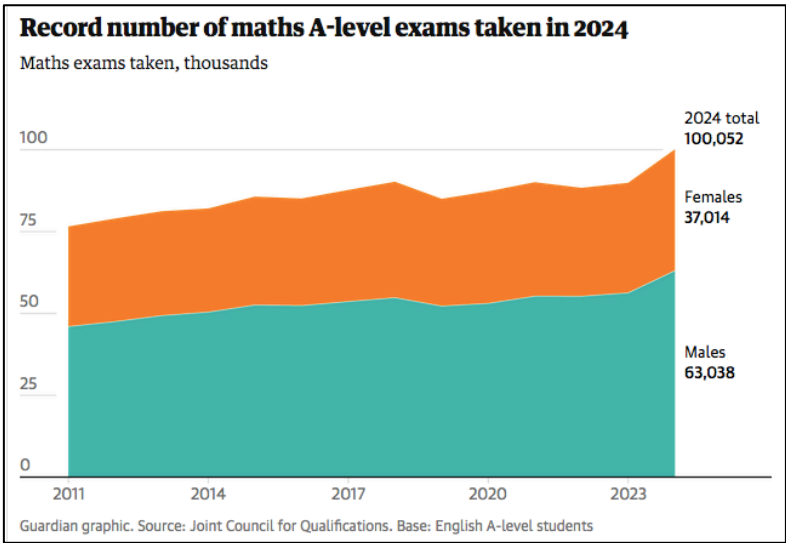


STEM & HUMANITIES

PART 2 - SYNTHESIS

DOC 1



<https://www.theguardian.com/education/article/2024/aug/14/a-level-students-choosing-narrower-range-of-subjects-after-gove-changes>

1. How has the number of students taking A-level maths changed from 2011 to 2024, and what could be the reasons for the record high in 2024?

2. What does the chart show about the differences between males and females taking A-level maths, and what factors might have influenced these changes?

3. Vocabulary activity. Find the equivalent in English of this words and expressions:

Doc 2: les perspectives d'emploi : ; les compétences relationnelles / transversales : ; la valeur à long terme : ; la population active :
La pensée critique :

Doc 3 : exposition aux sciences : ; contourner / éviter : ;
entrepreneuriat: ; programmes d'études : ; dimensions éthiques :

DOC 2



Myth Or Fact? STEM Majors Are Inherently More Valuable Than Humanities Majors

Jin Yun Chow - Oct 26, 2023, FORBES

I cannot tell you the number of students who tell my team daily that despite their passion for the humanities, they will most likely be majoring in a STEM field due to concerns about job prospects. I myself have been the recipient of many such pieces of well-intentioned advice earlier in my academic journey. Determined to major in comparative literature, I remember
5 bracing myself as friends and distant family would try to persuade me that there is no career to be had in the humanities. Now that I've put my passion for French literature and the Arabic language aside to pursue a full time career in entrepreneurship as the cofounder of Polygence, I can't help but wonder - how true is this claim today and are there truly no benefits to majoring in the humanities?

10 It is a widely accepted and cited fact that college degree holders fare better in their careers than workers with less education. The Hamilton Project, an economic policy initiative within the Brookings institute, has found that on average, degree holders earn about \$600,000 more over

their lifetimes than workers who enter the workforce with only a high school education. What is less well understood is the data around post-graduate earnings by graduates of different majors.

Citing the Census Bureau's American Community Survey, The New York Times reports that full-time workers who held computer science and engineering bachelor's degrees between the ages of 23-25 "earned an average of \$61,744 in 2017", which was "37% higher than the average starting salary of \$45,032 earned by people who majored in history or the social sciences."

However, it may be misleading to look purely at the earning potential of graduates from certain majors, because research has also shown that students *from the same major* often transition into a surprising variety of occupations, thereby earning very different incomes. To take an example in the field of English literature, 6.4% of graduates who enter the field of law earn a median salary of over \$100,000, whereas the 8.3% of graduates who enter the field of early childhood education earn \$50,000. In fact, researchers have found that in a diverse array of fields, a large majority of graduates do not end up working in the most common occupation in their specific major: looking at earnings by occupation or career track is perhaps more indicative than college major alone.

In addition, The New York Times also finds that any earnings advantage that STEM majors hold over humanities majors fades by age 40. There are two major reasons that contribute to this - first is that technical skills become obsolete quicker as younger graduates enter the workforce. In a recent working paper, Harvard economist David Deming calculated the change in required skills for different jobs over time. He found that "help-wanted ads for jobs like software developer and engineer were more likely to ask for skills that didn't exist a decade earlier. And the jobs of 10 years ago often required skills that have since become obsolete." This higher skill turnover in STEM fields is correlated with the relatively slower earnings growth of STEM graduates between graduation and age 40. Let us take the example of the closing gap between computer science majors and history majors. Deming reports that "male computer science or engineering majors roughly doubled their starting salaries by age 40, to an average of \$124,458", which is compared to social science and history majors, "who earned \$131,154 - an average that is lifted, in part, by high-paying jobs in management, business and law."

The second reason for this closing gap is that a liberal arts education fosters soft skills that don't tend to expire, such as critical thinking, people skills, and problem-solving skills. While much more difficult to quantify and while they do not create immediate pathways to high-paying first jobs, "they have long-run value in a wide variety of careers," especially in managerial and leadership positions. Liberal arts and humanities majors are also more likely to enter careers where midcareer salaries are the highest - including in upper management and business occupations, as well as careers that require advanced degrees such as law.

Turning to what employers are looking for when they screen candidates, we see even more evidence that the durable skills taught in humanities classes are coveted in the workplace. According to the 2018 survey by the National Association of Colleges and Employers, three attributes stand out when it comes to evaluating college graduates for potential positions: written communication, problem-solving, and teamwork. Other soft skills that made it into the top 10 desired skills include initiative, verbal communication, and leadership.

It is my hope that this research gives more students hope that they can and should pursue their authentic intellectual passions - even if they lie in the scary, erroneously deemed "useless" field of the humanities. To take myself as an example, my career ended up being in entrepreneurship - a direction completely different from the intellectual love of my life - comparative literature. Not only do I not regret having majored in the arts, I in fact feel that I owe much of my entrepreneurial success to the skills my major taught me.

1. According to the article, why does the earnings gap between STEM and humanities graduates tend to narrow by mid-career?

2. How does the author argue that studying the humanities can contribute to long-term career success despite lower starting salaries?

It's Time for the Humanities To Learn Some Science

By Charlotte R. Rediker, *The Harvard Crimson*, September 19th, 2025

Everybody knows about Mark Zuckerberg's journey from Harvard dorm room to Silicon Valley titan. Zuckerberg's story — including Facebook's numerous legal issues — is often used to highlight the significance of ethics to technology, and to STEM more broadly. But at Harvard and beyond, we're overlooking the reciprocal need for exposure to STEM among students in non-STEM fields, with serious implications for policy, ethics, and governance.

Harvard's graduation requirements make the imbalance clear. STEM students must complete Expository Writing and three General Education courses as well as two divisional distribution requirements in the social sciences and humanities. Meanwhile, humanities and social science students only take a GenEd and a divisional distribution course in STEM, in addition to a Quantitative Reasoning with Data course.

That's a problem. Informed participation in societal debates — such as those surrounding technology regulation, climate change, public health, or bioethics — requires a foundational understanding of the relevant scientific principles. Harvard's requirements ought to equip students to critically engage with these debates, evaluate scientific claims, and understand the potential and limitations of scientific knowledge. While universal requirements aim to integrate enough STEM into all students' studies to fulfill these goals, they fall short.

What's more, many students find ways to bypass developing the skills these requirements are meant to cultivate. Astronomy 2: Celestial Navigation is “a classic choice to fulfill QRD” according to one recent review on the Q Guide. Likewise, Engineering Sciences 139: Innovation in Science and Engineering, which focuses primarily on teaching entrepreneurship through activities like company pitches to venture capitalists, allows students to meet distributional requirement while avoiding the core competencies or foundational knowledge of STEM.

In principle, there's nothing wrong with students taking courses on the softer side of STEM if interested. But classes that focus on navigation or business development seem unlikely to achieve the intended goals of these requirements.

Beyond the uneven requirements split, STEM concentrations at Harvard often also integrate ethics and social sciences into their curricula — seemingly in response to the many sordid examples of technologists overlooking the ethical dimensions of their work. For instance, Computer Science concentrators have a Computation and the World requirement, as well as the Embedded EthiCS program, which integrates ethics directly into technical courses. But many non-STEM students have little-to-no engagement with STEM in concentration requirements, depriving them of a deeper understanding of how technology intersects with law, policy, and societal welfare.

And while medical school admissions and engineering accreditation generally require exposure to the humanities, the converse is rarely a condition for professional pathways in the humanities and social sciences. Pre-law students, for example, tend to focus on a specific topic to stand out during the law school admissions process, often enabled by interdisciplinary concentrations like History and Literature or Social Studies, which require students to define narrow, specialized topics of study.

The consequences of this blindspot became glaringly apparent during a congressional hearing featuring Zuckerberg in 2018. What was meant to be a critical examination of Facebook's ethical practices turned into an illustration of how ill-prepared many lawmakers were to engage with pressing technological problems.

When senators struggle to grasp the basics of how Facebook operates, it isn't just an embarrassing display — it's a warning sign. We often worry about technologists like Zuckerberg

navigating ethics and law without proper guidance. But the fact that many policymakers lack the technical understanding needed to hold these technologists accountable is an issue equally pressing.

50 As we face a future dominated by issues posed by AI, climate change, cybersecurity, bioengineering, and more, the ability of non-technologists to understand and critically assess new and emerging technologies is crucial. It's time for a more balanced educational approach — one that equips all students, regardless of their field, with the skills needed to navigate the many intersections between science and society in the modern world.

<https://www.thecrimson.com/article/2024/9/19/rediker-humanities-must-learn-science/>

1. What is the author's main argument about the imbalance between STEM and non-STEM education at Harvard?

2. Why does the author believe it's important for students in the humanities and social sciences to have a stronger foundation in STEM?

DOC 4

Is The STEM Education Crisis A Myth?

November 25, 2023 - NPR

<https://www.npr.org/2013/11/25/247166532/is-the-stem-education-crisis-a-myth>



Michelle Martin, host, is joined by **Anthony Carnevale**, of the Georgetown University Center on Education and the Workforce.

Listen to the audio document here on Cahier de Prépa and answer these questions:



- 1. What social or personal consequences do Carnevale and Hrabowski identify when students focus too narrowly on technical or job-specific training?**
- 2. How does Carnevale link the balance between STEM and the humanities to America's global competitiveness?**

