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CollegeBoard

AP Research Academic Paper

Sample Student Responses and Scoring Commentary

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AP[®] RESEARCH 2017 SCORING GUIDELINES
Performance Task Rubric: Academic Paper

Content Area	Performance Levels		
1 Understand and Analyze Context	The paper identifies a broad topic of inquiry and/or a purpose. 2	The paper identifies a focused topic of inquiry and describes the purpose. 4	The paper explains the topic, purpose, and focus of the inquiry and why further investigation of the topic is needed by connecting it to the larger discipline, field, and/or scholarly community. 6
2 Understand and Analyze Argument	The paper identifies or cites previous scholarly works and/or summarizes a single perspective on the student’s topic of inquiry. 2	The paper summarizes, individually, previous scholarly works representing multiple perspectives about the student’s topic of inquiry. 4	The paper explains the relationships among multiple scholarly works representing multiple perspectives, describing the connection to the student’s topic of inquiry. 6
3 Evaluate Sources and Evidence	The paper uses sources/evidence that are unsubstantiated as relevant and/or credible for the purpose of the inquiry. 2	The paper uses credible and relevant sources/evidence suited to the purpose of the inquiry. 4	The paper explains the relevance and significance of the used sources/cited evidence by connecting them to the student’s topic of inquiry. 6
4 Research Design	The paper presents a summary of the approach, method, or process, but the summary is oversimplified. 3	The paper describes in detail a replicable approach, method, or process. 5	The paper provides a logical rationale for the research design by explaining the alignment between the chosen approach, method, or process and the research question/project goal. 7
5 Establish Argument	The paper presents an understanding, argument, or conclusion, but it is simplistic or inconsistent, and/or it provides unsupported or illogical links between the evidence and the claim(s). 3	The paper presents a new understanding, argument, or conclusion that the paper justifies by explaining the links between evidence and claims derived from the student’s research. 5	The paper presents a new understanding, argument, or conclusion that acknowledges and explains the limitations and implications in context. 7
6 Select and Use Evidence	Evidence is presented, but it is insufficient or sometimes inconsistent in supporting the paper’s conclusion or understanding. 2	The paper supports its conclusion by compiling relevant and sufficient evidence generated by the student’s research. 4	The paper demonstrates an effective argument through interpretation and synthesis of the evidence generated by the student’s research, while describing its relevance and significance. 6
7 Engage Audience	Organizational and design elements are present, but sometimes distract from communication or are superfluous. 1	Organizational and design elements convey the paper’s message. 2	Organizational and design elements engage the audience, effectively emphasize the paper’s message and demonstrate the credibility of the writer. 3
8 Apply Conventions	The paper cites and attributes the work of others, but does so inconsistently and/or incorrectly. 2	The paper consistently and accurately cites and attributes the work of others. 4	The paper effectively integrates the knowledge and ideas of others and consistently distinguishes between the student’s voice and that of others. 6
9 Apply Conventions	The paper’s use of grammar, style and mechanics convey the student’s ideas; however, errors interfere with communication. 1	The paper’s word choice and syntax adheres to established conventions of grammar, usage and mechanics. There may be some errors, but they do not interfere with the author’s meaning. 2	The paper’s word choice and syntax enhances communication through variety, emphasis, and precision. 3

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NOTE: To receive the highest performance level presumes that the student also achieved the preceding performance levels in that row.

ADDITIONAL SCORES: In addition to the scores represented on the rubric, readers can also assign scores of **0** (zero).

- A score of **0** is assigned to a single row of the rubric when the paper displays a below-minimum level of quality as identified in that row of the rubric.

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Academic Paper

Overview

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;
- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;
- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;
- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;
- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;
- Use organizational and design elements to effectively convey the paper's message;
- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between the student's voice and that of others;
- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.

Technology Literacy in High Socioeconomic Status Schools

Introduction:

Normally the lack of technological skills is a problem associated with low socioeconomic status students, but this might not be the case. Few studies focus specifically on the technology literacy of high socioeconomic status students. For the jobs these students are going to be filling, the demand for the ability to be able to properly utilise technology to be more productive, solve seemingly unsolvable challenges, and to accelerate innovation. These three pillars must be cultivated from a young age for the technologies power to fully sink in. It is proposed that these pillars are not being enforced enough before the eighth grade, the final point where there is a standard for this new type of literacy. Perhaps a study of ninth grade students in a high socioeconomic status school can give insight into where the gaps with the schooling are and where to improve.

Review of the Literature:

Exposure to tech:

The problem with technology literacy begins early in schooling. In elementary school only 10-60 minutes per week were spent on using information technology according to a study conducted by Hackbarth. Due to this lack of time using technology at school it can be assumed that the students are gaining the needed skills at the home. Unfortunately this is not true in all cases, it has been shown by the National Assessment of Educational Progress that only 41% of people on the free and reduced lunch program have internet access. As the use for technology in jobs continuously increases, lack of skills with these tools may be detrimental in today's competitive work force. This problem is very difficult to solve as well because the incongruities in the standard of learning between people. This lack of early teaching about technology paired with the exposure to things such as social media can further inhibit the growth of technology literacy. Millennials spend on average 35 hours a week on social media, according to a study done by Experian Marketing Services. This high amount of time spent on a program that is designed to be easy to use is what creates this illusion of technology literacy. This illusion is a big issue as educators believe that the students can use the technology because the time spent on it. Unfortunately using technology often and using it well are not the same thing. This also creates the image to some educators that technology is useless in the classroom because the students will misuse it. Furthermore, studies have shown (Bennett) that far more students have a mobile phone compared to a computer. This also creates a lack of exposure to more complex technology and knowledge required to use a computer to its fullest extent. Of the students who

have a computer, only a fraction of them are interested in learning more about using a computer and will begin to explore and develop the necessary skills for the modern day.

Technology skills are not the only benefit of exposure to technology. According to an educational psychologist, Lev Vygotsky, this exposure also allows the student to gain the problem solving skills necessary to succeed in the future. These problem solving skills are going to be vital in the future. Some programs already exist that help develop these skills such as STEMworks. This group allows students to work together to solve problems using the latest technology(DOES NOT COMPUTE). This social aspect of group work also will play a major role in the student's development. This group work allows the students to talk and develop emotionally and socially while still keeping them engaged in the topic (Technology). These other skills that can be developed alongside the technology skills and that are just as important in becoming a productive worker.

Teachers do not know better:

As shown by an international study conducted using PIAAC, a survey that measures life skills, millennials now 19-34 year olds, the average age of male teachers in the United States. The united states scored 19th (Lorenzo) out of the 19 participating countries. But what does scoring this low actually mean? This survey sorts the results into 4 levels. Someone who scores below the first level would have problems doing a task such as sorting emails responses to a party invitation into pre-existing folders to keep track of who can and cannot attend. 19% of american millennials scored in this category. This was better than the people in the next age bracket up, where the average age of female teachers lay. PIAAC suggests that level 2 is the minimum for people in the workplace, any person below this level would have trouble locating

specific information on a spreadsheet by sorting rows or columns and then emailing that information to the person who requested it. This shows that even the teachers cannot help this problem without intervention, because they do not have the necessary skills to teach their students. This is further proved by a survey done by the Bill and Melinda Gates Foundation on teachers showing that 62% of teachers felt that a lack of comfort with technology was the biggest barrier to using it in the classroom. This lack of technology in the classroom is a major problem later in life as it has been shown that even when controlled for other variables such as race, gender and age those with the highest technology skills earn 40% more than those with the lowest skills. This continues with the fact that 80% of the jobs that require a bachelor's degree or less require a minimum of level two skills. Now the common core standard which most states follow have recognised this as a problem, so they have put a standard for technology literacy in place. Unfortunately this standard is that schools have to declare their students technology literate by 8th grade. This is so vague that it essentially circumvents the problem, allowing the schools to decide what this means instead of creating a standard that has been proven to be useful in the business world, such as the one developed by PIAAC. This also deepens the rift between poor schools, who do not have as much access to technology, and rich schools, who would base more of their curriculum in technology because it simplifies things for them. The richer schools simply using the technology in a meaningful way can help whereas the poorer schools just further themselves more. Because there is no standard, there is no consistency, no learning of the skills, or progression towards fixing the problem that is already supposed to be fixed.

Students:

This problem is not entirely to be blamed on the teachers and the schools though, the students contribute as well. A study done by The Online Computer Library Center has said that 72% of students ranked search engines as their first method of choice when attempting to find information. They continue on to say that today's more self-reliant students ask fewer questions to educators and librarians. This creates the issue of perpetuation of misinformation. These students are less likely to ask questions and trust their friends more for places to get information than educators. This paired with the ability of people to create their own content creates an environment where the students find it very easy to get information from many reputable, and non-reputable sources. According to the same study only 36% cross-check their information with a library. This prevents misinformation from being stopped before it spreads. This is a problem that must be addressed before any progress begins. Students that have grown up with technology think that all things on the internet are correct, but this belief is untrue. Students that have grown up with technology believe their high use makes them good at it, but once again untrue. Students can also tailor what they see more readily as well, only keeping track of things they want to, making this cycle of uniformness perpetual as well. Because of this students do not realize how little they know about vital things. A study by Microsoft suggests that 50% of jobs require some degree of technological competence, and that will rise to 70% in the next decade. This paired with the fact that 91% of people believe that their technology skills had no effect on them being hired, promoted or receiving a raise (DOES NOT COMPUTE), when paired with the fact that employers say that only 37% of people have the necessary technology problem-solving skills to do their jobs. The discrepancy between what people think they know and what they actually

know is another cause for this problem of lack of skills. Students are not willing to learn from their teachers when they think they already understand how to do everything.

Methodology:

To study the issue of technology literacy, an online quantitative survey was chosen for ease of use and simplifying the analysis of the results. An online study will not influence the results of this study because this is not a study of if there is access to technology, only if those who are exposed to technology can correctly use it. The survey was made as easy to access as possible, using only words as the url title so that ability to navigate to the survey did not influence in the study. The site the survey was given on is also very simple to use and should not impact the study as well. Another possible limitation is the students entering random answers, to help alleviate this a duplicate question was put in and the inconsistent results were filtered from the data.

The survey contained a questions from a few different groups, basic computer operations and concepts, word processing skills, spreadsheet skills, and programing and graphic design. These are all catagories that most students should be proficient in to be a successful worker in the modern environment. The questions were multiple choice with the answers “yes”, “no”, and “I don’t know”. The third option of “I don’t know” was introduced so if students did not understand the question or what a word in the question meant they could select it. This answer is counted as a no, because if they do not know what something means, they cannot use it to the degree necessary to be successful in the future. The questions in Computer Operations and

Concepts were questions such as “Can you find and start a program?” These were to get an idea of how competent the students were in basically using a computer. The questions in the second section, Word Processing Skills, tested their ability to use various tools in word based programs. The next section, Spreadsheet Skills tested the students ability to use tools in programs like google sheets or Microsoft excel. The fourth category, programming and graphic design contained questions that analyzed if the students had ever done anything in these fields and if so where. See Appendix A for the entire survey. A survey by Florida Gulf Coast University was used as a basis for many of these questions. There was a fifth category to collect data about the students, about their technology use and their current grade. This survey was given to 78 students in classes normally taken by freshmen to see if the eighth grade standard put forth by Common Core and enforced by the district and state meet the needs of the current workforce.

I plan to analyze this data by first filtering the results by taking only the freshman class results, then filtering by inconsistent results on the duplicate question. Then the data will be averaged based on individual question, by category, and overall. These will be used to draw conclusions about all students in well performing schools with a small free and reduced lunch percentage, technology literacy in specific categories and overall.

Results:

Of the 78 students who responded, 62 responses were valid. Three of the responses had contradicting results and 13 were non freshman respondents. This is approximately 21% of the total freshman population, which is more than enough to make generalizations about the entire class. All percentages are rounded to the nearest whole value for simplicity.

The first category, Basic Computer Operations and Concepts, in total 76% of the students said they were competent. The total data is in Table 1 below.

Question	Number of yeses	Number of Noes	Percent Yeses	Percent Noes
Do you understand the basic function of computer hardware components such as the CPU, monitor, and hard drive?	36	26	57%	43%
Can you find and start a program?	38	24	60%	40%
Can you save files to the hard drive or removable storage, such as a flash drive?	51	11	81%	19%
Can you shutdown a computer properly?	57	5	90%	10%

The second category, Word Processing Skills, in total 72% of the students said they were competent. The total data is in Table 2 below.

Question	Number of yeses	Number of Noes	Percent Yeses	Percent Noes
Can you use headers and footers?	46	16	73%	27%
Can you cut, copy and paste text using shortcuts?	51	11	81%	19%
Can you utilize spell-check?	54	8	86%	14%

Can you include page numbers?	41	21	65%	35%
Can you create a table?	43	20	68%	32%
Can you set margins?	41	21	65%	35%
Can you change the page orientation from portrait to landscape?	40	23	63%	37%

The third category, Spreadsheet Skills, in total 40% of the students said they were competent. The total data is in Table 3 below.

Question	Number of Yeses	Number of Noes	Percent Yeses	Percent Noes
Have you ever used Excel or Google Sheets?	37	25	59%	41%
Can you use the Formula Bar to perform mathematical calculations?	12	50	19%	81%
Can you use the built-in Function capability to create equations?	11	51	17%	83%
Can you create charts?	39	23	62%	38%
Can you sort and filter information?	27	35	43%	57%

The fourth category, Programing and Graphic Design, in total 24% of the students said they were competent. The total data is in Table 4 below.

Question	Number of	Number of	Percent	Percent
	Yeses	Noes	Yeses	Noes
Do you have any experience with programing or graphic design?	22	40	35%	65%
Could you program a simple calculator?	17	45	27%	73%
Do you know what an IDE is?	6	56	10%	90%

Of the 22 students that had experience with programing or graphic design only 7 had experience with it at school, the other 15 students experience came from home.

The final category collected, Computer Information, 86% of students own a computer and 84% of those computers have internet access. Of those computers 35% were Windows PC's, 11% were Macintoshes, 41% were another operating system, and the final 13% of people did not know what operating system their computer ran.

Discussion:

This section will address the results and compare them to previous studies. This section will follow the same outline as the results, moving section by section.

The results of section one are mostly expected by students who use computers on a daily basis. They know how to do pretty much basic things, but just might not know the technical wording for it.

Section two follows this same idea where they can do most things needed for typing an essay for a class, but that is about it.

Section three is also expected, very few people need to know how to use excel in high school, but for later jobs this becomes integral. This can also be an introduction to more important job fields such as statistics, and computer programing.

This leads into another unsurprising section, section 4. Very few kids know how to program or have been exposed to programming. This is terrible for kids because as jobs are more technology dependant kids need to know how to write basic scripts and the like. It also prevents them from possibly being exposed to a job they might like.

Conclusions:

Overall the collected data matched the ideas of the works previously in the field, but expanded on the depth of them, allowing the results to be greater known and perhaps something to be done about them. One possible solution is but another standard in place before graduating high school so in high school students have to take a class that covers all of these things and is just a general computer life skills class, allowing students to be exposed to more possible job careers and allowing for them to be better prepared for life. A second option is in lower grade levels forcing teachers to be more integrated from the start so the students learn and expand on

their computer knowledge as time goes on so by the time they graduate they may be more connected with their computers, but they are also smarter about using them.

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Sample: H

- 1 Understand and Analyze Context Score:** 6
- 2 Understand and Analyze Argument Score:** 4
- 3 Evaluate Sources and Evidence Score:** 4
- 4 Research Design Score:** 7
- 5 Establish Argument Score:** 3
- 6 Select and Use Evidence Score:** 2
- 7 Engage Audience Score:** 1
- 8 Apply Conventions Score:** 2
- 9 Apply Conventions Score:** 2

MEDIUM SAMPLE RESPONSE

Technology Literacy in High Socioeconomic Status Schools

Content Area: Understand and Analyze Context — Row 1

The response earned 6 points for this row because the paper identifies a focused topic of inquiry and describes the purpose of the research. The focus and purpose are identified on page 2, paragraph 1: "Normally the lack of technological skills is a problem associated with low socioeconomic status students, but this might not be the case. Few studies focus specifically on the technology literacy of high socioeconomic status.... Perhaps a study of ninth grade students in a high socioeconomic status school can give insight into where the gaps with schooling are and where to improve". On pages 3 to 4, the paper also situates its inquiry within the larger context of technology literacy among school children and teens.

Content Area: Understand and Analyze Argument — Row 2

The response earned 4 points for this row because the paper presents sufficiently scholarly works representing multiple perspectives on its topic of inquiry within the literature review. These perspectives include the issue of exposure to technology among young people, the technological literacy of millennials, and the technological skill level of current high school students. The response did not earn 2 points because the paper presents more than one perspective on its topic. The response did not earn 6 points because the paper fails to place these sources in conversation with one another, but rather discusses one source per paragraph within its literature review section.

Content Area: Evaluate Sources and Evidence — Row 3

The response earned 4 points for this row because the paper does include credible and relevant scholarly sources - Bennett and Lorenzo - within its literature review. The response did not earn 2 points because these two sources are scholarly and relevant to the student's inquiry. The response did not earn 6 points because the student does not explicitly explain the relevance of these sources to the research question, which is especially important since there are only two of them. Though the paper reveals a research gap on page 2, this gap does not clearly arise from a discussion of these sources; rather, it is simply claimed.

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Content Area: Research Design — Row 4

The response earned 7 points for this row because the paper provides a detailed description of a replicable research method which is stated on page 7, paragraph 2: "To study the issue of technology literacy, an online quantitative survey was chosen for ease of use and simplifying the analysis of the results". This method is also explained and defended by the student - for instance, on page 7, paragraph 2: "An online study will not influence the results of this study because this is not a study of if there is access to technology, only if those who are exposed to technology can correctly use it". Details of the study are provided in the "Results" section of the paper, which includes lists of questions and resulting data on pages 9 to 11.

Content Area: Establish Argument — Row 5

The response earned 3 points for this row because the paper mounts a logical argument, linking evidence to claims deriving from the student's original research, concluding that: "Overall the collected data matched the ideas of the works previously in the field, but expanded on them allowing the results to be greater known and perhaps something to be done about them" (page 12, paragraph 5). The response did not earn 5 points because the paper's synthesis and discussion of the data results are especially thin and lead to a new understanding that is relatively simplistic.

Content Area: Select and Use Evidence — Row 6

The response earned 2 points for this row because the paper provides evidence derived from the student's original research. This evidence includes survey responses to questions asking about the ability of high school freshmen to perform a number of technological tasks, including setting margins, shutting down a computer, using Excel, and programming a calculator. The response did not earn 4 points because the paper does not provide sufficient evidence to make its case. For instance, on page 8, the student reports that a response rate of "21% of the total freshman population...is more than enough to make generalizations about the entire class" (page 8, paragraph 3). There is also some question about how the data itself was collected and filtered for use - see page 7, paragraph 2: "Another possible limitation is the students entering random answers, to help alleviate this a duplicate question was put in and the inconsistent results were filtered from the data". In addition, the data is not sufficiently analyzed for the reader, making its final relevance ambiguous.

Content Area: Engage Audience — Row 7

The response earned 1 point for this row because the paper includes organizational and design elements, such as section headings and a separate bibliography. The response did not earn 2 points because the student refers to an "Appendix A" on page 8 that is not included. This error undermines the paper's ability to convey all of its raw data from surveys. In addition, the paper's discussion wanders excessively, especially in the "Review of the Literature" section on pages 3 to 7, making it difficult for the reader to maintain a clear sense of the paper's focus and direction.

Content Area: Apply Conventions — Row 8

The response earned 2 points for this row because the paper does provide citations and attributions of its sources within the body of the text and in an appended bibliography. The response did not earn 4 points because there is a consistent pattern of citation errors within the text - for instance, the first two sources cited in the paper, Hackbarth and the National Assessment of Educational Progress (page 3), are not sourced in the bibliography. In addition, the survey by Florida Gulf Coast University that was "used as a basis for many of" the questions in the student's survey is not cited or sourced in the bibliography (see page 8, paragraph 1).

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Content Area: Apply Conventions — Row 9

The response earned 2 points for this row because the writing in the paper is largely strong and grammatically correct. The response did not earn 1 point because the writing does not impede the student's communication of meaning. The response did not earn 3 points because the writing is often awkward, sloppy, and occasionally incoherent. For example, see page 4, paragraph 2: "As shown by an international study conducted using PIAAC, a survey that measures life skills, millennials now 19-34 year olds, the average age of male teachers in the United States. The united states scored 19th (Lorenzo) out of the 19 participating countries".