



SUMMARY OF
BIG HISTORY PROJECT
RESEARCH
2016/17 SCHOOL YEAR



BIG HISTORY PROJECT

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Introduction

Over the 2016/17 school year, the Big History Project (BHP) conducted studies to measure student growth in writing, the long-term impact of BHP on student learning and teacher practice, and student and teacher perceptions of BHP. All lines of research point to favorable results related to the quality and rigor of the course, especially in the areas of student writing and long-term learning, for those taking part in BHP. In addition, student and teacher perceptions of the course are generally positive, confirming the strength of BHP as a foundational course for preparing students for future studies not only in history, but across the disciplines.

This report is divided into three sections. The first focuses on the analysis of the BHP student writing, the second shares findings from teacher and student perception data, and the third summarizes case-study data that explored the long-term impact of participation in BHP.

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 the almost 14 billion years of history covered in the course 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 2016/17 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 schools¹. 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 almost 8,000 student essays in three waves: baseline (Wave 1), midterm (Wave 2), and end-of-course (Wave 3). With over 2,600 students in each wave, we assume a representative sample of students and schools participating in this study.

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. A 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.

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 2016/2017 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. This year, the study includes data from 2,627 students who took all three writing assessments.

Growth in Student Writing

Growth in student writing from the beginning of the year to the midterm was quite remarkable. Figure 1 shows the results across all three waves—baseline, midterm, and end-of-course—for all the 2,627 students in the study. At the outset, 34 percent of students’ papers scored at the proficient level (eighth grade) or higher. By the end of the year, this number had increased to almost 66 percent, for a growth of 32 percent. This is a dramatic gain.

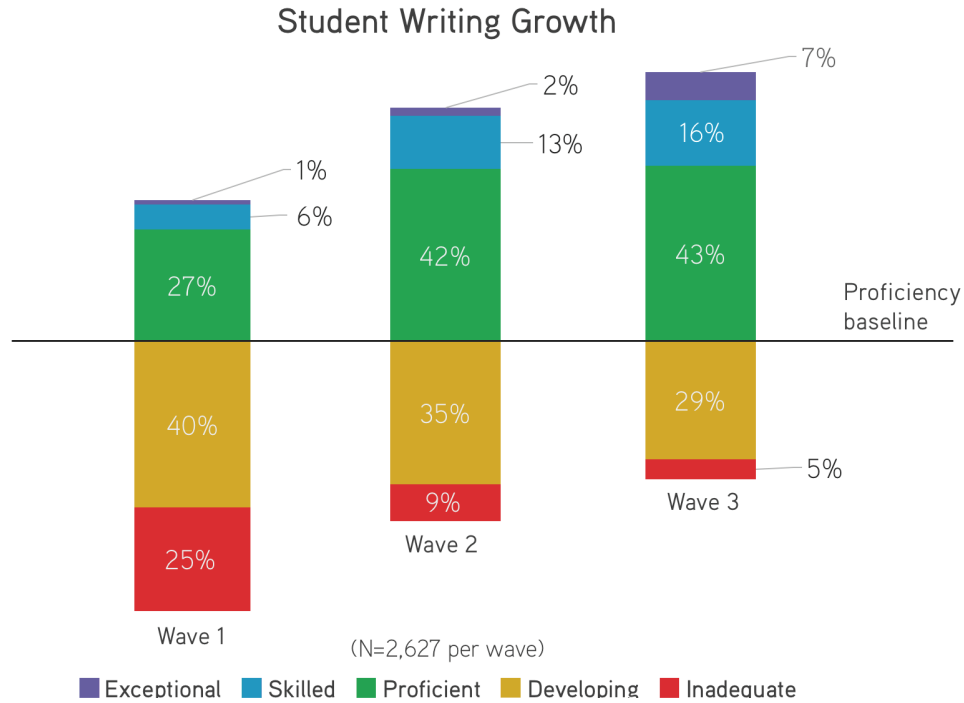


Figure 1. Overall change in writing scores for all students.

We are also interested 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 2 shows, student growth from Wave 1 to Wave 3 was similar regardless of school type. That is, regardless of school type, students showed growth over the duration of the course. We generally expect independent schools to show the greatest growth, as we consider them to have the most ideal teaching setting, in contrast with our Title I school settings. Therefore, most surprising and rewarding was the fact that students in Title I schools showed the most improvement when compared to peers in other public schools and even in Independent schools.

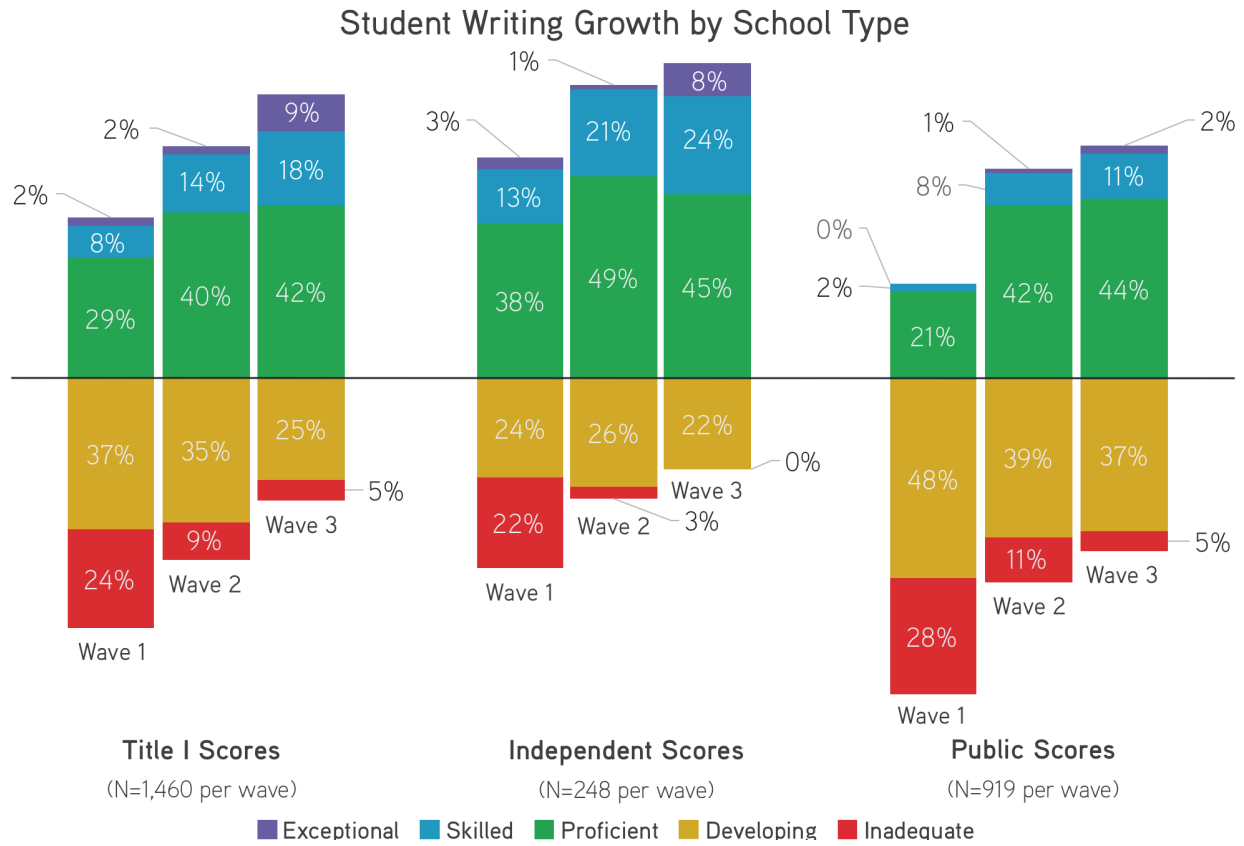


Figure 2. Growth in writing scores by school type.

Overall scores can often mask the degree to which students improve on the four different features of writing and thinking that BHP (and Common Core/College Ready Standards) 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:

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Reasoning (Figure 3): At baseline, almost half the students (43 percent) 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 17 percent. On the final writing assessment, 83 percent of the students scored proficient or above.

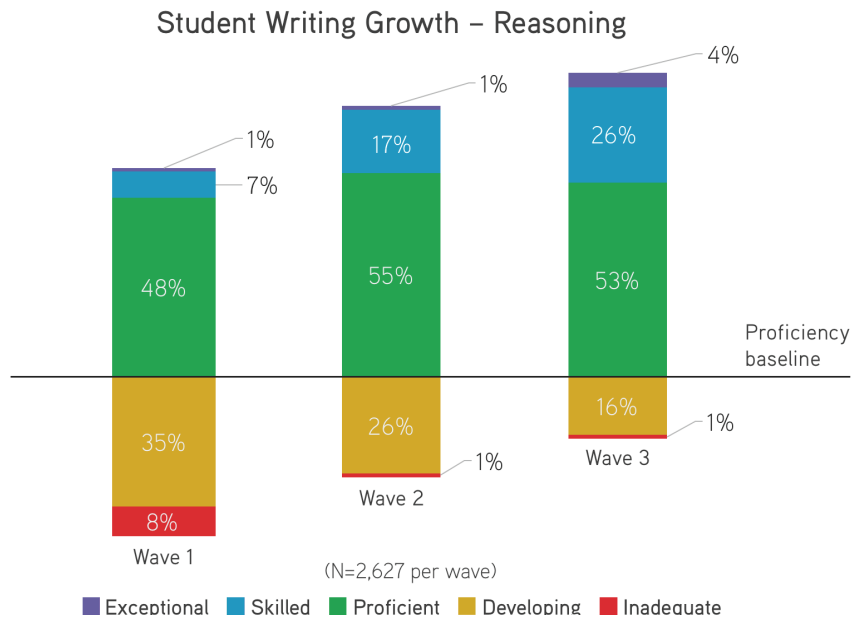


Figure 3. Overall change in reasoning scores.

Use of Evidence (Figure 4): At the beginning of the course, 57 percent 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 papers at the developing or below mark was 21 percent—a rather sharp decline. To frame it another way, by the end of the course, almost 80 percent of the students scored near or above eighth-grade level on their use of evidence, an increase of 37 percent.

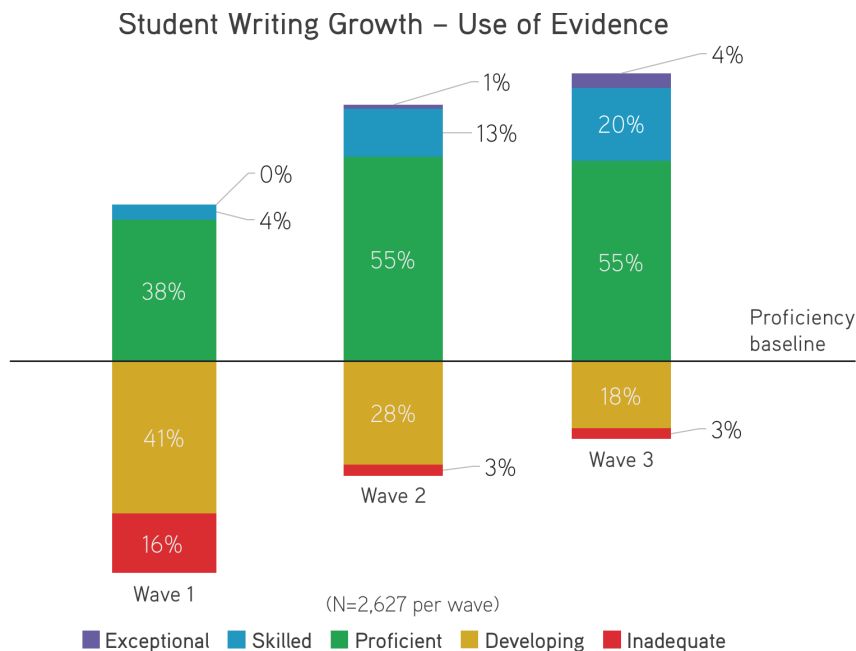


Figure 4. Overall change in use of evidence scores.

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Use of disciplinary concepts (Figure 5): At the onset of the course, 41 percent of students were at least two grade levels below the ninth-grade to tenth-grade level, a number that dropped to 24 percent at the end of the school year. When we look at the data from the perspective of proficiency, 58 percent of students were proficient or higher at the start of the school year, a number that increased to 76 percent at the end of the school year.

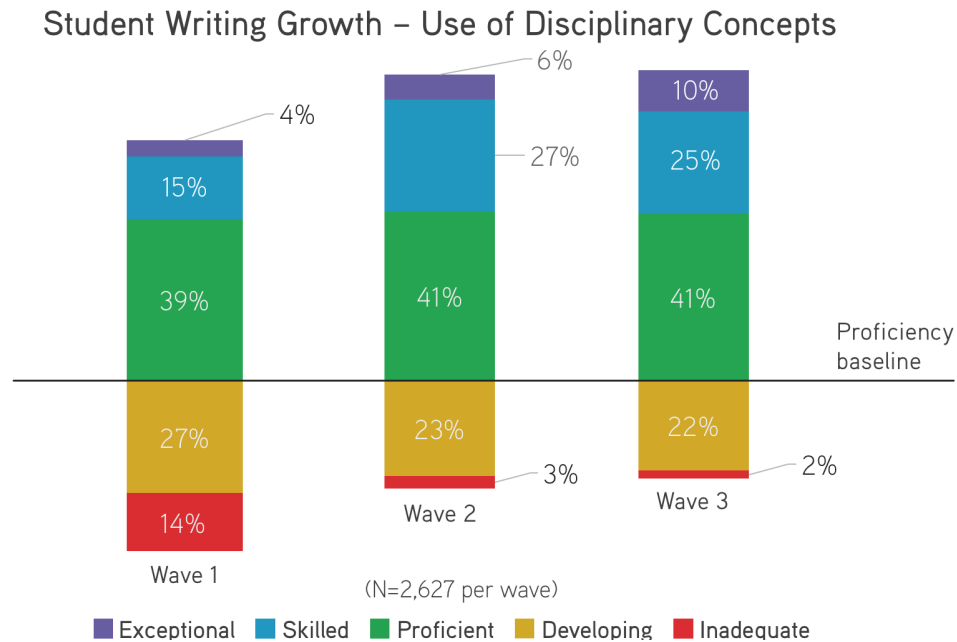


Figure 5. Use of disciplinary concepts scores.

In the 2016/17 school year, the students showed growth in their use of disciplinary concepts to make an argument, although the growth was not as sharp an increase as the other factors BHP measures (that is, reasoning, use of evidence, and writing mechanics). This pattern has emerged in previous years as well, and is something we have been puzzling over for some time. We have been surprised by the percentage of student papers that score proficient or higher in use of disciplinary content at the baseline. It seems that students encounter and use some BHP concepts, such as claim testers or thresholds of increasing complexity, before taking the baseline assessment, either in previous years or through introductory lessons.

Less dramatic growth in student use of disciplinary concepts may have occurred for a few reasons. First, baseline scores related to disciplinary concepts are higher than expected at a true baseline. If students actually took the first writing assessment at the start of the school year, their content numbers should be relatively low since they have not yet had much exposure to the course. The hypothesis that not all teachers are treating this as a true baseline is further supported by the finding that more experienced teachers had lower Wave 1 scores overall. Additionally, because content changes throughout the year, the growth in content knowledge may not be as accurate as the growth in the other features of writing that are measured as part of the study, since the criteria for those remain static throughout the year.

Writing mechanics (Figure 6): Students also showed growth in their writing mechanics from the beginning to 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, 28 percent 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 11 percent. We were heartened by the percentage of students scoring proficient or above this year—the highest in our 6 years—since it might indicate a general increased focus on writing across the grades. As has been true of all the factors, Title I schools again saw the largest growth overall in writing mechanics.

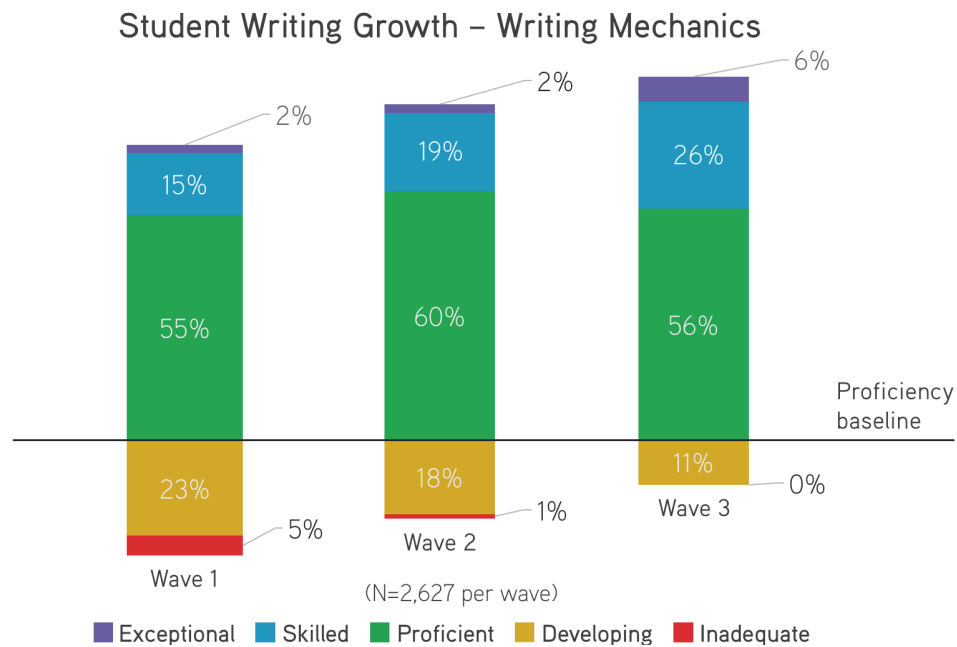


Figure 6. Improvement in writing mechanics scores.

Factors Correlating to Student Writing Growth

This year, the University of Michigan and BHP teams ran multifactor correlations to understand which factors correlated most to the growth in student writing. Using variables such as school type, student age, 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 tenure teaching BHP, and between student writing growth and type of professional development experience.

Teacher's Experience: The number of years a teacher has taught BHP has a positive relationship to the growth in students' performance on the writing assessments. Teachers teaching BHP for the first time saw an average growth of about 2 points on students' total TBA scores from Wave 1 to Wave 3, while teachers in their third year of BHP realized an average growth of 4.2 points in students' total TBA scores from Wave 1 to Wave 3. Put another way, students scored 0.24 points more from Unit 2 to Unit 9 for each year of experience their teacher had teaching BHP.²

² Significant at the level of $p < 0.001$.

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We were surprised that there was no relationship between the number of years a teacher had been teaching before they began teaching BHP and change in student writing scores. That is, more-experienced teachers showed no more or fewer gains than less experienced teachers. What seems to matter most is the number of years a teacher had worked with the BHP curriculum and its emphasis on writing and thinking. Even students of teachers in their first years showed gains in writing using the BHP materials.

BHP schools with PLCs and those without PLCs: BHP provides teachers a range of opportunities to learn and improve their instructional practice. We offer:

- Teaching Big History (TBH), an online course for beginning BHP teachers
- Summer in-person meetings available to all BHP teachers
- Access to the online BHP Teacher Community, through Yammer
- Individual Design Partner schools
- District Design Partners (DDPs)

Holding all other variables constant, there was no significant relationship among these professional development opportunities and student achievement except for teachers working in the DDP program. In terms of gains and their relationship to professional development, there was a significant difference between the gain achieved by students in DDP schools and those in other individual Design Partner schools, as DDP students scored on average .63 point or 2.5% points higher than their other students. There is a significant difference ($p=0.05$) between students whose teachers participated in a DDP program and completed TBH when compared with those that complete the TBH course alone or those that were Individual School Design Partners and completed the TBH course. Additionally, the mean growth of students whose teachers participated in both a DDP and completed the TBH course is significantly higher ($p=0.05$) than students whose teachers participated in only a DDP school or only completed the TBH course.

Two things make DDP schools different from other schools implementing BHP. First, these districts have an established and active centralized “convener,” usually a district-level administrator or supervisor. The convener works with BHP teachers across a few schools. Second, the district provides at least four district-level professional meetings at which BHP teachers gather, discuss progress in teaching the course, and share instructional and pedagogical ideas. There was a strong positive correlation to student achievement on the writing assessments among DDP schools with these two features, and strongest among DDP teachers who also took the TBH course.

Such findings correspond to more general research on professional development that shows that the greatest gains in student achievement occur with PD that is sustained over the school year, is site-based occurring in the context in which teaching takes place, is tied to the curriculum that teachers teach, and enables teachers to exchange ideas on effective practice in their teaching context.³

Discussion of Writing Findings

The BHP course is reading- and writing-intensive as students encounter a wide range of informational texts across multiple disciplines. The curriculum establishes routines to help teachers enhance students’ capacity to read and use these texts. In addition, BHP calls on students to write frequently, using a variety of writing genres including informal writing, narratives, explanations, and arguments. For example, BHP’s

3. See for example Laura M. Desimone, Andrew C. Porter, Michael S. Garet, Kwang Suk Yoon, and Beatrice F. Birman, “Effects of Professional Development on Teachers’ Instruction: Results from a Three-Year Longitudinal Study.” *Educational Evaluation and Policy Analysis*, no. 2 (2002): 81–112.

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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.

By embedding the Common Core, C3, and College Readiness Standards in these activities, the BHP team has designed a curriculum specifically to produce such progress in students' writing, reading, and thinking. Therefore, it is reasonable to assume that this course—its features, design, and the consistent support the BHP team provides teachers—is a key factor in understanding the reported progress in students' development. Additionally, it appears that districts willing to make time for BHP teachers to meet during the school year, after participating in the online professional development program, provide additional value to student performance.

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 it is limits our claims. In addition, we do not know how teachers presented each of the assessments or how faithful they were to enacting the course as designed. We suspect fidelity to the learning and instructional progressions influence student performance, but at this point we have no proxy for course fidelity.

Still, as documented here, student growth in writing continues to be strong in all instructional contexts, but particularly in Title I or traditionally underserved schools. Since familiarity with the BHP curriculum (as indicated by the years teachers teach BHP) corresponds to increases in student performance, we think it safe to conclude that the BHP approach and materials can be productive and effective for most students and schools. Making use of and sustaining collaborative professional development activities at the local level appears to add value to course resources, and is worth pursuing in subsequent years.

Furthermore, BHP is starting to unpack the specific factors related to student growth, providing the opportunity to target and grow the activities and programs that appear to be most impactful for growth in student writing and learning.

Study 2: Perceptions of BHP

The purpose of this study is for BHP to understand how students and teachers perceive the course. Understanding student perceptions can be a helpful measure of engagement with a course, and can also provide information about which type of lessons students favor most. The more interested students are in the course, the more likely they are to learn and be successful. Similarly, the more teachers enjoy teaching a course and the more effective they feel the course is for their students, the more positive the classroom experience will be for everyone. Analysis of the perception surveys shows that overall teachers and students are satisfied with the course.

There are additional purposes for understanding perceptions of the course. The first is that it helps the BHP team make changes to the course when lessons are not performing well in terms of engagement or effectiveness. It also helps the BHP team understand if teachers are being appropriately supported in teaching the course. These data help dictate changes to course content and teacher training materials. Finally, these data help to support, complicate, or challenge the findings from Study 1 and Study 3.

Data Collection

Throughout the year, data on student and teacher perceptions of the BHP course are collected. Students and teachers are asked questions about the course at the beginning of the year (Wave 1), the middle of



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the year (Wave 2), and the end of the year (Wave 3) to find out what they like and dislike about the course, what skills they are learning in the course and how this might be helping them in other areas. In addition, teachers fill out a log after each unit explaining which lessons they taught, how effective they felt the lessons were, and reporting on their overall satisfaction with the unit. Note that Wave 1 results are not shared here, since course satisfaction cannot be reasonably ascertained prior to teaching the course.

Student data is anonymous so that students feel comfortable being honest about their perceptions of the course. Teacher log data and survey data are not anonymous, which may be a limitation of the study. However, teachers are typically comfortable providing feedback to influence course changes. The same or similar data have been collected in prior years and are compared.

Teacher Perception Results

In this study, we looked at overall teacher satisfaction with the course. Teacher satisfaction was broken down further to tease out teacher perceptions of course materials, including student lessons and teacher support materials. In addition, changes in teacher practices were also assessed. Other data were collected as part of this, but the findings shared here are generally representative of the overall sample.

To get a sense of overall course satisfaction, we asked teachers two key questions. The first asks directly about course satisfaction. While a decent measure, research has shown that self-report related to satisfaction can be unreliable, and a better measure of satisfaction is what's often referred to in industry as a "net promoter score." This score measures a person's willingness to recommend the course to others.

While this year's direct course satisfaction results were not as high as the prior two years, they are still quite high: 88 percent of teachers are still satisfied or very satisfied with the course overall. It's not clear why the scores declined in the 2016/17 school year. It might be due to many of our respondents now being veterans of teaching BHP, and for them, the newness and excitement of the course has worn off. Another possibility is that this year's satisfaction scores are actually more representative of the population, since the n is higher than in any other year this survey was administered. Although the decline is notable, it's not necessarily meaningful, given the 96 percent recommendation rate in Wave 3.

TEACHERS	2015 W3	2016 W3	2017 W2	2017 W3
Overall Course Satisfaction	N=54	N=78	N=101	N=92
Course Satisfaction	94%	94%	86%	88%
Would Recommend	98%	95%	91%	96%
Prepare Students for Future	87%	89%	74%	74%
Student Staying Engaged	72%	68%	58%	58%
Changed My Teaching	89%	87%	78%	74%

Table 1. Overall teacher satisfaction with BHP.

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When further examining satisfaction with both course content and teacher support materials (see Table 2), perceptions remain extremely high. The vast majority of teachers were either satisfied or very satisfied with course materials throughout the school year. At the end of the year, 84 percent of teachers were satisfied or very satisfied. In addition to materials related to course content, such as lessons, videos, and readings, BHP provides a variety of support materials for teachers. These include an extensive course guide, unit guides, and other materials that outline BHP's approach to teaching as well as provide information about the instructional practices related to reading, writing, and research. There is also an online learning experience, a mini-course, that prepares teachers for BHP.

TEACHERS	2015 W3	2016 W3	2017 W2	2017 W3
Component Satisfaction	N=27	N=78	N=101	N=92
Course Materials	88%	90%	84%	84%
Course Structure	89%	91%	87%	89%
Program Communications	89%	83%	88%	85%
Teacher Materials	90%	83%	83%	84%
Website – Course Setup and Management	85%	82%	87%	89%
Website – User Experience	93%	89%	92%	89%

Table 2. Teacher satisfaction with teacher support materials.

Finally, we were curious to see if teachers feel that teaching BHP has impacted their practice (see Table 3). More than three quarters of the teachers surveyed agreed or strongly agreed that “BHP has changed my teaching,” while also reporting more confidence in teaching reading, writing, research skills, and in teaching across multiple disciplines. Teachers reporting such residual impact of BHP's pedagogical structures, activities, and routines is exciting. The qualitative studies of a handful of teachers shared as part of Study 3 (see below), not only support this survey data but offers us some of the specifics of how teachers use BHP approaches to teaching other courses.

TEACHERS	2015 W3	2016 W3	2017 W2	2017 W3
Teacher Profile	N=27	N=78	N=63	N=78
BHP Has Changed My Teaching	87%	87%	78%	79%
Confidence Teaching Interdisciplinary	98%	91%	87%	91%
Confidence Teaching Reading	86%	88%	84%	86%
Confidence Teaching Writing	90%	87%	82%	86%
Confidence Teaching Research Skills	95%	93%	88%	93%

Table 3. BHP impact on teacher practice.

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Student Perception Results

Students were asked about the skills they developed as the result of taking the course. Across the board, BHP students reported high impact of BHP on their skills. Although students reported that BHP had a positive impact on their writing skills, research skills, and other important intellectual practices as described by the CCSS, one skill of particular interest is critical thinking (see Table 4). Eighty-seven percent of BHP students reported that BHP had some impact, more impact, or high impact on their critical-thinking skills.

STUDENTS	2015 W3	2016 W3	2017 W2	2017 W3
Impact of BHP	N=2,032	N=1,953	N=4,660	N=3,963
Critical Thinking Skills	58%	52%	89%	87%
Presentation Skills	57%	55%	77%	76%
Reading Skills	41%	43%	83%	80%
Writing Skills	67%	64%	84%	84%
Research Skills	46%	53%	88%	86%
Technology Skills	46%	44%	78%	76%

Table 4. BHP's impact on students.

One student wrote the following about the course:

It is by far, the most engaging and interesting class I have ever taken. I love the topics it goes over as well as the questions raised in the investigations. I think the in class assignments also are enjoyable. They get me to think on a level that none of my other classes require of me.

Arguably, critical thinking is something we use in all areas of life, not just in school, which supports case study findings.

In terms of overall course satisfaction, almost two-thirds of the students have reported being satisfied with the course and most would recommend it to their peers (see Table 5). They report that they like learning BHP and think it will be useful to them in the future.

However, fewer than a third of the students report liking BHP more than other courses, and even fewer still report that it has stimulated their interest in history or science. These numbers are disappointing and might simply reflect when the students take the surveys, typically after 90 to 180 days of instruction and usually after an exam. The students interviewed in the case studies discussed below reported much greater interest in history and science because of BHP, which might indicate the impact at that time (most students were interviewed at least a year after taking BHP) or the impact of an in-person rather than online survey.

One explanation for this discrepancy is that in case study interview data, when students are asked if they like history more, less, or the same after taking BHP, some say they like it less, but then go on to explain that they love BHP so much, it makes "regular history" seem boring. This may have skewed the data. Another explanation for this is that the students who answered the survey questions are current BHP

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students, and their perspective related to future interest is different from the case study participants. The case study participants are mostly BHP alums reflecting on their experience in the course and how it changed them, so they have the benefit of hindsight, unlike the current students. This is very likely what happened for the survey question that asks students to consider the future (“BHP will help”). Case study participants can respond to this question based on experience rather than speculation. So, although the 69 percent agreement doesn’t contradict the case study findings, we initially expected an even higher level of agreement here.

STUDENTS	2015 W3	2016 W3	2017 W2	2017 W3
Overall Course Satisfaction	N=2,030	N=1,945	N=4,660	N=3,963
Course Satisfaction	66%	57%	56%	59%
Would Recommend	59%	51%		59%
Enjoy Learning	66%	56%	58%	55%
Enjoy More Than Other Classes	39%	28%	28%	28%
Future Science Interest	41%	38%	28%	30%
Future History Interest	24%	21%	17%	20%
BHP Will Help	63%	57%	59%	69%

Table 5. Overall student satisfaction with BHP.

Discussion of Perception Survey Findings

Overall student and teacher perceptions of BHP are positive. Over 95 percent of teachers would recommend the course to others, as would 59 percent of students. There is evidence of both teacher and student learning in these surveys, with teacher data showing a dramatic impact on overall confidence and changes in teaching practice. Student learning is clear when looking at BHP’s reported impact on skills.

One caveat regarding the teacher data is that there may be self-selection bias occurring as part of these surveys. Most teachers have the option to participate, so these might be teachers that have more positive feelings about BHP. This selection bias might also impact the student surveys – more engaged teachers might be more likely to compel their students to complete the surveys. Additionally, there may be some limitations related to the student findings. It is not clear that when students selected a neutral option for the responses if they were truly neutral. For example, some of the data for the question about how much BHP would help in future studies was recoded after a neutral answer was provided for the Likert scale item, but then follow-up verbatims clearly echoed a different sentiment. For example, this student gave a neutral response with the following verbatim:

I do think big history helped me prepare for future studies because this has helped take things in depth and make things more understanding. Now I know to take things in depth and try and focus on how it started and or created and go all the way into the present stage. BH helps you realize there is more to a topic then you think. [It] Opens your mind up to look at the bigger picture.

Therefore, that data was recoded to reflect “agree” rather than “neutral” as the response. It is not clear if this happened throughout the data, as only some questions had verbatim follow-up responses.

Finally, the survey findings provide excellent support and little disconfirming evidence in relation to both Study 1 and Study 3, apart from some discrepancies between case study findings and the perception surveys related to future interest in science and history, as discussed in the section above (see Table 4). Not only do the findings from the perception surveys help validate the information from the other studies, but they may also help BHP uncover some of the reasons why certain outcomes have occurred.

Study 3: Long-Term Impact of BHP on Student Learning and Teacher Practice

The purpose of this study was to evaluate whether participation in BHP has a long-term impact on student learning and teacher practice. For students, we sought to examine if the course influenced academic trajectories in history and science; how BHP impacts attitudes toward, perceptions of, and engagement with history; and if they take what they learn in BHP and transfer that to other courses. For teachers, we sought to understand if teaching BHP has an impact on their practice over time, both in BHP and other courses they teach. In this section, student findings will be shared first, following by teacher related findings.

Student Findings

Findings from this study show that when students take BHP in schools where there is high fidelity to the key course themes reported and where the teacher adopts the stance of being the lead learner in the classroom (as reported by the teacher and students), student outcomes are increasingly positive. These outcomes can include more interest in history and science over the long term; use of skills and knowledge in other and subsequent courses; deep conceptual understanding of the key course themes; and the ability to connect seemingly disparate information encountered in both school and life. The student study has been replicated three years in a row, and findings from the 2016/2017 school year further support and bolster the findings from the prior two years.

Data Collection

An independent researcher with a doctorate in the learning sciences and extensive experience with qualitative research, visited four schools and interviewed 345 current and former BHP students and 20 teachers and administrators. School sites were chosen based on the number of years they’ve been implementing BHP. Only schools that had been implementing for three years or more at the time of the study and had not been part of a previous case study were selected. Teachers in various geographical locations were contacted regarding their willingness to participate, and when four sites agreed to participate, no further schools were contacted. Convenience sampling was used to select participants; no one was excluded from the study so long as they had been a BHP student or staff at the school. Class schedules and availability for interviews were the biggest factors that influenced participation. The researcher, who also works for BHP in a number of capacities, including writing curriculum and leading professional development workshops, then created four case studies and a cross-case analysis to provide a picture of BHP in different contexts.

Two main sources of data were collected for this study: semistructured interviews with teachers and some students, and focus groups with students. In addition, the researcher conducted classroom observations to better understand the context within which students are learning and teachers are teaching BHP.



Student Case-Study Analysis and Findings

Interviews were transcribed and codes were generated. Once a final list was established, two people, the independent researcher and a postdoctoral scholar in the learning sciences from the University of Washington double coded a subset of the data to establish 90 percent inter-rater reliability. Case studies were written individually, and then a cross-case analysis was completed. These are the findings that came out of those case studies. (Note that the fourth finding only occurred in the highest fidelity implementation, while the other three were found in all implementations, although support was more robust for those findings in the higher fidelity implementations. Degree of fidelity and how it’s defined are discussed below, in the section “Discussion of Student Case-Study Findings.”)

1. BHP students report an increased interest in and engagement with history.
2. BHP students report a high level of course retention, which shows learning.
3. Skills learned in BHP are highly relevant and useful to students, both in and out of school.
4. BHP can provide students with a framework for all learning, giving them the ability to connect information across disciplines and in life.

Increased student engagement. Interest and engagement are often one of the most important precursors for learning. Without interest and engagement, it’s difficult to learn and focus on any given topic. During focus groups and interviews, all BHP students were asked whether they liked history more, less, or about the same after taking BHP. (Note: Although some of the students were still taking BHP when they were interviewed, they were nearing the end of the school year.) Students who took part in the BHP course reported being generally more interested in history and reported liking it more after taking it (see Figure 7). Additionally, many students reported that taking BHP also changed the way they feel about science, making it more interesting to them. In some cases, students reported that this changed their academic trajectory, leading them to take more difficult history and science courses. Increased interest and engagement in any topic can positively impact a student’s trajectory, regardless of course choice, helping them stay engaged with future courses.

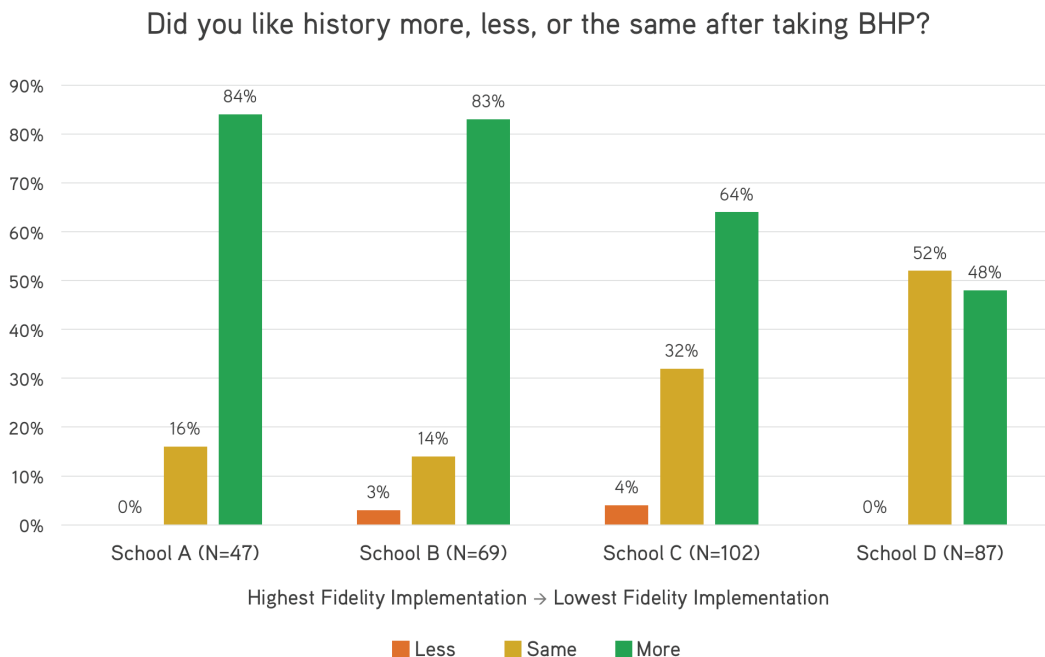


Figure 7. Student-reported interest in history.

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High rates of retention. BHP alumni were asked to recall what they remembered from the courses that they had taken at the same time as BHP (see Figure 8). The majority of students in high-fidelity implementations reported remembering more from BHP than from their other courses and were able to talk about the BHP content and concepts in detail. Students often don't remember details about past course content, and this supports findings that the class was engaging, and also suggests student learning.

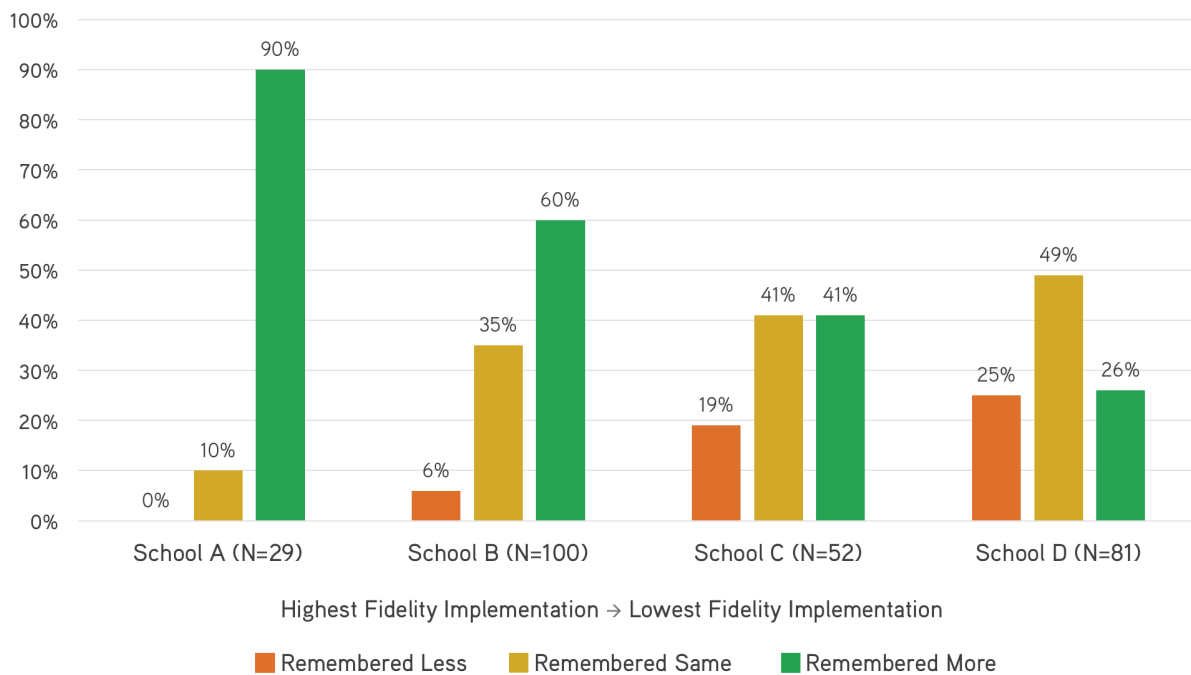


Figure 8. BHP alumni-reported content retention.

Discussion of Student Case-Study Findings

When we look across the findings as well as at other factors that were highlighted in each of the case studies, the following patterns emerge:

1. Higher-fidelity implementations are strongly correlated to positive student outcomes, including long-term learning and retention.
2. Student engagement with BHP increases when the teacher assumes the role of lead learner.
3. The highest fidelity BHP implementations can provide a conceptual framework for all learning.

These cross-case findings support the individual case study findings, and help to explain the individual case study results. In addition, it's noteworthy that these findings further extend and support those from the previous two school years. In total, 12 case studies have been completed in BHP classrooms over the course of three years, and the findings are similar across all three years. While we cannot claim that these outcomes will occur in all BHP classrooms, given the diversity of schools and settings that have participated in these studies, we are increasingly confident that these findings will generalize to other BHP classrooms.

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Impact of high-fidelity implementations. BHP is distinctive in part because it focuses on three essential skills and three core concepts (see Figure 9).

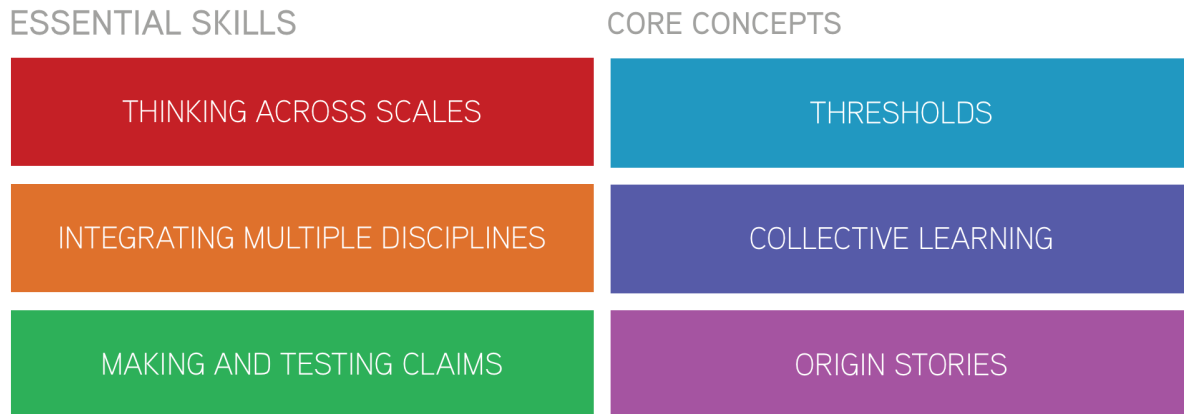


Figure 9. BHP essential skills and core concepts.

Of the four schools examined in this study, one maintained high fidelity to the essential skills and core concepts of BHP throughout the course. Fidelity in the context of these case studies is determined by examining three key factors.

First, teachers are asked about their degree of fidelity to the essential skills and core concepts (also referred to as the “big ideas” in BHP). If a teacher reports that they do not attend to one or more of the big ideas, they are no longer considered a high-fidelity implementation. The fewer big ideas that they attend to overall, the lower fidelity they are considered. Fidelity is not measured by examining what lessons and course materials are used by teacher, because the focus is on the essential skills and core concepts. To be considered high fidelity, teachers must attend to all of the essential skills and core concepts throughout the duration of the course.

Second, fidelity is addressed as part of the analysis of student data. Two specific codes were developed for examining fidelity. The first is applied to any unprompted statement that students make in relation to the essential skills and core concepts in the course, and the second is a context code, which helps us look for more evidence of fidelity as well as helps to confirm or disconfirm the teacher reports. If students frequently discuss the essential skills and core concepts of the course in the interviews, we assume that their teachers addressed those in their classrooms. When students don’t talk about those as much, we assume there was less focus on those skills and concepts in the classroom, even if their teacher reported otherwise.

Third, differences across grade levels are examined to determine if the level of fidelity varied for different years of course implementation. Finally, all settings are considered high fidelity until disconfirming evidence emerges that shows that teachers in those settings are not being faithful to the essential skills and core concepts of the course. As mentioned, the less teachers attend to the essential skills and core concepts of the course, the lower fidelity they are considered.

Of the four schools studied, School A maintained the highest fidelity. School A’s implementation had a strong focus on making and testing claims, while Schools C and D didn’t emphasize that essential skill as heavily. Schools C and D’s lack of emphasis on making and testing claims was one of the reasons they were considered lower fidelity compared to Schools A and B. Only School B showed change in fidelity over time. That change occurred through School B’s deemphasizing their focus on scale. Additionally,

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this school reported having a more skills-focused implementation overall. At School B, student findings were fairly different from the high-fidelity schools when examined over time. In all the high-fidelity implementations studied over the past three years, student interest in and engagement with history was maintained or increased. Students in high-fidelity implementations had notable levels of retention from the BHP course, and in the highest-fidelity settings, students developed a conceptual framework for school, life, and learning.

Teacher as lead learner. It is not reasonable to expect any teacher to have mastery of all the subject matter in BHP. Rather, the instructional approach to teaching that is suggested is that of teacher as lead learner. Although teachers may not have all of the content knowledge, they do have the skills required to be successful in BHP. Teachers can model for students how to use and hone their skills, and they can also learn alongside their students, demonstrating for them that BHP allows for different viewpoints, opinions, and interpretations of history. In classrooms where teachers reported taking this lead-learner stance, students more often reported feeling respected and engaged, having the agency to do the work needed in BHP.

Conceptual frameworks. A conceptual framework is an analytical tool that is used to make conceptual distinctions and organize ideas. Conceptual frameworks take on many variations, can be used for a variety of purposes, and are often defined according to context and use. BHP, when taught with fidelity to the key course skills and concepts, may provide students with a powerful organizing tool for school and life. In interviews, students often reported that the BHP helped them understand why they studied different subjects in school, how they connected, and why they mattered which then helped them understand how school can apply to real life. It appears, based on student interviews, that the focus on connectedness and taking multiple perspectives are both factors that foster the development of a conceptual framework. Although there are similarities between connectedness and taking multiple perspectives, and in many ways, they are tied to each other, for analytical purposes we attempt to tease them apart.

Teacher Findings

This case study describes the impact that teaching BHP has on its teachers, with teachers reporting that the course can be transformative for both their general pedagogical approach in the classroom, as well as their curricular choices. Findings from teacher reports show that teaching BHP can influence teachers' curricular choices in their non-BHP classes and that it can shift their overall pedagogical approach. Specifically, the shift toward being the lead learner in the classroom, away from a more traditional "sage on the stage" approach, has been reported as empowering for teachers and for student learning. Surprisingly, these shifts were particularly impactful for the most tenured teachers in the study, those from whom we might expect less change in practice. This suggests that BHP is not only beneficial for student learning, but also for teacher learning.

Data Collection

As part of an ongoing research study examining the impact of BHP on student learning and trajectories, 24 teachers and six administrators from eight schools were interviewed as a means for the researcher to better understand the classroom context of BHP in various settings. In both the spring of 2015 and 2017, 24 BHP teachers were interviewed about their experiences with the Big History Project. Teachers were asked about preparation to teach the course, fidelity of implementation, and changes in their approach to the course over time. At various points in the interviews, 11 of those teachers discussed how teaching BHP changed their practice, both in the BHP classroom and in other courses that they teach. Although not the focus of the interviews or the study, enough teachers and administrators reported that there is residual value in BHP on teacher practice that we share those findings here.

Teacher Data Analysis and Findings

Interviews were transcribed, after which one researcher read all interview transcripts. Any mention of how BHP had made an impact on their teaching practice, either in the BHP classroom or in other courses, was sorted into a new document. That document was examined, using the lens of grounded theory, to determine if any themes emerged from the data.

The findings shared here are those that point to how BHP can be transformative for a teacher's practice. These transformations emerged in two chief ways:

1. The course influenced teachers to modify their curricular practices in other courses they teach.
2. BHP shifted their general pedagogical approach.

Influence on Curricular Practices. For many teachers, the BHP curriculum is new, exciting, different, and provides them with an abundance of ideas and resources for their other courses. Teachers spoke about how the routines and practices embedded in BHP have helped them improve student writing in their other courses, and helped them to be better writing teachers overall. Teachers reported changes such as the use of different analytical tools (such as claim testing) to improve student writing overall; changes in assessment (investigation style instead of traditional tests); and the use of rubrics to target and improve upon specific writing skills.

One veteran teacher of 29 years explained that BHP sharpened her focus on making arguments and writing, explaining that as “a social studies teacher, we didn’t put a ton of emphasis on writing.” However, she continued, “making claims and defending them, we now do that, that’s kind of our main focus, and that’s what the Common Core wanted us to ... bring into the classes.”

Another teacher with 24 years of experience referenced using BHP strategies, such as the use of rubrics, to become a more effective teacher of AP psychology and US history, explaining that “I’ve used some of the writing rubrics even in other classes. Last year, I took the [idea of] Big History investigation [into US History], and so it’s kinda like we’re metamorphosing. I hate to use such a big word, but, we’re starting to use some of those strategies because it is standards based and I really like that.” This teacher also spoke extensively about how he was bringing the practice of claim testing into his other classrooms. This was a common theme, and one school felt so strongly about the usefulness of the practice of claim testing, they introduced claim testing to other history classrooms in that school, as well as to other schools in the district. The head of the social studies department of that school district began having his elementary and middle school teachers use claim testing in their classrooms.



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Another teacher pointed out that while she does not use the exact language of claim testers with her eleventh grade non-BHP students, she is using much of the language, the practices, and its spirit to find “that my essays are stronger, my students are better speakers.”

BHP Investigations changed the assessment practices in other classes, a teacher reported. Indeed, he said that teaching BHP “reenergized” his teaching, a claim corroborated by his principal:

I don't test anymore. I used to ... I did my own tests and it used to be notes, and lecture, and a primary source document reading... You might find a couple text books around. We only use the textbooks in US history.... I use a lot of [The Stanford History Education Group] Primary source documents. There's a huge writing component. So I've adopted the writing component of Big History into my US history, and we don't test anymore. [The course focuses on] higher critical thinking skills. ... [It] really asks the students to make a creative thesis, to [bear] down on 'Why did World War I happen?' [for example],...or on whatever historical question we're asking, and it makes them think.

Influence on Pedagogical Approach. Teachers also reported that BHP encouraged them to shift their pedagogical stance from the “all knowing” sage to the lead learner. One teacher described the change as “liberating.”

It was liberating. It was [like] being told that you're allowed to not know. Maybe that's because starting here, spending my whole career here, I hadn't had too much experience with telling kids it's OK to say "I don't know." We don't have to know everything, but being active learners is what's a valuable thing. . . . It's actually fun, it's putting power in their hands. I give them a lot of control. We're fortunate that we have iPads and so sometimes I'll say, "You know what? Write that down--we're going to look it up later." Or if we have time in the moment, "OK, Jimmy, great question, do me a favor, look that up right now. Report what you find back to the class."

She explained that this stance offers her the opportunity to model active learning, which she things both engages and empowers her students.

Assuming this instructional stance made learning collaborative, explained another veteran teacher.

I felt like it was more collaborative than it was, "I'm the guy telling you what to do." It was, "guys we're in this together. We're learning." This is awesome, and the kids loved it. Maybe not every kid. I can't speak for every kid, but for the most part, a lot of energy and a lot of positive feedback from the kids.... And it was cool that they had a teacher that didn't know everything. We were willing to figure it out.

Students seemed to enjoy teachers joining them in co-constructing what they learned rather than didactically giving facts and information. As one teacher explained, “It wasn't the content” that seemed to motivate the students but rather it was “because I flat out told the kids right up front that you and I are both learning this together, so, let's have some fun. And they loved that.”

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Many teachers discussed how students loved that the teachers were open about the fact that they did not know everything about the course, and that they would be learning together. This reportedly energized and engaged the students. In an informal conversation with yet another teacher (not included in this data set), the researcher was told that students who often “checked out” during class starting checking back in, because when the teacher didn’t know the answer, it gave them the opportunity to participate in ways that were not acceptable in the past, by either sharing knowledge that they had that the teacher did not, or finding comfort in the lack of shared understanding and subsequent co-learning process.

Discussion of Teacher Case-Study Findings

Many BHP teachers found such significant value in the BHP approach to reading, writing, and engagement that they reported using or modifying the tools, techniques, or BHP pedagogical practices for other courses. Both veteran and beginning teachers reported generative value in teaching BHP. The wide opportunity teachers have to learn how to use such pedagogical approaches, tools, and techniques appears to be one of BHP’s strengths, according to teachers. That is, they did not just have one chance to try something or learn something new. Some teachers reported they learned about a particular approach to managing an instructional problem, such as engaging students or getting students to edit more carefully, in the one day teacher-training summer sessions. Other teachers reported that they learned new teaching practices by picking up the curriculum and just teaching it as guided in the course materials.

It is important to note that for most of these teachers, formal BHP professional development was quite limited, typically a day or two, which makes the changes they reported all the more interesting, if not surprising. BHP appears to offer what researchers have called an “educative curriculum,” one that instructs teachers as the teachers instruct their students.⁴

One potential limitation of this study is that related to the positioning of the independent researcher. The researcher was paid by BHP to conduct this qualitative study, and also has vested interest in the design of the curriculum and PD since that researcher is one of the architects of the course. Teachers, and perhaps students, were aware of this during the interviews and it may have impacted their responses.

While we only talked with 20 teachers at length for this section, they did give us a glimpse of how BHP might be realizing its potential to not only help students learn crucial content and disciplinary literacy practices, but also help teachers improve their own practice. While we could not make claims about the generalizability of what these teachers reported – that is, we are certainly not claiming that BHP is transforming teaching – these interviews offer us insight into specific ways BHP can help teachers improve their teaching.

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

4. See for example Ball, Deborah Loewenberg, and David K. Cohen. “Reform by the Book: What Is: Or Might Be: The Role of Curriculum Materials in Teacher Learning and Instructional Reform?” *Educational Researcher* 25, 9 (1996): 6–14.; Davis, Elizabeth A, and Joseph S Krajcik. “Designing Educative Curriculum Materials to Promote Teacher Learning.” *Educational Researcher* 34, no. 3 (2005): 3–14.; and Davis, Elizabeth, Annemarie Sullivan Palincsar, Anna Maria Arias, Amber Schultz Bismarck, Loren Marulis, and Stefanie Iwashyna. “Designing Educative Curriculum Materials: A Theoretically and Empirically Driven Process.” *Harvard Educational Review* 84, no. 1 (2014): 24–52.

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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.

Although we are quite pleased with the gains students are making in their critical thinking as evidenced by their writing assessments, and with the positive impact students and 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 enhancing the ongoing professional development for our teachers and working to find ways to continually engage BHP students while they are taking the course. In many ways, we are facing a problem of success. As more and more schools, teachers, and students enroll in BHP, we must find new ways to maintain the close contact and timely interaction that has been a hallmark of the team's work.

This report indicates areas on which we can continue to work, it highlights areas of great success including the growth in student writing, teachers' course satisfaction, and ways both students and teachers report the course has positively affected their critical thinking or pedagogical practices respectively.

We will continue to conduct these studies in our effort to monitor and increase the value that BHP provides students, teachers, schools, and the larger educational community.

