

ENGLISH LANGUAGE AND COMPOSITION
SECTION II
Total time—2 hours and 15 minutes
3 Questions

Question 1

Suggested reading and writing time—55 minutes

It is suggested that you spend 15 minutes reading the question, analyzing and evaluating the sources, and 40 minutes writing your response.

Note: You may begin writing your response before the reading period is over.

(This question counts as one-third of the total essay section score.)

Since the early 2000s, the United States government and a number of corporations have sponsored initiatives to improve education in the STEM disciplines: science, technology, engineering, and mathematics. The emphasis on STEM subjects in elementary, secondary, and higher education reflects concerns that United States students are less proficient in these areas than are students in other countries. Additionally, there is a belief that mastery in STEM fields is now essential in order to join a highly technical and specialized workforce. However, not everyone is convinced that a STEM-focused curriculum is necessary and/or effective.

Carefully read the following six sources, including the introductory information for each source. Write an essay that synthesizes material from at least three of the sources and develops your position on the value, if any, of initiatives to improve STEM education and increase the number of students interested in the STEM disciplines.

- Source A (Ossola)
- Source B (graph)
- Source C (editors)
- Source D (survey)
- Source E (Fitzgerald)
- Source F (May)

In your response you should do the following:

- Respond to the prompt with a thesis that presents a defensible position.
- Select and use evidence from at least three of the provided sources to support your line of reasoning. Indicate clearly the sources used through direct quotation, paraphrase, or summary. Sources may be cited as Source A, Source B, etc., or by using the description in parentheses.
- Explain how the evidence supports your line of reasoning.
- Use appropriate grammar and punctuation in communicating your argument.

Source A

Ossola, Alexandra. “Is the U.S. Focusing Too Much on STEM?” *The Atlantic*, 3 Dec. 2014, www.theatlantic.com/education/archive/2014/12/is-the-us-focusing-too-much-on-stem/383353/.

The following is excerpted from an article published in a national American magazine.

The [STEM] acronym was a timely change for a series of subject areas that were rapidly moving into the national conversation. According to David Drew, an education professor at Claremont Graduate University in California and author of the book *STEM the Tide: Reforming Science, Technology, Engineering, and Math Education In America*, three forces sparked the national discussion about STEM education.

The first is a profound shift in the way the country’s economy functions, he said. Since the 1960s the U.S. economy has moved closer to becoming a true service economy, with more members of the workforce devoting their time to customers and less time to the product itself, like they did in the earlier part of the 20th century when the economy was more focused on manufacturing. U.S. technology companies like Apple and IBM have been a big part of this shift, wrote Natalie McCullough, then the chief marketing officer at a renewal-focused firm called ServiceSource, in a 2012 article in *Forbes*. “There’s a much more interesting domestic phenomenon here: the rise of high growth and high-value technicians who deliver a new world of advanced services for businesses and consumers alike,” she wrote. While some economists and policy makers have predicted a growth in STEM careers by 2018, the notion that the country will experience a shortage of scientists has more recently been discredited by education experts and academics.

The second force that brought STEM to the forefront, Drew said, is “the recognition and frustration that we are setting up unnecessary unfair barriers for people.” By this he refers to the unequal access to quality STEM education throughout the country, as well as the discrimination and discouragement faced by students who do try to pursue further education in these fields. This work has been covered extensively in the popular and scholarly media . . . and has inspired numerous initiatives, from mobile DIY [do it yourself]—engineering spaces to government programs that highlight departments’ diverse technical workforce, all of which are meant to level the playing field for students interested in STEM.

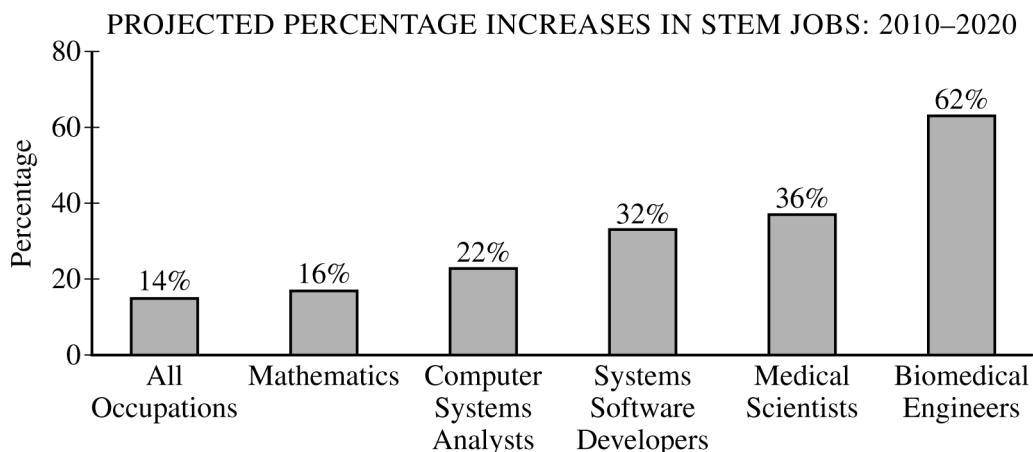
Finally, Drew said, the U.S. cares about STEM now because it realized “that we’re not doing as well in STEM in K-12 education.” Much of this fear stems from the biennial findings of the Program for International Student Assessment, an organization that issues a test to 15-year-olds all over the world to rank their competence in reading, math, and science. Those scary 2012 statistics—that out of 65 education systems American students rank 27th in math and 20th in science—have generated headlines such as “U.S. Students Slide In Global Ranking On Math, Reading, Science” from NPR and “U.S. teens lag in global education rankings as Asian countries rise to the top” on NBC.

From *The Atlantic*. © 2014 The Atlantic Monthly Group, LLC. All rights reserved. Used under license.

Source B

United States Department of Education. “Science, Technology, Engineering and Math: Education for Global Leadership.” n.d., www.ed.gov/sites/default/files/stem-overview.pdf.

The following is a graph from a 2010 report about United States STEM initiatives published by the Department of Education.



Source C

Editors. “Stem Education is Vital—but Not at the Expense of the Humanities.” *Scientific American*, 1 Oct. 2016, www.scientificamerican.com/article/stem-education-is-vital-but-not-at-the-expense-of-the-humanities/.

The following is excerpted from an article by the editors of a science-oriented magazine.

Kentucky governor Matt Bevin wants students majoring in electrical engineering to receive state subsidies for their education but doesn’t want to support those who study subjects such as French literature. Bevin is not alone in trying to nudge higher education toward course work that promotes better future job prospects. Senator Marco Rubio of Florida, a former presidential candidate, put it bluntly last year by calling for more welders and fewer philosophers.

Promoting science and technology education to the exclusion of the humanities may seem like a good idea, but it is deeply misguided. *Scientific American* has always been an ardent supporter of teaching STEM: science, technology, engineering and mathematics. But studying the interaction of genes or engaging in a graduate-level project to develop software for self-driving cars should not edge out majoring in the classics or art history.

The need to teach both music theory and string theory is a necessity for the U.S. economy to continue as the preeminent leader in technological innovation. The unparalleled dynamism of Silicon Valley and Hollywood requires intimate ties that unite what scientist and novelist C. P. Snow called the “two cultures” of the arts and sciences.

Steve Jobs, who reigned for decades as a tech hero, was neither a coder nor a hardware engineer. He stood out among the tech elite because he brought an artistic sensibility to the redesign of clunky mobile phones and desktop computers. Jobs once declared: “It’s in Apple’s DNA that technology alone is not enough—that it’s technology married with liberal arts, married with the humanities, that yields us the result that makes our hearts sing.”

A seeming link between innovation and the liberal arts now intrigues countries where broad-based education is less prevalent. In most of the world, university curricula still emphasize learning skills oriented toward a specific profession or trade. The ebullience of the U.S. economy, which boasted in 2014 the highest percentage of high-tech outfits among all its public companies—has spurred countries such as Singapore to create schools fashioned after the U.S. liberal arts model. . . .

The undergraduate able to cobble together a course schedule integrating STEM and the humanities may be able to reap rich rewards. Facebook co-founder Mark Zuckerberg became an avid student of Greek and Latin when he was only in high school, in addition to setting about learning programming languages. And the same government officials who call for a shift in educational priorities should know better than to trash the liberal arts. Take Bevin’s call to eschew French literature: Bevin is someone with his own debt to the humanities. He graduated from college with a bachelor’s degree in East Asian studies.

The way to encourage high-tech industry to move to Kentucky—or any other state—is not to disparage Voltaire and Camus.¹ Rather the goal should be to build a topflight state educational system and ease the way financially for students from even the most humble backgrounds to attend. The jobs will follow—whether they be in state government or in social media start-ups.

¹ famous French authors

Copyright © 2016 *Scientific American*, a division of Nature America, Inc. All rights reserved.

Source D

Hart Research Associates. “It Takes More Than a Major: Employer Priorities for College Learning and Student Success.” 10 April 2013, www.aacu.org/sites/default/files/files/LEAP/2013_EmployerSurvey.pdf.

The following graphic is excerpted from a survey of employer priorities conducted for The Association of American Colleges and Universities.

EMPLOYEES VALUE SOME SKILLS AND QUALITIES MORE THAN OTHERS WHEN HIRING

- Very important that our employees have this quality/skill
- Fairly important

Ethical judgement and integrity

76%

96%

Comfortable working with colleagues, customers, and/or clients from diverse cultural backgrounds

63%

96%

Demonstrated capacity for professional development and continued new learning

61%

94%

Interest in giving back to the communities in which our company is located or those that it serves

26%

71%

Knowledge of global cultures, histories, values, religions, and social systems

16%

55%

Source E

Fitzgerald, Deborah. “At MIT, the Humanities Are Just as Important as STEM.” *The Boston Globe*, 30 April 2014, www.bostonglobe.com/opinion/2014/04/30/mit-humanities-are-just-important-stem/ZOArg1PgEFy2wm4ptue56I/story.html.

The following is excerpted from an article published in a national American newspaper.

The role of the humanities in American education has been the subject of much recent debate amid concerns that the STEM disciplines (science, technology, engineering and math) are eclipsing the humanities fields in relevance and career prospects.

So some may be surprised, and, I hope, reassured, to learn that here at MIT—a bastion of STEM education—we view the humanities, arts, and social sciences as essential, both for educating great engineers and scientists, and for sustaining our capacity for innovation.

Why? Because the Institute’s mission is to advance knowledge and educate students who are prepared to help solve the world’s most challenging problems—in energy, health care, transportation, and many other fields. To do this, our graduates naturally need advanced technical knowledge and skills—the deep, original thinking about the physical universe that is the genius of the science and engineering fields.

But the world’s problems are never tidily confined to the laboratory or spreadsheet. From climate change to poverty to disease, the challenges of our age are unwaveringly human in nature and scale, and engineering and science issues are always embedded in broader human realities, from deeply felt cultural traditions to building codes to political tensions. So our students also need an in-depth understanding of human complexities—the political, cultural, and economic realities that shape our existence—as well as fluency in the powerful forms of thinking and creativity cultivated by the humanities, arts, and social sciences.

MIT’s curriculum has evolved significantly over the past 50 years to require all undergraduates to spend substantial time on subjects like literature, languages, economics, music, and history. In fact, every MIT undergraduate takes a minimum of eight such classes—nearly 25 percent of their total class time.

In these classes, our students learn how individuals, organizations, and nations act on their desires and concerns. They gain historical and cultural perspectives, and critical thinking skills that help them collaborate with people across the globe, as well as communication skills that enable them to listen, explain, and inspire. They learn 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.

Some of the best testimony about the value of such an education comes from our science and engineering alumni. One recent graduate who went on to medical school wrote about how her practice as a physician requires not only medical knowledge, but also the ability to interpret her patients’ accounts and stories—a skill she gained reading literature, studying the various forms of narrative, the many ways humans share vital information. “MIT biology prepared me for medicine,” she says. “Literature prepared me to be a doctor.” . . .

As educators, we know we cannot anticipate all the forms our students’ future challenges will take, but we can provide them with some fundamentals that will be guides for the ongoing process of exploration and discovery. We can help shape their resilience, and prepare them to analyze and problem-solve in both familiar and unfamiliar situations. 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.

Used by permission.

Source F

May, Gary S. “STEM, Not STEAM.” *Inside Higher Ed*, 30 Mar. 2015,
www.insidehighered.com/views/2015/03/30/essay-criticizes-idea-adding-arts-push-stem-education.

The following is excerpted from an article published on a higher-education-oriented news Web site. The author was then dean of the Georgia Tech College of Engineering.

The last few years have brought a call from some quarters to update the STEM acronym—for science, technology, engineering and mathematics—to STEAM, with the A standing for arts. On the surface, such a move seems harmless. What’s another letter, right? But in my view, STEM should stay just as it is, because education policy has yet to fully embrace the concept it represents—and that concept is more important than ever.

No one—least of all me—is suggesting that STEM majors should not study the arts. The arts are a source of enlightenment and inspiration, and exposure to the arts broadens one’s perspective. Such a broad perspective is crucial to the creativity and critical thinking that is required for effective engineering design and innovation. The humanities fuel inquisitiveness and expansive thinking, providing the scientific mind with larger context and the potential to communicate better.

The clear value of the arts would seem to make adding A to STEM a no-brainer. But when taken too far, this leads to the generic idea of a well-rounded education, which dilutes the essential need and focus for STEM.

STEM is the connecting of four separate, but similar, dots. The acronym was born in the early 2000s, when the National Science Foundation sought to promote a national conversation about the merits of pulling related areas out of their silos and teaching them in a more multidisciplinary way. Math and science were already well established in education. The thinking was that technology and engineering instruction was far less prevalent in public schools, despite society being dependent on both.

Over time, the four letters have served as the spark to rekindle America’s commitment to an innovation economy. The basis of that commitment is a larger, more skilled workforce in STEM areas. Policy from the Clinton, Bush and Obama administrations has emphasized the importance of preparing and encouraging more youth to pursue these fields at a time when they were less inclined to do so, and to provide more support and training for teachers in the subjects.

We cannot afford to be distracted from that strategy. A survey of executives by Business Roundtable last year revealed that 4 out of 10 companies still find that at least half of their entry-level job applicants don’t even have the basic skills in STEM. Yet these companies will have to replace nearly 1 million U.S. employees with basic STEM literacy (and 635,000 with advanced skills in STEM) in the next five years. This means that STEM education needs ongoing commitment and resources.

Used by permission.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

Synthesis Essay**6 points**

Since the early 2000s, the United States government and a number of corporations have sponsored initiatives to improve education in the STEM disciplines: science, technology, engineering, and mathematics. The emphasis on STEM subjects in elementary, secondary, and higher education reflects concerns that United States students are less proficient in these areas than are students in other countries. Additionally, there is a belief that mastery in STEM fields is now essential in order to join a highly technical and specialized workforce. However, not everyone is convinced that a STEM-focused curriculum is necessary and/or effective.

Carefully read the following six sources, including the introductory information for each source. Write an essay that synthesizes material from at least three of the sources and develops your position on the value, if any, of initiatives to improve STEM education and increase the number of students interested in the STEM disciplines.

- Source A (Ossola)
- Source B (graph)
- Source C (editors)
- Source D (survey)
- Source E (Fitzgerald)
- Source F (May)

In your response you should do the following:

- Respond to the prompt with a thesis that presents a defensible position.
- Select and use evidence from at least three of the provided sources to support your line of reasoning. Indicate clearly the sources used through direct quotation, paraphrase, or summary. Sources may be cited as Source A, Source B, etc., or by using the description in parentheses.
- Explain how the evidence supports your line of reasoning.
- Use appropriate grammar and punctuation in communicating your argument.

Reporting Category	Scoring Criteria	
Row A Thesis (0–1 points)	0 points For any of the following: <ul style="list-style-type: none"> • There is no defensible thesis. • The intended thesis only restates the prompt. • The intended thesis provides a summary of the issue with no apparent or coherent claim. • There is a thesis, but it does not respond to the prompt. 	1 point Responds to the prompt with a thesis that presents a defensible position.
Decision Rules and Scoring Notes		
	Responses that do not earn this point: <ul style="list-style-type: none"> • Only restate the prompt. • Do not take a position, or the position is vague or must be inferred. • Equivocate or summarize others' arguments but not the student's (e.g., some people say it's good, some people say it's bad). • State an obvious fact rather than making a claim that requires a defense. Examples that do not earn this point: <p>Restate the prompt</p> <ul style="list-style-type: none"> • <i>"Some people think that STEM classes should be taught in schools today, but others think that it's not necessary or effective."</i> <p>Address the topic of the prompt but do not take a position</p> <ul style="list-style-type: none"> • <i>"STEM education has increased in the United States as more and more corporations are hiring students who have mastery of STEM subjects."</i> <p>Address the topic of the prompt but state an obvious fact as a claim</p> <ul style="list-style-type: none"> • <i>"Concerned that American students are lagging behind internationally in STEM disciplines, U.S. schools are starting to put more emphasis on STEM education."</i> 	Responses that earn this point: <ul style="list-style-type: none"> • Respond to the prompt by developing a position on the value, if any, of initiatives to improve STEM education and increase the number of students interested in the STEM disciplines, rather than restating or rephrasing the prompt. Clearly take a position rather than just stating there are pros/cons.
		Examples that earn this point: <p>Present a defensible position that responds to the prompt</p> <ul style="list-style-type: none"> • <i>"The United States should place more emphasis on STEM initiatives so that American students can keep up with international competition for jobs."</i> • <i>"While an education in STEM disciplines is important, students should still take classes in the humanities, arts, and social sciences to be more well-rounded in their education and be more prepared for life after school."</i> • <i>"STEM education is an overrated trend that will not last. In fact, many employers look for qualities and skills that are not only taught in STEM classes."</i> <p>Additional Notes:</p> <ul style="list-style-type: none"> • The thesis may be more than one sentence, provided the sentences are in close proximity. • The thesis may be anywhere within the response. • For a thesis to be defensible, the sources must include at least minimal evidence that <i>could</i> be used to support that thesis; however, the student need not cite that evidence to earn the thesis point. • The thesis <i>may</i> establish a line of reasoning that structures the essay, but it needn't do so to earn the thesis point. • A thesis that meets the criteria can be awarded the point whether or not the rest of the response successfully supports that line of reasoning.

Reporting Category	Scoring Criteria				
Row B Evidence AND Commentary (0–4 points)	0 points Simply restates thesis (if present), repeats provided information, or references fewer than two of the provided sources.	1 point EVIDENCE: Provides evidence from or references at least two of the provided sources. AND COMMENTARY: Summarizes the evidence but does not explain how the evidence supports the student's argument.	2 points EVIDENCE: Provides evidence from or references at least three of the provided sources. AND COMMENTARY: Explains how some of the evidence relates to the student's argument, but no line of reasoning is established, or the line of reasoning is faulty.	3 points EVIDENCE: Provides specific evidence from at least three of the provided sources to support all claims in a line of reasoning. AND COMMENTARY: Explains how some of the evidence supports a line of reasoning.	4 points EVIDENCE: Provides specific evidence from at least three of the provided sources to support all claims in a line of reasoning. AND COMMENTARY: Consistently explains how the evidence supports a line of reasoning.
Decision Rules and Scoring Notes					
Typical responses that earn 0 points: <ul style="list-style-type: none"> Are incoherent or do not address the prompt. May be just opinion with no textual references or references that are irrelevant. 	Typical responses that earn 1 point: <ul style="list-style-type: none"> Tend to focus on summary or description of sources rather than specific details. 	Typical responses that earn 2 points: <ul style="list-style-type: none"> Consist of a mix of specific evidence and broad generalities. May contain some simplistic, inaccurate, or repetitive explanations that don't strengthen the argument. May make one point well but either do not make multiple supporting claims or do not adequately support more than one claim. Do not explain the connections or progression between the student's claims, so a line of reasoning is not clearly established. 	Typical responses that earn 3 points: <ul style="list-style-type: none"> Uniformly offer evidence to support claims. Focus on the importance of specific words and details from the sources to build an argument. Organize an argument as a line of reasoning composed of multiple supporting claims. Commentary may fail to integrate some evidence or fail to support a key claim. 	Typical responses that earn 4 points: <ul style="list-style-type: none"> Uniformly offer evidence to support claims. Focus on the importance of specific words and details from the sources to build an argument. Organize and support an argument as a line of reasoning composed of multiple supporting claims, each with adequate evidence that is clearly explained. 	
Additional Notes: <ul style="list-style-type: none"> Writing that suffers from grammatical and/or mechanical errors that interfere with communication cannot earn the fourth point in this row. 					

Reporting Category	Scoring Criteria	
Row C Sophistication (0–1 points)	0 points Does not meet the criteria for one point.	1 point Demonstrates sophistication of thought and/or a complex understanding of the rhetorical situation.
	Decision Rules and Scoring Notes <p>Responses that do not earn this point:</p> <ul style="list-style-type: none"> Attempt to contextualize their argument, but such attempts consist predominantly of sweeping generalizations (“<i>In a world where . . .</i>” OR “<i>Since the beginning of time . . .</i>”). Only hint at or suggest other arguments (“<i>While some may argue that . . .</i>” OR “<i>Some people say . . .</i>”). Use complicated or complex sentences or language that is ineffective because it does not enhance the argument. 	
	Responses that earn this point may demonstrate sophistication of thought and/or a complex understanding of the rhetorical situation by doing any of the following: <ol style="list-style-type: none"> Crafting a nuanced argument by consistently identifying and exploring complexities or tensions across the sources. Articulating the implications or limitations of an argument (either the student’s argument or arguments conveyed in the sources) by situating it within a broader context. Making effective rhetorical choices that consistently strengthen the force and impact of the student’s argument throughout the response. Employing a style that is consistently vivid and persuasive. 	
Additional Notes: <ul style="list-style-type: none"> This point should be awarded only if the sophistication of thought or complex understanding is part of the student’s argument, not merely a phrase or reference. 		

Sample 1A (1 of 3)

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

"...the World's problems are never tidily confined to the laboratory or spreadsheet" (Source E). America lends itself to being a country with a plethora of opportunities & jobs that are constantly in demand, day in & day out; however, one of the most prevalent job opportunities in this time and age holds itself to be in STEM fields. This begs the question, if the demands for jobs in the STEM field are increasing, should America focus on increasing the number of students to apply and focus on these majors? In a sense, it would make sense to pour more resources into this field of education; however, this newfound opportunity should not squander the prevalence of other fields such as literature or the arts. Therefore, although there should be more value placed on the development of STEM education, there should be no diminishing of the value of other subjects in order to achieve this goal.

Part of the ~~desire~~ desire that lays in increasing STEM education lies in the fact that the demands for people in this field are, and continue to, increase. Based on a study done by the United States Department of Education, it's projected for there to be a 62% increase in demand for biomedical engineers & over a third of the total percentage increase in medical scientists & software developers (Source B). This large increase can be attributed to the new form of economy that the US has taken on, particularly in the fact that there is now a focus on the customer than in the product (Source A). Both the increase in demands as well as the shifting economy work in tandem to establish the fact that those in STEM professions ~~can~~ benefit not only large businesses, but the people as well. There is also the fact that society itself has a heavy dependence on the developments of the STEM field; however, it holds true that there lacks focus on the field. Although one cannot sacrifice being well rounded ^{to succeed in} one particular subject, their efforts to

Sample 1A (2 of 3)

Important: Completely fill in the circle
that corresponds to the question you
are answering on this page.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

establish equal footing dilute the much needed focus for the field itself (Source F). The American education has failed to fully acknowledge the importance of STEM education as well, landing itself 27th out of 63 total education systems (Source A). This communicates further that in order to move with the changing economy as well as the increase in demand for STEM majors, America must put a larger value on the field as a whole.

Placing a focus on ~~stem~~ STEM education does not mean a whole displacement of other fields of education though, as more times than not it is found that all subjects work together in unison to produce a successful STEM based student. ~~While it is true that there is a large desire for education that~~ It's the fact that literature & technology, although completely opposite ends of the spectrum, work in tandem due to the fact that both cultures are so highly dependent on each other (Source C). Large corporations that host STEM geniuses ^{, such as stem jobs or type of math involving art, music, etc.} concede ~~the fact~~ that they are as much dependent on the liberal arts as any other STEM major. This creates the narrative that although there should be a focus on ^{the} ~~STEM~~ ^{field} ~~majors~~, the larger goal lies in the fact that America should establish an education system that places subjects in unison instead of undermining each other. ~~This~~ ^{With} an increased focus on the equality of STEM education, the opportunities & jobs follow through. Much of the jobs that make up America's workforce have found themselves to place a higher priority on overall character as well, further highlighting the importance of developing ones overall presentability & ~~present~~ ideas from the lessons of literature & art (Source D). As a whole, the importance of a well rounded STEM education not only emphasize the development of students, but the fact that success becomes a byproduct due to the skills obtained.

Sample 1A (3 of 3)

Important: Completely fill in the circle
that corresponds to the question you
are answering on this page.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

As such, this determines the fact that, while STEM education must be raised both in value & standards, the overall ~~the~~ reform needs to create an equal education system that provides opportunity for success ~~sustains~~ itself as the true goal in developing the STEM field. ~~Because~~ At the end of the day, "...the world's problems are never tidy confined to a laboratory or spreadsheet" (Barra E)

Sample 1B (1 of 3)

Important: Completely fill in the circle
that corresponds to the question you
are answering on this page.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

America's image as an innovation and education hub has slowed, and much of this can be attributed to the unsatisfactory implementation of STEM. Because of the increasing need in STEM job opportunities, the incentives to retain America's position as an innovation economy, and the importance of suppressing the decay of American aptitude in STEM subjects, there is great value in improving STEM education and interest.

First, STEM-focused curriculum must improve because America is struggling internationally in STEM subjects. In Source A, the author points to the Program for International Student Assessment, which ranks 15 year olds internationally in STEM subjects. America made headlines by "sliding in Global Ranking in math, reading and science." This shows that there is value in increasing STEM education because other countries are rising over America in education, and in order to change that narrative, there must be an increase in K-12 education in STEM. By putting more value into the improving of STEM and the increasing of access in STEM educations, America can retain its position as a top nation in education.

Second, there is great value in increasing STEM in America because there is a large demand increase in job opportunities in STEM fields according to trends of the past 10 years. According to the graph in Source B, there has been a 14% increase in all STEM-related occupations in America from ~~2000~~ 2010-2020. This means that the economy needs more and more

Sample 1B (2 of 3)

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

people that are STEM-educated in the workforce. This means that American workers would be incentivized with better jobs if they were incentivized with a strong STEM education. Students who receive STEM-education are stronger job candidates in the workforce. To maximize the economy's output, employment, and general wellbeing, America must invest in an improved STEM-based education to supply the economy with able employees that will stimulate an innovative economy.

Increasing STEM-education in America is imperative in order to retain Americas position as an innovation economy. According to Source F, in 2014, "4 out of 10 companies still find that at least half of their entry-level job applicants don't even have the basic skills in STEM" (Source F). This shows the desperate need for an increased commitment to STEM, because having less than ~~needed~~ ideal employee ability limits companies and limits the economic growth of America. Also, Americas "bread and butter" has been innovation, but that has slowed—a consequence of the lack of STEM aptitude. STEM is the "spark to rekindle Americas commitment to an innovation economy," and in order to maintain and grow upon Americas economic status, they must emphasize STEM resources.

America must improve STEM education in order to present workers with the capability to work jobs, to improve the nations status in education, and reinvigorate Americas image

Sample 1B (3 of 3)

Important: Completely fill in the circle
that corresponds to the question you
are answering on this page.

Question 1 **Question 2** **Question 3**

Begin your response to each question at the top of a new page. Do not skip lines.

as an innovation economy. By investing in STEM-education, America will benefit as the workforce will be capable and the economy, in turn, will prosper.

Sample 1C (1 of 2)

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

Although many people may not be on board with STEM-focused curriculum ~~at any age~~ to start as early as elementary school, its very benefit as it would give easier access to ~~the~~ quality education, there been seen a rise in the need of ~~STEM~~ education more engineers/ scientists, ~~the future of art history and geography are very important and crucial because you can learn valuable skills.~~ ~~and~~ ~~through~~ ~~the~~ ~~future~~ ~~of~~ ~~art~~ ~~history~~ ~~and~~ ~~geography~~ ~~are~~ ~~very~~ ~~important~~ ~~and~~ ~~crucial~~ ~~because~~ ~~you~~ ~~can~~ ~~learn~~ ~~valuable~~ ~~skills.~~

By offering these STEM classes to young children from an early age it can help lead many kids to pursue a career in STEM which ~~is~~ is said there will be a great domestic need of STEM workers in the future (source A). It's also seen that through grade K-12 the US has placed 27th in math and 20th in science. With these classes we would rank higher meaning students would also learn a lot more. A graph from 2010 shows us how the percent increase in STEM jobs increased from 2010-2020. This meaning there will be an overall increase in the jobs for Mathematics. (source B)

Schools, companies and important figures, have said to take over arts with STEM and that is a lot more important. In a graph from "The association of American colleges and universities" we see that a skill/value that isn't required or looked for when applying for

Sample 1C (2 of 2)

Important: Completely fill in the circle
that corresponds to the question you
are answering on this page.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

A job is the knowledge of global cultures, histories, values, religions and social systems (DOCD). ~~Big reading~~
~~education~~. Although this makes it seem as arts aren't important, people like a graduate from MIT has learn the ability to interpret her patients accounts and stories, which is a skill she learns reading literature. The arts should not be overpowered by STEM because through the arts we learn about humanities and disciplines. (Source E).

Furthermore, as Kentucky's governor Matt Bevin has said ~~he~~ he wants more welders and fewer philosophers, when in reality the importance of majoring in the classics or art history. (Source C). The need to teach both music theory and string theory are both important for the US economy. It's even been considered to add a "A" in STEM. "A" Standing for Arts ... STEAM. The arts are a source of enlightenment and inspiration into a broader perspective. (Source F).

In conclusion, although it would be beneficial in order to place STEM classes in early education, it should not rule out the importance of the arts as one can learn life skills through these courses which our all can also be beneficial to medical services and STEM careers.

Question 1

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Overview

Students responding to this question were expected to read six sources on the topic of STEM education and then write an essay that synthesized material from at least three of the sources and developed their position on the value, if any, of initiatives to improve STEM education and increase the number of students in the STEM disciplines. Students were expected to respond to the prompt with a thesis that takes a defensible position; use evidence from at least three provided sources to support their line of reasoning clearly, properly citing the sources; explain how the evidence supports their line of reasoning; and use appropriate grammar and punctuation in presenting their argument.

As per the Course and Exam Description (CLE-1.M, CLE-1.1), students were expected to be able to read the prompt, understand the task, use sources provided to write paragraphs that reflect their ability to establish claims and provide evidence, and demonstrate their understanding of prose and their ability to write using cogent, meaningful discourse.

Sample: 1A

Score: 1-4-1

Thesis (0–1 points): 1

The defensible thesis is found at the end of paragraph 1: “In a sense, it would make sense to pour more resources into this field of education; however, this newfound opportunity should not squander the prevalence of other fields such as literature or the arts. Therefore, although there should be more value placed on the development of STEM education, there should be no diminishing of other subjects in order to achieve this goal.”

Evidence and Commentary (0–4 points): 4

The response establishes a line of reasoning, acknowledging the “desire that lays in increasing STEM education” in paragraph 2 before devoting paragraph 3 to a nuanced look at the need to “establish an education system that places subjects in unison instead of undermining each other.” The response has adequate evidence, clearly explained throughout, using multiple sources in each paragraph (in order, Sources B, A, and F in paragraph 2 and Sources C and D in paragraph 3). Further, the concession that “there lacks focus on the field” in paragraph 2 uses two well-chosen paraphrases before returning to the central argument. The discussion of Source D in paragraph 3 illustrates the response’s consistency in supporting all claims, as seen in the assertion that “[a]s a whole, the importance of a well rounded STEM education not only emphasize the development of students, but the fact that success becomes a byproduct due to the skills obtained.”

Sophistication (0–1 points): 1

The response’s overall style is vivid and persuasive, as demonstrated in statements such as “Both the increase in demand as well as the shifting economy work in tandem to establish the fact that those in STEM professions benefit not only large businesses, but the people as well” (paragraph 2) and “Placing a focus on STEM education does not mean a whole displacement of other fields of education though, as more often than not it is found that all subjects work together in unison to produce a successful STEM based student” (paragraph 3). While the response combines sources in support of its

Question 1 (continued)

claims and recognizes the tensions in focusing on STEM versus education as a whole, it does not explore these tensions across sources. Additionally, the response does not necessarily situate the response within a broader context. Therefore, the response earned the Row C point for its consistently sophisticated style.

Sample: 1B

Score: 1-3-0

Thesis (0–1 points): 1

The response earned the thesis point at the end of the first paragraph, asserting that “[b]ecause of the increasing need in STEM job opportunities, the incentives to retain Americas position as an innovation economy, and the importance of suppressing the decay of American aptitude in STEM subjects, there is great value improving STEM education and interest.”

Evidence and Commentary (0–4 points): 3

The response shifts the order of the thesis but does clearly delve into the three issues it mentions in the thesis, beginning with a clear focus on “struggling internationally” before moving to “job opportunities” and then the “innovation economy.” The response uniformly offers evidence for these claims. Some evidence is clearly explained, as with the discussion of Source F in paragraph 4: “This shows the desperate need for an increased commitment to STEM, because having less than ideal employee ability limits companies and limits the economic growth of America.” In other places, the discussion fails to integrate the evidence, relying on repetition of ideas and of the source’s point. For example, in paragraph 2 the commentary on Source A about the slide in global rankings merely repeats the provided details: “This shows that there is value in increasing STEM education because other countries are rising over America in education.”

Sophistication (0–1 points): 0

The repetition (“This shows,” “This means”) is one issue that prevents the style from being vivid and persuasive. No attempt is made to situate the argument in a broader context. All assertions are supported with a single source in each paragraph (in order, A, B, and F), but the response does not explore tensions or complexities across the sources.

Sample: 1C

Score: 1-1-0

Thesis (0–1 points): 1

The response opens with a defensible thesis in the first sentence that sets up a counterargument with the phrase “Although many people may not be on board” and moves to a statement of the position: “its very benefic as it would give easier access to quality eduation, theres been seen a rise in the need of more engineers/scientists, the focus of art, history, and geography are very important and crucial because you can learn valuable skills.”

Evidence and Commentary (0–4 points): 1

The response does cite numerous sources (in order: A, B, C, D, E, and F) but does not explain how the evidence supports the argument. For example, the discussion of “Doc D” in paragraph 3 is followed by a summary of Source E and an unsubstantiated assertion that “through the arts we learn

Question 1 (continued)

about humanities and disciplines.” This focus on summary or description can also be seen in paragraph 2 in the statement that “[t]his meaning there will be an overall increase in the jobs for mathematics.”

Sophistication (0–1 points): 0

Beyond the brief attempt to establish a counterargument in the thesis, the response does not identify complexities and tensions or extend those to the sources. The response moves quickly through the sources, which does not allow for a substantial exploration of the topic. In addition, the emphasis on summary prevents the response from achieving a persuasive style.