



HIGH ACADEMIC ACHIEVEMENT

in a Virtual and Blended
Learning Environment



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Dear Colleagues,

Virtual learning has often been branded as a viable learning option for students who have fallen off their graduation path, those living in remote locales, or students with medical conditions. Rarely is it considered to be an option for the highest-performing students in a school. These learners come to school with clear goals and are often supported with resources and relationships to help them accomplish them. They are highly motivated to achieve and prepare for a postsecondary career.

This case study focuses on academic performance data for elite student-athletes enrolling in TPH Center of Excellence, a training academy that prepares students to earn athletic scholarships at top-tier colleges and universities. Since 2017, Edmentum has partnered to help TPH strategically expand its national footprint. Enrollment has grown twelvefold in four years.

We examine more closely the question of how virtual learning impacts outcomes for high-achieving students. What does academic performance look like? How are they performing on academic measures that align with college-readiness?

Our findings are promising. TPH students' grade point averages, as well as average SAT and ACT scores, significantly outperform national averages. TPH student-athletes also demonstrate consistently high performance on their courses with an average course grade across core subjects of 90.5 percent.

The results are yet another proof point that high-quality, sustainable virtual learning, supported by effective instruction, can create successful student outcomes everywhere learning occurs.

— DAVE ADAMS, CHIEF ACADEMIC OFFICER

Acknowledgements

We are grateful to the committed team of educators at TPH. From the teachers and academic advisors to administrators, they have been committed partners in this case study and generously shared their insights. In addition, Edmentum's Data Science and Research teams have played critical roles in helping to extract and analyze thousands of academic performance and student demographic data points as part of this process.

Executive Summary



This case study examines evidence to answer a simple question critical to the future of education: Is virtual learning associated with successful outcomes for high-achieving, college-bound students?

In 2017, TPH Center of Excellence and Edmentum partnered to design a virtual learning program to support the high levels of academic achievement required for student-athletes to be successful in K–12 education and accepted into NCAA programs at top universities.

This case study first examines the foundation of academic research that Edmentum’s virtual learning programs are built on, focusing specifically on the EdOptions Academy, instructional services, and Edmentum Courses. It then analyzes data from a combination of internal and external sources, including course-completion rates, course grades, formative and summative test scores, survey responses, and other data. The findings documented in this study clearly demonstrate that TPH Center of Excellence student-athletes consistently perform at high levels of academic achievement on measures that are key to postsecondary success.

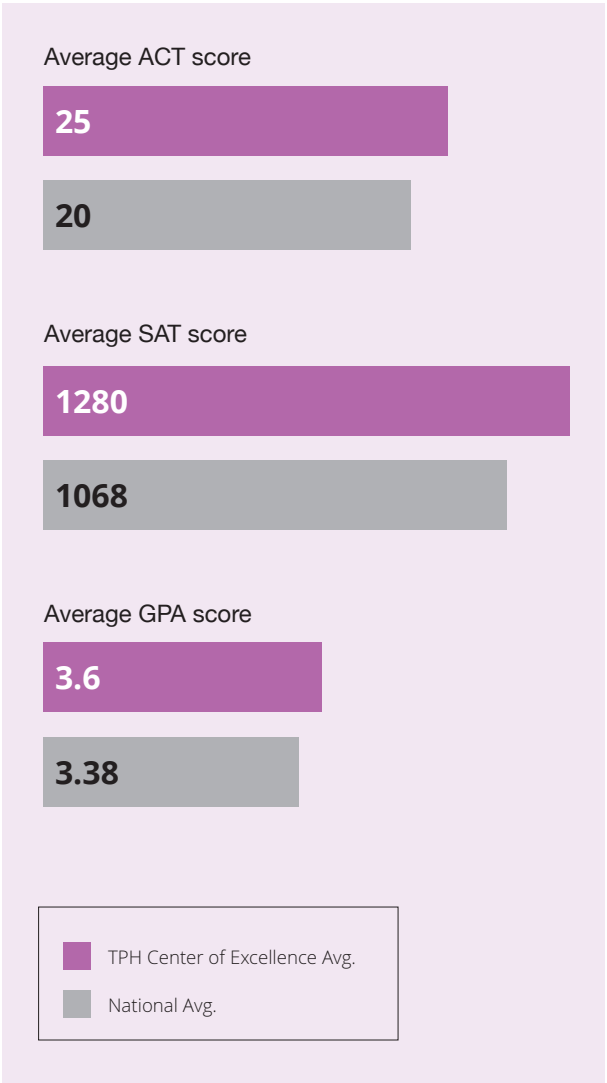
- **Academic college readiness:** TPH student-athletes outperform the national student average on the SAT and ACT assessments.
- **Consistent course performance:** TPH student-athletes demonstrate consistently high performance on course grades, with an average course grade across core subjects 90.5 percent.

Flexible scheduling in Edmentum’s virtual learning program has been key to accommodate the demands of sport-specific training and competition. With regularly scheduled live lessons provided by TPH-focused Edmentum instructors, and consistent, weekly scheduled virtual office hours, TPH students have the ability to set up scheduled times for additional instructional support as needed. This intentional design puts student-athletes in full control of their academics. Over four school years, the TPH and Edmentum partnership has helped student-athletes gain acceptance to the world’s top universities, including Harvard University, Yale University and the University of Notre Dame, as well as prestigious flagship state universities such as Ohio State University, the University of Michigan, and the University of Wisconsin.

90.5%

Avg. Course Grade

National Average	TPH Average	Edmentum Advantage
1068 SAT	1280 SAT	+212 POINTS
20 ACT	25 ACT	+5 POINTS
3.38 GPA	3.60 GPA	+0.22 POINTS



Introduction

Training For Lifelong Success

HOW A PERSONALIZED, BLENDED VIRTUAL LEARNING ENVIRONMENT IS PUSHING HIGH-PERFORMING STUDENT-ATHLETES TO NEW ACADEMIC LEVELS

The TPH Center of Excellence is where aspiring elite student-athletes seek holistic growth and development. The Center's mission for high performance is about more than helping elite athletes refine their skills on the playing field. Developing their metacognitive and critical thinking skills are key to success in college—and as global players in the game of life.



As a sports training academy, the program initially focused on the sport of hockey, but it has expanded to include athletes in other sports. Its name reflects the school's academy-style, focused environment where dedicated student-athletes study, train, and play.

TPH's student-athlete training program is geared toward developing each individual in four ways:

1. As a player of a particular sport;
2. As an athlete striving to develop strength, speed, athleticism, endurance;
3. As a student looking to become an independent, self-starting college freshman;
4. Most importantly, as an individual, seeking success in the ultimate game—the game of life.

A UNIQUE BLENDED LEARNING PLATFORM FOR ACADEMIC EXCELLENCE

To fulfill its mission, TPH Center of Excellence and Edmentum partnered to intentionally design a personalized virtual program with the flexibility needed for the demanding training schedule of elite student-athletes. But the program also had to be academically rigorous so that it prepared each student-athlete to thrive in some of the country's top universities.

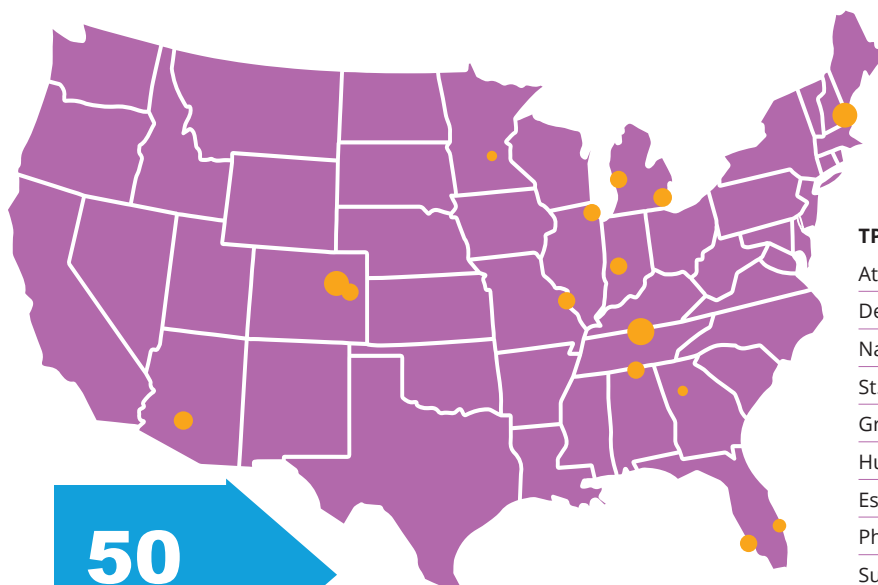
The partnership started small, enrolling nearly 50 students at two different TPH Centers of Excellence located in Michigan. Each year, the partnership has strategically expanded. In 2021, more than 691 students were enrolled across 15 TPH Centers of Excellence.

Regardless of the sport, TPH's training blueprint emphasizes:

1. Training the body, by promoting athletic qualities and sport-specific skills, habits, concepts, and details;
2. teaching the mind, through daily mentorship, athlete-specific learning, and added-value experiences; and
3. fostering a learning and training environment that powers the heart.

As a result, student-athletes love “the process” more when they leave the CoE than when they arrived.

Flexibility in academic scheduling is a key component of the program. For TPH Centers of Excellence, schedules provide consistency and are constructed with an understanding of the value of proper rest, recovery, and nutrition.



50

Students in 2017

691

Students in 2021

TPH CENTER OF EXCELLENCE	STUDENTS
Atlanta	36
Denver	63
Nashville, TN	107
St. Louis, MO	45
Grand Rapids, MI	42
Huntsville, AL	38
Esterro, FL	34
Phoenix, AZ	41
Superior, CO	47
Indianapolis, IN	19
Detroit, MI	46
Chicago	44
Ft. Lauderdale	14
Minnesota	10
Exeter, NH	105
Total	691

STUDENT RELATIONSHIPS WITH TEACHERS AND ACADEMIC ADVISORS

Another key part of student-athletes' academic success at TPH is the connections and relationships developed with Edmentum instructors and academic advisors. Teachers schedule weekly virtual classroom lessons, invite students to recurring office hour sessions, and engage in inquiry-based learning strategies to explore lesson concepts and content. Professional learning communities (PLCs) are promoted through a variety of techniques that have been found to enhance social presence from instructor to student and between students. These PLCs can be fostered through the use of technology on behalf of the instructor to personalize feedback and interactions and to establish the social presence that is critical to knowledge creation. Technology provides instructors with an opportunity to personalize the learning environment and enhance overall student engagement.

In a longitudinal survey of 7,652 EdOptions Academy students from 2019–21, 94 percent of students felt their teacher provided the support needed for them to be successful, and 96 percent said their teacher cared about their success.

94%
Agree

My EdOptions teacher provided the **support** I needed to be successful

96%
Agree

My EdOptions teacher **cares** about my success in this class

ACADEMIC ADVISORS

Because TPH student-athletes spend a significant amount of time each day at their sport training facility, each facility has an Academic Advisor present to work with students one to one and face to face. The Academic Advisor is typically a certified instructor but not the subject-specific general education teacher of the students. The Academic Advisor supports students through regular check-ins to ensure that students are making academic progress in their courses, are staying on pace to complete their work, and are receiving both the academic and the social-emotional support they need to succeed. Academic Advisors are a critical resource to provide students with the direction and support needed to stay on track to meet their academic and postsecondary goals.

Discussion

We started this paper by asking the question: Is virtual learning associated with successful outcomes for high-achieving, college-bound students?

To investigate this question, we focused on the achievement of TPH student-athletes as measured by several performance indicators. This included course-completion data from 9,147 courses taken by TPH student-athletes from 2017–21. A total of 493 students taking 3,941 core courses are included in the analysis. In addition, we analyzed SAT and ACT scores for this same group of students. An average, academy-wide GPA was provided by TPH administrators for an additional measure of academic success.

After examining the data, the findings in this study demonstrate that student-athletes who enroll in TPH and EdOptions Academy achieve at high levels on measures of learning that are strong predictors for postsecondary success. This study shows that they can achieve high academic outcomes and outperform national averages when they have access to high-quality, sustainable virtual learning programs.

- SAT scores for the student-athletes outperformed the national average by an average of 212 points.
- ACT scores for the student-athletes outperformed the national average by an average of 5 points.
- Student-athletes in the TPH and EdOptions Academy outperformed the national high school grade point average by 0.22 points.
- TPH student-athletes received average course grades across core subjects of 90.5%.

These programs include certified and experienced virtual instructors, a learning design that intentionally serves the whole learner, builds relationships, and integrates research-based curricula. The TPH and EdOptions Academy partnership provides a learning system where student-athletes benefit from a combination of proven instructional practice, including mastery learning, active and engaged learning, deliberate practice, explicit instruction, scaffolding, and metacognitive strategies implemented in a rich online environment that engages students with their teacher and the content to achieve their goals for success.

Further research is needed to better understand the causality and correlation between program components and student outcomes. When viewed in context with finding in the other studies in this series, Building High Quality Sustainable Virtual Programs (Edmentum 2021), findings demonstrate that virtual learning can provide high levels of academic outcomes for a variety of student populations, including: high-performing students, students with risk factors, rural students and elementary age students.

Appendix A: Data and Measures

This study focuses on the achievement of TPH student-athletes as measured by performance indicators from several data sources:

Course-completion data were extracted from Edmentum's student information systems (SIS) for all enrolled TPH student-athletes from 2017–21. These data include 9,147 courses taken by TPH student-athletes, including core, elective, and career and technical education (CTE) courses.

Course grade and course activity data were extracted from Edmentum's internal databases for enrolled TPH student-athletes from 2017–21. In total, 493 students taking 3,941 core courses are included in the analysis.

SAT and ACT scores were provided by TPH administration for TPH student-athletes from 2017–21.

The average TPH student-athlete GPA was provided by TPH administration for the 2019–20 school year and the first semester 2020–21 school year.

All EdOptions Academy students are provided an option to take a survey when they reach 80 percent completion in their course. The survey provides information on how students interact with their instructor during their course and how they feel about the support they received from their instructor. These longitudinal student survey data were collected from all EdOptions Academy students, including TPH student-athletes, from 2019–21. A total of 7,652 student responses are included in the analysis.

EdOptions Academy teacher qualification data are for all EdOptions Academy teaching staff, including TPH teachers, for the 2020–21 school year.

Courseware, Edmentum's standards-aligned digital curricula, is submitted for external review and approval by independent organizations and experts to ensure that it is based on effective pedagogical principles and that it comprehensively covers state and national standards of learning. Courseware approval and review data included in this study are from submissions between 2014–20.

Student Outcomes by Subject

To further understand the academic outcomes of TPH student-athletes, data were analyzed at the individual course level in each core subject area by various student outcomes. Averages presented reflect course-level outcomes data for courses completed by TPH student-athletes from 2017–21 combined.

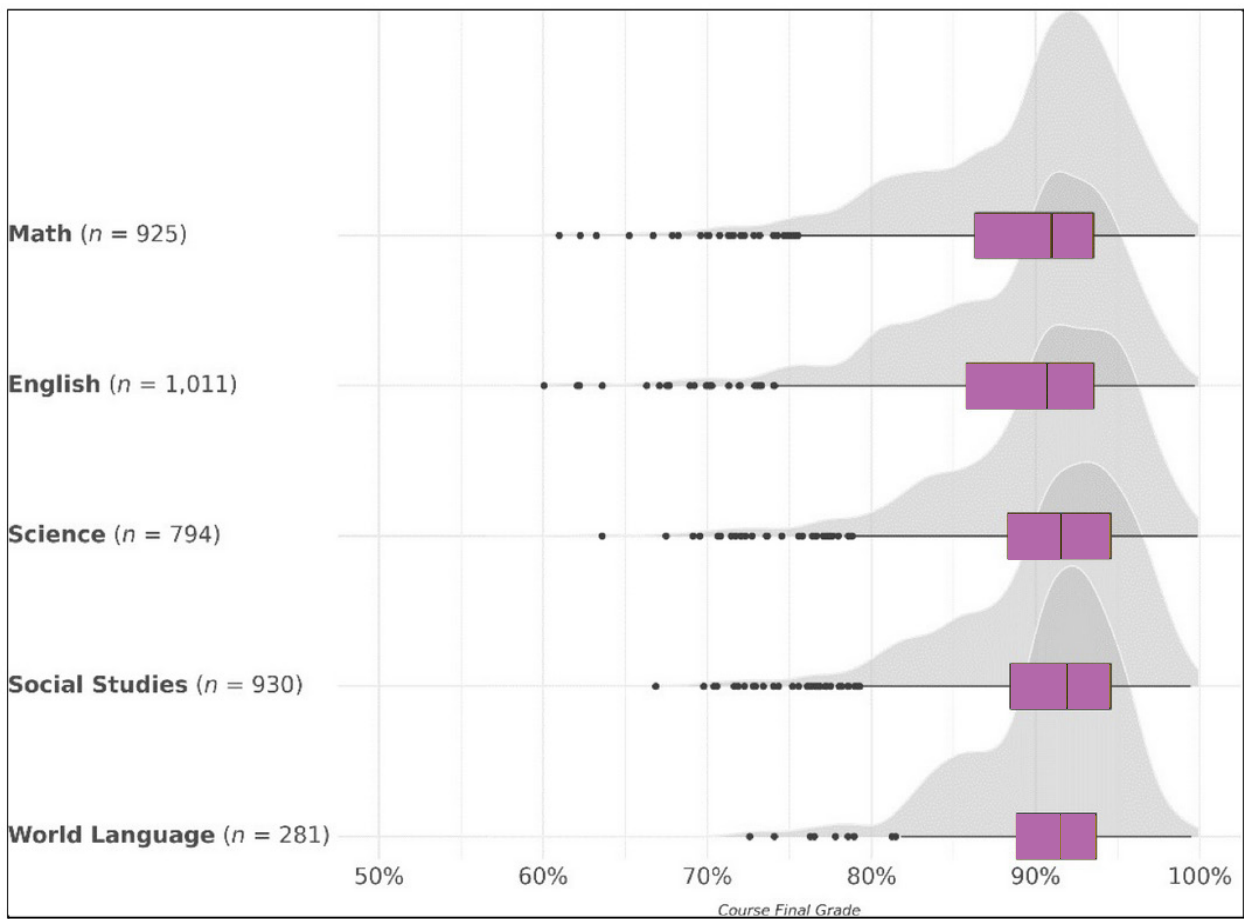
Except for time in the system, all course outcomes are calculated based on a scale of 0–100 percent. The following table provides a description of each student outcome analyzed.

Student Course Outcome	Description
Course Grade	Once the semester is complete, students receive a final grade of 0-100 in each course they enrolled in.
End of Course Exam	Each semester course includes an end of course exam that measures the learning objectives within that course.
Post-Unit Test	Each semester course is divided into instructional units, and each unit includes a unit post-test that measures the objectives within that unit.
Mastery Test	Each instructional unit within a course is divided into lessons, and each lesson includes a mastery test that measures the specific objective of that lesson.
Unit/Course Activity	Depending on the course subject, courses contain unit and/or course-level activities that measure students' ability to solve problems or complete tasks that require higher-order thinking.
Threaded Discussion	Each instructional unit includes a graded discussion topic that allows students to demonstrate critical thinking.

Student outcomes shown in Figure A1 were analyzed based on data from 9,147 courses taken by TPH student-athletes.

Figure A1 shows a visualization of the distribution of final course grades for each subject. The black lines in the figure represent the average grade, and the purple rectangle ranges from the 25th-75th percentile of the student grade distribution. Figure A1 shows the majority of the distribution is in the 90–100 percent range.

Figure A1: Course grade distribution of final average course grades for each subject in courses taken by five or more TPH student-athletes from 2017–2021.

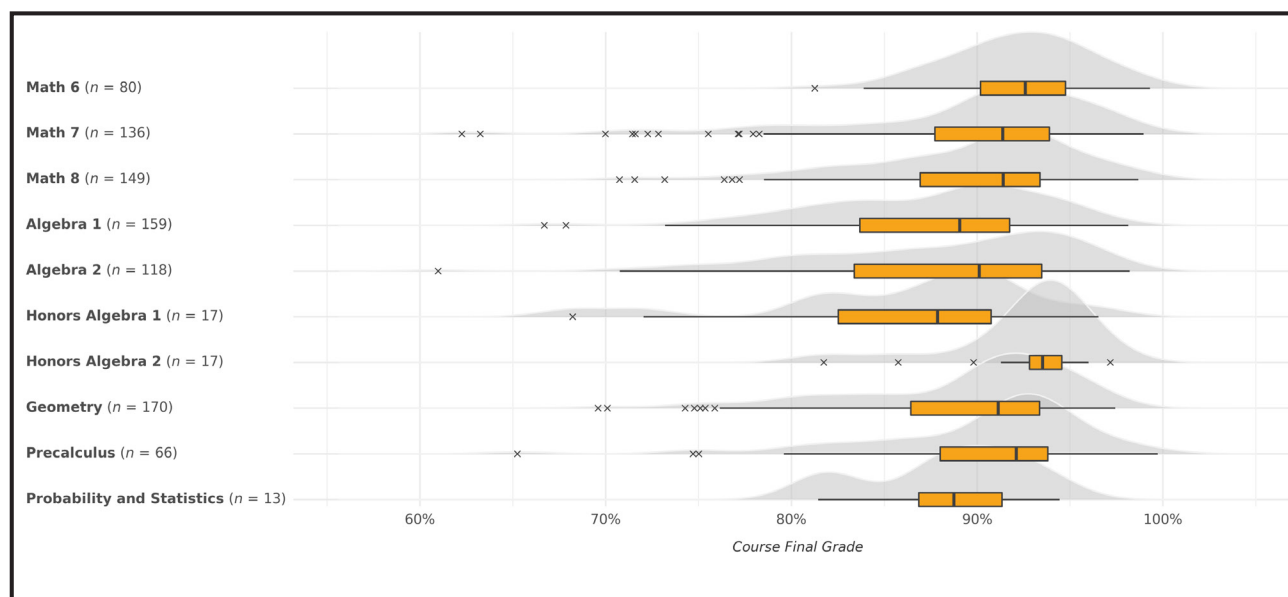


Course grade distribution of final average course grades for each subject in courses taken by five or more TPH student-athletes from 2017-21.

MATHEMATICS STUDENT OUTCOMES

Table A2 shows that average course grades in mathematics range from 84.4 percent to 92.9. The outcomes demonstrate consistently high academic performance in math across grade level and course content. The table includes the average scores for separate course activities within each math course. Figure A2 shows the distribution of average course grades for each math course taken by five or more TPH student-athletes from 2017–21.

Figure A2: average course grade distribution for each math course taken by five or more TPH student-athletes from 2017–2021.



MATHEMATICS STUDENT OUTCOMES, CONTINUED

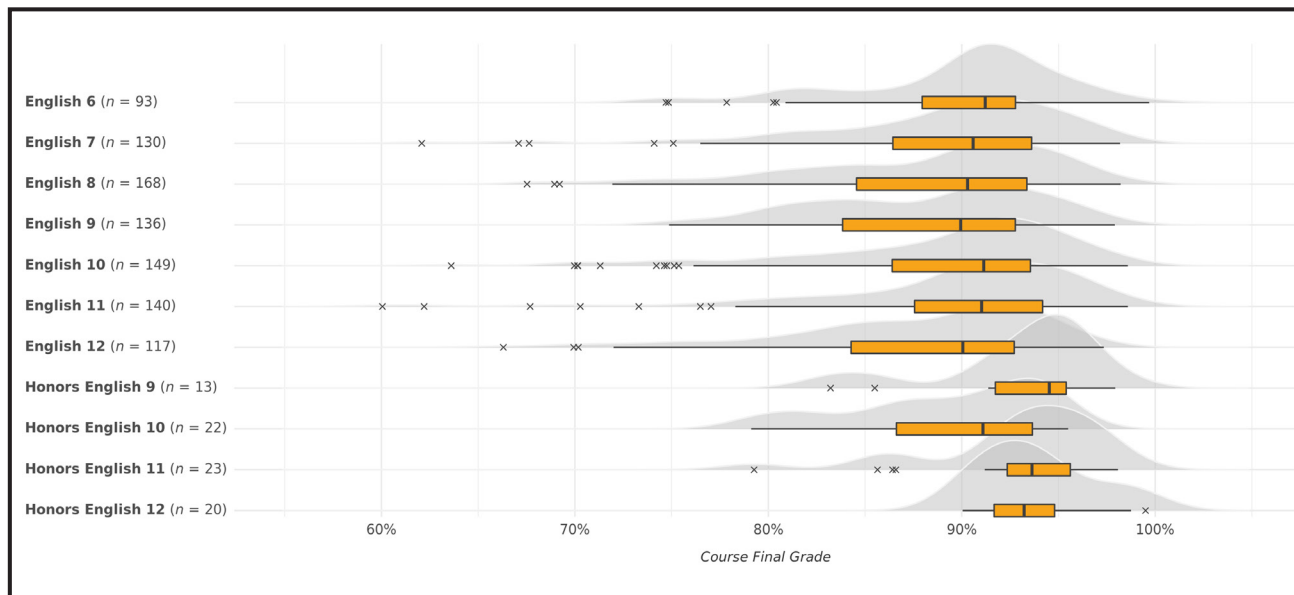
Table A2: Data table showing course-level averages for separate course activities within each math course.

Course	Semester	Avg. Grade	EOS	Post	Mastery	Activity	Discussion	Time Task	N
Math 6	A	92.89	89.74	88.46	94.47	93.07	99.04	24.46	38
Math 6	B	91.65	85.8	85.46	94.02	95.06	99.7	33.13	42
Math 7	A	89.35	85.67	82.98	92.67	88.69	95.78	35.51	66
Math 7	B	89.83	82.38	87.07	90.71	90.7	99.17	33.03	70
Math 8	A	88.14	82.32	82.02	86.62	89.58	97.33	40.21	75
Math 8	B	91.53	86.59	87.6	89.89	94.82	98.83	29.81	74
Algebra 1	A	86.61	81.59	84.95	85.03	83.87	95.56	51.73	76
Algebra 1	B	88.48	84.9	86.71	86.18	89.04	96.6	36.35	83
Algebra 2	A	88.26	85.99	86.5	86.3	87.65	95.67	32.13	73
Algebra 2	B	88	84.28	86.64	87.84	86.04	97.19	20.26	45
Honors Algebra 1	A	84.38	79.95	79.2	86.81	88.47	92.04	57.77	7
Honors Algebra 1	B	87.44	86.67	88.02	86.35	83.13	94.9	34.92	10
Honors Algebra 2	A	92.57	90.28	88.57	89.44	92.58	97.89	39.92	9
Honors Algebra 2	B	92.67	86.35	85.5	92.33	95	100	28.76	8
Geometry	A	88.68	88.36	87.87	90.24	81.87	96.07	35.56	82
Geometry	B	90.33	86.63	86.97	91.12	89.7	97.34	31.57	88
Precalculus	A	90.7	89.04	87.2	86.74	90.02	98.53	30	38
Precalculus	B	89.71	83.08	89.73	86.84	89.41	100	27.4	28
Probability and Statistics	84	88.47	80.88	80.81	91.98	88.73	99.01	49.11	13

ENGLISH STUDENT OUTCOMES

Table A3 shows that average course grades in English language arts (ELA) courses range from 86.1 percent to 94.2 percent. The table includes the average scores for separate course activities within each ELA course. The outcomes demonstrate consistently high academic performance in ELA across grade level and course content. Figure A3 shows the distribution of average course grades for each ELA course taken by five or more TPH student-athletes from 2017–21.

Figure A3: Course grade distribution for each ELA course taken by five or more TPH student-athletes from 2017–2021.



ENGLISH STUDENT OUTCOMES, CONTINUED

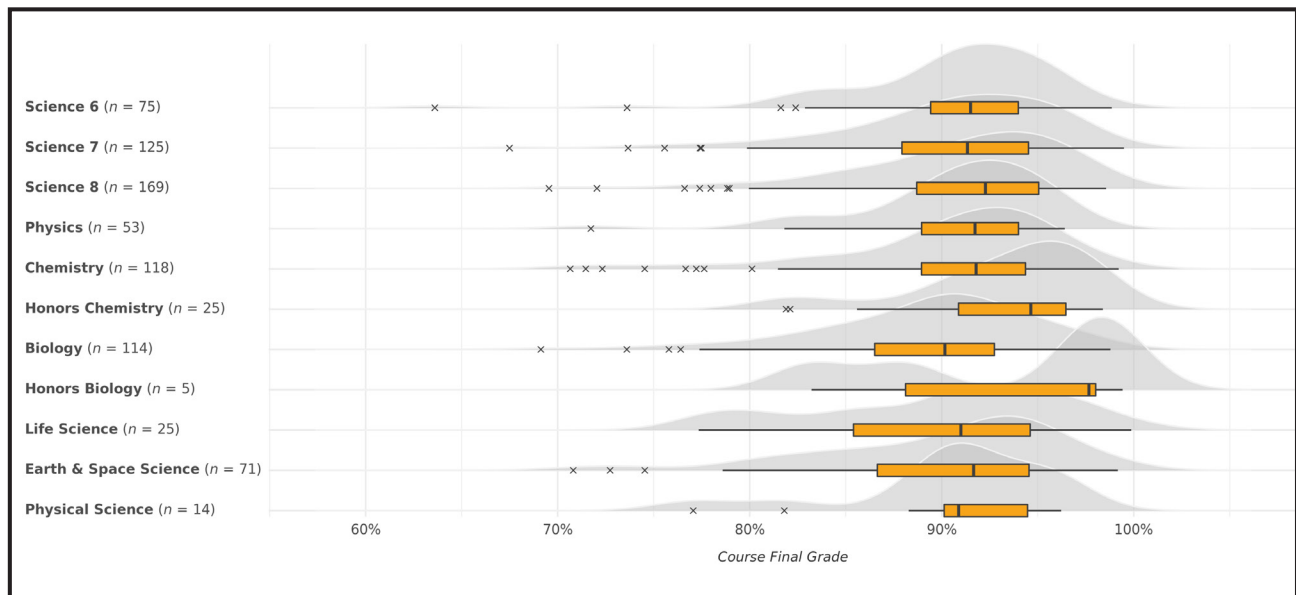
Table A3: Data table showing course-level averages for separate course activities within each ELA course.

Course	Semester	Final Course Grade	End of Course Exam	Post-Unit Exam	Mastery Test	Unit/ Course Activity	Threaded Discussion	Hrs. in Syst.	N
English 6	A	88.21	85.69	84.4	94.64	84.81	92.34	34.93	45
English 6	B	91.35	84.72	88.76	96.18	93.83	95.17	32.83	48
English 7	A	87.99	83.69	83.35	93.66	89.03	89.95	40.76	65
English 7	B	90.68	88.1	88.59	92.94	90.11	94.95	34.37	65
English 8	A	86.12	83.22	81.25	92.35	83.62	90.12	37.87	86
English 8	B	90.9	88.62	88.87	92.32	89.83	95.14	32.43	82
English 9	A	88.05	85.14	85.28	88.37	89.31	92.1	27.41	70
English 9	B	88.57	85.3	86.45	87.49	87.67	94.74	27.39	66
English 10	A	87.62	87.15	86.65	92.56	82.01	90.67	23.59	77
English 10	B	90.86	91.21	88.49	93.59	88.64	93.22	18.61	72
English 11	A	88.56	84.94	85.49	92.46	86.68	93	22.27	79
English 11	B	91.45	87.88	87.62	94.91	90.85	96.25	19.3	61
English 12	A	88.3	85.98	81.89	93.33	88.57	91.82	19.94	65
English 12	B	87.28	79.56	82.76	93.9	88.49	91.68	17.55	52
Honors English 9	A	92.84	91.18	89.75	94.68	93.1	96.43	23.12	7
Honors English 9	B	93.1	92.22	89.24	94.79	93.3	94.83	20.17	6
Honors English 10	A	88.3	89	89.55	97.01	82.03	89.7	23.39	11
Honors English 10	B	90.36	92.05	88.64	97.84	83.03	91.03	20.48	11
Honors English 11	A	91.7	89.26	90.94	93.68	91.73	96.11	24.85	12
Honors English 11	B	94.16	86.97	91.52	94.87	96.55	98.73	22.78	11
Honors English 12	A	93.52	86.69	91.71	96	96.17	93.93	31.16	10
Honors English 12	B	94.15	90	90.04	98.43	96.67	94.03	30.58	10

SCIENCE STUDENT OUTCOMES

Table A4 shows that average course grades in science courses range from 87.8 percent to 94.3 percent. The table includes the average scores for separate course activities within each science course. The outcomes demonstrate consistently high academic performance in science across grade level and course content. Figure A4 shows the distribution of average course grades for each science course taken by five or more TPH student-athletes from 2017–21.

Figure A4: Avg. course grade distribution for each science course taken by five or more TPH student-athletes from 2017-21



SCIENCE STUDENT OUTCOMES, CONTINUED

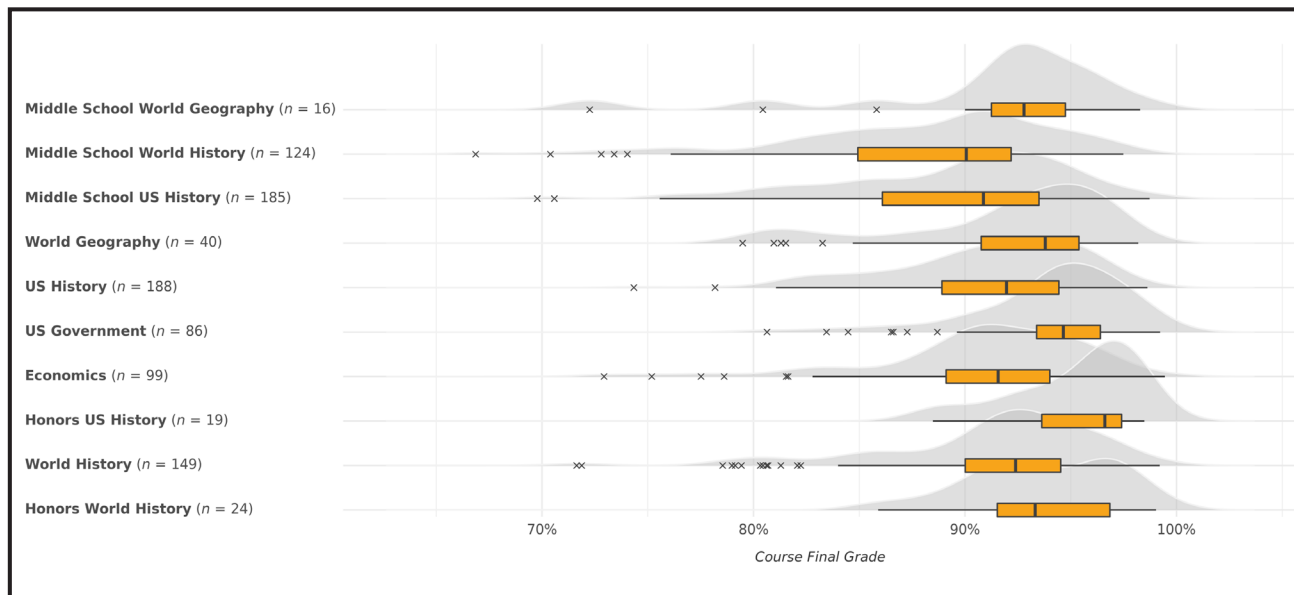
Table A4: Data table showing course-level averages for separate course activities within each science course.

Course	Semester	Final Course Grade	End of Course Exam	Post-Unit Exam	Mastery Test	Unit/Course Activity	Threaded Discussion	Hrs. in Syst.	N
Science 6	A	88.7	83.34	82.11	95.2	92.64	91.72	43.31	34
Science 6	B	92.07	82.39	86.98	96.96	97.02	97.44	37.26	41
Science 7	A	90.29	78.83	85.97	94.67	93.88	97.09	31.48	60
Science 7	B	90.92	83.45	88.65	92.22	95.44	95.76	31.82	65
Science 8	A	89.95	81.45	86.28	92.2	91.99	95.98	33.98	84
Science 8	B	92.5	83.71	90.51	93.71	96.16	97.94	23.67	85
Physics	A	91.22	88.22	90.12	94.18	87.07	95.98	42.82	29
Physics	B	90.45	86.21	87.64	94.67	86.93	96.95	36.64	24
Chemistry	A	91.2	91.79	88.12	91.45	92.61	92.92	25.65	55
Chemistry	B	89.99	88.88	87.96	90.96	91.54	93.64	20.11	63
Honors Chemistry	A	94.26	95.75	93.31	97.14	94.39	93.94	25.77	12
Honors Chemistry	B	92.42	91.56	91.49	96.04	93.66	93.23	21.75	13
Biology	A	88.4	87.96	87.41	89.94	87.6	90.58	34.65	59
Biology	B	90.23	90.55	88.43	92.34	90.35	91.76	31.28	55
Honors Biology	A	93.29	91.43	88.56	97.71	92.2	94.33	58.79	5
Life Science	A	89.72	83.04	83.4	89.14	92.23	97.67	29.82	17
Life Science	B	89.77	80.56	84.58	90.21	94.58	99.12	24.63	8
Earth & Space	A	89.76	81.35	82.75	91.32	95.64	97.13	32.17	39
Earth & Space	B	90.44	90.31	85.9	92.63	92.23	94.51	27.08	32
Physical Science	A	87.84	87.5	81.97	92.78	86.77	93.89	34.42	6
Physical Science	B	92.44	83.31	89.46	96.88	94.54	98.33	31.76	8

SOCIAL STUDIES STUDENT OUTCOMES

Table A5 shows that average course grades in social studies courses range from 87.5 percent to 95.7 percent. The table includes the average scores for separate course activities within each social studies course. The outcomes demonstrate consistently high academic performance in social studies across grade level and course content. Figure A5 shows the distribution of average course grades for each social studies course taken by five or more TPH student-athletes from 2017–2021.

Figure A5: Avg. course grade distribution for each social studies course taken by five or more TPH student-athletes from 2017–2021.



SOCIAL STUDIES STUDENT OUTCOMES, CONTINUED

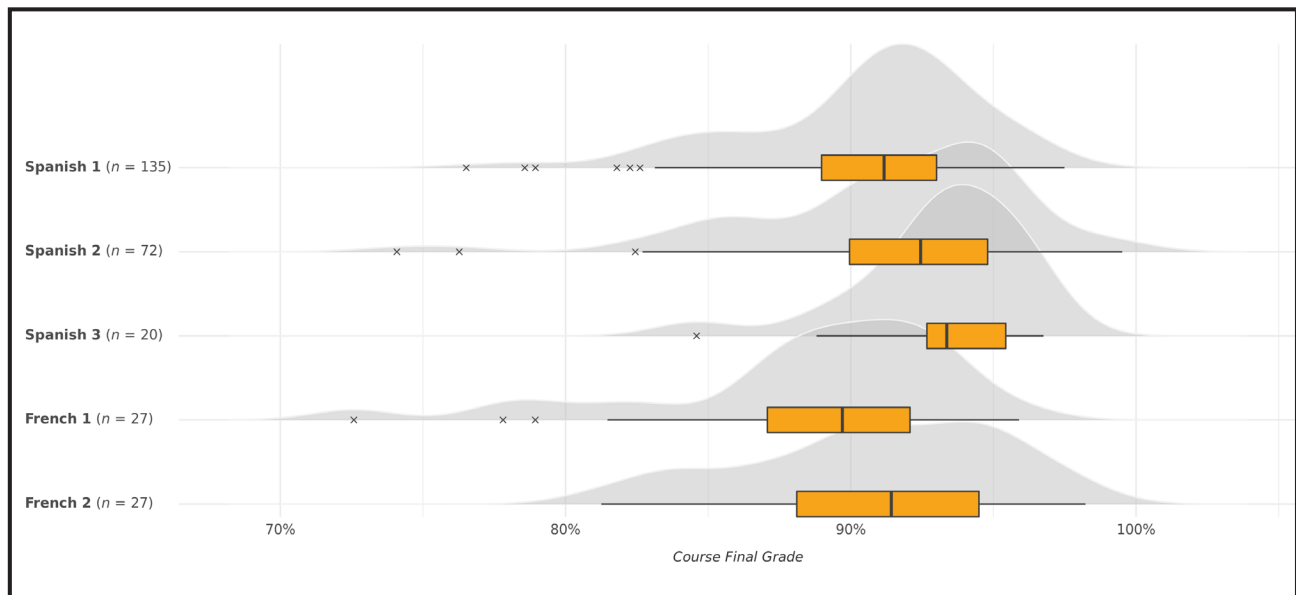
Table A5: Data table showing course-level averages for separate course activities within each social studies course.

Course	Semester	Final Course Grade	End of Course Exam	Post-Unit Exam	Mastery Test	Unit/Course Activity	Threaded Discussion	Hrs. in Syst.	N
Middle School World Geography	A	90.06	86.2	85.23	95.24	90.84	92.09	34.27	11
Middle School World Geography	B	93.23	91.67	86.66	98.33	96.8	92.67	29.55	5
Middle School World History	A	87.54	77.56	78.79	92.6	92.79	94.5	40.65	64
Middle School World History	B	88.98	81.36	84.89	93.15	91.32	93.97	54.62	60
Middle School US History	A	89.43	81.75	84.67	91.42	93.42	93.34	34.53	92
Middle School US History	B	89.7	83.78	87.22	92.02	92.28	93.29	30.49	93
World Geography	A	93.36	91.55	90.54	95	94.79	94.78	14.24	27
World Geography	B	89.2	88.13	87.63	95.08	85.75	89.42	20.03	13
US History	A	90.28	81.72	88.96	94.78	92.05	93.57	28.4	96
US History	B	92.03	87.92	91.06	97.31	90.14	93.79	20.71	92
US Government		94.18	91.91	92.98	95.97	93.77	96.23	19.2	86
Economics		90.93	90	87.91	93.59	92.4	91.99	19.72	99
Honors US History		95.7	92.17	94.48	97.83	96.02	97.1	27.43	10
Honors US History		94.85	89.53	93.46	99.75	92.14	98.06	20.82	9
World History	A	90.35	86.57	87.58	91.97	93.62	92.28	33.39	75
World History	B	92.1	88.84	90.89	94.03	93.95	92.79	30.91	74
Honors World History	A	93.15	88.69	84.47	95.97	97.34	98.09	40.09	13
Honors World History	B	94.4	92.49	89.97	97.08	95.93	96.85	33.25	11

WORLD LANGUAGE STUDENT OUTCOMES

Table A6 shows that average course grades in world language courses range from 86.5 percent to 94.5 percent. The table includes the average scores for separate course activities within each world language course. The outcomes demonstrate consistently high academic performance in world language across grade level and course content. Figure A6 shows the distribution of average course grades for each world language course taken by five or more TPH student-athletes from 2017–2021.

Figure A6: Avg. course grade distribution for each world language course taken by five or more TPH student-athletes from 2017–2021



WORLD LANGUAGE STUDENT OUTCOMES, CONTINUED

Table A6: Data table showing course-level averages for separate course activities within each world language course.

Course	Semester	Final Course Grade	End of Course Exam	Post-Unit Exam	Mastery Test	Unit/ Course Activity	Threaded Discussion	Hrs. in Syst.	N
Spanish 1	A	89.91	88.91	90.82	94.16	87.21	94.76	32.14	69
Spanish 1	B	91.15	91.33	91.59	95.33	88.75	95.63	29.73	66
Spanish 2	A	90.96	92.85	92.3	95.33	86.17	96.6	34.91	36
Spanish 2	B	91.85	89.64	93.12	96.25	89.86	96.19	24.32	36
Spanish 3	A	92.44	90	92.31	97.15	90.77	97.7	40.15	13
Spanish 3	B	94.54	93.21	94.64	97	93.71	98.35	30.12	7
French 1	A	86.48	90.62	82.89	94.88	81.29	95.75	34.72	16
French 1	B	91.27	90.44	87.02	94.55	91.77	98.83	40.41	11
French 2	A	90.41	92.14	91.61	96.71	85.7	96.34	44.38	14
French 2	B	91.36	93.08	93.17	96.38	86.07	94.95	33.05	13

Appendix B

5 Key Components of a Sustainable Virtual Program

Part of Edmentum's ongoing work is to define what high-quality sustainable virtual instruction looks like. After decades of work as an innovator in online teaching and learning, Edmentum has identified several key components for building a sustainable, high-quality virtual program.

High-Quality Instructional Practice	<ul style="list-style-type: none">• Effective instructional practices, tailored for an online environment• Experienced virtual instructors, highly-qualified and state certified• Active learning strategies
Online Curriculum and Assessment	<ul style="list-style-type: none">• Instructional materials that meet students where they are• Aligned with state's college and career ready standards• Multimodal and student-centered
Virtual Platform	<ul style="list-style-type: none">• Organized from a student's point of view• Simple, efficient, and ubiquitous• Data-driven intervention
Whole-Learner Services	<ul style="list-style-type: none">• Multi-role support teams: coaches, advisors, counselors, and mentors• Specialized services for students with disabilities, ELLs
Continuous Improvement	<ul style="list-style-type: none">• A deliberate focus on learning growth and continuity• An emphasis on growth-oriented goals and accountability metrics• Promoting students' beliefs that they have the ability to meet goals by changing how they approach new learning experiences.

Appendix C

The Science Behind Virtual Teaching Effectiveness

Edmentum's virtual instructional training and development for teachers is built on a foundation of research-based pedagogical principles.

ESTABLISHING STUDENT-TEACHER RELATIONSHIPS

When students feel welcomed and comfortable, they develop a sense of community, and they are more receptive to learning (Brown, 2010). When students join an Edmentum online learning community, they immediately receive tailored video introductions from their teacher or coaches. They'll also use the time to get acquainted with the school norms and culture. Research has shown that, in a virtual learning setting, instructors can enhance collaboration and establish a community of inquiry through the instructional methods that are used (Mandernach, 2009). Research demonstrates that students who received personalized feedback from their instructors felt more satisfied in the learning experience and achieved larger academic gains than students who did not (Gallien & Oomen-Early, 2008).

VIRTUAL INSTRUCTIONAL TOOLS AND TECHNIQUES

Edmentum instructors are trained to effectively leverage and utilize a variety of virtual instructional tools and techniques, including Edmentum's course learning platform, online video technology to record instructional sessions or micro-lectures. Instructor-created video content, for example, is a simple strategy for increasing students' sense of connection with their teachers. The utilization of personalized video content has been shown to increase the level of engagement and satisfaction experienced by students (Underdown & Martin, 2016).

TEACHER QUALIFICATION, EXPERIENCE, TRAINING, AND LEARNING OPPORTUNITIES

EdOptions Academy employs highly qualified, state-certified teachers who are experienced in teaching online courses in a virtual environment.

All EdOptions Academy teachers have a bachelor's degree from an accredited institution, a valid state teaching certificate for the states and subjects they teach, and experience teaching in both traditional and virtual classroom settings. Many teachers hold multiple certifications, advanced degrees, and endorsements. Specifically, EdOptions Academy teachers have an average of 14.8 years of teaching experience; 73.6% of teachers have a master's degree or higher, and 93% have certifications in multiple states. In addition, all newly hired teachers will receive a rigorous introductory training program as well as access to continuous learning opportunities.

TEACHER EFFICACY AND CONTINUOUS IMPROVEMENT

EdOptions Academy's academic department chairs ensure that all EdOptions Academy teachers are equipped with sufficient information and resources needed for instruction. The department head reviews teacher performance three times per year (during the academic year of August through June) to ensure that instruction consistently meets high standards. Reviews consist of one or more walkthroughs, feedback, evaluation checklists, and a final summative evaluation. Walkthroughs consist of checks on the teachers' certification for good standing and the use of technology for synchronous and asynchronous communication purposes (Zoom classrooms, email, IM, Web conferences, live sessions, threaded discussions, and file-sharing activities). Instructional reviews examine teachers' use of innovative strategies, the quality of their feedback and monitoring of students, and the degree of their responsiveness to students with special needs.

Edmentum's Research-Based Online Course Design Principles

Principles

Mastery Learning:

Focus on efficient learning. Students show mastery of key content, invest time in not-yet-mastered content, and proceed through learning new content at their own pace.

When it comes to introducing students to new concepts, content, or knowledge, there is a delicate sweet spot in their brains. When it's activated, the learner sees a path to mastery of new concepts. This critical spark enables students to work efficiently at their own pace with a focus on what they need to learn. (Le et al., 2014). It also subtly promotes a growth-mindset orientation in students, which research shows is a strong predictor of academic success.

Edmentum courses apply principles of mastery learning by establishing powerful learning objectives that effectively define what students will know and be able to do at the end of a course. Each learning objective includes a mix of assessment and learning experiences. Through formative, low-stakes assessments, as well as unit pretests, Edmentum courses provide information that allows teachers and learners to make self-directed decisions about their own learning. This ensures that the pace of instruction matches what each student is ready to learn (Haynes et al., 2016; Le et al., 2014).

Active Learning:

Involve learners in responding to and manipulating information while they learn — ensuring their involvement in building understanding and minimizing passive reception of information.

Decades of research support active learning's basic tenet, which is that students learn more when they are actively engaged in the content that they are expected to master (Prince, 2003). This student-centered instructional method puts the learner in charge, contrasting a traditional lecture format, in which a teacher delivers information to a classroom of students who passively receive it (Bonwell & Eison, 1991). Hattie's research (2009) shows that as students become active in the process of their own education, learning outcomes improve. Edmentum's courses include a range of effective teaching practices and active learning strategies.

Deliberate Practice:

Offer intentional, structured, and sustained practice that builds thoughtfully in complexity to support increasing levels of understanding.

Research shows that deliberate practice is a powerful influence on student achievement because initial learning can be consolidated from surface knowledge and committed to long-term memory (Hattie, 2009; Hattie & Yates, 2013). It refers to intentional, highly structured, and sustained student effort that impacts knowledge and skill acquisition and retention. The learning curve relies on the links among practice, reinforcement, immediate feedback, and performance (Campitelli & Gobet, 2011; Hattie & Yates, 2013).

Edmentum's learning design embeds deliberate practice and feedback within lesson tutorials. Integrated interactions allow learners to immediately apply new knowledge to gain higher levels of understanding. Students receive immediate feedback on correct or incorrect answers, including an explanation that encourages them to learn from their mistakes and successes. Extended practice provides additional applications of recent learning through interactions that are constructed to support and build mastery and ordered to build from basic foundational skills to the application of higher-level learning.

Principles

Explicit Instruction:

Support successful learning by providing clear skill statements, modeling of learning outcomes, and reducing cognitive load.

Explicit instruction refers to a “group of research-supported instructional behaviors used to design and deliver instruction that provides needed supports for successful learning through clarity of language and purpose and reduction of cognitive load” (Hughes et al., 2017). Edmentum designs each tutorial with a powerful learning objective that is clearly and transparently communicated. Guided problems and examples provide models to support learning through worked examples that reveal the thinking process. This structure has been found to have a high impact on student learning (Archer & Hughes, 2011).

Scaffolding:

Buoy learning by providing specific supports when learners need them and systematically removing them—leading to independence as learners approach mastery.

Scaffolding is a process of instructional supports to help students access, learn, and master content, as well as apply new skills and knowledge (Dickson et al., 1993; Rosenshine & Meister, 1992). Scaffolding is particularly important to learners when they are encountering new material.

Vygotsky (1978) described a zone of proximal development, where the level of difficulty is balanced with a learner’s prerequisite knowledge and proficiency. When learners are outside of this optimal learning zone, the time they are investing is not productive. Scaffolds help learners achieve an appropriate level of productive struggle.

Edmentum courses include interactive tools that allow learners to self-direct when they need to utilize scaffolds.

Metacognition:

Engage students in reflecting on how they best learn and evaluating their thought processes to help themselves along their learning path.

Metacognition refers to students’ self-understanding and knowledge about themselves as learners. Students use metacognitive skills to select, monitor, manage, and evaluate cognitive processes to self-reflect on how they learn and strategically employ the most effective learning strategies in their work (McGuire, 2015). Thoughtful self-monitoring practices are associated with better learning (National Research Council, 2005, 2013). Instructional strategies that utilize metacognition have been found to be strongly associated with positive educational outcomes (Hattie, 2009, 2012).

Edmentum courses are designed to clearly draw student attention to common misunderstandings and identify big ideas that underpin learning so that students can productively apply those big ideas throughout the course and better prepare themselves for success in higher-level courses. Think-aloud activities appear in videos, as instruction, and as interactions where learners see the thinking of other students and decide whether they agree or disagree with their thought processes. Lessons pair generalized logical thinking and the process with illustrative examples to support the steps for solving problems and the thinking behind them.



Edmentum Courses Independent Review and Approval

Edmentum's standards-aligned digital courses are submitted for external review and approval by independent organizations and experts to ensure that it is based on effective pedagogical principles and comprehensively covers state and national standards of learning. In 2020, Edmentum submitted digital curricula across 2,479 courses for review by curriculum experts and educators in 49 states.



99%

first-round approval rate

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