



SUMMARY OF BIG HISTORY PROJECT RESEARCH

2017/18 SCHOOL YEAR



BIG HISTORY PROJECT

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Introduction

Over the 2017/18 school year, the Big History Project (BHP) conducted studies to measure student learning and student and teacher perceptions of the BHP course. We conduct these studies annually in the larger interest of overall program improvement. We believe that a good course is not just a curriculum that helps students learn — it's a community, made up of the teachers and students who engage with that course.

The Big History Project has now been reporting data for seven years. We have always focused our attention on making data-backed decisions, and this has become increasingly important as our reach continues to grow. In the 2017/18 school year, we had an active BHP program in over 1,500 schools, an increase of almost 300 schools over the 2016/17 school year (see Figure 1). Based on past growth, we project that we will reach over 1,800 schools in the 2018/19 school year and over 2,000 in 2019/20. Schools that teach BHP exist around the world, on almost every continent.

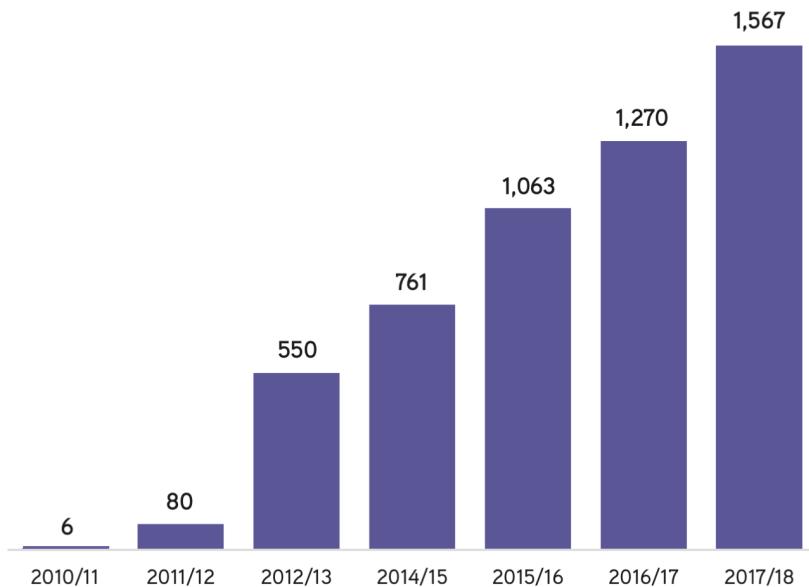


Figure 1. Number of schools with an active BHP program.

BHP is unique for many reasons, one being that we are deliberate about having a course and curriculum that are educative not just for students, but also for teachers. We foster learning through student and teacher engagement, and therefore take multiple measures to examine our progress in the following chief areas:

- Student learning
- Student perceptions of BHP
- Teacher learning
- Teacher perceptions of BHP
- Teacher engagement with the BHP community

The BHP Curriculum

Our student learning data comes from the results of text-based writing assessments that are administered throughout the school year. The remainder of the data is taken from surveys and other quantitative

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measures related to course use and engagement in both the online and in-person teacher community.

These lines of research point to favorable results related to the quality and rigor of the course, especially in the areas of student writing for students in Title I schools.¹ In addition, student and teacher perceptions of the course are generally positive, which confirms the strength of BHP as an engaging and foundational course for preparing students for future studies not only in history, but across the disciplines. BHP also appears to be educative for teachers, increasing their confidence and skill in teaching, which shows that we are providing appropriate supports for teaching this unique course. While the results year over year remain positive, there are always lessons to be learned and room for continuous improvement. This data helps us make informed decisions toward meeting our goals.

This report is divided into two sections. The first focuses on the analysis of BHP student writing and the second shares findings from teacher and student perception data.

Study 1: Student Writing in BHP

Improving students' ability to write coherent, logical essays that use evidence and disciplinary concepts effectively is one of BHP's most important goals. Writing is essentially thinking on paper. Writing well is a strong predictor of future success in school and beyond. Therefore, BHP provides many opportunities for students to write, and supports both students and teachers through scaffolds and lessons designed to develop thinking, reasoning, and writing skills. BHP is a writing-intensive course that includes curriculum and professional development activities for teachers that enable them to extend their students' capacity to use a range of texts as evidence and develop coherent and sophisticated arguments. While it is the almost 14 billion years of history covered in the course that draws the most attention, in many ways we are proudest of the growth we see in student thinking as displayed in their writing, growth that occurs year after year, including during the 2017/18 school year.

As in previous years, the analysis of BHP students' writing this school year showed growth from the beginning to the end of the course. This improvement held true across all the schools, students, and teachers studied, with the strongest growth occurring in Title I schools. In what follows, we describe the data collection, analysis, and the results of BHP's study of student writing.

Data Collection

Arizona State University (ASU), under advisement from the University of Michigan, collected and scored over 12,000 student essays in three waves: baseline (Wave 1), midterm (Wave 2), and end-of-course (Wave 3). Over the school year, a sample of teachers in BHP schools submitted student essays for three BHP Investigations:

- Wave 1–Investigation 2, “How and why do individuals change their minds?”
- Wave 2–Investigation 6, “How does language make humans different?”
- Wave 3–Investigation 9, “To what extent has the Modern Revolution been a positive or a negative force?”

¹ Title I, Part A, of the Elementary and Secondary Education Act, as amended, provides financial assistance to local educational agencies and schools with high numbers or high percentages of children from low-income families to help ensure that all children meet challenging state academic standards. A public school qualifies as Title I if 40% or more of the student population is eligible for free or reduced-price lunch.

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Completing each Investigation required students to read, analyze, question, and corroborate a variety of informational and historical texts — including primary and secondary sources, data charts and tables, and images and infographics — and apply disciplinary concepts before constructing an evidence-based essay to answer the Investigation question. Teachers were instructed to provide students with approximately 45 minutes to complete the essay in class, either on a computer or by hand. (Note that the BHP Investigation process aligns with the C3 dimensions of inquiry.)

The ASU team received anonymized versions of these essays and evaluated them using a rubric BHP and the University of Michigan built around the Common Core College Ready Writing Standards for History, Social Studies, Science, and Technical Subjects. Using the rubric, ASU analyzed student work along four features of effective writing: reasoning, use of evidence, use of disciplinary content, and writing mechanics.

BHP used the learning progressions articulated in the Common Core Writing Standards for History and Science to frame five levels of performance for each of the four features mentioned above:

- **Inadequate:** Three or more grades below ninth-grade to tenth-grade level
- **Developing:** Two grades below ninth-grade to tenth-grade level
- **Proficient:** One grade below ninth-grade to tenth-grade level
- **Skilled:** At the ninth-grade to tenth-grade level
- **Exceptional:** At the eleventh-grade to twelfth-grade level

The ASU team prepared graders by having them double-score sample essays from prior years until agreement was reached for all essays. Reliability checks were repeated during the grading process.

Participants

There were 4,376 students who completed all three text-based assessments (TBAs) that we have been using to assess writing, making the number of students in this year's report the largest in our seven years of reporting writing data.

However, given that this was a convenience sample, we need to use caution in comparing year over year data. Prior to 2016/17 data, we used a modified stratified random sample to ensure 45% of the students took the BHP course in a Title I public school, 45% took the course in a public school that the federal government did not identify as Title I, and 10% of the students were enrolled in an independent school. Last year, we modified our sampling, using a convenience sample of the entire student population that took all three waves of TBAs. This did not give us the 45/45/10% ratio we used in the past, but we were close enough to make the variation insignificant.

This year, however, the population that took all three waves did not reflect the 45% (Title I)/45% (public non-Title I)/10% (independent) ratio but rather:

- 41.5% Title I
- 52.4% public non-Title I
- 6.1% independent

Thus, this year we have a population in which public non-Title I school students are over-represented and public Title I and independent school students are under-represented, as compared to previous years. This will temper the year-over-year claims we make around the writing data in three possible ways.

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- Given that independent school students typically score a bit higher than other students, the smaller percentage likely reduces the mean scores for the total sample.
- Given that Title I students have typically shown the greatest growth from Wave 1 to Wave 3, the smaller percentage of Title I students in the population has likely reduced the size of the growth from Wave 1 to Wave 3.
- The data set this year also had a substantial portion of students (40%) drawn from just one state.

Analysis of Student Writing

This section is split into two parts. The first part describes the outcomes in student growth over the course of the 2017/2018 school year. The second section uses multifactor analysis to identify the relative impact of factors on student writing and reasoning, factors such as the number of years teachers have been teaching the BHP course.

Growth in Student Writing

Growth in student writing from the beginning of the year to the midterm was quite remarkable. Figure 2 shows the results across all three waves — baseline, midterm, and end-of-course — for all 4,376 students in the study. At the outset, 15% of students' papers scored at the proficient level (eighth grade) or higher. By the end of the year, this number had increased to almost 54%, a growth of 39%. This is a dramatic gain, outperforming even the 32% growth from the previous year.²

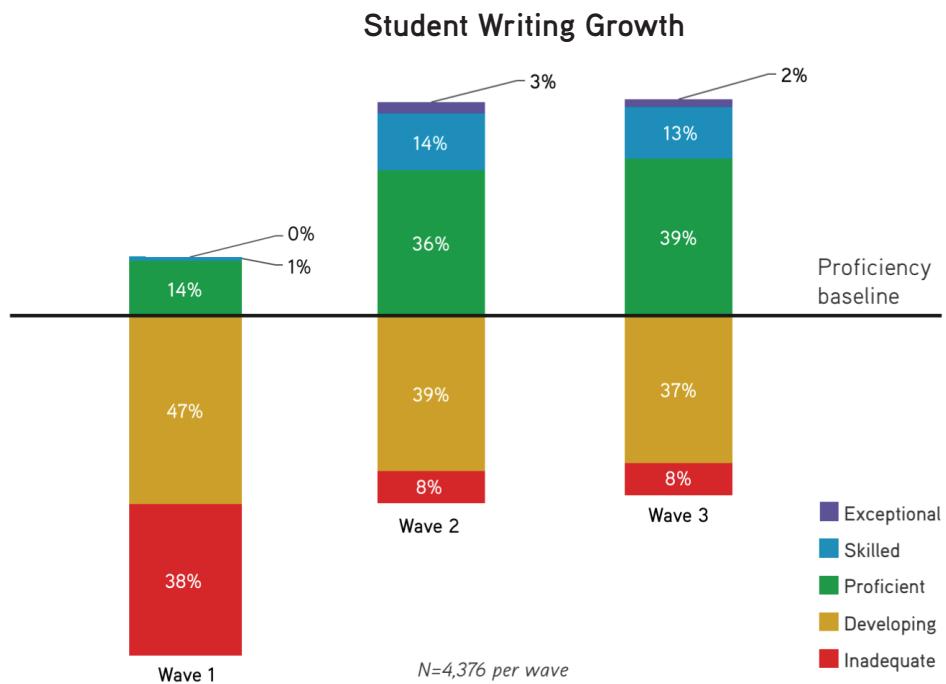


Figure 2. Overall change in writing scores for all students.

² In comparing last year's data to this year's, we see three important differences, differences to keep in mind in doing year-over-year comparisons. First, there are almost twice as many students in the sample this year (4,376) than there were in the 2016/17 sample (2,672). Second, this year, BHP encouraged teachers to complete the baseline assessment within a week of school beginning, labeling it "Investigation 0." This yielded far more accurate baseline data. Finally, as noted above, because of a convenience sample, we were not able to perfectly control or match the percentage of different schools—Title I public, non-Title I public, independent—exactly as we did in the past.

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Note that most of this growth occurred between Wave 1 and Wave 2, rather than being spread out evenly throughout the year. Between Waves 1 and 2, we saw a substantial decrease (30%) in students earning a score of inadequate.

We are also interested in how students fared in the different school types that BHP serves: public Title I schools, public non-Title I schools, and independent schools. As Figure 3 shows, student growth from Wave 1 to Wave 3 was proportionally similar regardless of school type, with two important exceptions: Title I schools have a greater proportion of students in the exceptional range in Waves 2 and 3, as compared to public non-Title I schools. Independent schools have a lower proportion of students labeled as inadequate for all waves compared to both public Title I and non-Title I.

We generally expect independent schools to both start with stronger scores and show the greatest growth, as we consider them to have comparatively more-ideal teaching settings. Thus, the growth trajectory of Title I students over other students is particularly rewarding.

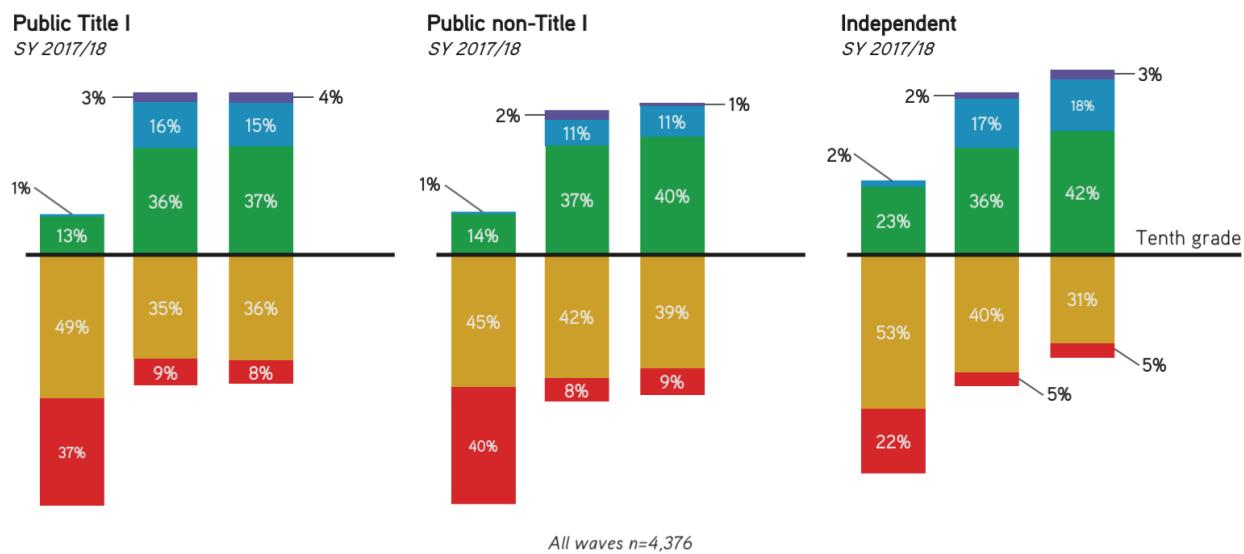


Figure 3. Growth in writing scores by school type.³

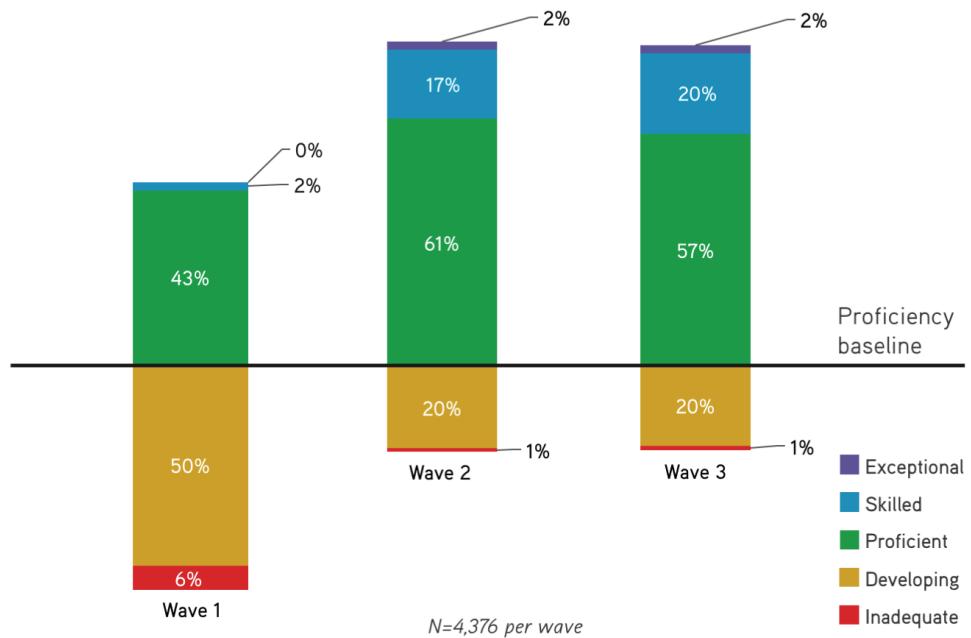
Overall scores can often mask the degree to which students improve on the four distinctive features of writing and thinking that BHP measures: reasoning, use of evidence, use of disciplinary concepts, and writing mechanics. Therefore, BHP breaks out each of these variables independently. Again, we saw general growth in each factor.

³ There is a difference between the number of students by school type and the overall number of students in the sample because we were unable to link 49 students to a school type.

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Reasoning (Figure 4): At baseline, more than half the students (56%) scored two grade levels or more below the ninth-grade level (developing or lower). By the end of the year, this number had decreased to 21%, or a 35% decrease overall. On the final writing assessment, 79% of the students scored proficient or above, a 34% increase from the baseline. These reflect the general patterns that we have seen in previous years.

Student Writing Growth - Reasoning

Figure 4. Overall change in reasoning scores.⁴

Use of evidence (Figure 5): At the beginning of the course, 73% of the students scored at least two grade levels below the ninth-grade level (developing or below). By the end of the year, the number of essays at the developing or below mark dropped to 25%—a rather sharp decline of 48%. To frame it another way, by the end of the course, almost 74% of the students scored near or above eighth-grade level on their use of evidence, an increase of 47%. Again, these growth patterns are quite similar to those from previous years.

⁴ The changes from the 2016/2017 data were quite modest and are statistically insignificant, since there were over 2,000 more students in this year's data sample and teachers gave the baseline test earlier in the school year. In general, a higher percentage of students in this year's sample scored below proficient than did the students in the 2016/17 sample. However, by Wave 3, the percentage of students scoring proficient or above was almost the same. For example, 43% of the students scored below proficient in reasoning in the 2016/2017 baseline test and 56% did so this year. In the Wave 3 assessment, 83% scored proficient or above in reasoning, as compared to 79% this year. We saw such patterns across all the variables—a greater percentage of students were below proficient in last year's baseline assessment, yet the percentage of students above proficient was comparable this year to last. This makes the growth more dramatic this year than last and more in line with previous years. Therefore, we will only reference last year's data in this report if it illuminates a unique or significant pattern. Of course, last year's report is available upon request.

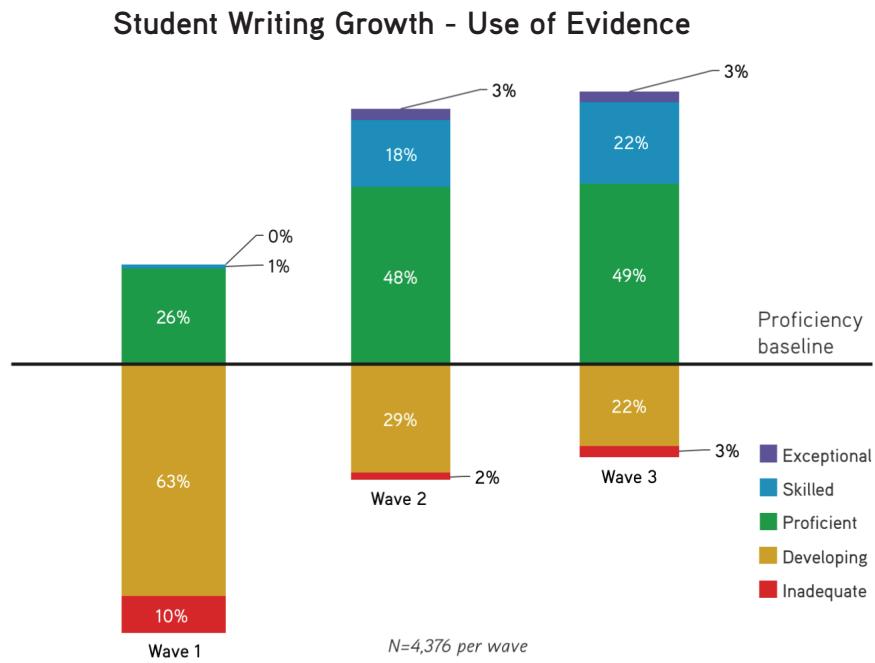


Figure 5. Overall change in use of evidence scores.

Use of disciplinary concepts (Figure 6): At the onset of the course, 71% of students were at least two grade levels below the ninth-grade to tenth-grade level, a number that dropped to 41% at the end of the school year. When we look at the data from the perspective of proficiency, 29% of students were proficient or higher at the start of the school year, a number that increased to 59% at the end of the school year, an increase of 30%.

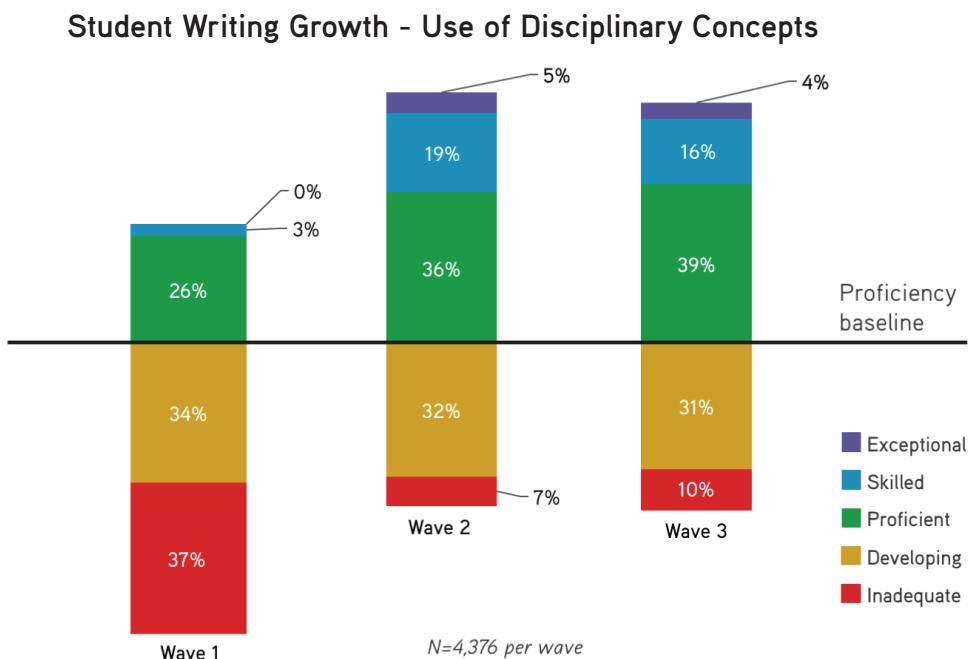


Figure 6. Use of disciplinary concepts scores.

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As in previous years, the students showed less growth between Wave 2 and Wave 3 than they did between Wave 1 and Wave 2. This flattening or stabilizing of growth has been a persistent challenge, as it remains the one area where students don't develop more sophisticated practices over the entire course of the year. We did mediate one issue from the previous year, where students employed BHP-specific concepts in the baseline assessment, even before encountering them in the instruction. We met this challenge by ensuring students took the baseline assessment within the first week or so of school and before studying other units.⁵

Writing mechanics (Figure 7): Students also showed growth in their writing mechanics from the beginning to the end of the BHP course, although it was more modest growth than the growth displayed in reasoning and use of evidence. On the baseline assessment, 33% of students scored at least two grades below the ninth-grade level (developing or below). By the end of the course, this number had dropped to 13%. As has been true of reasoning and content, Title I schools again saw the largest growth overall in writing mechanics.

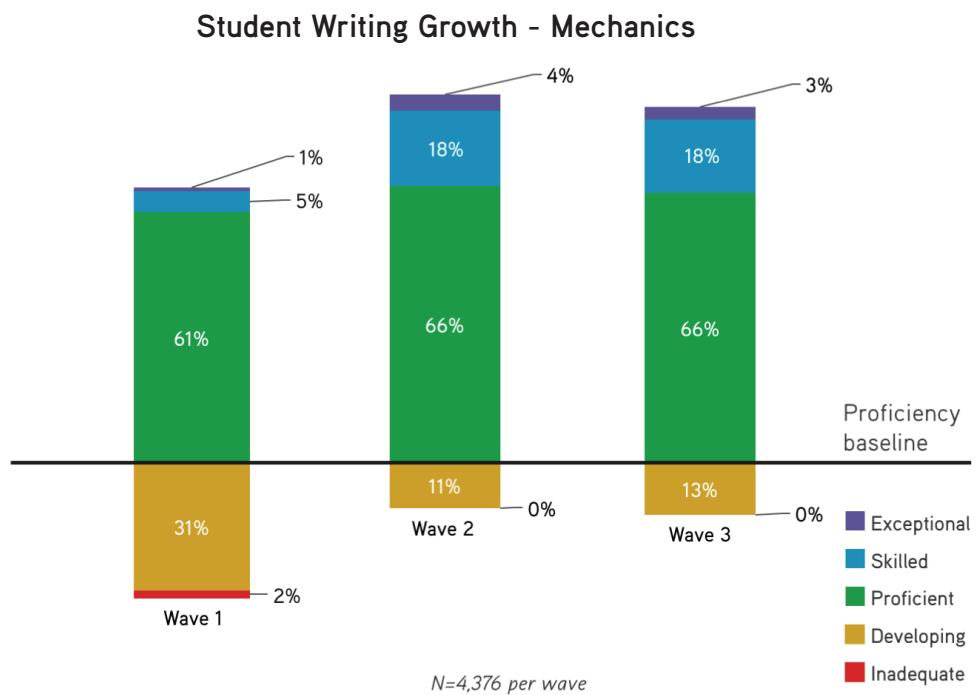


Figure 7. Improvement in writing mechanics scores.

⁵ Last year, we were troubled by the unusually strong scores at the baseline test, particularly concerning the use of disciplinary concepts. We intend the baseline test to be administered before BHP instruction begins in earnest, and therefore we would not expect to see students using many BHP concepts in their baseline essays. Last year, however, we found that students had used concepts unique to BHP in their baseline essays, concepts they should only have encountered later in the course. This suggested to us that some if not most teachers were waiting until weeks into the school year to give the baseline assessment. This year, the project team stressed to teachers the importance of getting an accurate baseline assessment and made some structural changes to maximize that outcome. Both tactics seemed to work, as more teachers gave the baseline assessment earlier and thus we have more confidence that the growth we are seeing more accurately reflects the BHP effect.

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Factors Correlating to Student Writing Growth

This year, the University of Michigan and BHP teams ran multifactor correlations to understand ways demographics or other variables corresponded (or did not) with the growth in student writing. Using variables such as school type, student race, student gender, teacher's experience teaching BHP, and teacher's participation in professional development, we could assess the relative weight of the different variables in relation to students' growth in writing.

It is important to stress that we are not making causal claims, since the data did not allow for us to analyze cause. However, we did find some interesting relationships, particularly between student writing growth and school type, and between student writing growth and specific teacher factors.

School type: Overall, we noted that for Title I schools, growth was significant compared to public non-Title I schools and independent schools. Digging deeper, we found that these differences were significant for both reasoning and content ($p=.05$). Title I schools also showed significantly more growth than public non-Title I schools in writing mechanics ($p=.05$). No significant differences were found for use of evidence as related to school type.

Partnership schools: Schools and teachers have played and continue to play an important role in creating and improving BHP courses. We have been very fortunate that BHP teachers are active members of our online communities, participating in data collection, giving us feedback on existing course materials, and suggesting complementary or replacement resources or lessons. We referred to the handful of schools who helped us in the pilot phase of the course development as our "design partners," and found this to be a very productive relationship that we have maintained and expanded in subsequent years. Currently, we have four different types of design partnerships, ranging from single classroom partnerships to large, district-wide partners, and we were curious about the relationship, if any, between student achievement and type of partnership relationship.

In general, we found some weak correlations linked to very modest raw score achievement gains.⁶ When we consider student growth, not raw scores, and hold other variables constant, there is no correlation between partner schools and student performance in writing.

Years teaching BHP: Last year, we found a correlation between student growth and raw score and the number of years teachers had been teaching BHP. Essentially, that correlation disappeared this year. There were no correlations between years teaching BHP and student growth, particularly when we held all other variables constant. This does not discount the impact of teaching experience, but rather the intentionally added lessons and supports BHP put in place this year to teach writing. Based on last year's data and feedback, we designed a set of increasingly sophisticated writing activities for all teachers to use, in the hope that we might "level" the experience field to ensure that students with new teachers get just as strong — or almost as strong — writing instruction as teachers with far more experience.

⁶ Specifically, 5-by-5 schools with active lead teachers corresponded to a 5% increase on the Wave 3 assessment over Wave 1; design partners with an active lead teacher corresponded to a 3.4% increase in scores; design partners without a lead teacher corresponded to a 1.5% increase.

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Discussion of Writing Findings

The BHP course is reading- and writing-intensive as students encounter a wide range of informational texts across multiple disciplines. BHP calls on students to write frequently, using a variety of writing genres including informal writing, narratives, explanations, and arguments. For example, BHP's 10 Investigations provide teachers and students scaffolds that spiral in sophistication to develop students' capacity to read, analyze, and use texts to make coherent and evidence-based arguments in writing. In short, BHP teachers must do more than teach historical and scientific content. They also must help students develop and enhance their capacity to read, evaluate, use, and create such texts.

This is complicated work. To assist teachers and students in taking up the challenges of such sophisticated reading and writing, the BHP curriculum has established routines proven to help. Guided by research on disciplinary literacy and standards found in documents such as the Common Core, C3, and College Readiness Standards, the BHP team over the years has designed and refined a curriculum specifically to develop students' writing, reading, and thinking at the same time students are deepening their understanding of the Big History story.

Last year, we refined several of our writing activities, making more explicit the steps in advancing students' skills in constructing evidence-based arguments. Thus, by embedding some of the practices experienced teachers use to develop student writing, we sought to help history and science teachers who might be teaching writing for the first or second time. Although our conclusion is speculative, we think this year's data shows the positive effect of this effort, since the writing scores improved, and, unlike the previous year, there was little variation among students taught by beginning BHP teachers compared to veteran BHP teachers.

BHP's attention to disciplinary literacy, its curriculum grounded in research and in practice, and the support the BHP team provides and gets from its teachers certainly helps explain this consistent progress in students' development year after year.

Of course, there are some limitations of this report. First, since we have no additional data on BHP students, such as GPAs or reading scores, we do not know the degree to which the baseline performance is an accurate representation of student writing or the degree to which it correlates with other factors. Given that we're measuring growth against this baseline, not understanding how representative this is limits our claims. In addition, we do not know how teachers presented each of the assessments or how faithful they were to the course as designed. We suspect fidelity to the learning and instructional progressions influences student performance, but at this point we have no proxy for course fidelity. Finally, as noted above, the convenience sample, while based on over 4,000 students, suffers from a modest self-selection phenomenon.

Still, as documented here, student growth in writing continues to be strong in all instructional contexts, but particularly in Title I schools, which are traditionally underserved. Given that we see student growth across all school types, even when we have limited information about teaching context and implementation, we think it safe to conclude that the BHP approach and materials can be productive and effective for most students and schools.

Study 2: Teacher and Student Perceptions of BHP Course

In addition to studying student achievement, BHP also seeks to understand how students and teachers perceive the course. Understanding student perceptions and attitudes offers insight into engagement and commitment, adding depth to the achievement scores. The more interested students are in the course, the more likely they are to learn and be successful. Similarly, the more teachers enjoy teaching the course and the more effective they feel the course is for their students, the more positive the classroom experience will be for everyone.

Again, the data from the 2017/18 surveys shows a very high percentage of teachers and students who report being satisfied with and engaged in BHP. However, this year, for the first time, one district presented us with markedly different results; therefore, we do not include them in the data set below, as we consider that an anomalous deployment. However, the BHP team is looking closely at those findings and following up with the district to better understand that particular implementation.

Data Collection

Three times a year, the BHP team collects data on student and teacher perceptions using an online survey built into the course. In these surveys, students and teachers answer a series of questions to determine their likes, dislikes, and attitudes about how they thought the course was “working.” Teachers, for example, responded to questions regarding their confidence in teaching the historical and scientific content and the required reading, writing, and research practices, in addition to assessing the effectiveness of course materials and the course’s impact on students. Students, on the other hand, answered questions about their interests, what they were learning, the course’s difficulty, and its relevance to their future studies.

Collecting data on teacher and student perceptions to the course has provided us valuable information and we seek to ensure participants are honest and forthright in their answers. Individual students are never identified, although internally we do aggregate student answers to understand district- or class-level patterns for the purposes of program improvement. As the data below shows, we focus on patterns among large groups of teachers, districts, and states, using it to assess and inform our work. While this might be a limitation of the study affecting the honesty of teachers’ answers, we have found that teachers are typically comfortable and honest — sometimes brutally so — in providing feedback to influence course changes. The same or similar data has been collected in prior years and is compared.

Findings

Teacher Perception Results

While there has been modest variation from year to year, the overwhelming majority of teachers over BHP’s eight years have reported being satisfied with the course, the teacher-facing and student-facing materials, the support the BHP team provides, and report favorably about the effect teaching the course has had on their teaching and student learning.

Table 1 shows that 91% of the teachers were satisfied with the course and would recommend it to other students, while 87% told us that BHP changed their teaching. And when asked about the various components of the course — student-facing content, lessons, videos, readings, teacher-facing supporting materials, the website — more than 9 out of 10 teachers reported being satisfied or very satisfied with the support or materials. More telling, though not represented in the table, is that fewer than 6% of teachers claimed to be dissatisfied with any element of the course.

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Table 1 also shows teachers' perceptions of how BHP kept students engaged and prepared them for their future. This year, around 80% of teachers thought that the BHP course prepared students for their future, while 7 out of 10 teachers thought the course kept students engaged.

Teachers - Overall Course Satisfaction

	2018 W1 N=212	2018 W2 N=102	2018 W3 N=68
Course Satisfaction	94%	90%	91%
Would Recommend	99%	95%	91%
Prepares Students for Future	86%	85%	79%
Student Stay Engaged	76%	66%	74%
Changed My Teaching	86%	78%	87%
Course Content	93%	91%	91%
Course Structure	94%	91%	94%
Program Communications	88%	89%	91%
Teacher Materials	91%	91%	91%
Website - Course Setup & Mgmt	88%	92%	91%
Website UX	88%	90%	94%

Table 1. Overall teacher satisfaction with BHP course and components.

BHP asks most teachers to teach outside their content comfort zone — that is, history teachers must understand and use science concepts, while science teachers must use history concepts. And, the course asks teachers of history or science to use a wide range of disciplinary literacy practices to teach students to read a wide range of texts analytically, write evidence-base arguments, and conduct interdisciplinary research. We have designed course materials and BHP professional development to support teachers in doing these things. Therefore, we ask several questions in our surveys to determine if teachers think we have helped them meet these instructional challenges and report the results in Table 2.

Table 2 shows that over 90% of the teachers expressed confidence in their ability to teach reading, writing, and research skills, and to teach across multiple disciplines. In addition, over 95% of teachers reported they understood the BHP history and core concepts.⁷ Regarding the science concepts in the course, which are typically a major concern of BHP social studies teachers, 74% told us they understood the science needed to teach the course and only 4% of the teachers reported they did not understand the science after teaching the course.

We continue to be heartened by the high percentage of teachers who report that BHP has changed the way they teach. Teachers report that they are less likely to use lecture in BHP and have more confidence in teaching the literacy practices and research skills that are so vital to students as they advance in their studies and become citizens in a democracy. From the beginning, the BHP team designed its lessons,

⁷ Core concepts include scale, thresholds of increasing complexity, and claim testing.

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activities, and assessments to engage students in higher level thinking and active learning and are pleased by how often teachers report this has had a residual effect on their teaching.

Teachers - Teacher Profile

	2018 W2	2018 W3
	N=102	N=68
BHP Has Changed My Teaching	78%	87%
Confidence Teaching Interdisciplinary	88%	94%
Confidence Teaching Reading	83%	84%
Confidence Teaching Writing	82%	90%
Confidence Teaching Research Skills	96%	97%

Table 2. Teacher satisfaction with teacher support materials.

Student Perception Results⁸

BHP asked students about their perceptions of the course, what they learned, the skills they developed in the course, and what they thought they gained as the result of taking the course. In comparing year-by-year change, two things stand out (see Table 3, below). First, we had more students complete the perception surveys this year than in the past. And second, the year-over-year data continues to show slight decline in students' overall satisfaction with the course.

Students - Overall Course Satisfaction

	2015 W3	2016 W3	2017 W3	2018 W2	2018 W3
	N=2,032	N=1,953	N=3,963	N=4,448	N=3,686
Course Satisfaction	66%	57%	59%	47%	50%
Would Recommend	59%	51%	59%		47%
Enjoy Learning	66%	56%	55%	50%	51%
Enjoy More Than Other Classes	39%	28%	28%	22%	24%
Future Science Interest	41%	38%	30%	26%	33%
Future History Interest	24%	21%	20%	17%	17%
BHP Will Help	63%	57%	69%	52%	56%

Table 3. Student perceptions of the BHP course.

⁸ We also separated out the student data from the special deployments discussed above. However, for the most part, that data didn't vary much from the overall student sample that we present here. There were only two areas where those students also showed less enthusiasm than other students: They were less satisfied with the course than the other students and less likely to recommend the course to others. There were other sets of interesting findings that make this student population quite different from others (for example, they began the course disliking history and science far more than others). This requires a far more careful analysis of this cohort of students than we are able to conduct at this time.

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Digging a bit deeper into the student perception data, we also found interesting patterns across these seven questions. First, students were far more likely to respond “no opinion” or “neutral” to questions than teachers. Second, while the percentage of students who expressed satisfaction, enjoyment, or speculated about BHP’s positive impact on their later studies was lower than we had hoped for, the percentage of students who expressed dissatisfaction or lack of enjoyment was also low. That is, only 18% of 3,686 students told us they were dissatisfied with the course; 23% reported they did not enjoy learning about Big History; and 18% told us they did not see BHP helping them in the future (see Table 4, below).

Table 4 also shows that students agreed with the teachers in holding that BHP helped improve their critical thinking, reading, writing, and technology skills. The student writing growth also corroborates the student perceptions of their improvement in reading, writing, and using evidence in response to inquiry questions.

	Wave 2	Wave 3
	<i>N=4,660</i>	<i>N=3,963</i>
Improved My Critical Thinking Skills	12% reported they disagreed 54% reported they were neutral 34% reported they agreed	14% reported they disagreed 47% reported they were neutral 39% reported they agreed
Improved My Presentation Skills	26% reported they disagreed 44% reported they were neutral 30% reported they agreed	26% reported they disagreed 27% reported they were neutral 37% reported they agreed
Improved My Reading Skills	21% reported they disagreed 46% reported they were neutral 33% reported they agreed	21% reported they disagreed 43% reported they were neutral 36% reported they agreed
Improved My Writing Skills	17% reported they disagreed 41% reported they were neutral 42% reported they agreed	14% reported they disagreed 40% reported they were neutral 46% reported they agreed
Improved My Research Skills	14% reported they disagreed 38% reported they were neutral 48% reported they agreed	15% reported they disagreed 33% reported they were neutral 52% reported they agreed
Improved My Technology Skills	25% reported they disagreed 40% reported they were neutral 35% reported they agreed	25% reported they disagreed 40% reported they were neutral 35% reported they agreed
Satisfied with the Course	47% reported they were satisfied 38% reported they were neutral 15% reported they were not satisfied	50% reported they were satisfied 32% reported they were neutral 18% reported they were not satisfied
Would Recommend the Course to Others	N/A	47% reported they would recommend the course to others 27% reported they were neutral 26% reported they would not recommend the course to others

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	Wave 2	Wave 3
Enjoyed Learning	18% reported they did not enjoy learning BHP 32% reported they were neutral 50% reported they enjoyed learning BHP	23% did not enjoy learning BHP 26% were neutral 51% reported they enjoyed learning BHP
Like More Than Other Classes	22% reported they liked BHP more than other classes 37% reported they were neutral 41% reported they did not like BHP more than other classes	24% reported they enjoyed BHP more than other classes 33% reported they were neutral 43% reported they did not enjoy more than other classes
I Want to Study Science in the Future	26% reported they want to study science in the future 48% reported they were neutral 26% reported they did not want to study science in the future	33% reported they want to study science in the future 26% neutral 41% reported they did not want to study science in the future
I Want to Study History in the Future	17% reported they want to study history in the future 35% reported they were neutral 48% reported they did not want to study history in the future	17% reported they want to study history in the future 32% neutral 51% reported they did want to study history in the future.
BHP Course Will Help Me in Future	52% reported BHP would help in the future 32% reported they were neutral 16% reported BHP would not help in the future	56% reported BHP would help in the future. 26% neutral 18% reported it would not help in the future

*Table 4. Student perceptions of the BHP course and its effects.***Discussion of Perception Survey Findings**

In some ways, we find the student data puzzling and disconcerting, while in other ways we are pleased by what we are finding. Obviously, the fact that the student perception data on course satisfaction was lower than the teacher perception data has been troublesome. We would love to see 90% or more of students say they would recommend the course, just like their teachers reported. Still, more than half of the students expressed satisfaction with the course and only 18% of the students indicated they were dissatisfied.

For us, one of the big questions is what to make of the 32% of the students who reported they were neither satisfied nor dissatisfied with the course. Should we treat this as “glass half full”? (“Well, at least they weren’t dissatisfied.”) Or treat this as “glass half empty”? (“Darn, they weren’t satisfied.”) In short, we do not know what students mean when they choose “neutral.”

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To try to understand this a bit more, we looked at the student verbatims. These offered us more insight — and more confusion — about students' choice of "neutral." For example, a student gave a neutral response to a question about BHP's benefit, but then wrote:

Although it was quite challenging at times, I have found that the concepts discovered and explored along with everything else I learned benefit me in other studies. Things such as the claim testers and some of the philosophical terms are helpful, and it also expands on history in more than just the traditional way, as well as involving philosophical and scientific viewpoints.

We frequently see comments such as these following neutral responses, and this has led us to wonder if providing a neutral response option for students lowered or depressed the positive ratings. It is important to note that we rarely saw students select a neutral response and then offer a negative comment, suggesting they were disagreeing with a statement. And, as noted in the previous section, teachers rarely selected "neutral." We have begun to explore the merits of eliminating the neutral option from student surveys.

The student surveys also indicated that students believed BHP had had a positive impact on their reading, writing, thinking, and research skills.

Finally, it might be that we are not asking the "right" questions to surface students' perceptions of the efficacy of the BHP course. Consider, for example, the statement "I enjoy the course more than others." We simply do not know what criteria students use to determine enjoyment. Is there a teacher effect or a grade effect in students' answers, as previous research on student evaluations has demonstrated?⁹

Thus, we are considering refining some of the questions to make sure we understand what students are agreeing or disagreeing with when responding to statements such as "Overall, I am satisfied with Big History." A change to "Overall, I am satisfied with what I learned in the Big History course" might offer us more valuable data. And there might be better ways to get at student perceptions of what BHP offers that correlates with achievement, engagement, participation, or perceptions of history and science, such as "This course explains complicated ideas to me in many ways"; or "I discussed ideas or activities from Big History with people outside of class"; or "I asked questions or contributed to class discussions in this course"; or "This course in Big History offered me new and deeper understandings of science."

⁹On the grading effect for student evaluations of courses see, for example, Clayson, et al., "Grades and the Student Evaluation of Instruction: A Test of the Reciprocity Effect," in Academy of Management Learning and Education, 5:1 (2017).

Conclusions

Many educators argue that what we measure is a strong indication of the things we value. At BHP, we measure and value not only the Big History that students learn, but how the course impacts their growth in reading, writing, and thinking; their perceptions of their experiences in the course; and the course's impact on teachers' practices, engagement, and perception. We invest effort in this research to assess how close we are to our goals of creating a world-class course, but also to help us improve our practices and materials when we fall short.

We also think it is important to let others see what we are learning about how well the BHP course and services are doing. And frankly, we wish other curriculum and resource providers would do the same, so we could see how BHP courses and supports are doing in relation to other providers. In our ongoing efforts to improve student learning and their and their teachers' experience, we could learn from seeing what others are doing and how they're doing it.

Although we are quite pleased with the gains students are making in their writing skills, as evidenced by their writing assessments, and with the positive impact teachers report that the course is having on them, we still have many areas in which to grow. With that in mind, we will be focusing on how to continue to improve writing skills throughout the year, not just in the first half of the course.

BHP is more than simply a course, but rather a broad community that has developed around this course, a community that every day adds great value to the course because it is so committed to its success. Providing a *comprehensive course* for secondary students across the US and around the world has been and remains an exciting and important challenge.¹⁰ Meeting this challenge could not have happened or continued without the community of teachers, students, administrators, and parents who have participated and continue to participate to make it happen.

Reports such as this, then, inform us of where we are and in what areas we could be doing better. However, they also allow all the members of the BHP community to take some pride in everything we have accomplished.

¹⁰ It is comprehensive in that BHP offers a coherent, extensive, flexible, and vast set of lessons, student-facing and teacher-facing materials, assessment and scoring systems, and online and in-person professional development activities suited to a very wide range of educational contexts.

