Class of 2022 History Summer Reading Assignment

Hello!

We are so glad that you have accepted a position at OSSM and will be joining the Class of 2022!

Over the summer you will complete a series of readings to prepare you for the work you will do in your Humanities classes at OSSM, they are included in this packet. The purpose of these readings is to expand your understanding of the role that the Humanities can play in your STEM education and to encourage the development of the historical thinking skills that will be necessary to perform well in your courses next year.

Things to think about while reading the selections: 1. How might your Humanities courses, especially history, contribute to your experience at OSSM? 2. How might STEM and Humanities courses work well together at OSSM? You do not have to answer these in writing, just think about them for the first week of class.

SHOULD YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CONTACT EITHER OF THE JUNIOR HISTORY PROFESSORS:

Doctor McCargish (US History): (405) 521-4610 or by email at michelle.mccargish@ossm.edu

Professor Baxter (History of Modern Middle East/East Asia): (405) 522-7810 or by email at Monique.Baxter@ossm.edu

Enjoy your summer; we can't wait to see you in August!

Dr. McCargish & Professor Baxter

Reading 1

From: Patrick Rael, Reading, Writing, and Researching for History: A Guide for College Students (Brunswick, ME: Bowdoin College, 2004).
https://courses.bowdoin.edu/writing-guides/

"Predatory" Reading 2.c.

Reading scholarly material requires a new set of skills. You simply cannot read scholarly material as if it were pleasure reading and expect to comprehend it satisfactorily. Yet neither do you have the time to read every sentence over and over again. Instead, you must become what one author calls a "predatory" reader. That is, you must learn to quickly determine the important parts of the scholarly material you read. The most important thing to understand about a piece of scholarly writing is its argument. Arguments have three components: the problem, the solution, and the evidence. Understanding the structure of an essay is key to understanding these things. Here are some hints on how to determine structure when reading scholarly material:

1. Think pragmatically. Each part of a well-crafted argument serves a purpose for the larger argument. When reading, try to determine why the author has spent time writing each paragraph. What does it "do" for the author's argument?
2. Identify "signposts." Signposts are the basic structural cues in a piece of writing. Is the reading divided into chapters or sections? Are there subheads within the reading? Subheads under subheads? Are the titles clearly descriptive of the contents, or do they need to be figured out (as in titles formulated from quotations)? Are there words or concepts in the titles (of the piece, and of subheads) that need to be figured out (such as novel words, or metaphors)?
3. Topic sentences. Topic sentences (usually the first sentences of each paragraph) are miniature arguments. Important topic sentences function as subpoints in the larger argument. They also tell you what the paragraph that follows will be about. When reading, try to identify how topic sentences support the larger argument. You can also use them to decide if a paragraph seems important enough to read closely.
4. Evidence. Pieces of evidence — in the form of primary and secondary sources — are the building blocks of historical arguments. When you see evidence being used, try to identity the part of the argument it is being used to support.
5. Identify internal structures. Within paragraphs, authors create structures to help reader understand their points. Identify pairings or groups of points and how they are telegraphed. Where are they in the hierarchy of the argument? Hierarchy of major

points is very important, and the most difficult to determine. Is the point a major or a minor one? How can you tell?

6. Examine transitions. Sometimes transitions are throwaways, offered merely to get from one point to another. At other times, they can be vital pieces of argument, explaining the relationship between points, or suggesting the hierarchy of points in the argument.
7. Identify key distinctions. Scholars often make important conceptual distinctions in their work.
8. Identify explicit references to rival scholarly positions. Moments when a scholar refers directly to the work of another scholar are important in understanding the central questions at stake.
9. Stay attuned to strategic concessions. Often authors seem to be backtracking, or giving ground, only to try to strengthen their cases. Examine such instances in your readings closely. Often, these signal moments where authors are in direct conversation with other scholars. Such moments may also help steer you toward the thesis.
10. Remember that incoherence is also a possibility. Sometimes it is very difficult to determine how a section of a piece is structured or what it's purpose in the argument is. Remember that authors do not always do their jobs, and there may be incoherent or unstructured portions of essays. But be careful to distinguish between writing that is complex and writing that is simply incoherent.

Finally, remember that you cannot read each piece of scholarship closely from start to finish and hope to understand its structure. You must examine it (or sections of it) several times. It is much better to work over an article several times quickly — each time seeking to discern argument and structure — than it is to read it once very closely.

Some Keys to Good Reading 2.d.

Three important questions to ask of secondary sources:

- What does the author say? That is, what is the author's central claim or thesis, and the argument which backs it up? The thesis of a history paper usually explains how or why something happened. This means that the author will have to (1) tell what happened (the who, where, when, what of the subject); (2) explain how or why it happened.
- Why does the author say it? Historians are almost always engaged in larger, sometimes obscure dialogues with other professionals. Is the author arguing with a rival interpretation? What would that be? What accepted wisdom is the author trying to challenge or complicate? What deeper agenda might be represented by this effort?

(An effort to overthrow capitalism? To justify Euro-Americans' decimation of Native American populations? To buttress claims that the government should pursue particular policies?)

- Where is the author's argument weak or vulnerable? Good historians try to make a case that their conclusion or interpretation is correct. But cases are rarely airtight – especially novel, challenging, or sweeping ones. At what points is the author vulnerable? Where is the evidence thin? What other interpretations of the author's evidence is possible? At what points is the author's logic suspect? If the author's case is weak, what is the significance of this for the argument as a whole?

Broad approaches to essay reading:

- What is the general subject of the author's investigation?
- What are the central problems or questions the author is investigating?
- What is the solution or explanation the author offers?
- How does the author go about convincing us that the solution/explanation is correct? That is, what is the structure of the argument? What are the major points, and what minor points are subordinated under each major point? What is the author's argument?
- What is the thesis question?
- What are the premises underlying it?
- What is the thesis?
- What is the "road map"; that is, given this thesis, what are the individual points the author will have to prove to make the thesis be true?
- What assumptions has the author made which remain unaddressed?

There are two general steps to reading scholarship:

Stage 1: Observation. What is the author's argument and how is it structured? This is the first read through the piece. Your objective is merely to understand what the author is trying to do.

Stage 2: Evaluation. Where is the argument particularly strong or weak? What about it is weak? This is the second read and subsequence analysis of the piece.

Your objective is to evaluate the author's success in making her or his case.

- Evaluating argument structure: What are the steps in the argument? How is the author breaking down sub-points? Why might the author being doing it this way? What other possibilities did the author not choose?
- Does the author do what the author sets out to do?

- ❖ Was what the author set out to do the right or a useful enterprise in the first place?

Reading 2

"Why Study History?" By Peter N. Stearns, Professor of History, George Mason University, American Historical Society Archives. https://www.historians.org/about-aha-and-membership/aha-history-and-archives/historical-archives/why-study-history-(1998)

People live in the present. They plan for and worry about the future. History, however, is the study of the past. Given all the demands that press in from living in the present and anticipating what is yet to come, why bother with what has been? Given all the desirable and available branches of knowledge, why insist—as most American educational programs do—on a good bit of history? And why urge many students to study even more history than they are required to?

Any subject of study needs justification: its advocates must explain why it is worth attention. Most widely accepted subjects—and history is certainly one of them—attract some people who simply like the information and modes of thought involved. But audiences less spontaneously drawn to the subject and more doubtful about why to bother need to know what the purpose is.

Historians do not perform heart transplants, improve highway design, or arrest criminals. In a society that quite correctly expects education to serve useful purposes, the functions of history can seem more difficult to define than those of engineering or medicine. History is in fact very useful, actually indispensable, but the products of historical study are less tangible, sometimes less immediate, than those that stem from some other disciplines.

In the past history has been justified for reasons we would no longer accept. For instance, one of the reasons history holds its place in current education is because earlier leaders believed that a knowledge of certain historical facts helped distinguish the educated from the uneducated; the person who could reel off the date of the Norman conquest of England (1066) or the name of the person who came up with the theory of evolution at about the same time that Darwin did (Wallace) was deemed superior—a better candidate for law school or even a business promotion. Knowledge of historical facts has been used as a screening device in many societies, from China to the United States, and the habit is still with us to some extent. Unfortunately, this use can encourage mindless memorization—a real but not very appealing aspect of the discipline. History should be studied because it is essential to individuals and to society, and because it harbors beauty. There are many ways to discuss the real functions of the subject—as there are many different historical talents and many different paths to historical meaning. All definitions of history's utility, however, rely on two fundamental facts.

History Helps Us Understand People and Societies

In the first place, history offers a storehouse of information about how people and societies behave. Understanding the operations of people and societies is difficult, though a number of disciplines make the attempt. An exclusive reliance on current data would needlessly handicap our efforts. How can we evaluate war if the nation is at peace—unless we use historical materials? How can we understand genius, the influence of technological innovation, or the role that beliefs play in shaping family life, if we don't use what we know about experiences in the past? Some social scientists attempt to formulate laws or theories about human behavior. But even these recourses depend on historical information, except for in limited, often artificial cases in which experiments can be devised to determine how people act. Major aspects of a society's operation, like mass elections, missionary activities, or military alliances, cannot be set up as precise experiments. Consequently, history must serve, however imperfectly, as our laboratory, and data from the past must serve as our most vital evidence in the unavoidable quest to figure out why our complex species behaves as it does in societal settings. This, fundamentally, is why we cannot stay away from history: it offers the only extensive evidential base for the contemplation and analysis of how societies function, and people need to have some sense of how societies function simply to run their own lives.

History Helps Us Understand Change and How the Society We Live in Came to Be

The second reason history is inescapable as a subject of serious study follows closely on the first. The past causes the present, and so the future. Any time we try to know why something happened—whether a shift in political party dominance in the American Congress, a major change in the teenage suicide rate, or a war in the Balkans or the Middle East—we have to look for factors that took shape earlier. Sometimes fairly recent history will suffice to explain a major development, but often we need to look further back to identify the causes of change. Only through studying history can we grasp how things change; only through history can we begin to comprehend the factors that cause change; and only through history can we understand what elements of an institution or a society persist despite change.

The Importance of History in Our Own Lives

These two fundamental reasons for studying history underlie more specific and quite diverse uses of history in our own lives. History well told is beautiful. Many of the historians who most appeal to the general reading public know the importance of dramatic and skillful writing—as well as of accuracy. Biography and military history appeal in part because of the

tales they contain. History as art and entertainment serves a real purpose, on aesthetic grounds but also on the level of human understanding. Stories well done are stories that reveal how people and societies have actually functioned, and they prompt thoughts about the human experience in other times and places. The same aesthetic and humanistic goals inspire people to immerse themselves in efforts to reconstruct quite remote pasts, far removed from immediate, present-day utility. Exploring what historians sometimes call the "pastness of the past"—the ways people in distant ages constructed their lives—involves a sense of beauty and excitement, and ultimately another perspective on human life and society.

History Contributes to Moral Understanding

History also provides a terrain for moral contemplation. Studying the stories of individuals and situations in the past allows a student of history to test his or her own moral sense, to hone it against some of the real complexities individuals have faced in difficult settings. People who have weathered adversity not just in some work of fiction, but in real, historical circumstances can provide inspiration. "History teaching by example" is one phrase that describes this use of a study of the past—a study not only of certifiable heroes, the great men and women of history who successfully worked through moral dilemmas, but also of more ordinary people who provide lessons in courage, diligence, or constructive protest.

History Provides Identity

History also helps provide identity, and this is unquestionably one of the reasons all modern nations encourage its teaching in some form. Historical data include evidence about how families, groups, institutions and whole countries were formed and about how they have evolved while retaining cohesion. For many Americans, studying the history of one's own family is the most obvious use of history, for it provides facts about genealogy and (at a slightly more complex level) a basis for understanding how the family has interacted with larger historical change. Family identity is established and confirmed. Many institutions, businesses, communities, and social units, such as ethnic groups in the United States, use history for similar identity purposes. Merely defining the group in the present pales against the possibility of forming an identity based on a rich past. And, of course, nations use identity history as well—and sometimes abuse it. Histories that tell the national story, emphasizing distinctive features of the national experience, are meant to drive home an understanding of national values and a commitment to national loyalty.

Studying History Is Essential for Good Citizenship

A study of history is essential for good citizenship. This is the most common justification for the place of history in school curricula. Sometimes advocates of citizenship

history hope merely to promote national identity and loyalty through a history spiced by vivid stories and lessons in individual success and morality. But the importance of history for citizenship goes beyond this narrow goal and can even challenge it at some points. History that lays the foundation for genuine citizenship returns, in one sense, to the essential uses of the study of the past. History provides data about the emergence of national institutions, problems, and values—it's the only significant storehouse of such data available. It offers evidence also about how nations have interacted with other societies, providing international and comparative perspectives essential for responsible citizenship. Further, studying history helps us understand how recent, current, and prospective changes that affect the lives of citizens are emerging or may emerge and what causes are involved. More important, studying history encourages habits of mind that are vital for responsible public behavior, whether as a national or community leader, an informed voter, a petitioner, or a simple observer.

What Skills Does a Student of History Develop?

What does a well-trained student of history, schooled to work on past materials and on case studies in social change, learn how to do? The list is manageable, but it contains several overlapping categories.

- The Ability to Assess Evidence.
  - The study of history builds experience in dealing with and assessing various kinds of evidence—the sorts of evidence historians use in shaping the most accurate pictures of the past that they can. Learning how to interpret the statements of past political leaders—one kind of evidence— helps form the capacity to distinguish between the objective and the self-serving among statements made by present-day political leaders. Learning how to combine different kinds of evidence—public statements, private records, numerical data, visual materials—develops the ability to make coherent arguments based on a variety of data. This skill can also be applied to information encountered in everyday life.
- The Ability to Assess Conflicting Interpretations.
  - Learning history means gaining some skill in sorting through diverse, often conflicting interpretations. Understanding how societies work—the central goal of historical study—is inherently imprecise, and the same certainly holds true for understanding what is going on in the present day. Learning how to identify and evaluate conflicting interpretations is an essential citizenship skill for which history, as an often-contested laboratory of human experience, provides training. This is one area in which the full benefits of historical study

sometimes clash with the narrower uses of the past to construct identity. Experience in examining past situations provides a constructively critical sense that can be applied to partisan claims about the glories of national or group identity. The study of history in no sense undermines loyalty or commitment, but it does teach the need for assessing arguments, and it provides opportunities to engage in debate and achieve perspective.

- Experience in Assessing Past Examples of Change.
    - Experience in assessing past examples of change is vital to understanding change in society today—it's an essential skill in what we are regularly told is our "everchanging world." Analysis of change means developing some capacity for determining the magnitude and significance of change, for some changes are more fundamental than others. Comparing particular changes to relevant examples from the past helps students of history develop this capacity. The ability to identify the continuities that always accompany even the most dramatic changes also comes from studying history, as does the skill to determine probable causes of change. Learning history helps one figure out, for example, if one main factor—such as a technological innovation or some deliberate new policy—accounts for a change or whether, as is more commonly the case, a number of factors combine to generate the actual change that occurs.

Historical study, in sum, is crucial to the promotion of that elusive creature, the well-informed citizen. It provides basic factual information about the background of our political institutions and about the values and problems that affect our social well-being. It also contributes to our capacity to use evidence, assess interpretations, and analyze change and continuities. No one can ever quite deal with the present as the historian deals with the past—we lack the perspective for this feat; but we can move in this direction by applying historical habits of mind, and we will function as better citizens in the process.

History Is Useful in the World of Work

History is useful for work. Its study helps create good businesspeople, professionals, and political leaders. The number of explicit professional jobs for historians is considerable, but most people who study history do not become professional historians. Professional historians teach at various levels, work in museums and media centers, do historical research for businesses or public agencies, or participate in the growing number of historical consultancies. These categories are important—indeed vital—to keep the basic enterprise of history going, but most people who study history use their

training for broader professional purposes. Students of history find their experience directly relevant to jobs in a variety of careers as well as to further study in fields like law and public administration. Employers often deliberately seek students with the kinds of capacities historical study promotes. The reasons are not hard to identify: students of history acquire, by studying different phases of the past and different societies in the past, a broad perspective that gives them the range and flexibility required in many work situations. They develop research skills, the ability to find and evaluate sources of information, and the means to identify and evaluate diverse interpretations. Work in history also improves basic writing and speaking skills and is directly relevant to many of the analytical requirements in the public and private sectors, where the capacity to identify, assess, and explain trends is essential. Historical study is unquestionably an asset for a variety of work and professional situations, even though it does not, for most students, lead as directly to a particular job slot, as do some technical fields. But history particularly prepares students for the long haul in their careers, its qualities helping adaptation and advancement beyond entry-level employment. There is no denying that in our society many people who are drawn to historical study worry about relevance. In our changing economy, there is concern about job futures in most fields. Historical training is not, however, an indulgence; it applies directly to many careers and can clearly help us in our working lives.

Why study history? The answer is because we virtually must, to gain access to the laboratory of human experience. When we study it reasonably well, and so acquire some usable habits of mind, as well as some basic data about the forces that affect our own lives, we emerge with relevant skills and an enhanced capacity for informed citizenship, critical thinking, and simple awareness. The uses of history are varied. Studying history can help us develop some literally "salable" skills, but its study must not be pinned down to the narrowest utilitarianism. Some history—that confined to personal recollections about changes and continuities in the immediate environment—is essential to function beyond childhood. Some history depends on personal taste, where one finds beauty, the joy of discovery, or intellectual challenge. Between the inescapable minimum and the pleasure of deep commitment comes the history that, through cumulative skill in interpreting the unfolding human record, provides a real grasp of how the world works.

Reading 3

"Why STEM Students Need Humanities Courses: The more science and technology dominate our culture, the more we need the humanities" • By John Horgan on August 16, 2018 *Scientific American* blog. https://blogs.scientificamerican.com/cross-check/why-stem-students-need-humanities-courses/

What's the point of the humanities? Of studying philosophy, history, literature and "soft" sciences like psychology and political science? This question has become increasingly urgent lately, as enrollment in the humanities continues to plummet. According to one analysis, the number of American students majoring in humanities has fallen from almost 20 percent in the 1960s to less than 5 percent today. One governor recently applauded the trend, saying that state schools should "produce more electrical engineers and less French literature scholars."

Some defenses of the humanities leave me cold. New York Times columnist Ross Douthat, a Catholic, proposes that the humanities can be revived by "a return of serious academic interest in the possible (I would say likely) truth of religious claims." With friends like this…

This week an LA-based public radio station, WUTC, asked me to join a discussion about the plight of the humanities. I couldn't say everything I wanted to, so here's an updated pitch for the humanities I posted in 2013.

I started teaching a required freshman humanities course at Stevens Institute of Technology a decade ago. The syllabus included Sophocles, Plato, Shakespeare, Descartes, Kant, Marx, Nietzsche, William James, Freud, Mead—you know, Western Civilization's Greatest Hits. I love teaching the class, but I don't assume students love taking it. So on the first day I ask, "How many of you would skip this course if it wasn't required?" After I assure the students they won't hurt my feelings, almost all raise their hands. They say they came to Stevens for engineering, computer science, math, physics, premed, finance, digital music production, etc. They don't see the point of reading all this old impractical stuff that has nothing to do with their careers. When I ask them to guess why Stevens inflicts this course on them, someone usually says, smirking, To make us well-rounded. Whenever I get the "well-rounded" response…I say, "I don't really know what 'well-rounded' means. Does it mean being able to chitchat about Hamlet at cocktail parties? I don't care about that."

Then I give them my pitch for the course, which goes like this: We live in a world increasingly dominated by science. And that's fine. I became a science writer because I think science is the most exciting, dynamic, consequential part of human culture, and I wanted to be a part of that. But it is precisely because science is so powerful that we

need the humanities now more than ever. In your science, mathematics and engineering classes, you're given facts, answers, knowledge, truth. Your professors say, "This is how things are." They give you certainty. The humanities, at least the way I teach them, give you uncertainty, doubt, skepticism. The humanities are subversive. They undermine the claims of all authorities, whether political, religious or scientific. This skepticism is especially important when it comes to claims about humanity, about what we are, where we came from, and even what we can be and should be.

Science has replaced religion as our main source of answers to these questions. Science has told us a lot about ourselves, and we're learning more every day. But the humanities remind us that we have an enormous capacity for deluding ourselves. They also tell us that every single human is unique, different than every other human, and each of us keeps changing in unpredictable ways. The societies we live in also keep changing--in part because of science and technology! So in certain important ways, humans resist the kind of explanations that science gives us. The humanities are more about questions than answers, and we're going to wrestle with some ridiculously big questions in this class. Like, What is truth anyway? How do we know something is true? Or rather, why do we believe certain things are true and other things aren't? And how do we decide whether something is wrong or right to do, for us personally or for society as a whole? Also, what is the meaning of life? What is the point of life? Should happiness be our goal? Well, what the hell is happiness? And should happiness be an end in itself or just a side effect of some other more important goal? Like gaining knowledge, or reducing suffering? Each of you has to find your own answer to these questions. Socrates, one of the philosophers we're going to read, said wisdom means knowing how little you know. Socrates was a pompous ass, but there is wisdom in what he says about wisdom.

If I do my job, by the end of this course you'll question all authorities, including me. You'll question what you've been told about the nature of reality, about the purpose of life, about what it means to be a good person. Because that, for me, is the point of the humanities: they keep us from being trapped by our own desire for certainty.

Reading 4

"Oh, The Humanities! Why STEM shouldn't take Precedence over the Arts" By Joni Adamson, Arizona State University Project Humanities

As much trouble as the education industry is in, every state continues to witness the dissolving of the very funds intended to help it. Major cuts in education have been directed toward the arts and humanities where millions of students are being deprived of these subjects and outlets. According to the National Center for Education Statistics (NCES), nearly 1.5 million elementary students are without music, nearly 4 million are without the

visual arts, and almost 100% of them, more than 23 million, are educated without dance and theatre.

Government Push for STEM

While the Department of Education (DoE) attempts to find a one-size-fits-all solution for more than 14,000 public school districts through its Common Core Standards, the STEM subjects (science, technology, engineering, and mathematics) have been placed as the focal point for education, well ahead of arts and humanities.

Dave Csintyan, CEO of the educational non-profit organization See the Change USA, feels taking away from the arts and humanities programs is the wrong answer but said the push for STEM may actually have a positive effect on arts and humanities students who are exposed to STEM learning. "Rigorous STEM exposure is equally applicable to professional success no matter the field of choice," he said.

Education reform has been a major part of Barack Obama's presidency, who has proposed a bill called the STAPLE Act, which would provide immigrant PhD students in STEM fields a green card upon graduation. The argument is that these students, who commonly return to their home country to develop companies and businesses, should be given the option to remain in America and help boost the economy. This potential law is a major player in the push for STEM. It voices the government's insistence that the education system is not producing enough Master's and PhD STEM graduates.

But the major push for STEM education in America may, in fact, not be that necessary after all. A Georgetown University, Rutgers University, and Urban Institute-collaborated study found that "U.S. colleges and universities are graduating as many scientists and engineers as ever before…[and the] findings indicate that STEM retention along the pipeline shows strong and even increasing rates of retention from the 1970s to the late 1990s. Over the past decade, U.S. colleges and universities graduated roughly three times more scientists and engineers than were employed in the growing science and engineering workforce."

It seems the great migration toward STEM by the government will indeed have adverse effects and not solely in regards to the cuts in education funds. There is the economic impact to consider, as well.

The Americans for the Arts and Economic Prosperity IV study showed that the nonprofit arts and culture industry accounts for more than four million full-time jobs and more than $135 billion in economic activity. It also generates over $22 billion in revenue for local, state, and federal governments each year.

But access to the arts for students of all ages continues to shrink as more government officials continue to solely invest in STEM, forcing the arts and humanities to fend for themselves.

According to Florida's governor, Rick Scott, picking a degree shouldn't be up to the student. It should be up to what is best for the student, or at least what he thinks is best for the student.

> "I want to spend our money getting people science, technology, engineering and math degrees," he said in a radio interview on WNDB-AM in Daytona Beach. "That's what our kids need to focus all of their time and attention on: those type of degrees that when they get out of school, they can get a job."

Stronger Together Than Apart

Eric Darr, president of Harrisburg University of Science and Technology, said he doesn't think arts and humanities students are being turned off from pursuing those particular degrees, although some of the recent press may help sway some of their decisions – in particular articles about salary comparisons. "The social sciences — communications, pre-law, journalism — continue to be very popular," he said.

As much as the DoE encourages the increase in STEM, it is aware that education needs the influence of the arts and humanities. The American Academy of Arts and Sciences formed its Commission on the Humanities and Social Sciences (CHSS) at the request of Congress. The group, comprised of scientists, engineers, leading business executives, philanthropists, jurists, artists, and journalists, were asked to find the answers to a question posed by Congress: What actions should government officials take to maintain national excellence in humanities and social science education in order to better improve the economy and civil society?

Darr believes it is a mistake to try to separate STEM and the social sciences. He said they are both stronger together.

Recent moves by government officials looking to improve education, however, have done just that via budget cuts. One of the more obvious statements in the STEM push is the Obama Administration's Race to the Top initiative, which places all 50 states in an academic competition to be the best and be eligible for additional education funding, has STEM emphasis as one of its seven point factors. Arts and humanities, however, is not on the list.

Many have gravitated to the idea that STEM is the best source for innovation and job creation. But according to the Americans for the Arts organization, their studies show that children involved in the arts are four times more likely to be recognized for academic achievement and four times more likely to participate in a math and science fair. These same

students are also three times more likely to be elected to class office in their school, giving them early leadership skills and making them more apt to become leaders in the business world.

Karl Eikenberry, a fellow at Stanford's Center for International Security and Cooperation, former ambassador to Afghanistan and a retired general was reported saying during a CHSS discussion at Stanford that knowledge of history, foreign languages and cultures can help America more successfully navigate the increasing number of multinational issues that need multinational solutions.

The need for advancements in science, technology, engineering, and mathematics will never cease, as will the need for the study of social sciences like human behavior, languages, linguistics, and philosophy. The answer is the continual interworking of both. "The new economy requires that we continue to improve and encourage STEM education because mastering existing and new technologies is vital," said Edward Abeyta, director of K-16 Programs at the University of California-San Diego Extension. "It also requires that arts be included in the curricula to capture the full potential of the whole-brain."

He said the education industry needs to take a STEAM approach.

> "It is using the combination of all these capabilities that drives creativity and innovation," he said of STEAM. "The future economic cost of not having a whole brain education system that fosters creativity and innovation is immense. It requires retraining instructors to teach how to deal with ambiguities and nuances – how to think creatively and how to construct or deal with abstract issues instead of so much of the emphasis being on teaching facts. Teachers will need to teach our students to 'think' – not memorize."

One of the major components of STEM is rote memorization which can hinder a student's ability to think freely on subjects. When social sciences and arts are provided, students are able to understand problems rather than simply accepting solutions. Even if the STEAM approach is best, funding cuts to arts and humanities programs remain an inescapable reality. In the face of such cuts, arts and humanities students will have less career counseling and professional guidance in school than their STEM peers. As such, these students need to become their own career coaches and figure out for themselves how to convince employers of the relevance and value of their degrees.

How Humanities Students Can Help Themselves

Humanities students need to educate themselves on how to communicate their abilities and ideas. Also, having a firm business foundation along with understanding the importance of their own craft is essential to impressing an employer and landing a job. Darr said

students must place themselves in the best position to secure a job coming out of college and gave some tips on how to do it:

- Keep a portfolio of your work. Through your education, internships, and early career, continue to catalog documents, audio and video recorded projects, and any other materials showing your work. Not having proof that you are talented in your field can be costly. For those in the arts field, creating a portfolio of your work – whether art, music, film – gives employers an insight into your established work and where you are headed in your field. The portfolio needs to show the quality and complexity of your work and how it has progressed over time. A portfolio should mimic a timeline providing visual evidence of professional growth.
- Get an internship – at all costs. Earning a degree is a must but obtaining internship work related to your industry is vital. When applying for a job, nearly every professional opening requires some experience. It is very important to have on a resume to show that you have some idea of what it is to work in your area. Even a short history of understanding how to conduct social science research or working in an arts industry is steps ahead of someone who only has a degree. A philosophy major may consider interning with a law firm or a consulting firm to become comfortable in a business environment.
- Take classes that help you become a good communicator. At the end of your college career, take a course on communication, preferably one that will count toward your degree. Most degree programs give students the ability to take upper level courses of their choosing. For example, a student studying philanthropy may consider taking a business course to help them understand the business side of non-profit work.

To fully participate in today's society, you need to have some knowledge of technology – even if you're a fine arts student. Most schools offer courses in social media. Knowing how to use and manage social networking sites will go a long way in helping you land a career job. There is no denying the importance of STEM education and the economic and technological impacts it has on the world. But STEM standing alone, or by itself atop the educational mountain, will soon prove counterproductive.

"The idea that we must choose between science and humanities," Abeyta said, "is false."

Reading 5

"Why everyone should study the liberal arts—even future doctors and engineers : Students in STEM, medicine, need liberal arts education to succeed" – EAB Blog 8:03 AM - August 17, 2016

Even with an increased focus on teaching students technical skills, an education steeped in the liberal arts is essential for students in medicine and other STEM disciplines. In a piece for The Conversation, Dartmouth College professors Leslie Henderson, Glenda Shoop, and Lisa Adams explain that as the cost of higher education continues to rise, institutions are under more pressure than ever to demonstrate the value of the liberal arts. That becomes particularly important to prove as the demand for workers with technical skills grows. How colleges can close the skills gap Some may ask why a student pursuing a career in medicine would bother learning about history, politics, or language. According to the authors, these disciplines are not only complementary to STEM education—they're fundamental. One reason why the liberal arts are so important for physicians is because learning about subjects such as ethics, sociology, and psychology helps medical providers break down cross-cultural barriers. Learn more about creating T-shaped professionals "To succeed at their trade, doctors not only need to have a sophisticated knowledge of biology, they also must master the complex clinical micro- and macro-systems in which their patients live and they work," the authors write. "Physicians must also fully understand social constructs such as class, gender, and race, explicit and implicit, that mold both how they make medical decisions and how, in turn, patients receive their care."

At Dartmouth, students take part in international service projects that expose them to the "social, political, environmental, and economic factors" that affect delivery of health care—topics that go beyond medicine alone. Meanwhile, institutions such as Harvard University, Yale University, and the University of Texas at San Antonio are incorporating the arts and humanities into their medical curricula. Dashboard: See the hottest jobs, skills, and employers in your state In another article for The Conversation, Muhammad Zaman, a professor of biomedical engineering and international health at Boston University, argues that STEM students must learn the historical context behind scientific developments to fully appreciate and understand them. Zaman points to research showing that historical narratives help students link scientific theory with practice. This experience also exposes students to how past scientists overcame early failures and challenges to make monumental discoveries. "Looking at the story of science over centuries enables students to understand that research and discovery are continuous processes," Zaman writes. "The findings they arrive at today … are the fruits of the hard work of real people who lived in real societies and had complex lives, just like the rest of us." Henderson, Shoop, and Adams argue that now is the time for

medical schools to place a greater emphasis, not less, on developing well-rounded students (Zaman, The Conversation, 8/15; Henderson et al., The Conversation, 8/15).

Reading 6

"Why STEM majors need the humanities, and vice versa" EAB Blog 8:06 AM - May 2, 2018

Despite debates about the comparative value of the humanities and STEM, the two are more compatible than you may think, argues Marcelo Gleiser, a theoretical physicist, in NPR. Gleiser, a professor of natural philosophy, physics, and astronomy at Dartmouth College, teaches a course that culturally contextualizes scientific thought. Commonly referred to as "physics for poets" by students, the course treats science and humanities as complementary ways of understanding the world, writes Gleiser. When the lecture ventures into equations or philosophy, it's easy to guess each student's academic background—and that's not a good sign, he writes. Humanities students tend to deflate when math appears, whereas STEM students perk up. And when the class reads philosophy, the opposite happens. The differences in how students interact with the course reveals the underlying divide between STEM and the humanities in higher ed, he argues. As the gulf between STEM and humanities widens, both disciplines lose nuance, he argues. Scientists may overlook the social consequences of technological innovation, and humanists may lose sight of technology's effect on the world. To expose students to other disciplines, science courses should grapple with original texts, while humanities classes should tackle scientific concepts, he recommends. Research topics like climate change or artificial intelligence don't fall neatly into STEM or the humanities—to fully understand any concept requires an interdisciplinary investigation, he argues. Some institutions recognize the importance of humanities-trained scientists and vice versa.

Cornell University, for example, recently debuted a data science ethics course that explores the ethical gray areas data scientists face every day. Similarly, Wellesley College and Davidson College have incorporated more STEM courses into traditionally humanities-focused curriculums (Gleiser, NPR, 4/2). AAC&U News, June 2014 Perspectives -At MIT, the Humanities Are Just as Important as STEM By Deborah K. Fitzgerald, The Boston Globe, April 30. MIT is known around the world as a bastion of STEM education (science, technology, engineering, and mathematics), so it may surprise—and hopefully please—many to learn that the university believes the arts and humanities are essential elements of an MIT education, says Deborah K. Fitzgerald, a professor of history and dean of the MIT School of Arts, Humanities, and Social Sciences. MIT's mission is to prepare students to solve the world's most challenging problems, and while this does require scientific knowledge and technical skills, "the world's problems are never tidily confined to the laboratory or spreadsheet," she says. Urgent challenges like poverty, climate change, and

disease "are always embedded in broader human realities." To keep up with these challenges, MIT's curriculum has evolved over the years, and all undergraduates spend time studying subjects such as literature, history, and music—about a quarter of their total class time. Studying these subjects helps MIT students gain historical and cultural perspectives and develop the communication skills that allow them to listen to the concerns of others and explain their own perspectives and reasoning. Students also learn, Fitzgerald says, "that most human situations defy a single correct answer, that life itself is rarely, if ever, as precise as a math problem, as clear as an elegant equation." Many MIT graduates—from doctors to engineers to entrepreneurs—have testified to the usefulness of studying a broad range of disciplines, citing courses in history, literature, and philosophy as crucial to developing their empathy and critical thinking skills. AAC&U's recent surveys of business leaders confirm these testimonies—most employers are more concerned with graduates' creativity, teamwork, and communication skills than their field-specific knowledge.

Developing these cross- cutting capacities is especially crucial in a time of rapid globalization and economic change. "The stakes are high these days — for individuals, societies, for the planet itself — and we cannot be complacent," Fitzgerald says. "Calling on both STEM and humanities disciplines — as mutually informing modes of knowledge — we aim to give students a toolbox brimming over with tools to support them throughout their careers and lives."

Reading 7

"As Tech Companies Hire More Liberal Arts Majors, More Students Are Choosing STEM Degrees" By Sydney Johnson, *EdSurge,* Nov 13, 2018.
https://www.edsurge.com/news/2018-11-13-as-tech-companies-hire-more-liberal-arts-majors-more-students-are-choosing-stem-degrees

The number of students choosing liberal arts majors is dipping. At the same time, more STEM employers are hiring workers with humanities backgrounds, according to a new report by researchers at Strada Education Network and Emsi, a labor market analytics firm. Bachelors of arts degrees in the humanities decreased from 36 percent in 1970 to 23 percent in 2016, according to data from the Integrated Postsecondary Education Data System. Over the same time period, career-oriented majors in science, technology, engineering and mathematics crept from 64 to 77 percent. According to the paper's researchers, the number of workers in STEM fields with a liberal arts background is simultaneously increasing. "We are clearly seeing an uptick in the data in terms of percent growth increase in liberal arts backgrounds into technical areas," says Rob Sentz, chief innovation officer at Emsi and one of the authors of the report. The study points to estimates from LinkedIn that suggest "between 2010 and 2013, the growth of liberal arts majors entering the technology industry

from undergrad outpaced that of computer science and engineering majors by 10 percent." The parallel trends are caused by a mismatch between job seekers and employers, the study argues. "The disconnect is that employers are not always great about articulating the skills they are looking for," says Michelle R. Weise, chief innovation officer at Strada Institute for the Future of Work and another author of the report. "Even if they prioritize skills like communication, the job posting might mostly describe the technical skills."

The report, which was released Tuesday, suggests the disconnect comes back to the difficulty employers have signaling the broad "human skills" they are looking for. That inefficiency has been the selling point for what the report estimates to be a $2.9 billion industry around "workforce technology." Companies specializing in this area focus on connecting talent to opportunity, and startup accelerator LearnLaunch estimates more than 240 such companies have already been funded. But those fragmented solutions and companies haven't yet solved the challenges they think exist. "Everyone is building their own proprietary solution for the skills-gap problem," says Weise. She sees opportunity in the increased emphasis from the labor market for humanistic skills, such as emotional intelligence and ethics: "To say at a very granular level that this is what a human skill entails breaks down the false dichotomy we have between hard and soft skills. It's more around how do we think about these uniquely human skills that will resist automation. It gives us a different mindset for the challenges that are ahead." Government leaders and education reformers alike have pushed back on the value of a liberal arts education. The report reads that "policymakers have been particularly down on the outcomes of liberal arts, questioning the value of these majors as relevant to the challenges ahead." And major tech companies including Google and Apple recently announced that employees are no longer required to have a degree on their resume. Weise believes the tech industry's move away from four-year degree backgrounds is a sign that more employers are looking toward skills-based hiring. "A lot of entrepreneurs moving away from this as a proxy for skills because it tends to prioritize the privileged," she says. Still, Sentz urges students and job seekers to not interpret those shifts as rationale to skip college, and that employers will continue to look for degrees. "Employers are getting realistic that a degree from an elite university is limiting. Will they still prefer the top talent? Yes. Are they willing to broaden their search? Yes. It's both." Authors of the report say the study isn't intended to defend the liberal arts, but fill a gap in research around quantifying the value of a humanities education. "In the past, liberal arts outcomes have always been harder to quantify because they lack of career specificity embedded in the program," says Sentz. "If you look at nursing or computer science, the name of the outcome is in the program."

The study found that unlike STEM majors, who are more likely to enter their field after graduation, liberal arts students experience rapid wage growth in their 30s and 40s, after

working in their second or third job where they learn to articulate how their skills translate to technical fields, and after gaining some technical skills along the way. “People coming from a liberal arts program who possess good human skills that translate to a variety of jobs are appealing because they are already good thinkers, and can be trained vertically on say, social media or programming,” says Sentz. The report also notes shortcomings associated with a liberal arts education. Students who majored in the liberal arts were less likely than other majors “to report that their coursework was helpful or that they acquired important life skills.” And average earnings for students who major STEM fields are higher than those who study liberal arts. Still, research shows liberal arts majors do well in the labor market. According to the study, 82 percent of workers with a liberal arts degree are employed, with the average full-time worker earning $55,000 annually. The authors suggest that better translating human skills such as leadership, collaboration, creativity and critical thinking—all important pillars of a liberal arts education—will be key in signaling the value of a humanities education to employers and naysayers in an increasingly tech-driven workforce. “If you’re going to major in liberal arts, it’s not bad,” says Sentz. But “you need to spend more time thinking about how you apply that in the market.”

Reading 8

“Why Science Is Essential For Liberal-Arts Education (And Vice Versa)” By Chad Orzel, *Forbes*, April 18, 2018. https://www.forbes.com/sites/chadorzel/2018/04/18/why-science-is-essential-for-liberal-arts-education-and-vice-versa/#1bb1441d5bb5

My day job is as a professor at Union College in Schenectady, NY, and as is typical for an academic institution, we spend a lot of time thinking about what it is that we do. The other day, we had a meeting squeezed in between admitted-students events at which we ended up trying to define some very general goals for a liberal-arts education-- what general skills and knowledge should students graduating from a small liberal-arts college like Union have?

I wasn't that happy with the meeting generally, but I was fairly pleased with my attempt at a one-sentence summary of the goals of a liberal-arts education:

Students should be able to analyze a situation, decide on a course of action, and advocate for their choice.

As an off-the-cuff attempt at a pithy summary of what we're trying to do, I think that captures most of it, and it's nice and concise. Of course, now I'm going to ruin that concision by explaining at length what I think that means in the context of a liberal-arts education.

(Note: I'm going to hyphenate "liberal-arts" here, which is slightly non-standard, to try to make clear that I'm talking about "liberal-arts education" in the sense of a broad education

covering topics from a wide range of disciplines, not "the liberal arts," which is often used as a term for the arts and literature side of academia. And also to try to head off the idea that "liberal" here has a political connotation, though that part's probably doomed to failure…)

One of the failure modes of one-sentence summaries, particularly in academia, is that you often end up with a sentence that wouldn't be out of place in a nineteenth-century novel, bespangled with adverbs and adjectives and hung about with extra clauses trying to cover every contingency. That cuts against the real goal of the whole thing, particularly in this Twitter-y age, so I fight against the tendency to add adjectives, even where they'd help make the meaning clearer.

In this case, the adjective that I debated including but ultimately didn't is "complicated." A successful liberal-arts education should leave students able to look at a complicated real-world situation and analyze it to determine what's really going on and why.

Analyzing complicated situations is often held up as one of the characteristics of "humanities" disciplines, the idea being that science reduces everything to simple cases. This completely misses the critical point that real science is all about analyzing complex things. The real world is a complicated place, and the reductionist approach of science is not a failure to acknowledge that, it's a strategy for dealing with it.

Rigorous and controlled experiments and observation are powerful tools-- among the very best we have-- for taking a situation whose complexity might seem overwhelming and breaking it into manageable chunks. When you do that, the individual problem elements no longer seem quite son intractable, and you can begin to think about them one at a time.

A liberal-arts education necessarily includes science-- preferably a laboratory science-- because students need to experience this process in action. They need to know that the explicit process of science-- looking at the world, thinking about why it works that way, testing your theory, and sharing the results-- is a powerful and general approach to just about anything. (I have a book-length version of this argument, but I'll try to restrain myself here.)

That said, a liberal-arts education necessarily includes studies outside of science because the important context of a complicated situation will often include aspects from a wide range of human experiences. Understanding a real-world situation requires some level of comfort with issues of history and culture, and empathy for others. Students need to be able to navigate these fields, not just brush past them on the way to science-ing up a problem, lest they clumsily create new problems.

While analysis of context can be fun in its own right-- I've lost many an hour chasing the context of some issue down ever deeper Wikipedia wormholes-- life requires actions. And actions require decisions about how to act.

This is another place where I debated but resisted adding an adjective, specifically "appropriate action." One of the points of a liberal-arts education is for students to learn to use their analytical tools to decide on a course of action that is not just effective, but ethical and humane as well. For every complex problem there's an elegant but brutally reductive solution that will make everyone unhappy-- we want students to have the wisdom to avoid those and chart a better course. That again requires knowledge of history and philosophy, and empathy for others.

That said, too much analysis can be a trap. There's an element of truth in the character of Chidi Anagonye in "The Good Place," a former academic with an encyclopedic knowledge of ethical philosophy who is horribly indecisive as a result. It's easy to get so wrapped up in the context of a situation that you never actually decide what to do about it.

This is, as I've written before, a regular source of frustration for me when interacting with academics from other fields, but also an area where the science component of a liberal-arts education can be of help. The notion of taking action and making progress is an essential part of science. Any new theory worth its salt suggests new experiments that could test it, and new avenues of theoretical exploration. Any new experiment will demand some refinement of theory, and suggest future experiments to extend our understanding of the problem at hand.

Science is all about how to responsibly make models and decisions based on incomplete information. And that, in turn, is an essential skill for life in general.

Analyzing and acting on an individual level is great, but meaningful large-scale effects will only come from the collective action of many people working together. This necessarily requires being able to communicate and persuade others to join in with your chosen course of action.

The non-science connection here is obvious: to communicate effectively, students must learn to write and speak persuasively, and the study of arts and literature are essential for that. The best way to learn to write is to study the writing of others and figure out how and why it works, and what you can take from them for your own use.

The sciences have an essential role to play as well when it comes to communication. Quantitative data can be as powerful a tool for persuasion as lofty rhetoric, in the right hands. Effective advocacy demands not just the ability to turn a clever phrase or speak well into a microphone, but also the ability to marshal and present data to support a position.

And, just as importantly, the ability to cut through and counteract attempts to use bad data in obfuscatory or propagandistic ways.

Comfort with quantitative data is essential for advocacy, and that is a skill best acquired in the sciences and social sciences. The intimidating mathematical apparatus of modern science exists because it's a set of tools for, to paraphrase Feynman, not being fooled. The science component of a liberal-arts education is essential for giving students the ability to engage with and understand the real meaning and limitations of quantitative data. This is obviously critical for analysis, but it's equally important as a tool for advocacy, helping persuade others to join in action to make the world a better place.

So, that's 1200 words unpacking the meaning of nineteen: "Students should be able to analyze a situation, decide on a course of action, and advocate for their choice." I think that sentence does about as well as one short sentence can at encapsulating the essential nature and central goals of a liberal-arts education. And when you dig into it, both science and the arts have a key role to play in achieving those goals.