whole. Roosevelt intuitively knew the link between economics and the aspirations and feelings of people. He knew the power of communication, of appealing to the emotions. Banks or the economy do not operate in isolation, they need to be seen in the context of the people. This linking, this kind of seeing the part in the context of the whole, must be integral to education of the future.

Winston Churchill intuitively knew the context when, at the height of World War II, he told his country and the world, 'We shall never surrender'. During the Battle of Britain, the Germans expected Britain to surrender in 6 weeks. But after 3 months, the Germans gave up, though they heavily outnumbered Britain in both aircraft and experienced pilots. They were training four times as many pilots every month as Britain. The advantage seemed to be with Hitler, but he had not taken into account the enormous psychological determination of Britain and the intuitive knowledge of her leader. In one of his most famous addresses to the nation, Churchill rallied the English to make unheard of sacrifices and unrelenting effort to defend their freedom. He spoke out of the deepest conviction and courage of his heart. He was not going to surrender, and he appealed to the depths of the English people. During air raids, he would stand outside on the roof top, shaking his fists at the bombers. His courage, patriotism, sense of honor and self-sacrifice resonated with all the English people. They backed him totally. In one of his other war speeches, he said 'I have nothing to offer but blood, toil, tears

and sweat'. What more can a leader offer, and every one of his countrymen was willing to follow him and offer the same. These statements of Churchill had all his emotions, sentiments and beliefs behind them, and struck a chord with all his people. Against all odds the underequipped and undermanned British air force was victorious in the skies over Britain. In the face of such resistance, Hitler had no choice but to give up. Churchill knew that more than the planes, pilots, armaments and war infrastructure, it was the soldiers' determination backed by the countrymen's support that would win the war.

Whether in war or in peace, knowing the whole context helps one get the right perspective to address the issue. Contextual education helps students get this perspective. There are a number of initiatives many schools and colleges take in this regard. The concept of service learning that some universities offer is one attempt, the trans-disciplinarity that Finland has introduced in its curriculum is another.

Service-learning is an educational approach that combines book learning with real world work. Students are given an opportunity to apply their classroom learning to support or enhance the community as part of their course. Many organizations and universities have incorporated service-learning into the curriculum, to address the contextual, motivational, and multi-disciplinary team needs. Purdue University's Engineering Projects in Community Service program requires its students to form multi-disciplinary groups to meet community needs. Penn State University has a program entitled 'Humanitarian Engineering', in which the emphasis is on relationship building. Long-term collaborative partnerships are formed with local communities so that the outreach programs at the university reach the community.

California-based UnCollege, founded by a young man put off by the disconnect between theory and real world applications, Dale Stephens, offers the 'gap year program'. It is an experiential learning program where students are provided with the resources and relevant contacts to equip themselves for an entrepreneurial career. The London-based IF Project aims to provide free, university level humanities education to youth. University professors and subject experts volunteer to teach, universities and other institutions make available their premises and other resources. The project coordinators also leverage the public lectures, concerts, exhibitions scheduled in London, and use museums, galleries and public spaces as venues for classes. The entire city of London is converted into a large, open air classroom.

Contextualization has been introduced in a more formal, structured way by the government of Finland. Finland has an efficient and equitable education system. The youth are regarded as one of the country's most precious resources. The schools and colleges foster the individual potential of every child. Apart from academics, students are taught handcrafts, cooking, sports, creative pursuits, community skills, developing a good image, and sensitivity to others.

The country has consistently ranked among the top in the Programme for International Student Assessment (PISA), a standardized test given to 15-year olds in 65 nations. In 2013, OECD tested adults from 24 countries in a survey called the PIAAC (Programme for International Assessment of Adult Competencies). Literacy, numeracy and problem solving skills were measured for 16-65 year olds. Finland was either at or near the top on all measures.

Instead of following the principle of “If it ain’t broke, don’t fix it”, Finland has introduced a revolutionary change in its education system.

“Education becomes contextualized when studied within the physical, social and cultural circumstances characterizing real life situations. So, creating the relevant context, education comes to life.”

Subject-specific subjects have been replaced by broad topics. Instead of an hour of History, an hour of Maths and so on, upper schools in the country teach ‘European Union’, in which students will study the subject from the perspective of history, politics, geography, languages, sociology, business, etc. ‘Climate Change’ will study weather, environment, living sciences, industry, and economy. Teachers lecturing to rows of students is giving place to small groups of students studying together. This ‘phenomenon’ teaching is benefitting students, according to early data. Student performance has improved in this already excellent educational system.

9. Conclusion

The power of abstraction reduces life knowledge to objective principles. Abstraction may be intelligible to the intellect, but is incomprehensible to the imagination, creativity, emotional intelligence all of which is so important to the full development of personality. In the education of the future, the gap between abstract concept and social relevance must be bridged. Education becomes contextualized when studied within the physical, social and cultural circumstances characterizing real life situations. So, creating the relevant context, education comes to life. It transforms education from a two dimensional image into a three dimensional holograph.

Not every academic discipline lends itself to contextualization, but we can explore how much can be done. The arts and humanities are easier to contextualize, but it may be more difficult with the sciences. When we need experts in every field, would knowledge of other fields help or distract? Does contextualization stand in the way of specialization? These are questions that need to be explored in the education of the future.

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