

# THE CURRICULA OF THE FUTURE: THE SKILLS, MINDSETS & VALUES THAT OUR STUDENTS NEED

## LOS PLANES DE ESTUDIO DEL FUTURO: LAS DESTREZAS, MENTALIDADES Y VALORES QUE NUESTRO ALUMNADO NECESITA

**Raya Bidshahri**  
Founder & CEO, Awecademy  
raya@awecademy.org  
www.awecademy.org

Received: 15/05/2019

Accepted: 14/06/2019

© 2019 IVAP. Este es un artículo de acceso abierto distribuido bajo los términos de la licencia Creative Commons Reconocimiento – NoComercial – SinObrasDerivada (by-nc-nd)



**Laburpena:** Gizakien etorkizuna gaur ikusten dugunarekin alderatuta erabat ezberdina izango da. Gerta daitekeen laneko indarraren hazkundera, automatizazio teknologikoaren inpaktu eta irudimenaren aroaren agerpena dira, besteen artean joera klabeak lanaren etorkizuna moldatzen ari direnak. Aldaketa sakonen mundu baten bizi gara eta, horren ondorioz, gutako askok jasango dugu gure bizitzan zehar gizakiaren progresuaren milaka urteren baliokidea. Emaitzetan, edukien ezagutzan eta ikasketa pasiboan oinarritzen diren ereduak porrot egiten dute lan-indar digitalaren eta irudimenaren aroaren testuinguruan. Tradizionalki, berrikuntza hezkuntzan tekno-

logia eratorriak eta irakasteko lan-tresnak izan ditu ardatz. Edukia edo teknologietan oinarritzen den ikasketa-planak zaharkituak edo baztertuak izaten ari dira. Ohiko ikasketa-planek errebisio sakona behar dute XXI. mendeko trebeziaren arreta nagusia jartzeko, hau da, etorkizuneko isurpenak, hazkunderaren pentsaera, diziplinartekotasuna, adimen anitzak eta ikasketa sistema iraunkorrak.

*Gako-hitzak:* hezkuntzaren etorkizuna, teknologia, hezkuntzaren teknologia, ikasketa-planak, berrikuntza, trebeziak, pentsaera, baliokak, futurismoa, transgizatasuna, teknologia esponentziala, lanaren etorkizuna.

**Resumen:** El futuro de la humanidad será radicalmente diferente de lo que vemos hoy. El aumento de la fuerza laboral contingente, el impacto de la automatización tecnológica y la aparición de la era de la imaginación son algunas de las tendencias clave que están transformando el futuro del trabajo. Estamos viviendo un mundo de cambios acelerados y, en consecuencia, muchos de nosotros experimentaremos a lo largo de nuestra vida el equivalente a miles de años de progreso humano. Los modelos que hacen énfasis en las calificaciones, el conocimiento de los contenidos y el aprendizaje pasivo fracasan en el contexto de la fuerza laboral digital y la era de la imaginación. Tradicionalmente, la innovación en educación se ha centrado en las tecnologías subyacentes y las herramientas de enseñanza. El contenido o los planes de estudio que se basan en las tecnologías han continuado siendo obsoletos e ignorados. Los planes de estudio tradicionales necesitan una revisión drástica para poner el énfasis principal en las destrezas del siglo XXI, las fluencias futuras, la mentalidad de crecimiento, la interdisciplinariedad, las inteligencias múltiples y los sistemas de aprendizaje permanente.

*Palabras clave:* Futuro de la educación, tecnología, tecnología de la educación, planes de estudio, innovación, destrezas, mentalidad, valores, futurismo, transhumanismo, tecnología exponencial, futuro del trabajo.

**Abstract:** The future of humanity will be radically different than what we see today. The rise of the contingent workforce, the impact of technological automation and the emergence of the imagination age are amongst some of the key trends that are transforming the future of work. We are living through a world of accelerating change and consequently, many of us will experience thousands of years worth of human progress in our lifetimes. With an emphasis on grades, content knowledge and passive learning, such models fail in the context of the digital workforce and imagination age. Traditionally, innovation in education has been focused on the underlying technologies and teaching tools. The content or curricula that sit on the technologies has continued to be out-dated and ignored. Traditional curricula need a dramatic overhaul in order to place the core emphasis on 21st-century skills, future fluencies, growth mindsets, interdisciplinary themes, multiple intelligences, and lifelong learning systems.

*Keywords:* Future of Education, Technology, Education Technology, Curricula, Innovation, Skills, Mindsets, Values, Futurism, Transhumanism, Exponential Technology, Future of Work.

## Summary

Introduction.—Section 1: A World of Accelerating Change.—Section 2: Problems with Traditional Education.—Section 3: The Curricula of The Future.—Section 4: Technological Tools for Future-Focussed Curriculum.—Section 5: The New Purpose of Education.—Bibliography.

## Introduction

The future of humanity will be radically different than what we see today. The way we live and work is rapidly changing. The rise of the contingent workforce, the impact of technological automation and the emergence of the imagination age are amongst some of the key trends that are transforming the future of work (Bidshahri, 2016). We are living through a world of accelerating change and consequently, many of us will experience thousands of years worth of human progress in our lifetimes.

Traditional industrial-era education models were designed to create factory-style workers who performed monotonous and routine tasks (Shrager, 2018). With an emphasis on grades, content knowledge and passive learning, such models fail in the context of the digital workforce and imagination age. Mainstream educational models fail to prepare youth to use technology ethically, to live a meaningful purpose-driven life or even face 20,000 years of human progress in their lifetime (Kurzweil, 1999). There is not enough emphasis on the core curricula skills and competencies required to thrive in the future workforce and above all, have a positive impact on humanity. Many young minds are graduating high schools today with a little awareness of the jobs and industries of the future.

Traditionally, innovation in education has been focused on the underlying technologies and teaching tools. The content or curricula that sit on the technologies has continued to be out-dated and ignored (Curtis, 2003). What is required is not simply a revolution in *how* we teach, but also in *what* we teach. In other words, there is a need for innovation in curricula, content and knowledge frameworks. Traditional cur-

ricula need a dramatic overhaul in order to place the core emphasis on 21st-century skills, future fluencies, growth mindsets, interdisciplinary themes, multiple intelligences, and lifelong learning systems.

Even more, there is a desperate need for a curriculum that makes learning an awe-inspiring experience and focuses on developing existential intelligence. Beyond content and skills, mindsets such as intelligence optimism, moonshot thinking, and a cosmic perspective can ensure that future generations strive to have a positive impact on humanity. Integrating enlightenment values, such as science, reason, and humanism, in our education models will accelerate human progress in the coming years. Technological tools such as virtual reality, artificial intelligence, and big data can complement the delivery of such a cutting-edge curriculum.

The purpose of education should not only be to prepare young minds for a fulfilling life and a successful career, but also prepare them to contribute to positive civilization-level change. This involves tackling global challenges, expressing themselves radically, and creating an exciting future for humanity.

## Section 1 A World of Accelerating Change

### 1.1. Impact of Exponential Technologies

One main purpose of education is to prepare young minds for the future. But we first have to ask ourselves, what will the future of humanity look like? What are the

trends and forces that are shaping the world 10, 50 or 100 years from now?

Some of the most dramatic changes in our world today are emerging as a result of exponential technologies. For a technology to be considered «exponential,» it's power doubles each year, and/or the cost drops by half (Kurzweil, 1999). Examples of such technologies include artificial intelligence (AI), augmented and virtual reality (AR, VR), data science, biotechnology, computing, robotics, 3D-printing, autonomous vehicles and much more. These technologies are providing groundbreaking solutions to innovators and organizations globally. They are impacting every aspect of our lives and jobs, across all industries.

In order to understand the power of exponential technologies, we need to understand how quickly they are accelerating in growth. Such is where the concept of «exponential growth» comes in. Intuitively, human beings are wired to think linearly and not exponentially. For instance, if you were to take 30 linear steps, with each step being 1 meter in length (1, 2, 3, 4, 5, 6...), by step 30, you would be 30 meters from where you started. In contrast, if you were to take 30 exponential steps, where the length of your step doubled each time (1, 2, 4, 6, 16, 32...), by step 30 you would be 1 billion meters from where you started. This is the equivalent of 26 times around the earth (Berman, 2016). That is the power of exponential growth. That is how quickly these technologies are advancing. That is the kind of growth we need to prepare our children for.

Moore's Law is the observation that the number of transistors per square inch on integrated circuits has doubled every 18 months since they were invented in 1958. The law has persisted throughout the last 60 years despite the social, economic and global setbacks and the prediction is that this trend would continue into the foreseeable future. In addition to this, The Law of Accelerating Change shows that the rate of progress is itself accelerating. As systems become more and more advanced, the faster can they progress (Kurzweil, 1999). As Ray Kurzweil (described by Bill Gates as the best predictor of future technologies) put it, «We won't experience 100 years of progress in the 21st century—it will be more like 20,000 years of progress (at today's rate).»

The implications of such technological advancements are profound. We're seeing them across all industries, whether it's transportation or healthcare. Entirely new sectors and industries are being born, and visionaries are leveraging technologies to launch innovative ideas and solve global challenges. We are seeing early signs of a future with the potential to live on Mars, con-

nect our minds to machines, run entirely on renewable energy, and access an abundance of resources. But is our youth prepared to live in such a world? Are they prepared to tackle the risks and optimize the opportunities?

## 1.2. The Trends Shaping the Future of Work

### *The Rise of the Contingent Workforce*

Many companies are moving away from the traditional offices and 9-5 jobs and towards an increasing number of the contingent workforce. A contingent workforce consists of freelancers, independent contractors, and other non-full-time personnel. A report by *Ardent Partners* revealed that 30% of company workforces are now made up of non-full-time employees, and that may grow to 50% by 2020 (Ardent Partners, 2007). Additionally, an *increasing percentage* of full-time employees and global teams from multinational organizations are beginning to work and collaborate on the cloud (Deloitte, 2016).

### *Technological Automation*

*McKinsey Global Institute* reports that almost 50% of current professional tasks could potentially be automated using currently demonstrated technologies (Chui, 2017). The report demonstrates that jobs involving data collection, data processing, and predictable physical work were most likely to be replaced with machines. One potential implication of this is that «work» will become more meaningful as workers are left to perform jobs requiring more creativity, intellectual pursuits, and human interaction (Osborn, 2016).

### *The Birth of Novel Industries & Jobs*

Technological growth is also contributing to the emergence of entirely novel industries. According to the *World Economic Forum*, 65% of the jobs that middle-school students today will be doing, do not exist yet (WEF, 2016). We are seeing the emergence of many new exciting jobs and industries such as the imagination & creativity sector, bioengineering, human enhancement, technology ethics, renewable energy, and space transportation. Beyond the traditional jobs such as doctors and lawyers, we are seeing the emergence of roles such as VR experience designers, privacy consultants, clean grid architects, hyperloop coordinators, and interplanetary pilots (Bidshahri, 2018).



### *The Imagination Age & The Creative Economy*

The *imagination age* is a theoretical period beyond the information age where creativity and imagination will become the primary creators of economic value (Hansen, 2012). This is driven by technological trends like virtual reality and the rise of digital platforms like YouTube, all of which increase demand for user-generated content and creativity. It is also driven by automation, which will take away a lot of monotonous and routine jobs, leaving more higher-ordered and creative jobs. Economists point out that jobs in publishing are declining, while jobs for designers, architects, actors and directors, software engineers, and photographers are growing (SMU, 2017).

### *Lack of «Robot-Proofing»*

As outlined in the previous section, industry experts are demonstrating that almost half of today's jobs can be automated via current technology alone, putting jobs that require routine and administrative tasks at the highest risk. In order to better prepare youth for such a workforce, there needs to be less emphasis on routine tasks and more on 21st-century skills such as creative problem-solving, agility, systems thinking, critical thinking, social skills, and entrepreneurial abilities (Chui, 2017). Currently, these skills are emphasized during extracurriculars when instead, they should be at the very core of any curriculum.

## Section 2

### Problems with Traditional Education

As a result of all of the trends discussed so far, education models that may have been well-suited for the industrial-era are no longer fit for purpose in a world of accelerating change and disruptive technologies. Traditional education has many shortcomings, many of which are also seen in models adopted by many private international schools that claim to be at the frontier of education. While many private schools may appear to have «outstanding» accolades, grades and university acceptance rates, they are fundamentally built around an outdated philosophy, structure, and curriculums, due to the following reasons:

#### *Emphasis on Grades*

The primary metric of success in current schools is grades and test results. However, many psychologists are highlighting the «*fallacy of good grades*» in measuring success and abilities (Price-Mitchell, 2011). There is a growing *body of data* to suggest that grades don't correlate with intelligence (Sutherland, 2017). This is because exams and standardized tests often measure a very narrow and specific type of psychometric and logical-mathematical intelligence, and do not take into account many of a student's important strengths, such as emotional intelligence, effort, kindness, initiative, passion, adaptability, creativity and much more. Exams measure the ability of the student to answer questions in a particular way and not their ability to innovate.

#### *Lack of Personalization*

In many classrooms, all of the students have a standardized experience and undergo the same types of content and assessments. Such a «cookie-cutter» system originated out of the industrial-era in order to prepare factory workers to do monotonous and routine tasks (Shrager, 2018). Where in reality, each student is unique and has a different set of interests, learning styles, skills, weaknesses, and strengths. Such a cookie-cutter approach is not productive and does not prepare young minds for a world of accelerating change. It also means that learning is a boring and disengaging experience for many students.

#### *Lack of Preparation for Uncertainty*

A report by the *World Economic Forum* reveals that almost 65 percent of the jobs elementary school students will be doing in the future do not even exist yet (WEF, 2016). Yet, many young minds are not aware of the uncertainty let alone prepared for it. In order to thrive in an ever-changing world, students need to be equipped with skills such as agility and adaptability, risk management, adaptive foresight, and life-long learning. Yet, traditional schools are designed around the assumption that the future is predictable. For example, many young minds are asked to pick and prepare for a major, degree or career path, a process that is nonsensical in the face of an uncertain future.

#### *Overemphasis on Passive Learning*

Many young minds will go through decades of formal education, before having any experience or exposure with a real-life work or professional setting. Above all, most students do not get the opportunity to apply their learning in a real-life context and consequently, do not

see the relevance of the majority of their curriculum. Instead of traditional exams, students learning needs to be assessed in the form of projects and formative assessments (Alber, 2011), such as by creating works of art, launching impact-driven charities or conducting original scientific research.

### *Emphasis on External Rewards*

At a very fundamental level, traditional mainstream education is designed to reward learning with extrinsic rewards such as good grades, university acceptance or the eventual desire to be employed. Many are pointing out that students love for learning their subjects is declining as a result of an overemphasis on exams and coursework (Shepherd, 2008). Other studies have found student exhaustion levels to be «extreme» when compared with those of traditional high-exhaustion occupations (Law DW, 2007). In order to be agile and life-long learners (a necessity to thrive in an ever-changing world), students in the 21st century need to be motivated by an intrinsic love and passion for learning.

### *Lack of Preparedness to tackle Global Challenges*

Climate change, resource access, refugee crisis, wealth inequality, and natural disasters are examples of global challenges that our children will need to tackle. Yet many young minds are not equipped with the skills, mindsets, and values to tackle these global challenges at scale. If we want our youth to grow up to eradicate poverty, create prosperity for all, protect all life, close wealth inequality and transcend nationalism, our schools need to prepare and inspire them to do so. Currently, only a small number of learners in any school will receive such preparation as a consequence of extracurricular experience, but if we are to create an exciting future for humanity, it should be at the core and center for every learner.

### *Lack of Emphasis on Happiness & Fulfillment*

College freshmen mental health in the United States is at an *all-time low* (Eagan, 2014). Suicide rates nearly *doubled* amongst UK university students to reach all-time high (IPPR, 2015). The harsh reality is that most schools are not spending enough time guiding learners to find true happiness, meaning, and purpose in life. How many of our students are exposed to educational tools that teach them how to cope with stress, how to find the things that make them happy, how to develop their emotional intelligence or even, how to build meaningful relationships?

### *Uninspiring Teaching*

Many educators fail to inspire their students because of lack the social, pedagogical and presentation skills required to leave a classroom of young people awe-struck. In addition to being educated about the impact of emerging technologies, educators need to be trained to present knowledge in captivating narratives, make complex ideas engaging, and, more importantly, relevant. In order to see the extent of the problem, ask the next student you meet how often they come home from their formal school with a sense of excitement to have a positive impact on the world. How often do our students have deeply transformative experiences in their schools?

## Section 3 The Curricula of the Future

In the last few decades, innovation in education has been primarily focused on the underlying technologies of *how* we teach. The rise of digitization has transformed the EdTech landscape, giving rise to a wide array of online and digital learning resources. While such trends are powerful, it is not enough for us to simply transform how we teach.

As we improve education, we must not only be innovative with our technological teaching tools, but also with educational content, strategy, and policies. There is no point digitizing flawed curricula that fails emphasize the right kind of skills, values, and mindsets.

*What* we teach as well needs to be revolutionized. There is a desperate need for innovation in the curriculum, mindsets, and competencies that we teach youth.

The following are characteristics of the curricula of the future:

### 3.1. **Emphasis on 21st-century skills, Values & Mindsets**

In an age of uncertainty, instead of content knowledge, we should place an emphasis on critical survival skills. These include collaboration, leadership, communication, risk-taking & adaptability, digital literacy & much more (Wagner, 2011). Traditionally, these have

been accessed through extracurricular activities while the core curricula were focused on basic literacy and content knowledge and application.

In order to empower youth to create a positive future for humanity, the curriculum of the future must also place emphasis on enlightenment values such as reason, science, progress, liberty, and tolerance. This is in addition to mindsets and ways of thinking such as moonshot thinking, intelligent optimism, and risk-taking.

### *Multidisciplinary themes*

One of the issues with traditional education is that we continue to teach in isolated subjects (with occasional cross-curricular links). In contrast, the workforce is showing less and less demand for specialists and more for cross-curricula problem-solvers.

Beyond the real world practical benefits, interdisciplinary learning is more fulfilling. It can allow students to learn things they may not be interested in - in the context of fields that they are interested in. *Research from Neuroscience* has also shown us that multidisciplinary learning improves creativity, problem-solving skills, and analytical thinking (Townsend, 2017).

Fundamentally, the real world is far more complex than what we've been portraying to our students. Consider global challenges such as climate change, access to education, cybersecurity and the mental health epidemic. No single discipline can adequately describe and resolve each of these global grand challenges. Only a collection of them can.

### *Emphasis on Multiple Intelligences*

One of the most important components of effective 21st-century teaching is recognizing the different forms of intelligence and catering to the unique abilities of *all* students. Howard Gardner, a pioneer of this perspective, differentiates intelligence into distinct 'modalities', as opposed to a single general ability. *These include:* musical-rhythmic, visual-spatial, verbal-linguistic, logical-mathematical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic. Based on two decades of brain research, the theory suggests that we all have different extents of these intelligence to different degrees (Northern Illinois University, 2018).

As education expert, *Rohan Roberts writes*, we have developed the machine equivalent of almost all of Howard Gardner's multiple intelligences - except for interpersonal, existential and interpersonal intelligence (Roberts, 2018). In fact, these need to be the very core competencies that we focus on in schools.

### *Integrated Lifelong Learning Systems*

Future curricula aren't just limited to learning within a classroom, but rather it is built on top of integrated lifelong learning systems. Effective education needs to be integrated into our everyday experiences, including entertainment. According to the Millennium project's *Education 2030* report (The Millennium Project, 2017), future education will be tailored to users «across all age groups from pre-natal programs to programs for the elderly that provides knowledge, work, and leisure enjoyment.»

A lifelong learning mindset is essential in order to be employable in the future workforce. New industries are constantly being born and dying out through disruption. Future workers need to be able to leverage online MOOCs and the vast array of educational resources available to them in order to gain in-demand skills.

## 3.2. 21st Century Skills, Core Competencies & Mindsets for Innovation

When it comes to preparing young minds for the future of work and an uncertain future, experts largely agree that we need less emphasis on subjects, content and grades and far more on 21st-century skills.

So what are the skills that we need today and in the emerging workforce? Education expert Tony Wagner has spent a lifetime trying to answer this very question. Through investigating the education sector, interviewing industry leaders and studying the global workforce at large, *Wagner has identified seven survival skills of the future* (Wagner, 2011). These are skills and mindsets young people absolutely need in order to meet their full potential:

1. **Critical Thinking and Problem Solving:** The ability to use different kinds of information and reasoning to solve complex problems. Critical thinking involves using systems thinking to make judgments and decisions and formulate beliefs.
2. **Collaboration Across Networks and Leading by Influence:** The ability to collaborate across global teams in both digital and physical spaces. Within the context of a digital workforce, leadership among a team is no longer about commanding with top-down authority, but rather about leading by influence.
3. **Agility and Adaptability:** The ability to adapt to change in a world a VUCA (Volatile, uncertain, complex and ambiguous) world. In the post-

industrial era, the impact of technology has meant that learners have to be agile and adaptive to the unpredictable consequences of disruption.

4. **Initiative and Entrepreneurship:** The ability to take initiative to tackle local and global challenges, work and learn independently in the process. Throughout his research, Wagner has found that even in corporate settings, business leaders are struggling to find employees who consistently «seek out new opportunities, ideas, and strategies for improvement.»
5. **Effective Oral and Written Communication:** The ability to articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts. This also includes being able to use communication for a range of purposes, such as to inform, instruct, motivate and persuade.
6. **Assessing and Analyzing Information:** The ability to assess, evaluate, use and manage information. Furthermore, in the age of fake news, an active and informed citizen will have to be able to assess information from many different sources through a skeptical lens.
7. **Curiosity and Imagination:** The ability to exercise a natural wonder and curiosity for the world and leverage it as a driver of new knowledge and innovation. It takes powerful imagination to envision breakthroughs and then go about executing them. It is the reason Albert Einstein famously said, «Imagination is more important than knowledge.»

In *Robot-Proof: Higher Education in the Age of Artificial Intelligence*, Northeastern University president Joseph Aoun proposes educating students in a way that will allow them to do the things that machines can't (Aoun, 2017). He calls for a new paradigm, called Humanics, that teaches young minds «to invent, to create, and to discover»—filling the relevant needs of our world that robots simply can't fill. The three key literacies that this model places emphasis on include:

1. **Data literacy:** being able to manage and analyze big data.
2. **Technological literacy:** being able to understand exponential technologies and conduct computational thinking.
3. **Human literacy:** being able to communicate and evaluate the social, ethical, and existential impact

Beyond the literacies, at the heart of Aoun's framework are four cognitive capacities that are crucial to developing in our students if they are to be resistant to *automation*: critical thinking, systems thinking, entrepreneurship, and cultural agility.

The framework also puts an emphasis on experiential or project-based learning, wherein the heart of the student experience is not lectures or exams but solving real-life problems and learning by doing, creating, and executing.

### 3.3. The Importance of Existential Intelligence

Existential intelligence is the ability to use one's intuition, thought and meta-cognition to ask (and answer) deep questions about human existence. Those who are inherently existential ask questions such as: Who are we? Why do we live? Do we have a purpose? Why and how are we conscious? What is the meaning of life? In many ways, it takes a certain level of courage and a specific cognitive toolkit to tackle such grand questions.

According to Howard Gardner, «These are questions that transcend perception; they concern issues that are too big or small to be perceived by our five sensory systems.» Socrates and the Buddha are examples of famous figures who exhibited an exceptional level of existential intelligence (Gardner, 2016).

#### *The Importance of Existential Intelligence*

Developing our youths' existential intelligence is one critical way of making them more aware of our true potential as a species and understand the bigger picture. Young thinkers who regularly ponder on deep questions about their self-identities and human nature, leave room for a vast array of intellectual development. It's why many also refer to this form of intelligence as «life smart» (Gardner, 2006).

Self-reflective consciousness or «meta-wondering» boosts one's ability for self-awareness and self-transformation, both as individuals and as a species. After all, our higher and self-reflective consciousness - is one of the features that sets us apart from the rest of the animal kingdom. It is also one of our most untapped potentials.

The future of work is yet another reason to cultivate our youths' existential intelligence. In an era of increasing automation, we are seeing that the hardest jobs to automate are the ones that require higher-ordered thinking.

#### *Bringing Existential Wonder into The Classroom*

Educators need to bring in content and curricula that place an emphasis on all the existential musings that

many brilliant minds throughout history have grappled with: Who are we? Where did we come from? Where will we go from here? There are many topics that cater to existential intelligence - such as taking a cosmic perspective, understanding the value of one human life, the future of the human species and finding your purpose in this world.

Emphasis on tools such as the Socratic method, discussion-style lessons, and philosophical topics are other excellent ways to stimulate existential thought. Another strategy is through multidisciplinary teaching and challenging students to see familiar ideas from unique, and possibly existential, perspectives.

We spend so much time teaching students how to answer questions that we often neglect to teach them how to ask them. Asking questions—and asking good ones—is how we move forward as a species. It is the foundation of any major scientific discovery or existential breakthrough. It all starts with a question.

### 3.4. Mindsets for Positive Change in Society

Stimulating positive change at the civilization level also requires certain mindsets and ways of thinking. In addition to developing skills and abilities, the curriculum of the future must also place emphasis on mindsets or ways of thinking that empower youth to have a positive impact on humanity. Examples of such mindsets include:

#### *Growth Mindset*

In order to improve the world, individuals also need to be able to improve themselves. In schools, youth need to be inspired to cultivate a growth mindset, one where they are constantly leveraging their strengths and working on their weaknesses. When one has a growth mindset, «I can't do this» is reframed as «I can't do this yet». Decades of knowledge and understanding from neuroscience supports the idea that our brains are ever changing and plastic throughout our lives (Dweck, 2007).

According to Carol S. Dweck, «In a growth mindset, people believe that their most basic abilities can be developed through dedication and hard work—brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment.» In contrast, an individual with a fixed mindset believes that their knowledge, intelligence, and skills are static and unchanging. This kind of fixed mindset is detrimental to lifelong learning, growth, and success.

#### *Moonshot Thinking*

Instead of looking to make a 10 percent gain or improvement in a current product or idea, moonshot thinking involves aiming for a 10x improvement of the status quo. Moonshot thinking allows for radical, daring, and disruptive ideas as opposed to incremental improvements. It's about big-picture, civilization-level change.

According to X, the *Moonshot Factory*, «The combination of a huge problem, a radical solution to that problem, and the breakthrough technology that just might make that solution possible is the essence of a moonshot.» *Self-driving electric cars, internet-beaming hot air balloons, and a pill that can detect cancer cells* are all examples of moonshots.

Yet it's important to recognize that moonshot thinking doesn't just have to rely on technology. 10x improvements in societal values, morals, and policies can also happen as a result of moonshot thinking.

#### *Abundance Mindset*

Traditionally, businesses and startups were built on scarcity. The motivation for scale was to find a scarce product or resource (or induce scarcity through intellectual property and patents). However, technology has increasingly become a resource-liberating mechanism and it is contributing into a *future of abundance* (Diamandis, 2012). Digitization has dramatically reduced the cost of access to education, food, healthcare, and transportation. Resources are becoming increasingly *demagnetized and democratized*. Today's innovators will need to leverage an abundance mindset, as opposed to a mindset of scarcity.

#### *Intelligent Optimism*

*Intelligent optimism* is being optimistic about the future based on reason and evidence. It is not only about recognizing that we are faced with constant challenges, but also embracing our potential as a species to solve them.

There are many reasons to be optimistic. In the last 100 years, we have seen a 100 percent increase in average human life expectancy (Pinker, 2018). We have massively increased our access to goods and services, information, education, transportation, and means of communication. The number of deaths due to war has seen *significant declines* (Pinker, 2018). The list *goes on*.

Yet our brains are wired to disproportionately pay attention to bad news. There is an evolutionary advantage to being on alert and hyper-aware of the threats



that face us. News agencies know this, hence the saying, «if it bleeds, it leads.» In fact, studies show that bad news far outweighs good news by as much as seventeen negative news reports for every one good news report ((Pinker, 2018).

### *Risk-taking & Embracing Failure*

Radical innovations involve embracing uncertainty, stepping out of one's comfort zone, and doing something that fulfills your life or company's grand mission, even if the odds are not in one's favor. Effective risk-taking involves identifying strategies that can mitigate risks, such as building a support system of allies or preparing for any predictable challenges that lie ahead.

A crucial aspect of risk-taking is also embracing failure and re-defining failed attempts as temporary setbacks as opposed to them being the end of our dreams as we know it. In the words of Elon Musk, «If things are not failing, you are not innovating enough.»

### *Cosmic Perspective*

We've all heard of «thinking big» or 'big-picture thinking.» Moving beyond that involves having a cosmic perspective. This involves recognizing our place in the vast cosmic arena and the fragility of our planet. It leads to an awareness of the unimaginable potential we have as a species. In the words of Neil deGrasse Tyson, «I want people to see that the cosmic perspective is simultaneously honest about the universe we live in and uplifting when we realize how far we have come and how wonderful is this world of ours.»

Looking at ourselves from a cosmic perspective is known to inspire more compassion for our fellow human beings. After all, from space, national boundaries and geographic differences disappear, and it becomes clear that at the end of the day, we are all fundamentally human.

This shapes the kinds of projects and organizations we invest our time and energy in. Having a cosmic perspective shift the ambitions and priorities we set for ourselves to those that matter from a grand perspective. As a species, we become more purpose-driven.

## 3.5. Values for the Future

Human progress is not simply a result of the technological or material progress of our species. It is also a result of advancements in morals, virtues, and values in individual human beings. In the last century, we've

made massive strides in the rights revolution: rights for women, rights for children, civil rights, LGBT rights, animal rights, and rights for criminals. However, the rise of powerful technological tools such as social media, big data, and Artificial Intelligence will pose a novel set of challenges to our rights, ethics and even, democracies.

In order to prepare youth for such transformations, they don't only need to acquire future fluencies and core competencies, but also acquire the kind of values and moral principles that will contribute to positive transformations.

Consider the age of Enlightenment, a philosophical, social and cultural movement that took place primarily in Europe and, later, in North America, during the late 17th and early 18th century (Pinker, 2018). The moment placed emphasis on reason over superstition, and science over blind faith. The Enlightenment movement had a powerful impact, particularly in the western world and led to many positive aspects of modern society today. While many of us intuitively respect such values, very few participants in society and consciously state the values of the enlightenment, let alone defend them.

Examples of some key enlightenment values include:

### *Reason*

Enlightenment thinkers believed truth could be discovered through reason or logical thinking, as opposed to superstition, blind belief or religion. This forms the very foundation of science and scientific thinking, the most powerful tool at our disposal to understand ourselves and the world we live in. This involves understanding the world around us based on rationality and observable means. It involves actively analyzing their own arguments, beliefs, morals, and ways of viewing the world.

### *Skepticism*

In today's digital world, we are all constantly exposed to vast amounts of information online. Yet, we are also exposed to a significant amount of misinformation, disinformation, propaganda and straight up «fake news». Such is where critical thinking and skepticism can be a powerful value in modern day society. Skepticism involves having higher standards for claims, arguments and ways of understanding in the world. It is the process of questioning or the doubt towards putative knowledge or beliefs. Unlike content knowledge, skepticism isn't something that can be memorized. Instead, it's a thinking process and mindset that can be improved through practice.

## Progress

We are currently living in the most peaceful time in *human history*. We are living longer, wealthier and healthier lives than ever before. All of this progress is not driven by some inevitable or mysterious force, but rather by the values of the Enlightenment and human ingenuity (Pinker, 2018). This is powerful because understanding the underlying mechanisms of human advancement can ensure that we can continue to push humanity forward in a positive direction. It's not blind belief in progress that will ensure it, but rather a deep understanding of what drives it.

Steven Pinker, an advocate for enlightenment values and human progress, *points out*, «Progress does not mean that everything becomes better for everyone everywhere all the time. That would be a miracle, and progress is not a miracle but problem-solving. Problems are inevitable and solutions create new problems which have to be solved in their turn.»

## Liberty

Enlightenment thinkers believed that people had the right to freedom, such as freedom of speech and religion, and that these freedoms should be guaranteed by people's governments. They also believed that government should be for people, not the other way around. John Locke wrote, «Man is born free, and everywhere he is in chains.» Ultimately, all human beings seek liberty and freedom. It is a key to happiness, self-expression and a democracy.

These are simply a small number of powerful values that our educational models could instill in youth minds. Other powerful values for the future can include empathy, compassion, awe, wonder, self-expression, curiosity, exploration, ethical use of technologies and much more.

### 3.6. Education for Positive Civilization-level Change

As we have explored so far, we are living through an era of innovative disruptions and an abundance of resources due to exponential technologies. However, this is in the relative show term. The law of accelerating returns (Kurzweil, 1999) means that the very rate of technological growth will be growing by orders of magnitude as we head towards the coming technological singularity.

As a result, in the long term, leading experts are predicting a future where we modify the genome of life

on earth, colonize Mars, have every-day immersive experiences in virtual reality and even upload our consciousness on to machines. These aren't just wild speculations - entrepreneurs, researchers, and innovators are actually getting us there on the path of human progress.

## Civilization-level change

Renowned education expert Marc Prensky, points out that «we educate our kids so they can better their, and our, world. Our children can be and should be, improving their world —and improving themselves in the process— via a new approach that far better suits them and the needs of our future society. From the very start of their education, we should be fusing 'thinking skills' and 'accomplishing skills' into education with a direct, hands-on connection to the world and its problems.»

Civilization-level change (Prensky, 2008) is all about using moonshot thinking to tackle humanity's most pressing challenges on a global scale. Examples of revolutionary transformation at the civilizational level include eradicating poverty, promoting global enlightenment and even becoming a multi-planetary species.

Our students should be a part of this species-wide mission. In reality, many of your young minds have untapped potential and capabilities to contribute to human progress while they are students. The act of *doing*, can in return allow them to improve many of their 21st century skills - such as creative problem solving, collaboration and independent learning.

So how do we design our school systems to allow for civilization-level change?

## Different Education

As Tony Wagner points out, «For students to become innovators in the twenty-first century, they need a different education, not merely more education.»

As a society, we need to change our perception of the word «education» at the most fundamental level. Education should not be something that you do at a specific institution for a specific period of time for certification. Instead, it should be a lifelong journey of exploration, self-discovery, and transcendence driven by intrinsic rewards.

It's not enough to simply innovate our educational technology and tools. More tablets or digital whiteboards don't necessarily translate to more effective learning. After all, there is no point digitizing curricula that focuses on out-dated content and fails to touch up the critical skills and abilities that our youth needs.

One of the fundamental tenets of future-oriented curricula should be to prepare young minds to tackle what Singularity University calls *Global Grand Challenges* - which highlights some of the most pressing issues that face our species today. We've seen a growing body of evidence pointing to the benefits of *project-based learning*. Education that focuses on global challenges takes project-based learning a step further by integrating it with a big-picture purpose. What better way to motivate our students than by revolving their learning experience around a grand vision for humanity?

The real world is far more complex and inter-related than what we've been traditionally portraying to our students. Look at some of the challenges that we are faced with today: climate change, access to education, cybersecurity, mental health epidemic and so on. No single discipline can adequately describe and resolve each of these global grand challenges. Only a collection of them can.

As a result, our curricula need to focus much less on isolated subjects but instead of multidisciplinary themes. Human progress won't just be shaped by technology or science. It will also be shaped and influenced by the ideas from philosophy, history, sociology, and ethics - which we use to decide how we should use emerging powerful technology.

An educational system designed for civilization-level change should also be one that cultivates creativity & imagination. Before we can go ahead to create or design a radical solution, we have to be able to imagine it. Contrary to popular belief, imagination and creativity are a) not completely intuitive/innate, and b) not just critical for those officially in creative jobs. Like any other skill, these abilities can be cultivated and are critical to individuals from all professional backgrounds.

By using the knowledge they gain to actively solve problems, our students are being encouraged to not just be passive consumers of information, but also to be involved in creative processes as active doers. Other imagination-enabling activities can include self-reflection, creative writing, listening to inspiring non-lyrical music, immersing oneself in creative films or books, and so on.

### 3.7. Wisdom-based Education

When we think of wisdom, we often think of ancient philosophers, mystics, or spiritual leaders. Wisdom is associated with the past. Yet some intellectual leaders are challenging us to reconsider wisdom in the context of the technological evolution of the future.

Tools such A.I & Robots are neither malevolent nor benevolent on their own; human values and decision-making influence how they are used. In reality, the virtuous insights that future humans possess will be even more powerful than their technological tools.

Tom Lombardo and Ray Todd Blackwood are advocating for exactly this. In their interdisciplinary paper *«Educating the Wise Cyborg of the Future,»* they propose a new definition of wisdom—one that is relevant in the context of the future of humanity (Lombardo, 2011).

#### *Defining Cyborgs in Abstract Terms*

The core purpose of Lombardo and Blackwood's paper is to explore revolutionary educational models that will prepare humans, soon-to-be-cyborgs, for the future. The idea of educating such «cyborgs» may sound like science fiction, but if you pay attention to yourself and the world around you, cyborgs came into being a long time ago.

Techno-philosophers point out that our tech devices are an abstract form of brain-machine interfaces. We use smartphones to store and retrieve information, perform calculations, and communicate with each other. Our devices are an extension of our minds.

According to philosophers Andy Clark and David Chalmers' theory of the extended mind, we use this technology to expand the boundaries of our minds (Clark, Chalmers, 1998). We use tools like machine learning to enhance our cognitive skills or powerful telescopes to enhance our visual reach. Such is how technology has become a part of our exoskeletons, allowing us to push beyond our biological limitations.

#### *Defining Cyborgs Literally*

Such an abstract definition of cyborgs is both relevant and thought-provoking. But it won't stay abstract for much longer. The past few years have seen remarkable developments in both the hardware and software of brain-machine interfaces. Experts are designing more intricate electrodes while programming better algorithms to interpret the neural signals. Scientists have already succeeded in enabling paralyzed patients to type with their minds, and are even allowing people to communicate *purely through brainwaves* (Koebler, 2015). Technologists like Ray Kurzweil believe that by 2030 we will connect the neocortex of our brains to the cloud via nanobots (Kurzweil, 1999). With advancements in bioengineering, neuroscience, and A.I, we will likely see the emergence of human-machine hybrids.

Given these trends, humans will continue to be increasingly cyborg-like. Our future schools may not necessarily educate people as we are today, but rather will be educating a new species of human-machine hybrid.

### Wisdom-Based Education

Whether you take an abstract or literal definition of a cyborg, we need to completely revamp our educational models.

Currently, the goal of both K-12 and higher education is to provide students with the degree that society tells them they need, and ostensibly to prepare them for the workforce. In contrast, Lombardo and Blackwood argues that wisdom should be the central goal of higher education, and they elaborate on how we can practically make this happen. Lombardo has developed a comprehensive two-year foundational education program for incoming university students aimed at the development of wisdom.

What does such an educational model look like? Lombardo and Blackwood break wisdom down into individual traits and capacities, each of which can be developed and measured independently or in combination with others (Lombardo, 2011). The authors lay out an expansive list of traits that can influence our decision-making as we strive to tackle global challenges and pave a more exciting future. These include big-picture thinking, curiosity, wonder, compassion, self-transcendence, love of learning, deep understanding, love of thinking, self-responsibility optimism, courage and much more.

As the authors point out, «given the complex and transforming nature of the world we live in, the development of wisdom provides a holistic, perspicacious, and ethically informed foundation for understanding the world, identifying its critical problems and positive opportunities, and constructively addressing its challenges.»

After all, many of the challenges we see in our world today boil down to out-dated ways of thinking, be they regressive mindsets, superficial value systems, or ego-centric mindsets. The development of wisdom would immunize future societies against such debilitating values, many of which hinder human progress.

### The Wise Cyborg

Lombardo and Blackwood invite us to imagine how the wise cyborgs of the future would live their lives. What would happen if the powerful human-machine hybrids of tomorrow were also purpose-driven, compassionate, and ethical?

They would perceive the evolving digital world through a lens of wonder, awe, and curiosity. They would use digital information as a tool for problem-solving and a source of infinite knowledge. They would leverage immersive mediums like virtual reality to enhance creative expression and experimentation. They would continue to adapt and thrive in an unpredictable world of accelerating change.

Our media often depict a dystopian future for our species. It is worth considering a radically positive yet plausible scenario where instead of the machines taking over, we converge with them into wise cyborgs. This is just a glimpse of what is possible if we combine transcendent wisdom with powerful exponential technologies.

## Section 4 Technological Tools for Future-Focused Curriculum

There are various technologies that can aid the delivery of the kind of future-focussed & wisdom-based curriculum outlined in this paper:

### Digital-Learning

The internet has exponentially increased our access to information. We are seeing the rise of massive open online courses, also known as MOOCs. Last year, there were 58 million students enrolled in MOOCs with 700 universities across thousands of courses. Many of these courses, including those offered by prestigious universities, are available for free or even with official institutional accreditation (Shah, 2016).

Though not yet perfect, these courses are becoming more interactive and project-based. They break the physical limitations of the traditional classroom and allow an educator to reach millions of students from around the world at a minimal cost. Individuals from developing countries can now access and enroll in courses offered by the most prestigious universities in the world.

Even in traditional classrooms, this access to online information has transformed the learning experience. Today's innovative teaching methods involve blended learning, which includes a mix of classroom learning and online learning. For instance, students will watch online instructional videos at home while classroom time is focused on problem-solving and collaborative activities. This also gives students control over the time, pace, and place of their learning.

### Virtual & Augmented Reality

Show, not tell has always been a fundamental principle in effective teaching. Virtual and augmented reality are revolutionizing the learning experience. They allow students to take journeys into ancient history,



travel across the universe and visit museums in different countries, all without leaving the classroom.

For instance, the *Google Expeditions Pioneer Program* will allow teachers to take their students on a journey anywhere in the world. Whether it's «exploring coral reefs or the surface of Mars in an afternoon,» teachers can take students on immersive, virtual field trips.

One of the biggest feats of such technologies is that they make the learning experience more engaging, awe-inspiring and transformative. These immersive experiences have the potential to contribute to faster learning, better retention, and improved decision-making.

### Big Data & Personalized Learning

Big data offers the opportunity to both evaluate educational programs and provide more valuable learning experiences for students. It can aid researchers in identifying what teaching methods work best both for the masses and for individual students.

Data can be used to improve student results, assess each student's strengths and weaknesses and create mass-customized programs. Algorithms can analyze student data and consequently make flexible programs that adapt to the learner based on real-time feedback.

One day, they may even aid or replace educators. *One Georgia Tech professor* used a virtual teaching assistant to chat with students, and some students didn't even notice the difference (Hill, 2016).

At the moment, most online courses are still mass-made, but in the future, they can be mass-customized. After all, every student is unique in personality, learning style, and life path. The education they receive should reflect their individual needs.

## Section 5 The New Purpose of Education

For many, the purpose of education is to prepare young minds for better grades, their next level of training (such as a university), or career success. While education is indeed a critical tool for work and life preparedness, such goals fail to capture the true power and essence of education.

Consider instead the mission statement of Awecademy:

- Empower learners of all ages everywhere to take education in their hands and refocus humanity's hopes, dreams, and ambitions.

- Enable millions of next generation learners to think critically, dream big, wonder about existence, and have a positive impact on the world in their lifetime.
- Transform learners everywhere into doers who will help create a vibrant and prosperous global economy based on reason, empathy, and shared resources.
- Create millions of next-generation cosmic citizens who will embrace the values of the Enlightenment about promoting the flourishing of all life on earth.
- Bring awe, wonder, and inspiration into education and open a universe of possibilities to a new generation of learners.
- Leverage the tools of exponential technologies to solve the grand challenges facing our species and create a new generation of existential thinkers and compassionate doers.

The above goals represent a far more profound and powerful purpose for education. Beyond preparation for work and life, education can also be used as a tool for human progress and positive civilization-level change. All global challenges can be tackled through the right kind of powerful education. In the words of Buckminster Fuller, «We are called to be architects of the future, not its victims.»

In order to create an exciting future for humanity, young minds first need to be able to imagine and design it. The purpose of education should be to equip learners with the competencies and mindsets that allow them to imagine, design and create an exciting future for themselves and humanity at large.

## Bibliography

- Alber, R. (2011, February 15). *Why Formative Assessments Matter*. Retrieved from <https://www.edutopia.org/blog/formative-assessments-importance-of-rebecca-alber>
- Aoun, J.E. (2017). *Robot-Proof: Higher Education in the Age of Artificial Intelligence*. Cambridge: The MIT Press.
- Berman, A.E. (2016, April 5). *How to Think Exponentially and Better Predict the Future*. Retrieved from <https://singularityhub.com/2016/04/05/how-to-think-exponentially-and-better-predict-the-future/>
- Bidshahri, P. (2016, October 4). *How the Disruptive Power of Technology Is Redefining Work*. Retrieved from <https://singularityhub.com/2016/10/24/how-the-disruptive-power-of-technology-is-redefining-work/>
- Bidshahri, P. (2018, January 29). *These Are the Most Exciting Industries and Jobs of the Future*. Retrieved from <https://>

- singularityhub.com/2018/01/29/these-are-the-most-exciting-industries-and-jobs-of-the-future/
- Chui, M. (2017, January). *Harnessing automation for a future that works*. Retrieved from <https://www.mckinsey.com/featured-insights/digital-disruption/harnessing-automation-for-a-future-that-works>
- Clark, A. Chalmers, D.J. (1998, January). *The Extended Mind*. Retrieved from <http://cogprints.org/3201/extended.html>
- Curtis, P. (2002, September 26). *Outdated curriculum 'failing to interest young people..* Retrieved from <https://www.theguardian.com/education/2003/sep/26/schools.uk>
- Deloitte (2016). Global Human Capital Trends 2016. The new organization: Different by design. Retrieved from Deloitte University Press.
- Diamandis, P.H. (2012). *Abundance: The Future Is Better Than You Think*. New York: Free Press.
- Dweck, S.D (2007). *Mindset: The New Psychology of Success*. New York: Ballantine Books.
- Dwyer, C.J. (2007). *The State of Contingent Workforce Management 2017-2018: The Convergence of Talent, Technology, and the Future of Work*. Retrieved from: <https://www.fieldglass.com/sites/default/files/2018-01/state-of-contingent-workforce-management-2017-2018-convergence-of-talent-technology-and-future-of-work.pdf>
- Eagan, D. (2014). *The American Freshman: National Norms Fall 2014*. Prepared by the Staff of the Cooperative Institutional Research Program. Retrieved from <https://www.heri.ucla.edu/monographs/TheAmericanFreshman2014.pdf>
- Fourth Industrial Revolution*. Retrieved from [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf)
- Gardner, H.E. (2006, July 4). *Multiple Intelligences: New Horizons in Theory and Practice*. New York: Basic Books.
- Hansen, D. (2012, August 6). *Imagination: What You Need To Thrive In The Future Economy*. Retrieved from <https://www.forbes.com/sites/drewhansen/2012/08/06/imagination-future-economy>
- Hill, D.J. (2016, May 11). *AI Teaching Assistant Helped Students Online—and No One Knew the Difference*. Retrieved from <https://singularityhub.com/2016/05/11/ai-teaching-assistant-helped-students-online-and-no-one-knew-the-difference/>
- IPPR Thin Tank (2015). *Not by Degrees: Improving Student Mental Health in The UK's Universities*. Retrieved from [https://www.ippr.org/files/2017-09/1504645674\\_not-by-degrees-170905.pdf](https://www.ippr.org/files/2017-09/1504645674_not-by-degrees-170905.pdf)
- Koebler, J. (2015, September 23). *The Most Advanced Human Brain-to-Brain Interface Ever Made*. Retrieved from [https://www.vice.com/en\\_us/article/nzeaak/the-most-advanced-human-brain-to-brain-interface-ever-made](https://www.vice.com/en_us/article/nzeaak/the-most-advanced-human-brain-to-brain-interface-ever-made)
- Kurzweil, R. (1999). *The age of spiritual machines: When computers exceed human intelligence*. New York: Viking.
- Law, D.W. (2007, January). Exhaustion in university students and the effect of coursework involvement. Retrieved from US National Library of Medicine National Institutes of Health.
- Lombardo, Tom & Todd Blackwood, Ray (2011). Educating the wise cyborg of the future. *The Horizon*. 19, 85-96. 10.1108/10748121111138281.
- Northern Illinois University, Faculty Development and Instructional Design Center (2018). *Howard Gardner's Theory of Multiple Intelligences*. Retrieved from [https://www.niu.edu/facdev/\\_pdf/guide/learning/howard\\_gardner\\_theory\\_multiple\\_intelligences.pdf](https://www.niu.edu/facdev/_pdf/guide/learning/howard_gardner_theory_multiple_intelligences.pdf)
- Osborn, S.V. (2016, August 23). *The End of Meaningless Jobs Will Unleash the World's Creativity*. Retrieved from <https://singularityhub.com/2016/08/23/the-end-of-meaningless-jobs-will-unleash-the-worlds-creativity/>
- Pinker, S. (2018). *Enlightenment Now: The Case for Reason, Science, Humanism, and Progress*. New York: Penguin House.
- Premsky, M. (2008). *The emerging alternative to our current world-wide academic education: Empowerment Education*. Retrieved from [http://marcprensky.com/wp-content/uploads/2018/09/Premsky-End-to-end\\_Real-World-ProjectEmpowerment\\_Education-02.pdf](http://marcprensky.com/wp-content/uploads/2018/09/Premsky-End-to-end_Real-World-ProjectEmpowerment_Education-02.pdf)
- Price-Mitchell, M. (2011, August 15). *The Fallacy of Good Grades: Why tests don't measure your child's most important strengths*. Retrieved from <https://www.psychologytoday.com/us/blog/the-moment-youth/201108/the-fallacy-good-grades>
- Roberts. R. (2018, April 2). *A.I. and Multiple Intelligences*. Retrieved from <https://medium.com/awecademy/a-i-and-multiple-intelligences-the-many-ways-of-being-intelligent-e50d426b3383>
- Shah, D. (2016, December 25th). *By The Numbers: MOOCs in 2016*. Retrieved from Class Central MOOC Report.
- Shepherd, J. (2008, March 3). *What happened to the love?* Retrieved from <https://www.theguardian.com/education/2008/mar/04/internationalstudents.educationguardian2>
- Shrager, A. (2018, June 29). *The modern education system was designed to teach future factory workers to be «punctual, docile, and sober»*. Retrieved from <https://qz.com/1314814/universal-education-was-first-promoted-by-industrialists-who-wanted-docile-factory-workers/>
- SMU Cox School of Business (2017). *The Imagination Age: America's Fourth Wave of Economic Progress*. Retrieved from <https://www.smu.edu/-/media/Site/Cox/CentersAndInstitutes/ONeilCenter/Research/AnnualReports/2017AnnualReport.ashx?la=en&la=en>
- Sutherland, A. (2017, April 27). *Grades don't correlate with a student's intelligence*. Retrieved from <https://www.statepress.com/article/2017/04/spopinion-grades-do-not-correlate-with-a-students-intelligence>
- The Millennium Project (2007). Education and Learning Possibilities by the Year 2030. Retrieved from <http://107.22.164.43/millennium/Education-2030.html>
- Towards Arts Integration in K-12 Curricula*. Retrieved from <https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1475&context=honorsthesis>
- Townsley, K.G. (2017). From STEM to STEAM: the Neuroscience Behind the Movement. University Honors Theses, 446.
- Wagner, T. (2011). *Creating Innovators: The Making of Young People Who Will Change The World*. New York: Scribner/Simon & Schuster.
- WEF (2016, January). *The Future of Jobs: Employment, Skills and Workforce Strategy for the Future*. Retrieved from [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf)