McGraw-Hill Education, Inc.

Annual Report

As of December 31, 2019

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Special Note Regarding Forward-Looking Statements

This report includes statements that are, or may be deemed to be, “forward-looking statements.” These forward-looking statements can be identified by the use of forward-looking terminology, including the terms “believes,” “estimates,” “anticipates,” “expects,” “intends,” “plans,” “may,” “will” or “should” or, in each case, their negative or other variations or comparable terminology. These forward-looking statements include all matters that are not historical facts. They appear in a number of places throughout this report and include statements regarding our intentions, beliefs or current expectations concerning, among other things, our results of operations, financial condition, liquidity, prospects, growth, strategies and the industry in which we operate.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events and depend on circumstances that may or may not occur in the future. We caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the developments in the industry in which we operate, may differ materially from those made in or suggested by the forward-looking statements contained in this report. In addition, even if our results of operations, financial condition and liquidity, and the developments in the industry in which we operate are consistent with the forward-looking statements contained in this report, those results of operations, financial condition and liquidity or developments may not be indicative of results or developments in subsequent periods.

Any forward-looking statements we make in this report speak only as of the date of such statement, and we undertake no obligation to update such statements. Comparisons of results for current and any prior periods are not intended to express any future trends or indications of future performance, unless expressed as such, and should only be viewed as historical data.

Presentation of Financial Information

This annual report contains financial statements of McGraw-Hill Education, Inc. (formerly known as Georgia Holdings, Inc.). On March 22, 2013, MHE Acquisition, LLC, acquired all of the outstanding equity interests of certain subsidiaries of The McGraw-Hill Companies, Inc. (“MHC”) pursuant to the Purchase and Sale Agreement, dated as of November 26, 2012 and as amended on March 4, 2013 (collectively, the “Acquired Business”). As a result of this transaction, investment funds affiliated with Apollo Global Management, LLC acquired 100% of MHE Acquisition, LLC. We refer to the purchase of the Acquired Business and the related financing transactions as the “Founding Acquisition.” MHC is now known as S&P Global Inc.

Use of Non-GAAP Financial Information

We have provided Billings, EBITDA and Adjusted EBITDA in this annual report because we believe they provide investors with additional information to measure our performance and evaluate our ability to service our indebtedness.

Management reviews these measures on a regular basis and uses them to evaluate and manage the performance of our business, make resource allocation decisions and compensate key management personnel as these measures provide comparability from period-to-period as sales of digital solutions represent an increasing percentage of our total sales during this time of transition. We believe that, for the reasons outlined herein, these non-GAAP financial measures provide useful information to investors and provide increased transparency and a better understanding of our business performance trends as a supplement to reported revenue, net income (loss) from continuing operations and operating cash flows. However, these measures should be evaluated only in conjunction with the comparable GAAP financial measures and should not be viewed as alternative or superior measures of GAAP results.

Billings is a non-GAAP sales performance measure that we believe provides useful information in evaluating our period-to-period performance because it reflects the total amount of revenue that would have been recognized in a period if we recognized all print and digital revenue at the time of sale. We use Billings as a sales performance measure given that we typically collect full payment for our digital and print solutions at the time of

sale or shortly thereafter, but recognize revenue from digital solutions and multi-year deliverables ratably over the term of our customer contracts. As sales of our digital learning solutions have increased, so has the amount of revenue that is deferred in accordance with U.S. GAAP. Billings is a key metric we use to manage our business as it reflects the sales activity in a given period, provides comparability from period-to-period during this time of digital transition and is the basis for all sales incentive compensation. In the K-12 market where customers typically pay for five to eight year contracts upfront and the ongoing costs to service any contractual obligation are limited, the impact of the change in deferred revenue is most significant. Billings is U.S. GAAP revenue plus the net change in deferred revenue.

We believe that the presentation of Adjusted EBITDA which is defined in accordance with our debt agreements is appropriate to provide additional information to investors about certain material non-cash items and about unusual items that we do not expect to continue at the same level in the future as well as other items to assess our debt covenant compliance, ability to service our indebtedness and make capital allocation decisions in accordance with our debt agreements.

Billings, EBITDA and Adjusted EBITDA are not presentations made in accordance with U.S. GAAP, and our use of these terms varies from others in our industry. Billings, EBITDA and Adjusted EBITDA should not be considered as alternatives to revenue, net income from continuing operations, operating cash flows, or any other performance measures derived in accordance with U.S. GAAP as measures of operating performance, debt covenant compliance or cash flows as measures of liquidity. Billings, EBITDA and Adjusted EBITDA have important limitations as analytical tools, and you should not consider them in isolation or as substitutes for analysis of our results as reported under U.S. GAAP. Further, EBITDA:

- excludes certain tax payments that may represent a reduction in cash available to us;
- does not reflect any cash capital expenditure requirements for assets being depreciated and amortized that may have to be replaced in the future;
- does not reflect changes in, or cash requirements for, our working capital needs; and
- does not reflect the significant interest expense, or the cash requirements necessary to service interest or principal payments, on our indebtedness.

In addition, Adjusted EBITDA, as defined in accordance with our debt agreements:

- includes estimated cost savings and operating synergies, including some adjustments not permitted under Article 11 of Regulation S-X;
- does not include one-time expenditures, including costs required to realize the synergies referred to above;
- reflects the net effect of converting deferred revenues, deferred royalties, and deferred commissions to a cash basis assuming the collection of all receivable balances and payment of all amounts owed;
- does not include management fees paid to entities and investment funds affiliated with Apollo Global Management, LLC, which will discontinue upon completion of this offering; and
- does not reflect the impact of earnings or charges resulting from matters that we and the lenders under our senior secured credit facilities may consider not to be indicative of our ongoing operations.

Our definition of Adjusted EBITDA allows for the add back of certain non-cash and other charges or costs that are deducted in calculating net income from continuing operations. However, these are expenses that may recur, vary greatly and can be difficult to predict. They can represent the effect of long-term strategies as opposed to short-term results. In addition, certain of these expenses can represent the reduction of cash that could be used for other corporate purposes. Because of these limitations, we rely primarily on our U.S. GAAP results and use Billings, EBITDA and Adjusted EBITDA only supplementally.

Trademarks

This annual report contains references to our trademarks and service marks. Solely for convenience, trademarks and trade names referred to in this annual report may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies' trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

PART I

Item 1. BUSINESS

The Science of Learning

We help unlock the potential of each learner by accelerating learning through intuitive, engaging, efficient and effective experiences. We define the Science of Learning as the understanding of how individuals learn and apply that understanding, grounded in research, to our content, technology and user experience to produce learning solutions that directly and positively impact individual student outcomes. As a learning science company, our goal is to empower educators and learners with information and intuitive learning environments in which to engage more personally with each other and with critical concepts in order to promote more effective and efficient learning.

Company Overview

We are a leading provider of outcome-focused learning solutions, delivering both curated content and digital learning tools and platforms to the students in the classrooms of approximately 250,000 higher education instructors, approximately 13,000 pre-kindergarten through 12th grade ("K-12") school districts and a wide variety of academic institutions, professionals and companies in more than 100 countries. We have evolved our business from a print-centric producer of textbooks and instructional materials to a leader in the development of digital content and technology-enabled adaptive learning solutions that are delivered anywhere, anytime. We believe we have established a reputation as an industry leader in the delivery of innovative educational content and methodologies. For example, in the higher education market, we were the first in our industry to introduce digital custom publishing, which permits instructors to tailor content to their specific needs. We also created *LearnSmart*, one of the first digital adaptive learning solutions in the higher education market, which leverages our proprietary content and technology to provide a truly personalized learning experience for students. Since 2009, all of our major K-12 programs have also been created in an entirely digital format.

We believe our brand, content, relationships, and distribution network provide us with a distinct competitive advantage. Over our 125 year history, the "McGraw-Hill" name has grown into a globally recognized brand associated with trust, quality and innovation. We partner with more than 14,000 authors and educators in various fields of study who contribute to our large and growing collection of proprietary content. Our collection includes well-known titles and programs across each of our principal markets. For example, in the United States higher education market, *Economics: Principles, Problems, and Policies* (McConnell/Brue/Flynn) is a leading Economics program. According to the Association of American Publishers ("AAP"), our programs and learning solutions in the U.S. K-12 market achieved a 19% market share overall. Additionally, *Harrison's Principles of Internal Medicine* is one of the most widely-sold global medical reference solutions to the professional market, with our complementary digital offering *AccessMedicine* available in almost every medical school in the United States. We sell our products and solutions across multiple platforms and distribution channels, including our large network of nearly 1,400 sales professionals.

As learners and educators have become increasingly outcome-focused in their search for more effective learning solutions, we have embraced adaptive learning tools as a central feature of our digital learning solutions. Adaptive learning is based on educational theory and cognitive science that emphasizes personalized delivery of concepts, continuous assessment of gained and retained knowledge and skills, and design of targeted and personalized study paths that help students improve in their areas of weakness while retaining competencies. We have developed a unique set of digital solutions by combining innovative adaptive learning methods with our proprietary content and digital delivery platforms. These solutions provide immediate feedback, and we believe they are more effective than traditional print textbooks in driving positive student outcomes. Students' year-over-year performance can be impacted by many factors outside the instructional materials used in class. We believe that even taking into account these factors, our learning solutions can contribute to significant improvements in students' classroom performance as well as improved student retention. For the instructor, time spent on active learning experiences increases significantly as a result of a reduction in time spent on administrative tasks and the availability of critical data to help better focus in class instruction.

We have conducted numerous case studies for several of our learning solutions for colleges that used *Connect/LearnSmart*, *SmartBook* and *ALEKS*, and in each case where our solutions have been implemented, our case studies have yielded positive findings when compared to class performance in periods immediately prior to implementation, many of which have been considerable. For example, according to a 2013 study by the Department of Chemistry, University of California, Riverside, it was found that general chemistry students who completed a pre-course assignment on *ALEKS,* an adaptive-responsive homework system could expect their average final exam score to increase by over 13 points when compared to nonparticipating students. Students who completed a precourse assignment on a traditional responsive homework system saw an average increase in their final exam score by 8 points versus those who did not participate. Students who worked on the online homework for the entire quarter saw even greater gains in their final exam scores compared to non-participants.

In the United States higher education market, where the pace of digital adoption is the most rapid of all of our end markets, the success of our sales of adaptive offerings has led to more than a 300 basis point increase in higher education market share from 2013 to 2019 according to Management Practice, Inc. ("MPI"), an independent education research firm.

Our four operating segments are:

Higher Education (39% of total revenue in 2019): We are a top-three provider in the United States higher education market with a 24% market share for the year ended December 31, 2019 according to MPI. We provide students, instructors and institutions with adaptive digital learning tools, digital platforms, custom publishing solutions and traditional printed textbook products. The primary users of our solutions are students enrolled in two- and four-year non-profit colleges and universities, and to a lesser extent, for-profit institutions. We sell our Higher Education solutions to well-known online retailers, distribution partners and college bookstores, who subsequently sell to students. We also increasingly sell via our proprietary e-commerce platform, primarily directly to students, which currently represents the largest distribution channel in this segment, with revenue having grown from $172 million for the year ended December 31, 2016 to $199 million for the year ended December 31, 2019. For the year ended December 31, 2019, 72% of Higher Education revenue was derived from digital learning solutions.

K-12 (37% of total revenue in 2019): We are a top-three provider in the United States K-12 curriculum and learning solutions market with a 19% market share for the year ended December 31, 2019, according to the AAP. We sell our learning solutions directly to K-12 school districts across the United States. While we offer all of our major curriculum and learning solutions in digital format, given the varying degrees of availability and maturity of our customers' technological infrastructure, a majority of our sales are derived from selling blended print and digital solutions. The product sales mix in any period can impact the percentage of total digital sales, with our math and social studies programs being more heavily weighted in digital as compared to our reading and literacy programs, for example. We believe that the quality of our blended offerings has been driving significant growth in both print and digital revenue. For the year ended December 31, 2019, 39% of K-12 revenue was derived from digital learning solutions.

International (16% of total revenue in 2019): We leverage our global scale, including approximately a 415 person sales force, brand recognition and extensive product portfolio to serve students in the higher education, K-12 and professional markets in more than 100 countries outside of the United States. Our products and solutions for the International segment are produced in more than 75 languages and primarily originate from our offerings produced for the United States market and that are later adapted to different international markets. Sales of digital products are growing significantly in this market, and we continue to increase our inventory of digital solutions. For the year ended December 31, 2019, 23% of International revenue was derived from digital learning solutions.

Professional (8% of total revenue in 2019): We are a leading provider of medical, technical, engineering and business content for the professional, education and test preparation communities. Our digital subscription products had a 95% annual retention rate in 2019 and are sold to more than 2,200 customers, including corporations, academic institutions, libraries and hospitals. For the year ended December 31, 2019, 59% of Professional revenue was derived from digital learning solutions, including digital subscription sales.

Our Industry

We compete in the market for educational services in the United States and abroad. It is one of the largest sectors in the United States economy and, according to GSV Advisors, spending on education in 2015 was $1.6 trillion and is forecast to increase to $2.0 trillion in 2020. Global educational expenditures in 2015 were $4.9 trillion and are forecast to increase to $6.3 trillion in 2020, according to GSV Advisors.

Higher Education

We are a leading provider in the market for new instructional solutions in the United States higher education segment, which was estimated to be approximately $2.8 billion in 2019, according to MPI. This market includes digital learning solutions as well as traditional and custom print textbooks, but excludes used and rental print textbooks. Used and rental materials are commonly purchased by students as a substitute for new materials. Based on estimates for used and rental substitutes, the overall market for textbooks is significantly larger than the market for new instructional materials. We believe the increased use of digital products will drive significant growth in our addressable market given digital products are not provided in a used or rental form.

The importance of higher education in the United States is clear. 65% of all jobs in the United States will require some form of postsecondary education or training by 2020, up from 28% in 1973 and 59% in 2010, according to Georgetown University Public Policy Institute. We expect another key long-term driver of growth in the higher education market to be student enrollment. Enrollment at degree-granting institutions in the United States is nearly 20 million.

Over the past three decades, the level of educational attainment has increased in the U.S. labor force, according to University of Virginia Weldon Cooper Centers for Public Service. Between 1992 and 2016, the share of the people with a bachelor’s degree has increased from 18 percent to 25 percent, and those with an advanced degree-including master’s, professional, and doctoral degrees-has increased from 9 to 14 percent. In 2016, two-thirds of the labor force had at least some college experience.

Public and political scrutiny of the disparity between funding and student outcomes has increased demand for greater transparency and accountability for spending on education. With educational institutions under pressure to increase their student retention and graduation rates, new and more effective methods of teaching and learning are in demand.

Despite the significant government expenditures in education, low college graduation rates and insufficient job placement in the United States have resulted in additional social and economic costs including rising aggregate and per capita student loan debt and increasing incidents of default. In addition, American students are not learning the skills and knowledge they need to succeed in an increasingly competitive global marketplace.

According to NCES, in 2017 approximately 60% of full-time students who graduated from four-year institutions graduated within six years. For two-year institutions, approximately 32% of full-time students who graduated completed their studies within three years.

In a recent study by the Foundation for Excellence in Education, two-thirds of college professors report that what is taught in high school does not prepare students for college and, according to ACT, nearly 1.8 million 2019 graduates around the U.S.(52 percent of the graduating class) took the ACT test during high school. According to ACT, only 37 percent of ACT-tested graduates in the class of 2019 met at least three of the four ACT College Readiness Benchmarks (English, reading, math and science). This is down slightly from 38 percent last year and 39 percent in 2017.

Public policy initiatives aimed at improving student outcomes and accountability within higher education in the United States extend to college and career readiness standards in the K-12 market. An important aspect of postsecondary student success is adequate preparation via primary and secondary education. In the United States,

improved college readiness has been a focal point for lawmakers, which has led to an increased focus on the linkage between K-12 funding and higher student achievement of educational standards.

K-12

Our addressable K-12 market in the United States, which includes new instructional materials, courseware and formative assessment was approximately $6.6 billion for the 2019-2020 school year, including adoption and open territory states, according to Simba Information. According to NCES, K-12 enrollment in the United States as of Fall 2019 was over 56 million, and enrollment is projected to grow to over 57 million in 2028. We define our K-12 market as divided among basal (core or alternative required grade-level taught subjects that are delivered in a specific order with increasing difficulty), supplemental (academic instruction provided outside the required programs) and intervention products (targeted instruction to students lacking proficiency in a subject matter, or those who have special learning or behavioral needs). Eighteen states, known as adoption states, approve and procure new basal programs, usually every five to eight years on a state-wide basis for each major area of study, before individual schools or school districts are permitted to schedule the purchase of materials. In all remaining states, known as open territories, each individual school or school district can procure materials at any time, though they usually do so on a five to eight year cycle.

Growth in the K-12 market is driven by demand for new materials to address college and career readiness standards, increasing state and local budgets for educational materials, and rising student enrollment. Property tax revenue, the primary source for state and local funds for purchases of instructional materials, has been increasing in the United States along with a rise in property values.

Professional

As the United States economy continues to expand, we expect the market for professional education resources to grow, particularly among industry sectors that are experiencing more rapid growth in jobs. The Professional and Business Services and Healthcare and Social Assistance industry sectors are expected to add nearly 6 million jobs between 2016 and 2026, more than all other United States industries combined, according to BLS. We derive a substantial portion of our Professional revenue from these two markets.

International

The global e-Learning market, including higher education, K-12 and professional training, is expected to continue to grow. This large international education market is increasingly focused on digital content due to the growing penetration of the smartphone. Individuals in developing countries are nearly twice as likely to use connected devices (i.e. mobile phones or tablets) for educational purposes on a regular basis as those in developed markets, according to Juniper Networks. Today, through our significant investment in digital solutions and Digital Platform Group ("DPG"), we plan to increasingly capitalize on these strong market trends.

The accelerating shift toward a knowledge-based economy is fueling demand for higher levels of education around the world. The importance of higher education in the United States is clear. 65% of all jobs in the United States will require some form of postsecondary education or training by 2020, up from 28% in 1973 and 59% in 2010, according to Georgetown University Public Policy Institute. As higher education becomes more important to the success of the global economy, governments have increased their emphasis on student preparation and postsecondary readiness through funding requirements of primary and secondary education programs.

The trend towards increased globalization has generated demand for higher levels of educational attainment in international markets as well. McGraw-Hill International sells English language product into 108 countries, in which English is either the official or the primary language, or as in many developing countries, educational agendas emphasize the use of English as a universal language for commerce and other sectors of the economy. We believe this trend will increase the readily addressable market for our educational solutions, which are often initially created for English-speaking students before being adapted for international markets.

We expect the investment in education to continue to grow as student enrollment rises around the world. According to UNESCO, global higher education enrollment was approximately 220 million students in 2016, more than doubling since 2000 and is expected to grow to approximately 594 million by 2040.

Our Competitive Strengths

We believe the following to be our most important competitive strengths:

Widely recognized brand with global reach and expansive scale.

We believe our brand recognition is driven by our long-standing history of over 125 years in the industry and our ownership of globally well-known titles such as *Harrison's Principles of Internal Medicine* and Samuelson's *Economics*, which have been cornerstones of education around the world for decades. We distribute our products in more than 100 countries across Asia-Pacific, Europe, India, Latin America and the Middle East, and approximately 25% of our approximately 4,134 employees are based in nearly 40 offices in 26 countries outside of the United States. We believe that our brand, global reach and scale provide us with a defensible market position and present significant barriers to entry. We expect to leverage our market position and internal infrastructure and operational resources to further grow revenues and gain market share by increasing distribution of learning solutions through our network.

In the United States, our products are sold in over 5,000 higher education institutions and approximately 13,000 K-12 school districts across all 50 states. Our nearly 1,100 person sales force, which includes approximately 350 sales people in the United States higher education and approximately 300 sales people in the United States K-12 markets, maintains close relationships with the individual instructors that represent the primary decision makers in the higher education market and the states, school districts, and individual schools that primarily make purchase decisions in the K-12 market. In addition, our growing suite of digital products allows us to develop direct relationships with an even larger group of customers, including over 4 million higher education students and instructors who were users of our Connect platform in 2019.

Proprietary and unique content, developed over many years, leveraged in digital adaptive learning.

Our portfolio of proprietary content developed over 125 years and built around market leading titles has been the foundation of our transformation into a large and growing digital learning solutions provider. Our top 10 product categories represented over 50% of industry net sales as reported by the AAP in 2018. This market leadership has uniquely positioned us to extend our portfolio of traditional print products by offering digital alternatives and new digital solutions that incorporate our existing content and curriculum.

In addition to leveraging digital formats to extend the reach of existing print content, we create all new content in a digital format and optimize it for use in an adaptive environment. This has reduced our development costs and enhanced our ability to use new content for the future development of additional products. We believe that our repositories of over nine petabytes of digital content, which is over nine million gigabytes, provide us with an opportunity to more quickly and effectively bring future products to market. Our centralized DPG team ensures that all of our digital solutions are immediately available to customers running a wide range of different technology architectures.

Diversified portfolio of education businesses and unified approach to digital.

We have a unique presence across the learning continuum, including higher education, K-12 and professional, with additional operations in international markets. The higher education segment of our business, which represented approximately 39% of our revenue in 2019, has historically proven to be countercyclical, balancing out cycles experienced by the K-12 business. During and immediately following recent economic downturns, postsecondary enrollment rates have tended to rise while postsecondary attrition rates have tended to decline. We believe this is driven by the lower opportunity cost for enrolling or staying in college during times of

relative economic weakness and higher unemployment. In the current economic environment, characterized by a slow recovery, the K-12 market is benefiting from increased state and local government spending while higher education enrollment has begun to slow.

In addition to making our product development more innovative and faster to market, our DPG organization has allowed us to spread significant R&D spend across our entire revenue base and leverage investments in products developed for one segment across our entire product suite. This centralized approach provides superior capital efficiency to a siloed development model. DPG, along with the acquisitions of *ALEKS*, *LearnSmart* and *Engrade*, enables us to own and control all of the key technologies necessary to implement our digital strategy.

First mover in digital adaptive learning solutions and strong capabilities in digital technology.

We believe the significant investment we have made in our digital capabilities has made us a longstanding leader in digital adaptive learning. Today, our annualized spend in our DPG, including operating and capital expenditures, has grown from less than $90 million in 2012 to approximately $170 million in 2019. While we are committed to continuing our significant digital investment, growth rates of spending have declined as we have achieved scale. In addition to our organic investments, we have committed in excess of $200 million for the acquisitions of *ALEKS*, *LearnSmart, and Engrade* which have significantly strengthened our platform and adaptive digital offerings. Our *LearnSmart* solution has been one of the most widely used adaptive platforms in higher education since its launch in 2009, and *ALEKS*, our digital adaptive learning solution originally developed for K-12 math, originated in 1992 with a National Science Foundation grant. Our long history of offering adaptive learning solutions has allowed us to develop a growing and robust database of student interactions relating to achievement of learning objectives, which we use to continuously improve the effectiveness of our platforms. For example, *LearnSmart* has generated more than 15.0 billion interactions with students since inception in 2009, recently growing at an average of more than 200 million interactions per month. Since 2010, *ALEKS* has seen nearly 10.7 billion interactions through December 31, 2019. In addition to using this information to enhance the effectiveness of our adaptive tools, we share data on interactions with instructors to help them more effectively integrate our solutions into their lessons, focusing on content that students are having difficulty learning, reinforcing our relationships and making our solutions more difficult to displace.

Our interactions data are also leveraged on an ongoing basis to create new adaptive technology solutions. For Higher Education, our *SmartBook* adaptive offering, introduced in 2013, is among the first adaptive reading experiences for higher education that utilizes data analytics combined with a deep repository of proprietary content to improve learning outcomes.

Highly attractive business model

We enjoy a business model that is highly cash generative. Since 2014 through the end of 2019, we have generated cash flows from operating activities of approximately $1.6 billion. Our strong cash flow has enabled significant investment in our digital capabilities, several key strategic acquisitions, return of capital to our shareholders and continued deleveraging. Since the Founding Acquisition in 2013, our strong cash flow has funded four acquisitions, including *ALEKS*, *LearnSmart*, *Engrade* and *Redbird*, that included cash components totaling $150 million. We also completed a minority interest buy-out of Ryerson Canada (our Canadian business) for $27 million. In addition, we have made significant investments in the staffing of DPG, which supports ongoing innovation, development and maintenance of our technology platforms, reducing our pre-publication and capital expenditure requirements and our dependence on third parties.

In addition to our ongoing shift towards a more digitally-enabled model, another important driver of increasing free cash flow generation has been our demonstrated success in implementing various cost saving measures. These opportunities, largely developed and implemented in the first few years following our sale to Apollo in March 2013, improved our operating margins over time and allowed us to fund additional investment in our digital capabilities. Since our sale to Apollo, we have identified and actioned more than $250 million of annualized cost savings.

Our Growth Strategies

The key elements of our growth strategies are described below.

Further our leadership in digital solutions and digital technology.

We intend to capitalize on the increasing market demand for digital learning solutions by expanding our portfolio of technology-enabled adaptive tools and learning solutions. By leveraging a common software architecture and platform, we will be able to quickly design, develop and test innovative products. Our next generation products, several of which have been recently deployed or are currently in development, will also benefit from the experience we have gained from our existing product suite. These products will have enhanced flexibility, provide greater ability for our users to create custom solutions, and better analyze learning data. We believe these next generation products will further our leadership in our key markets and allow us to grow our revenues at a faster rate than the overall market.

In order to better leverage technology across all of our businesses, drive product innovations and create a more efficient product development process, we are consolidating technologies to eliminate duplicative capabilities. We expect this effort will reduce maintenance costs and unlock creative synergies across our engineering teams. We will also streamline our tools and platforms for efficient and effective delivery with open application program interfaces. This rationalization and simplification of our delivery platforms will reduce costs, freeing up capital for investment in new products.

Introduce new enterprise solutions aimed at education effectiveness and student retention.

We believe our learning science focus, highly talented DPG team and the large amount of data we collect via our adaptive learning solutions uniquely position us to offer enterprise services that help our institutional customers improve educational outcomes and accountability. We intend to sell a number of new products and services that offer enterprise-wide course development and design services, analytical tools focused on optimizing student performance and retention, and college and career readiness programs and services.

In 2019, we introduced SmartBook 2.0, an adaptive learning solution that provides personalized learning for each and every student and is available as part of the Connect platform, which builds on our market-leading technology with enhanced capabilities that deliver a more personalized, productive, and accessible learning experience for students and instructors. SmartBook 2.0 spans over 90 disciplines, with 10 billion questions answered and over 200 million+ interactions per month.

Leverage our learning solutions in International and Professional markets.

We intend to leverage our large global sales presence, our DPG team, deep local knowledge and numerous strategic partnerships to adapt our leading portfolio of English language content and digital solutions to meet local market needs, such as culture, language and curricula. We believe that this will allow us to rapidly scale our presence in international markets, with particular focus on emerging markets in Latin America, the Middle East, Africa and Asia Pacific.

We also believe we can achieve significant growth by utilizing our adaptive learning competencies to enter and disrupt attractive education segments. These include the high stakes test preparation markets in selected geographies, vocational and skills-based training markets, and the corporate training market where personalized adaptive learning has significant value to the enterprise.

Continue to evolve our digital first business model to generate significant free cash flow.

We will continue to drive towards a digital first business model which will allow us to continue to generate significant free cash flow over time as we derive an increasing proportion of our sales from digital learning

solutions. We expect our digital first model to continue to result in higher margins and lower capital intensity as we drive efficiencies in our business from reduced operating expenditures, reduced print inventory and more efficient pre-publication investment relative to revenue. We expect to use our free cash flow to fund our growth, deliver our balance sheet and, potentially, return capital to shareholders over time.

Selectively pursue acquisitions.

We will consider acquisitions that expand our product offerings, accelerate our digital product development and add important content. We believe our brand and scale allow us to derive significant benefit from emerging education technology companies, which would be challenged to attain a significant market position as standalone companies.

Our Products

Higher Education Products

Higher Education provides adaptive digital learning tools, digital platforms, custom publishing solutions and traditional printed textbook products with capabilities in adaptive learning, homework tools, lecture capture and LMS integration for post-secondary markets. We have invested significantly in a suite of digital and custom learning solutions, and our instructional materials include digital and printed texts, lab manuals, interactive study guides, testing materials, software and other multimedia products covering the full spectrum of subjects. Although we cover all major academic disciplines, our content portfolio is organized into three key disciplines: (i) Business, Economics and Career; (ii) Science, Engineering and Math; and (iii) Humanities, Social Science and Languages. Substantially all of Higher Education's revenue is generated from approximately 2,000 individual titles, including print and digital formats, with no single title accounting for more than 2% of revenue. We have longstanding and exclusive relationships with many authors and nearly all of our products are covered by copyright in major markets, providing us the exclusive right to produce and distribute such content in those markets during the applicable copyright term. Higher Education's products consist of the following:

I. Digital Learning Solutions

Higher Education's digital learning solutions include, among other features, adaptive digital learning tools, online assessment software, course management software, cloud-based classroom activity capture and replay, online access to eBooks and social network and community tools. These solutions form a seamless, fully-digital ecosystem that enhances the value and results of higher education over the entire learning lifecycle. For the years ended December 31, 2019, 2018 and 2017, Higher Education digital revenue represented 72% ($439 million), 63% ($416 million), and 62% ($442 million) of total Higher Education revenue, respectively.

For the years ended December 31, 2019, 2018 and 2017, Higher Education digital Billings (including the change in deferred revenue) represents 74% ($474 million), 67% ($454 million) and 62% ($447 million) of total Higher Education Billings, respectively.

Our core digital learning platforms include:

- ***McGraw-Hill Connect:*** a homework and learning management solution that applies learning science and award-winning adaptive tools to improve student results and course delivery efficiency. With *McGraw-Hill Connect*, instructors can integrate digital content into their course and create a customized learning environment, accessible by students via desk top and mobile devices. Students can learn interactively through homework and practice questions, embedded video, simulations, virtual laboratories, audio programs and online games. *McGraw-Hill Connect* contains a suite of tools, including integrated eBooks, course and assignment set-up tools, automated assessment, adaptive learning systems, grading and reporting tools. *McGraw-Hill Connect* is offered for most core freshman and sophomore level courses in the United States with 4.2 million paid activations across campuses nationwide during the year ended December 31, 2019, an increase of 8% over the prior year.

- ***LearnSmart:*** an adaptive learning program that personalizes learning and designs targeted study paths for students through specific courses. *LearnSmart* is an interactive product that determines which concepts the student does not know or understand and teaches those concepts using a personalized plan designed for each student's success. All *LearnSmart* questions are tied to clear learning objectives. When students answer questions, they also rank how confident they are in their answers. Based on each student's response and level of certainty, *LearnSmart* continuously adapts the content and probes presented to each student, so the material is always relevant and geared towards mastering the learning objectives. Once a concept is mastered, *LearnSmart* then identifies the concepts students are most likely to forget throughout the term and encourages periodic review to ensure that concepts are truly retained. *LearnSmart* has generated more than 15.0 billion interactions with students since inception in 2009. According to studies, *LearnSmart* has consistently improved student outcomes.

- ***SmartBook:*** an adaptive reading product introduced in Higher Education in 2013 designed to help students understand and retain course material by guiding each student through a highly personal study experience. Each *SmartBook* helps make studying more efficient and effective by offering features not present in traditional print products, including adaptive content, search/index functionality, note taking capabilities, embedded video and interactive elements. The *SmartBook* product also makes use of our *LearnSmart* adaptive technology. When a student reads the chapters in *SmartBook,* they are prompted by *LearnSmart* questions to identify recommended areas of focus for the student. Our *SmartBook* are primarily sold in the higher education market across a variety of courses and are designed to be compatible with a broad range of devices, including the Kindle and Nook eReaders, the iPad and other tablets and standard desktop and laptop computers. We believe that *SmartBook* will continue to increase in popularity as the prevalence of these digital reading devices also increases.

  Our *SmartBook* contain rights management features that are designed to prevent copying or resale. Students pay for them based on usage for one school term. The amount paid is designed to be comparable to the cost of a one-term rental of a print textbook. Therefore, our *SmartBook* are priced lower than print textbooks but cost us less to distribute and manufacture, leading to a comparable gross margin. Moreover, our bundling of digital solutions with *SmartBook* augments the economics of a digital sale and further improves the economics relative to the traditional all-print model.

  In 2019, we introduced SmartBook 2.0, an adaptive learning solution that provides personalized learning for each and every student and is available as part of the Connect platform, which builds on our market-leading technology with enhanced capabilities that deliver a more personalized, productive, and accessible learning experience for students and instructors. SmartBook 2.0 spans over 90+ disciplines, with 10 billion + questions answered and over 200 million+ interactions per month.

- ***Connect Master:*** an adaptive learning solution that allows students to demonstrate what they know and apply their learning to real-world challenges. The Individualized Study Tool creates a personalized learning experience for students and provides the opportunity to practice and enhance understanding of core concepts. The Practical Assessments allow students to progress from understanding basic concepts to using their knowledge to analyze realistic scenarios and solve problems. *Connect Master*'s ability to customize content at the learning-objective level provides instructors the opportunity to specifically tailor student course materials to how the course is implemented.

- ***ALEKS:*** an adaptive learning product for the higher education market initially developed in 1992 with a National Foundation grant. *ALEKS* uses research-based artificial intelligence to rapidly and precisely determine each student's knowledge state, pinpointing exactly what a student knows. *ALEKS* then instructs the student on the topics he or she is most ready to learn, constantly updating each student's knowledge state and adapting to the student's individualized learning needs. Rooted in 20+ years of research and analytics, *ALEKS* ensures improved student outcomes by fostering better preparation, increased motivation and knowledge retention. *ALEKS* has an average learning rate of 94% across all disciplines - math, science, business. With *ALEKS*, instructors control the student experience and pacing of content. Instructors can

choose more structure by holding the entire class accountable with due dates or less structure by allowing students to work at their own pace. *ALEKS* had 2.0 million unique users in Higher Education during the year ended December 31, 2019, an increase of 5% over the prior year.

- ***ALEKS Placement, Preparation and Learning****:* an adaptive learning that assesses and accurately measures the student's math foundation to create a personalized learning module to review and refresh lost knowledge. This allows the student to be placed and successful in the right course, expediting the student's path to completing their degree.

- ***SIMnet****:* an easy-to-use online training and assessment solution for Microsoft Office. It provides students with life-long access and unlimited practice on Microsoft Word, Excel, Access and PowerPoint in addition to file management, and operating systems content. With effective training modules as part of *SIMnet*, students can apply learning to course assignments and career opportunities.

- ***McGraw-Hill Create:*** a self-service website that enables instructors to discover, review, select and arrange content into personalized print or electronic course materials. Instructors can curate customized course materials from a content portfolio consisting of over 8,400 textbooks, 19,400 articles, 56,200 cases, 8,900 readings, 2,000 digital offers, 100 videos, and 500 images/cartoons. Instructors can further supplement the materials with their own custom content. *McGraw-Hill Create* allows the creation of customized products across most disciplines and study areas, including accounting, business law, economics, finance, management, marketing, philosophy, political science, sociology, world languages, anatomy and physiology, chemistry, engineering, biology, psychology, English and mathematics.

- ***StudyWise:*** a series of mobile apps which support students in adaptive practice on smartphones. *StudyWise* extends the reach of *McGraw-Hill Connect* by providing an intimate and efficient learning tool, meeting students in their natural environment.

- ***Open Learning Solutions***: our next generation open learning environment that provides access to customizable courses and assessments for higher education users. The platform provides a robust digital experience for teachers and students accessing McGraw-Hill programs in order to enhance learning.

II. Custom Publishing

Higher Education's custom publishing solutions provide educators the ability to weave together various elements including digital text, digital solutions, print, videos, charts and their own materials into a seamless, tailored learning solution, replacing traditional print textbooks and printed class materials. Custom materials, by their nature, have a higher sell-through rate and are more likely to have their content frequently updated by the instructor, resulting in frequent new publications, forced obsolescence of old editions and more limited re-distribution potential into used or rental markets. Custom products create strong loyalty from educators, as they typically invest significant time and effort into creating unique learning solutions tailored to their teaching styles. Our custom publishing solutions are often bundled arrangements that require us to attribute value to the digital component separately. For the years ended December 31, 2019, 2018 and 2017, Higher Education custom publishing revenue, excluding the digital component, represented 6% ($41 million), 8% ($54 million) and 11% ($78 million) of total Higher Education revenue, respectively.

III. Traditional Print

Higher Education continues to provide students with traditional print textbooks, including a library of titles covering the full spectrum of subjects, written by some of the top authors and experts in their respective fields. For the years ended December 31, 2019, 2018 and 2017, Higher Education traditional print represented 21% ($129 million), 29% ($191 million) and 27% ($194 million) of total Higher Education revenue, respectively.

K-12 Products

Our K-12 product portfolio includes thousands of instructional resources across hundreds of programs, covering nearly all courses offered in K-12. We also provide the ability to tie instruction and assessment together into a robust platform for school district support and data-driven instruction. This includes strong curriculum resources plus adaptive and formative assessment engines. While the McGraw-Hill name has been a respected source for printed textbooks and teacher materials for generations, we are also recognized for our pure digital programs and our hybrid solutions that blend digital and print in customized packages. Our K-12 business is one of the few providers that offer the diversity of product to actively serve core K-12 markets and niche and specialized markets. In our core markets, our offerings include *Reading Wonders* and *My Math* and in our niche and specialized markets we offer well known programs such as SRA *Open Court Reading* and *Number Worlds*. We focus on supporting each state's chosen standards through comprehensive and robust offerings. All our key programs meet the Common Core and college and career readiness standards, as well as the standards chosen by each state to support its learning goals.

I. Core Programs

Core basal programs consist of digital and print products that serve mainstream educators with research-based, comprehensive learning solutions. Core basal programs are designed to provide the entire curriculum for a course, including student instruction, practice, assessment and remediation as well as teacher materials. These programs may have as few as five or six components (such as in some high school courses) or thousands of components (such as in K-5 reading and math programs). Core basal programs comprise approximately 80% of K-12's sales and cover all major instructional subjects including Reading, Math, Social Studies, Science, and Literature, while the balance includes specialized programs that include a wide range of products targeted at certain niche markets.

- **Alternative Basal Products:** comprehensive classroom programs for particular segments of the market that require distinct learning methodologies, such as reading teachers who want more directed, skills-oriented programs and math teachers who want more reform-based, hands-on mathematics programs. These unique programs demand specialized authors, editing and design skills, marketing strategy and a true consultative selling model. K-12 is among the largest education providers in its ability to deliver all of these critical elements.

- **Intervention Products:** programs with targeted instruction to students lacking proficiency in a subject matter, or those who have special learning or behavioral needs. Nearly all students require extra instructional support at one time or another and K-12 builds this support into all of its Core Basal Programs while also providing separate targeted programs for intervention and remediation. Programs include products that focus on reading and mathematics support, and remediation solutions in science, social studies, career and college readiness, workplace skills and other areas of need.

- **Supplemental Products**: additional learning resources when core program solutions do not meet all of the needs of certain educators, such as extra online practice in multiplication, kits that enhance phonics skills, practice books for basic workplace skills or biography readers for middle school students. K-12 competes in this segment due to its specialized product development capabilities and experienced sales staff who know how to market to these educators.

For the years ended December 31, 2019, 2018 and 2017, K-12 traditional print represented 60% ($355 million), 65% ($363 million) and 72% ($432 million) of total K-12 revenue, respectively.

II. Digital Learning Solutions

Digital resources are an essential part of the instructional mix across both core basal and specialized programs. The recent and dramatic increase in hardware, online connectivity and educational focus on technology has brought many classrooms to a digital tipping point. With the significant investment in its digital portfolio over

recent years, K-12 has an opportunity to capitalize on this ongoing digital transformation and has developed a number of fully online learning programs. For the years ended December 31, 2019, 2018 and 2017, K-12 digital revenue represented 39% ($229 million), 35% ($198 million) and 28% ($171 million) of total K-12 revenue, respectively.

For the years ended December 31, 2019, 2018 and 2017, K-12 digital Billings (including the change in deferred revenue) represented 40% ($260 million), 37% ($222 million) and 35% ($258 million) of total K-12 Billings, respectively.

Our core digital products include:

- ***Access Manager:*** An IMS Global Standards certified integration platform for K-12 Ed Tech interoperability. *Access Manager* removes the cost and complexity of schools adopting educational technology. *Access Manager* is based on open standards and positions MHE to help districts drive down the costs of using technology, enhancing the opportunity for greater use of technology in teaching and learning.

- ***ConnectEd:*** an open learning environment providing access and customization of our content for K-12 users. The platform offers a digital learning solution for teachers and students to access teaching and learning resources.

- ***Open Learning Solutions:*** our next generation open learning environment that provides access to customizable courses and assessments for K-12 users. The platform provides a robust digital experience for teachers and students accessing McGraw-Hill programs in order to enhance learning.

- ***ALEKS:*** an adaptive learning math product for the K-12 market. *ALEKS* uses research-based, artificial intelligence to rapidly and precisely determine each student's knowledge state, pinpointing exactly what a student knows. *ALEKS* then instructs students on the topics they are most ready to learn, constantly updating each student's knowledge state and adapting to the student's individualized learning needs. While *ALEKS* specializes in remedial and developmental math, we have also integrated *ALEKS* into all of our secondary math offerings. During the year ended December 31, 2019, *ALEKS* had 2.6 million unique users in K-12, an increase of 14% over the prior year.

- ***LearnSmart:*** is an adaptive learning program being deployed with the majority of K-12's grade 6-12 resources. *LearnSmart* builds a learning experience to meet each student's individual needs. *Smartbook*, built on the *LearnSmart* engine, highlights core content as students read and identifies concepts students need to spend additional time reviewing and improving the efficiency and productivity of independent study.

International Products

International sells higher education, K-12, professional and other products and services to educational, professional and English language teaching markets in more than 76 languages across Asia-Pacific, Europe, India, Latin America, the Middle East, and North America. While the business mix and strategic focus of International varies from region to region according to local market dynamics, International's business strategy leverages the content, tools, services and expertise from our domestic businesses. As a result of the widespread use of English as a universal language, a majority of International's revenue during the year ended December 31, 2019 was generated by selling our unmodified English language products internationally. Approximately 77% of International's revenue was generated from such unmodified products together with minor regionally-driven cosmetic changes or translations of English language products. Approximately 31% of International's revenue for the year ended December 31, 2019 was derived from content created in local markets or products originating from unrelated publishers for distribution in our international markets. Although approximately 77% of International's 2019 revenue was generated by traditional print products, digital offerings are driving significant international growth. In more developed markets, with a greater prevalence of digital devices, many of our U.S.-developed digital solutions,

such as *McGraw-Hill Connect*, *ALEKS* and *LearnSmart* are gaining market share. For the years ended December 31, 2019, 2018 and 2017, International traditional print revenue represented 77% ($191 million), 80% ($203 million) and 84% ($237 million) of total International revenue, respectively.

For the years ended December 31, 2019, 2018 and 2017, International digital revenue represented 23% ($58 million), 20% ($52 million) and 16% ($44 million) of total International revenue, respectively.

For the years ended December 31, 2019, 2018 and 2017, International digital Billings (including the change in deferred revenue) represented 23% ($59 million), 20% ($52 million) and 17% ($49 million) of total International Billings, respectively.

Professional Products

Professional is a leading provider of medical, technical, engineering, and business content and training solutions for the professional, education and test preparation communities. Professional's products include digital product portfolios and textbooks easily accessible through whichever medium our student and professional customers prefer. Professional's digital product portfolio spans two main categories: (i) digital subscription services and (ii) eContent (including eBooks and related applications).

I. Digital Subscription Services

Digital subscription services are platforms that provide searchable and customizable digital content integrated with highly functional workflow tools. Professional offers more than 25 digital subscription services which are organized across three broad subject categories: (i) Medical, (ii) Engineering and Science, and (iii) Test Preparation. These products are sold on an annual subscription basis to more than 2,200 corporate, academic, library and hospital customers as of December 31, 2019. Our digital subscription services customer base has a retention rate across major platforms of 95% in 2019.

The flagship *Access* line of products provide an integrated digital workspace that combines Professional's content, contextualized rich media and high-functionality workflow tools which allow instructors to select specific reference content, assign to students and monitor progress. For example, *AccessMedicine* is an innovative online resource that provides students, residents, clinicians, researchers, and other healthcare professionals with access to content from nearly 160 medical titles, updated content, thousands of images and illustrations, interactive self-assessment, case files, time-saving diagnostic and point-of-care tools and a comprehensive search platform as well as the ability to view from and download content to a mobile device. Frequently updated and continuously expanded by world-renowned physicians, *AccessMedicine* provides fast, direct access to the information necessary to complete evaluations, diagnoses, and case management decisions, and pursue research, medical education, self-assessment and board review.

The value proposition of Professional's digital subscription platforms is compelling for our subscribers, and the economics are attractive and highly scalable for us. Digital subscription platforms provide a stable, recurring revenue stream with high annual re-order rates. New competitors in the digital subscription market must overcome large volumes of proprietary content developed over many years. Digital products are highly profitable due to the low variable cost nature of these products, with gross margins of nearly 90%. For the years ended December 31, 2019, 2018 and 2017, digital subscription revenue represented 48% ($57 million), 45% ($53 million) and 40% ($48 million) of total Professional revenue, respectively.

II. eContent (eBooks) and traditional print

eBooks represent the majority of Professional's eContent offerings. Professional's more than 7,100 eBooks are sold on major eBook retail websites and through Professional's own websites. Our eBooks are designed to be compatible with a broad range of devices, including the Kindle and Nook eReaders, the iPad, nearly 250 medical, test preparation and business mobile applications for the iPhone, other tablets and standard desktop and laptop computers. Professional provides timely and authoritative knowledge to customers around the world through the

release of over 240 titles per year. Our roster of distinguished authors and prestigious brands represent some of the best-selling professional publications, such as *Harrison's Principles of Internal Medicine*, *Perry's Chemical Engineers' Handbook* and *Graham & Dodd's Security Analysis*, and are well-regarded globally in both academic and professional career markets. Our products are sold and distributed worldwide in both digital and print format through multiple channels, including research libraries and library consortia, third-party agents, direct sales to professional society members, bookstores, online booksellers, direct sales to individuals and other customers. Our top customers include retail trade, academic and government institutions and corporations. For the years ended December 31, 2019, 2018 and 2017, Professional digital revenue represented 59% ($70 million), 56% ($65 million) and 51% ($62 million) of total Professional revenue, respectively.

For the years ended December 31, 2019, 2018 and 2017, Professional digital Billings (including the change in deferred revenue) represented 60% ($73 million), 57% ($68 million) and 53% ($66 million) of total Professional Billings, respectively.

Raw Materials, Printing and Binding

Paper is one of the principal raw materials used in our business. We have not experienced and do not anticipate experiencing difficulty in obtaining adequate supplies of paper for operations. We have contracts to purchase paper and printing services that have target volume commitments. However, there are no contractual terms that require us to purchase a specified amount of goods or services and if significant volume shortfalls were to occur during a contract period, then revised terms may be renegotiated with the supplier.

Environmental

We generally contract with independent printers and binders for their services. However, it is possible that we could face liability, regardless of fault, if contamination were to be discovered on properties currently or formerly owned, operated or leased by us or our predecessors, or to which we or our predecessors have sent waste. We are not currently aware of any material environmental liabilities or other material environmental issues at our properties or arising from our current operations. However, we cannot assure you that such liabilities or issues will not materially adversely affect our business, financial position or results of operations in the future.

Seasonality and Comparability

Our revenues, operating profit and operating cash flows are affected by the inherent seasonality of the academic calendar. In 2019 we realized approximately 18%, 24%, 35% and 23% of our revenues during the first, second, third and fourth quarters, respectively. This seasonality affects operating cash flow from quarter to quarter and there are certain months when we operate at a net cash deficit. Changes in our customers' ordering patterns may affect the comparison of our current results in prior years where our customers may shift the timing of material orders for any number of reasons, including, but not limited to, changes in academic semester start dates or changes to their inventory management practices.

Competition

We are one of the largest education companies in the world by revenue. Our product portfolio and customer base span the entire educational spectrum, and as a result we compete with a variety of companies in different product offerings. Our larger competitors are currently Pearson, Houghton Mifflin Harcourt, Wiley and Cengage. The focus on technology and digital products in education may result in the emergence of additional competitors over time. We believe that we are well positioned to compete in our markets. We primarily compete on the quality of our content and effectiveness of our digital solutions, product implementation support, brand and reputation, author reputation, customers' history using our products and, to a lesser extent, price.

Personnel

As of December 31, 2019, we had nearly 4,134 employees worldwide directly supporting our operations

with approximately 3,084 employed in the United States. None of our employees in the United States are represented by a union.

Intellectual Property

Our products contain intellectual property delivered through a variety of media, including digital and print. We rely on a combination of copyrights, trademarks, patents, non-disclosure agreements and other agreements to protect our intellectual property and proprietary rights. We also obtain significant content, materials and technology through license arrangements with third party licensors.

We have registered certain patents, trademarks and copyrights in connection with our publishing businesses. We also register domain names, when appropriate, for use in connection with our websites and internet addresses. We believe we either own or have obtained the rights to use all intellectual property rights necessary to provide our products and services. We believe we have taken, and continue to take, in the ordinary course of business, appropriate legal steps to protect our intellectual property in all relevant jurisdictions.

We rely on authors for the majority of the content for our products. In most cases, copyright ownership has either vested in us, as a "work made for hire", been assigned to us by the original author(s), or the author has retained the copyright and granted us an exclusive license to utilize the work.

Piracy of intellectual property can negatively affect the value of and demand for our products and services. We attempt to mitigate the risk of piracy through (1) the implementation of restrictive use mechanisms and other limitations inherent to our products and (2) the use of online monitoring combined with legal and regulatory actions and initiatives.

Some of our products contain inherent usage controls and other built-in safeguards that reduce the risk and ease of piracy, including: (a) requirements that users login to their accounts with user names and passwords; (b) the fact that sharing account access for many of our products would result in an abnormal user experience and inaccurate grading; (c) use by our eBook providers of time-based lockouts that allow our eBooks to be automatically disabled based on subscription length; and (d) the inherent limitations in the usefulness and ease of copying the text of many of our products, due to the adaptive and interactive nature of our key content together with certain limitations on copying and pasting.

We also use a variety of legal actions, regulatory initiatives and online monitoring efforts to further mitigate piracy concerns, including:

- Online monitoring of piracy-related activities;
- Initiation of litigation against certain infringers, both individually and jointly with other domestic and foreign publishers;
- Requesting that third parties take down infringing content;
- Lobbying efforts;
- Monitoring of our digital applications for abnormal load/usage; and
- Anti-piracy educational programs.

Since 2007, we have engaged an outside firm that uses web-based technology to search for active titles that are illegally posted or distributed on the internet. We also perform other regular searches for illegal use or distribution of our content, investigate notices of illegal postings of our intellectual property and send take down notices to internet service providers and web sites where infringing material is identified. Over the past years, we have joined with other educational publishers to engage outside counsel to investigate and file numerous copyright

and trademark suits in federal court against various online sellers and distributors of infringing copies of our copyrighted materials. We have partnered with various trade associations, such as the AAP and the Software Information Industry Association ('SIIA'), to pursue joint actions against sources of both print and electronic piracy, lobby legislative and other government officials in the U.S. and abroad to establish laws and regulations that might assist content owners in combating piracy. We place a "Report Piracy" button on various internal and external sites to enable employees, authors and third parties to report instances of illegal content distribution, which are investigated and actioned as appropriate.

The Founding Acquisition

On March 22, 2013, MHE Acquisition, LLC ("AcquisitionCo") completed the Founding Acquisition, pursuant to which a wholly-owned subsidiary of the Company acquired all of the outstanding equity interests of certain subsidiaries of McGraw-Hill Companies, Inc. ("MHC") pursuant to a Purchase and Sale Agreement, dated November 26, 2012 and as amended March 4, 2013 (the "Acquired Business"). The Acquired Business included all of MHC's educational materials and learning solutions business, which is comprised of (i) the Higher Education, Professional, and International Group (the "HPI business"), which includes post-secondary education and professional products both in the United States and internationally and (ii) the School Education Group business (the "SEG business"), which includes school and formative assessment products targeting students in the pre-kindergarten through secondary school market. We refer to the purchase of the Acquired Business and the related financing transactions as the "Founding Acquisition." Following the Founding Acquisition, MHC is now known as S&P Global, Inc.

As of completion of the Founding Acquisition, Apollo Global Management LLC (the "Sponsors"), certain co-investors and certain members of management directly or indirectly owned all of the equity interests of AcquisitionCo. In connection with the Founding Acquisition, a restructuring was completed, the result of which was that the HPI business and the SEG business became held by separate wholly owned subsidiaries of MHE US Holdings LLC. The HPI business became held by McGraw-Hill Global Education Intermediate Holdings, LLC ("MHGE Holdings") and its wholly owned subsidiary McGraw-Hill Global Education Holdings, LLC ("MHGE"), while the SEG business became held by McGraw-Hill School Education Intermediate Holdings, LLC ("MHSE Holdings") and its wholly owned subsidiary McGraw-Hill School Education Holdings, LLC ("MHSE"). In addition, concurrent with the closing of the Founding Acquisition, subsidiaries of each of MHGE and MHSE entered into certain credit facilities. Neither MHGE nor its subsidiary companies guaranteed or provided collateral to the financing of MHSE, and MHSE did not guarantee or provide collateral to the financing of MHGE or its subsidiary companies.

Proposed Merger

On May 1, 2019, McGraw-Hill Education, Inc. ("McGraw-Hill"), McGraw-Hill Global Educations Holdings, LLC ("McGraw-Hill Issuer"), Cengage Learning Holdings II, Inc. ("Cengage"), Cengage Learning Holdco, Inc. ("Cengage Intermediate Holdco "), and Cengage Learning, Inc. ("Cengage Issuer"), entered into an Agreement and Plan of Merger (the "Merger Agreement"). Pursuant to and subject to the terms and conditions of the Merger Agreement, Cengage Intermediate Holdco will merge with and into Cengage, Cengage Issuer will merge with and into Cengage, and then Cengage will merge with and into McGraw-Hill Issuer (the "Merger"), with McGraw-Hill Issuer continuing as the surviving entity following the Merger. At the effective time of the Merger (the "Effective Time") (1) each share of McGraw-Hill common stock, par value $0.01 per share, will convert into one share of Class A Common Stock of the combined company, and (2) each share of Cengage common stock, par value $0.01 per share, will convert into a certain number of shares of Class B Common Stock of the combined company such that, as of the Effective Time, the aggregate number of issued and outstanding shares of Class A Common Stock will equal the aggregate number of issued and outstanding shares of Class B Common Stock. Accordingly, the legacy stockholders of McGraw-Hill and the legacy stockholders of Cengage will, as of the Effective Time, each collectively own exactly 50% of the issued and outstanding shares of voting common stock of the combined company.

The proposed transaction is subject to certain closing conditions, including receipt of regulatory approvals. McGraw-Hill and Cengage submitted Hart-Scott-Rodino Act filings with the U.S. Department of Justice and Federal Trade Commission on May 31, 2019. McGraw-Hill is working towards closing the transaction in 2020.

McGraw-Hill has also agreed to various customary covenants and agreements, including, among others, to conduct its business in the ordinary course during the period between the execution of the Merger Agreement and the Effective Time, and to use reasonable best efforts to obtain all requisite regulatory approvals.

Merger-related costs are expensed as incurred and consist of integration planning costs, legal fees, rating agency fees, and professional services.

Our Key Metrics

We measure our business using several key financial metrics, including Billings and Adjusted EBITDA by segment.

Billings is a non-GAAP sales performance measure that we believe provides useful information in evaluating our period-to-period performance because it reflects the total amount of revenue that would have been recognized in a period if we recognized all print and digital revenue at the time of sale. We use Billings as a sales performance measure given that we typically collect full payment for our digital and print solutions at the time of sale or shortly thereafter, but recognize revenue from digital solutions and multi-year deliverables ratably over the term of our customer contracts. As sales of our digital learning solutions have increased, so has the amount of revenue that is deferred in accordance with U.S. GAAP. Billings is a key metric we use to manage our business as it reflects the sales activity in a given period, provides comparability from period-to-period during this time of digital transition and is the basis for all sales incentive compensation. In the K-12 market where customers typically pay for five to eight-year contracts upfront and the ongoing costs to service any contractual obligation are limited, the impact of the change in deferred revenue is most significant. Billings is GAAP revenue plus the net change in deferred revenue.

For further information on non-GAAP financial measures and a description of how we calculate Billings and operating factors that impact Billings, see “Management’s Discussion and Analysis of Financial Condition and Results of Operations-Non-GAAP Measures” and “Use of Non-GAAP Financial Information.”

Adjusted EBITDA by segment, as determined in accordance with Accounting Standards Codification Topic 280, Segment Reporting, is a measure used by management to assess the performance of our segments. We exclude from Adjusted EBITDA by segment: interest expense (income), net, income tax (benefit) provision, depreciation, amortization and pre-publication amortization and certain transactions or adjustments that our management does not consider for the purposes of making decisions to allocate resources among segments or assessing segment performance. In addition, Adjusted EBITDA by segment is calculated in a manner consistent with the definition and meaning of our Adjusted EBITDA non-GAAP debt covenant compliance measure.

Our key metrics are presented under the headings “Selected Financial Data.”

Item 1A. RISK FACTORS

You should carefully consider the risk factors set forth below, as well as the other information contained in this annual report. Any of the following risks could materially and adversely affect our business, financial condition or results of operations. In addition, the risks described below are not the only risks that we face. Additional risks and uncertainties not currently known to us or those that we currently view to be immaterial could also materially and adversely affect our business, financial condition or results of operations.

Risks Related to Our Business

The pendency of the Cengage merger may adversely affect our business and performance.

On May 1, 2019, we announced that we had entered into a merger agreement with Cengage under which we and Cengage will combine in a "merger of equals" transaction. The merger agreement prohibits either party from taking certain material actions without the consent of the other. We may otherwise be disinclined to make material changes to our business, structure or operations during the pendency of the merger, which may cause us to forgo pursuing certain opportunities or making certain changes that we would otherwise have made. While the merger is pending, a portion of the time of senior management and other employees will be devoted to obtaining regulatory clearances for the merger and planning for the post-merger integration of the two businesses, rather than to our normal business. In addition, uncertainty regarding future employment at the merged company or the desirability of working for the merged company may distract employees, cause some high performing employees to leave, and make it more difficult for us to hire new employees. During the pendency of the merger, we continue to incur significant costs for financial, legal, accounting and other advisors relating to the merger. All of these factors may adversely affect our financial performance.

The merger with Cengage may not occur.

Our merger agreement with Cengage currently terminates on May 1, 2020 if the merger has not been consummated by 5:00 p.m. Eastern Time on that date. There is a possibility that the merger will not be consummated by that time and, in such event, there is no guarantee that we and Cengage will agree to extend the termination date. In addition, the obligations of each of us and Cengage under the merger agreement to consummate the merger are subject to a number of conditions, including obtaining required regulatory clearances for the merger. There is no guarantee that those conditions will be satisfied or waived. If the merger does not occur, we will not have the opportunity to realize the anticipated benefits of the merger and any adverse effect of the pendency of the merger on our financial performance will not be offset by those anticipated benefits.

If the merger with Cengage occurs, we may not realize the anticipated benefits of the merger.

If the merger with Cengage does occur, a number of factors could cause us not to realize the anticipated benefits of the merger or not to realize them within the anticipated time frame. In order to obtain regulatory approval for the merger, we and Cengage may be required to sell the assets related to a significant number of Higher Ed titles, for which we may not be able to obtain fair value and whose sale may adversely affect our future revenue. The anticipated benefits of the merger include substantial opportunities to reduce ongoing operating costs; however, there is no guarantee that cost reductions or their estimated magnitude will be realized or realized within the anticipated time frame. Integrating our business with Cengage's business (1) will consume a substantial amount of the time of certain members of management and other employees, which they will be unable to devote to normal business, (2) may result in internal conflicts that cause high performing employees to leave or cause employees to be less productive, (3) may cause disruptions in normal business processes and systems, which could temporarily adversely affect the combined company's business operations, and (4) will result in the merged company incurring costs that may not be offset by any post-integration synergies. In addition, the merger will require refinancing or amending a substantial portion of our and Cengage's outstanding indebtedness, and the interest rates and other terms of the new or amended indebtedness may be more onerous than existing terms or than anticipated.

If the merger is consummated, the combined company will be subject to the risks that Cengage faces, in addition to the risks that we currently face.

While we and Cengage face many of the same risks, if the merger is consummated, the combined entity will face any litigation or other risks that Cengage faces in addition to the risks that we face. Investors are encouraged to see Cengage's disclosures and reports to evaluate those risks.

A substantial portion of our credit facilities will need to be refinanced or extended within the next 14 months, and most of our credit facilities will need to be refinanced or extended with the next 26 months.

$100,000,000 of our $150,000,000 Receivables Facility is a 364-day commitment that expires on September 30, 2020; our $350,000,000 Revolving Credit agreement expires on May 2, 2021; the remaining $50,000,000 of our $150,000,000 Receivables Facility expires on October 29, 2021; our $180,000,000 MHGE Parent Term Loan matures on April 20, 2022; and our Term Loan Facility ($1.652 billion outstanding) matures on May 4, 2022. Each of these credit facilities must be refinanced or extended by its expiration or maturity date. The interest rates and other terms of any refinancing or extensions may be more onerous than existing terms, which could adversely affect our financial performance, liquidity and ability to take advantage of business opportunities.

We face competition from both large, established, industry participants and new market entrants, the risks of which are enhanced due to rapid changes in our industry and market.

Our competitors in the market for education products include a few large, established, industry participants. Some established competitors have greater resources and less debt than us and, therefore, may be able to adapt more quickly to new or emerging technologies and changes in customer requirements or devote greater resources to the development, promotion and sale of their products than we can. In addition, the market shift toward digital education solutions has induced both established technology companies and new start-up companies to enter certain segments of our market. These new competitors have the possible advantage of not needing to transition from a print business to a digital business. The risks of competition are intensified due to the rapid changes in the products our competitors are offering, the products our customers are seeking and our sales and distribution channels, which create increased opportunities for significant shifts in market share. Competition has required us to reduce the price of some of our products or make additional capital investments and may result in reductions in our market share and sales.

Our investments in new products and distribution channels may not be profitable.

In order to maintain a competitive position, we must continue to invest in new products and new ways to deliver them. This is particularly true in the current environment where investment in new technology is ongoing and there are rapid changes in the products our competitors are offering, the products our customers are seeking, and our sales and distribution channels. In some cases, our investments will take the form of internal development; in others, they may take the form of an acquisition. Our investments in new products or distribution channels, whether by internal development or acquisition, may be less profitable than what we have experienced historically, may consume substantial financial resources and/or may divert management's attention from existing operations, all of which could materially and adversely affect our business, results of operations and financial condition.

Our failure to win new state adoptions could adversely affect our revenue.

A significant portion of our revenue is derived from sales of K-12 instructional materials pursuant to pre-determined adoption schedules. Due to the revolving and staggered nature of state adoption schedules, sales of K-12 instructional materials have traditionally been cyclical, with some years offering more sales opportunities than others. For example, over the next few years, new adoptions are scheduled in one or more of the primary subjects of reading, language arts and literature, social studies and science in, among others, the states of California, Texas and Florida, which are the three largest adoption states. In each adoption decision for each state, we face significant competition and are subject to regulatory approvals. Our failure to participate or do well in new state adoptions could materially and adversely affect our revenue for the year of adoption and subsequent years.

Reductions in anticipated levels of federal, state and local education funding available for the purchase of instructional materials could adversely affect demand for our K-12 products.

Most public school districts, which are the primary customers for K-12 products and services, depend largely on state and local funding programs to purchase materials. In addition, many school districts also receive substantial funding through Federal education programs. State, local or federal funding available to school districts

may be reduced as a result of reduced tax revenues, efforts to reduce government spending or increased allocation of tax revenues to other uses. In addition, changes in the laws or regulations that give school districts flexibility in their use of funds previously dedicated exclusively to the purchase of instructional materials may reduce the share of district funds allocated to the purchase of instructional materials. Reductions in the amount of funding provided to school districts or reductions in the portion of those funds allocated to instructional materials could reduce demand for our K-12 products.

Changes in the timing and order patterns of customer purchases may adversely affect predictability of results and comparability with prior results.

Traditionally, when the majority of products sold to customers in the higher education market consisted of print textbooks sold through the campus bookstore, the timing of purchases was predictable because of the long lead time to order and receive printed books before the start of the semester and because the sale was made to a distribution partner that needed the inventory ahead of the school year. As the higher education market has shifted to digital products, there has been a tendency for purchases to occur closer to the beginning of the semester since less lead time is required for the purchase of a digital product and because the sale is frequently made directly to the student. The shift to digital and increasing competition for the campus bookstore has diminished the visibility that the traditional distribution channel has into student demand. As a result, distribution channels are ordering from us closer to the start of the school year and with increased variability in ordering and return patterns. There is no assurance that the trend to more digital purchases will continue, but given the current mix of digital versus print purchasing and increased competition among distribution channels, it has become more difficult to predict the timing and order patterns of customer purchases of our higher education products.

There is also timing uncertainty in the K-12 business. Within a year, timing of orders can vary significantly, as the primary season for ordering occurs in the period between May and August, which spans our second and third quarters. As a result, states and school districts that have significant purchases scheduled for a given year could materially swing results between quarters based on when in the season the order is placed. Additionally, the timing of a decision for a state-wide adoption or by an individual school district, in an adoption or open territory state, to purchase in a given year can be significantly impacted or delayed by various circumstances including but not limited to funding issues, development of standards and specifications, competing priorities or school readiness to implement the new curriculum or technology. In addition, whereas in the past most school districts purchased educational materials in state adoptions up-front, many are now choosing to spend on educational materials over a multi-year period, and in some cases school districts are choosing to use available funds to purchase hardware, software and other instructional aids that are not produced by us.

Taken together, it has become increasingly difficult for us to forecast the timing of customer purchases, causing us to have to wait until later in the buying season in order to assess our financial performance. The change in ordering patterns may impact the comparison of results between a quarter and the same quarter of the previous year, between a quarter and the consecutive quarter or between a fiscal year and the prior fiscal year.

Evolving policy changes and funding shifts may impact timing and cost of development and implementation.

A number of political, regulatory and social influences could require unanticipated modifications to our programs or impact the sales of our programs. In particular, State and district interpretation of Every Student Succeeds Act (ESSA) guidelines and related evidence-based funding requirements, political pressures and community activism, influences from various demographic groups and the growing number of English Language Learners and low income students in certain districts, could each impact state and local adoptions of instructional materials.These factors have the potential to delay or impair sales of our products, result in our products becoming obsolete and/or cause us to incur additional product development costs.

A change from up-front payment by school districts for multi-year licenses could adversely affect our cash flow and results of operation.

In keeping with the past practice of payment for printed materials, school districts typically pay up-front when buying multi-year licenses. If school districts changed to spreading their payments to us over the term of the licenses, our cash flow and results of operation could be adversely affected.

Increased availability of free or relatively inexpensive products may reduce demand for or negatively impact the pricing of our products.

Free or relatively inexpensive educational products are becoming increasingly available, particularly in digital formats and through the internet. For example, some governmental and regulatory agencies have increased the amount of information they make publicly available for free. In addition, in recent years there have been initiatives by not-for-profit organizations such as the Gates Foundation and the Hewlett Foundation to develop educational content that can be "open sourced" and made available to educational institutions for free or nominal cost. There is also a possibility that federal or state governments will enact legislation or regulations that mandate or favor the use by educational institutions of open sourced content. The increased availability of free or relatively inexpensive educational products may reduce demand for our products or require us to reduce pricing, thereby impacting our sales revenue.

Increased customer expectations for lower prices or free bundled products could reduce sales revenues.

As the market has shifted to digital products, customer expectations for lower priced products has increased due to customer awareness of reductions in marginal production costs and the availability of free or low-cost digital content and products. As a result, there has been pressure to sell digital versions of products at prices below their print versions and an increase in the amount of products and materials given away as part of bundled packs. Increased customer demand for lower prices or free bundled products could reduce our sales revenue.

Malfunction or intentional hacking of our technological systems could adversely affect our operations or business and cause financial loss and reputational damage.

We depend on complex technological systems to provide our products to our customers and to operate our business. Malfunction or intentional hacking of these systems could adversely affect the performance or availability of our products, result in loss of customer data, adversely affect our ability to conduct business, or result in theft of our funds or proprietary information. The occurrence of such problems could result in liability, harm to our reputation, loss of revenue, or financial loss.

Failure to comply with privacy laws or adequately protect personal data could cause financial loss and reputational damage.

Across our businesses we hold large volumes of personal data, including that of employees, customers and students. We are subject to a wide array of different privacy laws, regulations and standards in the United States and in foreign jurisdictions where we conduct business with regards to access to, collection of, and use of personal data, including but not limited to (i) the Children's Online Privacy Protection Act and state student data privacy laws in connection with personally identifiable information of students, (ii) the Health Insurance Portability and Accountability Act in connection with our self-insured health plan, (iii) the Payment Card Industry Data Security Standards in connection with collection of credit card information from customers, and (iv) various EU data protection laws resulting from the EU Privacy Directive. Our failure to comply with applicable privacy laws, regulations and standards or prevent the improper use or disclosure of the personal data we hold could lead to penalties, significant remediation costs, reputational damage, potential cancellation of existing contracts, and an impaired ability to compete for future business.

Defects in our digital products could cause financial loss and reputational damage.

In the fast-changing digital marketplace, demand for innovative technology has generally resulted in short lead times for producing products that meet customer specifications. Growing demand for innovation and additional functionality in digital products increases the frequency of the product development and product enhancement cycle, which in turn increases the risk that our products may contain flaws or corrupted data. These defects may only become apparent after product launch, particularly for new products and new features to existing products that are developed and brought to market under tight time constraints. Problems with the performance of our digital products could result in liability, loss of revenue or harm to our reputation.

An increase in unauthorized copying and distribution of our products could adversely affect our sales, and an increase in efforts to combat such activities could increase our expenses .

Most of the value of our products consists of the intellectual property contained in them. As a result, the sale price of our products is high relative to the cost of copying them. This disparity makes our products tempting targets for unauthorized copying and distribution by both end users and illegal commercial enterprises. The risk of unauthorized copying and distribution of our products is greatest in the higher education and professional markets, where the purchasers of our products are usually students and other individual customers, who generally obtain our products through channels that are more susceptible to being used for the distribution of unauthorized copies. In recent years, technological and market changes have facilitated the unauthorized copying and distribution of our products to students and other individual customers. Of particular note is the development of on-line distribution services that allow illegal commercial enterprises to utilize reputable and efficient marketplaces and fulfillment services for the distribution and sale of counterfeit copies of products. Our management believes that increases in unauthorized copying and distribution of our products may have contributed to a decline in sales of our higher education print products in recent years. While we and others in our industry have been and continue to be engaged in a variety of efforts to reduce the extent of counterfeit textbooks and other illegal copies of our products in the marketplace, further expansion of the unauthorized copying and distribution of our products could adversely affect our sales, and ongoing efforts to combat such activities could impact our expenses.

Factors that reduce enrollment at colleges and universities could adversely affect demand for our higher education products.

Enrollment in U.S. colleges and universities can be adversely affected by many factors, including changes in government and private student loan and grant programs, uncertainty about current and future economic conditions, general decreases in family income and net worth and a perception of uncertain job prospects for recent graduates. In addition, enrollment levels at colleges and universities outside the United States are influenced by the global and local economic climate, local political conditions and other factors that make predicting foreign enrollment levels difficult. While enrollment at degree granting institutions in the United States has overall been steadily growing over the last several decades, enrollment levels have generally declined in recent years. Any reductions in enrollment at colleges and universities both within and outside the United States could adversely affect demand for our higher education products.

Growth of the used and rental book markets could adversely affect our revenue.

Active markets exist for the sale and rental of used versions of our printed books. The used and rental markets are particularly material with respect to our printed higher education and professional printed books, where most of the purchasers are students and other individual customers who may only need the use of the book for a limited period of time. The sale of used books and rental of books provides a lower priced option for customers who do not need a new version of a book to keep. Recent technological and market developments have resulted in an increase in the size of the used and rental markets. The used and rental market competes directly with our current new book sales market and reduces our revenue over time from new book sales as used versions become available in the used and rental market. Although, as discussed in - "Our Growth Strategies - Increase our penetration in our largest, most profitable disciplines and sub-markets", in 2018 we started a rental program for all our new copyright higher education titles, we have not previously participated in the used or rental markets for most of our books and

our rental program is not expected to be fully implemented for a number of years. Further expansion of the used and rental markets in which we do not participate could adversely affect our revenue.

We are dependent on third-party distributors, representatives and retailers for a substantial portion of our sales.

In addition to our own sales force and websites, we offer our products through a variety of third-party distributors, representatives and retailers. We do not ultimately control the performance of our third-party distributors, representatives and retailers to perform as required or to our expectations. Also, certain of our distributors, representatives or retailers may market other products that compete with our products. The loss of one or more of our distributors, representatives or retailers or their failure to effectively promote our products or otherwise perform in their functions in the expected manner could adversely affect our ability to bring our products to market and impact our revenues.

Consolidation and concentration in our distribution and retail channels could adversely affect our profitability and financial results.

Some of our distribution and retail channels have experienced significant consolidation and concentration. This concentration could potentially place us at a disadvantage with respect to negotiations regarding pricing and other terms, which could adversely affect our profitability and financial results.

An adverse change in orders, returns or payments by a material reseller could adversely affect our financial results.

A significant portion of our sales are to a small number of resellers. As of both December 31, 2019 and 2018, two customers comprised approximately 23% of the gross accounts receivable balance, respectively. The Company had no single customer that accounted for 10% or more of our gross revenue for the year ended December 31, 2019, 2018 and 2017. An adverse change in orders, returns or payments by a material reseller could adversely affect our financial results.

We may not be able to retain or attract the key authors and talented personnel that we need to remain competitive and grow.

Our success depends, in part, on our ability to continue to attract and retain key authors and talented management, creative, editorial, technology, sales and other personnel. We operate in a number of highly visible industry segments where there is intense competition for successful authors and other experienced, highly effective individuals. Our successful operations in these segments may increase the market visibility of our authors and personnel and result in their recruitment by other businesses. There can be no assurance that we can continue to attract and retain key authors and talented personnel and, if we fail to do so, it could adversely affect our business.

We may not be able to reduce our costs related to print products as fast as revenues from those products decline.

As the portion of our business that consists of print products declines, our need for certain facilities and arrangements, such as printing and warehousing, also declines. Some of the costs related to these facilities and arrangements are relatively fixed over the short term and, as a result, may not decline as quickly as the related revenues. If our print-related costs do not decline proportionately with our print-related revenues, our results of operations and financial condition would be adversely affected.

The shift to sales of multi-year licenses may affect the comparability of our GAAP revenue to prior periods and cause increases or decreases in our sales to be reflected in our results of operation on a delayed basis.

As our business transitions from printed products to digital products, an increasing percentage of our revenues are derived from the sale of multi-year licenses. Our customers typically pay for both printed products and multi-year licenses up-front; however, we recognize revenue from multi-year licenses over their respective terms, as required by GAAP, even if we are paid in full at the beginning of the license. As a result, an increase in the portion

of our sales coming from multi-year licenses may cause our GAAP revenue, when compared to prior periods, to not provide a truly comparable perspective of our performance. Another effect of recognizing revenue from multi-year licenses over their respective terms is that any increases or decreases in sales during a particular period do not translate into proportional increases or decreases in revenue during that period. Consequently, deteriorating sales activity may be less immediately observable in our results of operations.

Unexpectedly large returns could adversely affect our financial results.

We generally permit our distributors to return products they purchase from us. When we record revenue, we record an allowance for sales returns, which is based on the historical rate of return and current market conditions. Should the estimate of the allowance for sales returns vary by one percentage point from the estimate we use in recording our allowance, the impact on operating income would be approximately $0.8 million.

The high degree of seasonality of our business can create cash flow difficulties.

Our business is seasonal. Purchases of Higher Education products have traditionally been made in the third and fourth quarters for the semesters starting classes in September and January. As the Higher Education business continues to shift towards digital sales as well as print rental, fourth quarter sales for the January semester have partially migrated to the first quarter. Purchases of K-12 products are typically made in the second and third quarters of the calendar year for the beginning of the school year. This sales seasonality affects operating cash flow from quarter to quarter. There are months when we operate at a net cash deficit from our activities. In 2019, we realized approximately 18%, 24%, 35% and 23% of our revenues during the first, second, third and fourth quarters, respectively, making third-quarter results particularly material to our full-year performance. We cannot make assurances that our third quarter net sales will continue to be sufficient to meet our obligations or that they will be higher than net sales for our other quarters. In the event that we do not derive sufficient net sales, we may not be able to meet our debt service requirements and other obligations.

Our substantial indebtedness restricts our ability to react to changes in the economy or our industry and exposes us to interest rate risk and risk of default.

We are a leveraged company that has substantial indebtedness. As of December 31, 2019, we had $2,277.3 million face value of outstanding indebtedness (in addition to $350.0 million of commitments under the Senior Facilities, none of which was drawn and excluding letters of credit of $4.3 million), and for the year ended December 31, 2019, we had total debt service of $193.1 million (including approximately $51.3 million of debt service relating to fixed rate obligations, without giving effect to the $500.0 million notional interest rate swap. Our substantial indebtedness could have important consequences. For example, it could:

- limit our ability to borrow money for our working capital, capital expenditures, debt service requirements, strategic initiatives or other purposes;
- make it more difficult for us to satisfy our obligations with respect to our indebtedness;
- require us to dedicate a substantial portion of our cash flow from operations to the repayment of our indebtedness, thereby reducing funds available to us for other purposes;
- limit our flexibility in planning for, or reacting to, changes in our operations or business;
- make us more vulnerable to downturns in our business or the economy;
- restrict us from making strategic acquisitions, engaging in development activities, introducing new technologies or exploiting business opportunities;
- cause us to make non-strategic divestitures; or

- expose us to the risk of increased interest rates, as certain of our borrowings, including borrowings under the Senior Facilities are at variable rates of interest.

In addition, the agreements governing our indebtedness contain restrictive covenants that will limit our ability to engage in activities that may be in our long-term best interest. Our failure to comply with those covenants could result in an event of default which, if not cured or waived, could result in the acceleration of substantially all of our indebtedness.

Despite our substantial indebtedness, we may still be able to incur significantly more debt, which could intensify the risks described above.

We and our subsidiaries may be able to incur additional indebtedness in the future. For example, as of December 31, 2019, we had $350.0 million available for additional borrowing under the Revolving Facility portion of the Senior Facilities (excluding letters of credit of $4.3 million), all of which would be secured. In addition, although the terms of the agreements governing our indebtedness contain restrictions on our and our subsidiaries' ability to incur additional indebtedness, these restrictions are subject to a number of important qualifications and exceptions, and the indebtedness incurred in compliance with these restrictions could be substantial. Further, these restrictions will not prevent us from incurring obligations that do not constitute indebtedness. The more leveraged we become, the more we, and in turn our security holders, will be exposed to certain risks described above under "Our substantial indebtedness restricts our ability to react to changes in the economy or our industry and exposes us to interest rate risk and risk of default."

We may record future goodwill or indefinite-lived intangibles impairment charges related to our reporting units, which could materially adversely impact our results of operations.

We test our goodwill and indefinite-lived intangibles asset balances for impairment during the fourth quarter of each year or more frequently if indicators are present or changes in circumstances suggest that impairment may exist. We assess goodwill for impairment at the reporting unit level and, in evaluating the potential for impairment of goodwill, we make assumptions regarding estimated net sales projections, growth rates, cash flows and discount rates. Although we use consistent methodologies in developing the assumptions and estimates underlying the fair value calculations used in our impairment tests, these estimates are uncertain by nature and can vary from actual results. Declines in the future performance and cash flows of the reporting unit or small changes in other key assumptions may result in future goodwill impairment charges, which could materially adversely impact our results of operations.

Our management determined that there was a material weakness in our accounting for revenue recognition in our K-12 business.

During 2016, we identified a material weakness in our internal control over financial reporting. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. This material weakness related to the accounting for revenue recognition in our K-12 segment. The Company concluded that it previously did not defer certain revenues related to print subscription products resulting in an overstatement of revenue recognized.

In addition, during the second and third quarters of 2016, the Company entered into certain customer contracts containing multiple element arrangements, including free with order digital subscription products. The Company concluded that it previously did not properly identify and account for the free with order digital subscription products as a separate deliverable resulting in an overstatement of revenue recognized.

We appropriately accounted for our K-12 revenue recognition in the audited consolidated financial statements and unaudited consolidated quarterly financial information included in this annual report.

Our management is in the process of remediating these material weaknesses. If we are unsuccessful in remediating these weaknesses or suffer additional deficiencies or material weaknesses in our internal controls in the

future, we may be unable to report financial information in a timely and accurate manner and it could result in a material misstatement of our annual or interim financial statements that would not be prevented or detected on a timely basis, which could cause investors to lose confidence in our financial reporting and cause a default under the agreements governing our indebtedness.

Legal actions against us, including intellectual property infringement claims, could be costly to defend and could result in significant damages.

In the ordinary course of business, we are occasionally involved in legal actions and claims against us arising from our business operations and therefore expect that we will likely be subject to additional actions and claims against us in the future. Litigation alleging infringement of copyrights and other intellectual property rights, particularly in relation to proprietary photographs and images, has become extensive in the educational publishing industry. At present, there are various suits pending or threatened which claim that we exceeded the print run limitation or other restrictions in licenses granted to us to reproduce photographs in our instructional materials. A large number of similar claims against us have already been settled. A number of our competitors are or have been defendants in similar lawsuits. We have liability insurance in such amounts and with such coverage and deductibles as management believes is reasonable. However, there can be no assurance that our liability insurance will cover our damages and, if our liability insurance does cover our damages, that the limits of coverage will be sufficient to fully cover all potential liabilities and costs of litigation. While management does not expect any of the claims currently pending or threatened against us to have a material adverse effect on our results of operations, financial position or cash flows, due to the inherent uncertainty of the litigation process, the resolution of any particular legal proceeding or change in applicable legal standards could have a meaningful adverse effect on our financial position and results of operations.

We face risks of doing business abroad.

As we continue to invest in and expand portions of our overseas business, we face exposure to the risks of doing business abroad, including, but not limited to:

- lack of local knowledge or acceptance of our products and services;
- entrenched competitors;
- the need to adapt our products to meet local requirements;
- longer customer payment cycles in certain countries;
- limitations on the ability to repatriate funds to the United States;
- difficulties in protecting intellectual property, enforcing agreements and collecting receivables under certain foreign legal systems;
- compliance under the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act and other anti-corruption laws;
- the need to comply with local laws and regulations generally; and
- in some countries, a higher risk of political instability, economic volatility, terrorism, corruption, social and ethnic unrest.

Fluctuations between foreign currencies and the U.S. dollar could adversely affect our financial results.

We derived approximately 16% of our total revenue in the year ended December 31, 2019 from our international sales operations. The financial position and results of operations of our international operations are

primarily measured using the foreign currency in the jurisdiction of operation of such business as the functional currency. As a result, we are exposed to currency fluctuations both in receiving cash from our international operations and in translating our financial results into U.S. dollars. For example, foreign exchange rates had a unfavorable impact on our revenue of $5.2 million for the year ended December 31, 2019. We have operations in various foreign countries where the functional currency is primarily the local currency. For international operations that are determined to be extensions of the parent company, the U.S. dollar is the functional currency. Our principal currency exposures relate to the Australian Dollar, British Pound, Canadian Dollar, Euro, Mexican Peso and Singapore Dollar. Assets and liabilities of our international operations are translated at the exchange rate in effect at each balance sheet date. Our income statement accounts are translated at the average rate of exchange during the period. A strengthening of the U.S. dollar against the relevant foreign currency reduces the amount of income we recognize from our international operations. In addition, certain of our international operations generate revenues in the applicable local currency or in currencies other than the U.S. dollar, but purchase inventory and incur costs primarily in U.S. dollars. While, from time to time, we may enter into hedging arrangements with respect to foreign currency exposures, variations in exchange rates may adversely impact our results of operations and profitability. The risks we face in foreign currency transactions and translation may continue to increase as we further develop and expand our international operations.

We are dependent on third-parties for the performance of many critical operational functions.

We rely on third-parties for many critical operational functions, including general financial shared services, accounts payable, accounts receivable, royalty processing, printing, warehousing, distribution, technology support, online product hosting and certain customer support functions. Since those functions are provided by third parties, our ability to supervise and support the performance of those functions is limited. The loss of one or more of these third-party partners, a material disruption in their business or their failure to otherwise perform their functions in the expected manner could cause disruptions in our business that would adversely affect our results of operations and financial condition.

A significant increase in operating costs and expenses could have a material adverse effect on our profitability.

Our major operating expenses include employee compensation, paper, technology and third-party provider fees and royalties. Any material increase in these or other operating costs and expenses that we are not able to pass on in the cost of our products and services could adversely affect our results of operations and financial condition.

Item 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

Item 2. PROPERTIES

Our corporate headquarters are located in leased premises at 1325 Ave of Americas, New York, NY 10019. We lease offices, warehouses and other facilities at 52 locations, of which 14 are in the United States. In addition, we occupy real property that we own at 6 locations, of which 4 are in the United States. Our properties consist primarily of office space used by our operating segments, and we also utilize warehouse space and book distribution centers. We believe that all of our facilities are well maintained and are suitable and adequate for our current needs.

The properties listed in the table below are our principal owned and leased properties:

Location	Lease Expiration	Approximate Area	Principle Use of Space
Owned Premises:			
Blacklick, Ohio	Owned	548,144	Warehouse & Office
Monterey, California	Owned	209,204	Office
Columbus, Ohio	Owned	170,615	Office
Dubuque, Iowa	Owned	139,062	Office
Leased Premises:			
Groveport, Ohio	2022	667,672	Warehouse & Office
Ashland, Ohio	2021	602,378	Warehouse & Office
Penn Plaza, New York	2020	168,903	Office
Avenue of the Americas, New York	2035	136,176	Office
Noida, Uttar Pradesh, India	2020	90,500	Warehouse & Office
Chicago, Illinois	2029	59,693	Office
Irvine, California	2021	53,220	Office
Boston, Massachusetts	2021	37,622	Office
Seattle, Washington	2021	24,646	Office
East Windsor, New Jersey	2024	23,183	Office

In addition, we own and lease other offices that are not material to our operations.

Item 3. LEGAL PROCEEDINGS

In the normal course of business both in the United States and abroad, we are a defendant in various lawsuits and legal proceedings which may result in adverse judgments, damages, fines or penalties and is subject to inquiries and investigations by various governmental and regulatory agencies concerning compliance with applicable laws and regulations. In view of the inherent difficulty of predicting the outcome of legal matters, we cannot state with confidence what the timing, eventual outcome, or eventual judgment, damages, fines, penalties or other impact of these pending matters will be. We believe, based on our current knowledge, that the outcome of the legal actions, proceedings and investigations currently pending should not have a material adverse effect on the Company's financial condition.

In 2016, MHE filed a complaint against Illinois National Insurance Company ("INIC") in the Supreme Court of the State of New York seeking a declaration that it is entitled to full insurance benefits under several multi-media policies with INIC which has denied liability and asserted a counterclaim on November 28, 2016 in the Action seeking (i) a declaratory judgment that MHE is not entitled to the coverage sought; (ii) recoupment of indemnity payments already made by INIC on the claims; and (3) recoupment of defense costs reimbursed by INIC. On December 17, 2019, the First Department ruled that MHE is entitled to coverage for damages related to the Copyright Actions under the policies and referred the case back to the trial court for a determination of damages.

Item 4. MINE SAFTEY DISCLOSURES

Not applicable.

PART II

Item 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Not applicable.

Item 6. SELECTED FINANCIAL DATA

The consolidated statement of operations for the years ended December 31, 2019, 2018, 2017 and the consolidated balance sheet data as of December 31, 2019 and 2018 have been derived from the audited consolidated financial statements of the Company included elsewhere in this annual report. The consolidated statement of operations for the years ended December 31, 2016 and 2015 and the consolidated balance sheet data as of December 31, 2017, 2016 and 2015 have been derived from the audited consolidated financial statements of the Company, which are not included elsewhere in this annual report.

As our historical financial information may not be indicative of our future performance, the data presented below should be read in conjunction with our audited consolidated financial statements and related notes, thereto, and with Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this annual report.

(Dollars in thousands)	**Year Ended December 31, 2019**	**Year Ended December 31, 2018**	**Year Ended December 31, 2017**	**Year Ended December 31, 2016**	**Year Ended December 31, 2015**
Statement of Operations					
Revenue	$ 1,571,388	$ 1,596,945	$ 1,719,072	$ 1,740,027	$ 1,828,592
Cost of sales	371,387	394,531	426,636	427,409	479,469
Gross profit	1,200,001	1,202,414	1,292,436	1,312,618	1,349,123
Operating expenses					
Operating and administration expenses	1,030,470	1,038,073	1,065,755	1,078,604	1,127,455
Depreciation	56,302	46,929	45,243	37,045	30,636
Amortization of intangibles	71,849	86,722	88,068	90,886	94,156
Total operating expenses	1,158,621	1,171,724	1,199,066	1,206,535	1,252,247
Operating income	41,380	30,690	93,370	106,083	96,876
Interest expense (income), net	180,430	180,576	179,378	199,506	192,918
Loss on extinguishment of debt	—	—	—	26,562	—
Other (income) expense	(7,962)	—	(12,727)	—	(4,779)
(Loss) income from operations before taxes on income	(131,088)	(149,886)	(73,281)	(119,985)	(91,263)
Income tax provision (benefit)	12,122	10,535	(7,351)	15,117	11,530
Net (loss) income from continuing operations	(143,210)	(160,421)	(65,930)	(135,102)	(102,793)
Net (loss) income from discontinued operations, net of taxes	—	—	—	(1,905)	(76,338)
Net (loss) income attributable to McGraw-Hill Education, Inc.	(143,210)	(160,421)	(65,930)	(137,007)	(179,131)

(Dollars in thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017	Year Ended December 31, 2016	Year Ended December 31, 2015
Other Financial data					
Billings (1)	$ 1,663,057	$ 1,661,437	$ 1,866,416	$ 1,912,902	$ 2,057,951
Adjusted EBITDA by Segment (1)					
Higher Education	183,252	200,667	227,707	233,507	294,540
K-12	110,525	24,085	112,078	138,368	126,902
International	15,161	8,038	18,324	19,011	33,229
Professional	35,453	35,754	39,944	33,739	32,193
Other	10,647	(7,620)	2,092	(1,737)	(1,274)
Capital expenditures	(75,239)	(63,239)	(45,127)	(38,223)	(41,181)
Total Net Debt (2)	1,810,357	1,904,766	1,832,207	1,926,503	1,581,601
Working Capital (3)	(66,125)	25,882	131,557	178,433	176,619
Statement of Cash Flow data					
Cash flows (used for) provided by:					
Operating activities	$ 262,101	$ 156,353	$ 263,892	$ 197,964	$ 308,422
Investing activities	(151,767)	(160,694)	(135,711)	(139,418)	(151,763)
Financing activities	(54,254)	(52,432)	(142,311)	(190,912)	(12,850)

	As of				
(Dollars in thousands)	December 31, 2019	December 31, 2018	December 31, 2017	December 31, 2016	December 31, 2015
Balance Sheet data					
Cash, cash equivalents and restricted cash (4)	$ 401,856	$ 345,920	$ 407,632	$ 418,753	$ 553,194
Total assets	2,553,615	2,514,436	2,517,272	2,578,075	2,723,683
Total debt (2)	2,202,303	2,219,711	2,239,839	2,345,256	2,134,795
Stockholders' equity (deficit)	(1,452,235)	(1,306,257)	(1,198,533)	(1,150,088)	(689,102)

(1) Billings, a measure used by management to assess sales performance, is defined as the total amount of revenue that would have been recognized in a period if all revenue were recognized immediately at the time of sale.
Management believes that Billings is helpful in highlighting the actual sales activity in a given period and provides comparability from period to period during our ongoing transition from the sale of printed materials to digital solutions which are required to be deferred and recognized as revenue over time in accordance with U.S. GAAP.
(2) Total debt is presented as long-term debt plus current portion of long-term debt. Total net debt is total debt less cash and cash equivalents.
(3) Working capital is calculated as current assets less current liabilities.
(4) Cash, cash equivalents and restricted cash includes restricted cash included in other non-current assets within the consolidated balance sheets. Refer to Note 1, "Basis of Presentation and Accounting Policies" within the accompanying notes to the consolidated financial statements.

Billings is calculated as follows:

(Dollars in thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017	Year Ended December 31, 2016	Year Ended December 31, 2015
Revenue	$ 1,571,388	$ 1,596,945	$ 1,719,072	$ 1,740,027	$ 1,828,592
Change in deferred revenue (a)	91,669	64,492	147,344	172,875	229,359
Billings	$ 1,663,057	$ 1,661,437	$ 1,866,416	$ 1,912,902	$ 2,057,951

(a) We receive cash up-front for most product sales but recognize revenue (primarily related to digital sales) over time recording a liability for deferred revenue at the time of sale. This adjustment represents the net effect of converting deferred revenues to a cash basis assuming the collection of all receivable balances.

Adjusted EBITDA by segment is a measure used by management to assess the performance of our segments and is calculated in a manner consistent with the definition and meaning of our Adjusted EBITDA non-GAAP debt covenant compliance measure. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations - Debt Covenant Compliance”.

Billings is not a presentation made in accordance with U.S. GAAP and does not purport to be an alternative to revenue as a measure of operating performance or to cash flows from operations as a measure of liquidity. Such measure has limitations as our analytical tool, and you should not consider such a measure in isolation or as a substitute for our results as reported under U.S. GAAP. Management compensates for the limitations of using non-GAAP financial measures by using them to supplement U.S. GAAP results to provide a more complete understanding of the factors and trends affecting the business than U.S. GAAP results alone. Because not all companies use identical calculations, this measure may not be comparable to other similarly titled measures of other companies. See "Use of Non-GAAP Financial Information."

Item 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion provides a narrative of our results of operations and financial condition for the years ended December 31, 2019, 2018 and 2017. You should read the following discussion of our results of operations and financial condition in conjunction with the accompanying audited financial statements and notes thereto, appearing elsewhere in this document.

Company Overview

We are a leading provider of outcome-focused learning solutions, delivering both curated content and digital learning tools and platforms to the students in the classrooms of approximately 250,000 higher education instructors, approximately 13,000 pre-kindergarten through 12th grade ("K-12") school districts and a wide variety of academic institutions, professionals and companies in more than 100 countries. We have evolved our business from a printcentric producer of textbooks and instructional materials to a leader in the development of digital content and technology-enabled adaptive learning solutions that are delivered anywhere, anytime. We believe we have established a reputation as an industry leader in the delivery of innovative educational content and methodologies.

As learners and educators have become increasingly outcome-focused in their search for more effective learning solutions, we have embraced adaptive learning tools as a central feature of our digital learning solutions. Adaptive learning is based on educational theory and cognitive science that emphasizes personalized delivery of concepts, continuous assessment of gained and retained knowledge and skills, and design of targeted and personalized study paths that help students improve in their areas of weakness while retaining competencies. We have developed a unique set of digital solutions by combining innovative adaptive learning methods with our proprietary content and digital delivery platforms. These solutions provide immediate feedback, and we believe they are more effective than traditional print textbooks in driving positive student outcomes. Students' year-over-year performance can be impacted by many factors outside the instructional materials used in class. We believe that even taking into account these factors, our learning solutions can contribute to significant improvements in students' classroom performance as well as improved student retention. For the instructor, time spent on active learning experiences increases significantly as a result of a reduction in time spent on administrative tasks and the availability of critical data to help better focus in class instruction.

Business Segments

We have four operating business segments: Higher Education, K-12, International and Professional. Higher Education is our largest segment, representing 39%, 42% and 42% of total revenue for the years ended December 31, 2019, 2018 and 2017, respectively. Our K-12 segment generated 37% 35%, and 35% of total revenue for the years ended December 31, 2019, 2018 and 2017, respectively. Our International segment generated 16% of total revenue for the years ended December 31, 2019, 2018 and 2017, respectively. Our Professional segment represents 8%, 7% and 7% of total revenue for the years ended December 31, 2019, 2018 and 2017, respectively. The remaining total revenue relates to adjustments made for in-transit product sales.

Higher Education

In the higher education market in the United States, we provide students, instructors and institutions with adaptive digital learning tools, digital platforms, custom publishing solutions and traditional printed textbook products with capabilities in adaptive learning, homework tools, lecture capture and Learning Management System ("LMS") integration for post-secondary markets. Although we cover all major academic disciplines, our content portfolio is organized into three key disciplines: (i) Business, Economics & Career; (ii) Science, Engineering & Math; and (iii) Humanities, Social Science & Languages. Our top selling products include *Economics: Principles, Problems, and Policies* (McConnell/Brue/Flynn), *ALEKS, Managerial Accounting* (Garrison) and *The Art of Public Speaking* (Lucas). The primary users of our solutions are students enrolled in two- and four-year non-profit colleges and universities, and to a much lesser extent, for-profit institutions. Based on NSCRC data, recent declines in 2-year and 4-year enrollments have been driven in large part by declines in for-profit institutions. While overall enrollments

declined by approximately 2.1 million between Fall 2010 and 2019, the for profit enrollment declines were approximately 42% of the total while other enrollments declined 58% of the total. In 2019, or-profit colleges accounted approximately 9% of Higher Education revenue.

We sell our Higher Education solutions to well-known online retailers, distribution partners and college bookstores, who subsequently sell to students. Our own direct-to-student sales channel is increasing via our proprietary e-commerce platform, which currently represents the largest distribution channel in this segment. Although we sell our products to the students as end users, it is the instructor that makes the ultimate decision regarding new materials for the course. We have longstanding and exclusive relationships with many authors and nearly all of our products are covered by copyright in major markets, providing us the exclusive right to produce and distribute such content in those markets during the applicable copyright terms.

In addition, affordability initiatives are a key focus with strong digital activation growth led by our Inclusive Access institutional delivery and the launch of our formal rental program which was introduced in the fall of 2018 for our new copyright Higher Education titles with rental agreements executed with all major distribution partners.

K-12

In the K-12 market in the United States, we primarily sell curriculum and learning solutions, which include core basal programs, intervention and supplemental products, formative assessment tools, teaching resources and professional development programs. We sell our learning solutions directly to school districts across the United States. The process through which products are selected and procured for classroom use varies throughout the United States. Eighteen states, known as adoption states, approve and procure new basal programs, usually every five to eight years on a state-wide basis for each major area of study, before individual schools or school districts are permitted to schedule the purchase of materials. In all remaining states, known as open territories, each individual school or school district can procure materials at any time, though they usually do so on a five to eight year cycle. The student population in adoption states represents approximately 47% of the U.S. elementary and secondary school-age population. Many adoption states provide “categorical funding” for instructional materials, which means that state funds cannot be used for any other purpose. While we offer all of our curriculum and learning solutions in digital format, given the varying degrees of availability and maturity of our customers’ technological infrastructure, a majority of our sales are derived from blended print and digital solutions. Our top selling programs are *Reading Wonders, Everyday Math, Inspire Science and ALEKS K-12.*

International

Our International segment, defined as sales outside the United States, serves students in the higher education, K-12 and professional markets in more than 100 countries. Our products and solutions for the International segment are produced in more than 75 languages and primarily originate from our offerings for the United States market, which are later adapted to meet the needs of individual geographies. Sales of our digital offerings are growing significantly in the international market, and we are continuously increasing our inventory of digital programs. The growth in the use of the English language is also a driver of demand for digital learning solutions and printed educational instructional materials.

Professional

In the professional market in the United States, we provide medical, technical, engineering and business content for the professional, education and test preparation communities. Our digital subscription products are sold to more than 2,200 customers including corporations, academic institutions, libraries and hospitals. Our digital subscription products had a 95% annual retention rate in 2019.

Other

Other represents certain transactions or adjustments that are unusual or non-operational. In addition, adjustments made for in-transit product sales, timing related corporate cost allocations and other costs not attributed to a single operating segment are recorded within Other.

Factors Affecting Our Performance

Impact of Our Digital Transformation

The acceptance and adoption of digital learning solutions is driving a substantial transformation in the education market. We believe we are well positioned to take advantage of this transformation given our ability to offer embedded assessments, adaptive learning, real-time interaction and feedback and student specific personalization based on our core curated educational content in a platform- and device-agnostic manner.

The demand for our digital solutions has increased substantially over the last five years though the rate of transformation differs by business segment. In the higher education market, our customers' technology infrastructures are sufficiently advanced to support full adoption of digital learning solutions. During the year ended December 31, 2019, approximately 74% of our Higher Education Billings was derived from digital learning solutions. In the K-12 market, varying degrees of broadband internet connectivity, adequacy of technical support staff, and teacher training across our customer base have limited the rate of broad-based adoption of digital solutions. Product mix in K-12 will impact digital revenue. For example, reading and literacy are less digital than math and social studies. Recent public policy and funding initiatives have increased emphasis on removing these limitations. Professional markets have the greatest digital readiness, and a majority of our Professional revenues are derived from digital product sales. Internationally, the receptivity to digital solutions is also strong, particularly in developing economies. According to Juniper Networks, people in developing countries are nearly twice as likely to use connected devices for educational purposes on a regular basis as those in developed markets.

Our revenue models across each of our business segments are transforming along with our customers' increasing adoption of digital learning solutions. In general, our digital solutions are sold on a subscription basis with high renewal rates, which provides a more stable and predictable long term revenue model. We believe that the digital transformation will provide new opportunities for revenue growth. For example, our digital learning solutions provide an opportunity for us to increase the size of our addressable market as our digital products are not available in a format that can be utilized for sale in the used and rental market. In addition, the reserve that we maintain for product returns has declined over time due to the shift from traditional print products to digital learning solutions, which experience a much lower return rate.

We closely monitor our digital sales given the significant investment being made across our business and the increasing adoption of digital in the marketplace. Our digital offerings are sold on a standalone basis and as part of bundled or blended offerings. In instances where we sell digital with a print component, it is our policy to bifurcate the sale between the digital and print components and attribute value to each of the components in accordance with U.S. GAAP. When we discuss or present digital revenues, such information is based upon the attribution of value in accordance with U.S. GAAP and does not include print revenues.

The transition from traditional print to digital solutions also improves our cost structure as we tag and leverage content across the entire business instead of duplicating development efforts in each segment. We also expect to reduce raw material, warehouse and delivery costs as a result of the shift to digital solutions, as well as reducing sampling costs that are incurred to provide traditional print products to purchasing decision makers at no cost to them.

The development cycle for traditional print products involves periodic revisions, which give rise to significant pre-publication costs that are capitalized and recognized through amortization expense over time. Our total spend on pre-publication costs is influenced mostly by the timing of new adoption opportunities in our K-12 business and the timing of investment in front-list titles in our Higher Education business, during any given

period. With our digital solutions, we employ a continuous revision cycle that permits smaller and more frequent investment over the lifecycle of a product to maintain the product's relevancy by quickly incorporating feedback and enhancement opportunities. The cost of the smaller and more frequent investment is expensed and not capitalized, a shift from the historical accounting for pre-publication costs.

Our digital learning solutions are supported by our in-house Digital Platform Group ("DPG"), which was formed in 2013 to drive innovation and to develop, maintain and leverage our digital learning solutions and technology tools and platforms across our entire business. To maintain and grow our leading digital position, we have increased our annual digital learning solutions spending, including operating and capital expenditures, from less than $90 million in 2012 to approximately $170 million in 2019. While we are committed to continue significant digital investment, growth rates of spending has declined as we have achieved scale. While our investment has increased significantly since 2012, our annual expenditures have stabilized as our major initiatives and the build-out of certain foundational capabilities near completion.

Revenue

Higher Education

We derive revenue primarily from the sale of digital learning solutions and content, traditional and custom print content and instructional materials. Our digital and print revenues are a function of sales volume and, to a lesser extent, changes in unit pricing. Our revenues are comprised of product and services sales less an allowance for product returns and revenue that is required to be deferred in accordance with U.S. GAAP.

Our business is driven by our ability to maintain and win instructor adoptions and purchasing decisions made by students. Trends in student enrollment impacts the number of students requiring our digital and print solutions in a given year. Because instructors are the ultimate decision makers for content and instructional materials to be used in their courses, we compete for instructor adoptions of our products. After an instructor has adopted our products for use in his or her course, students have the option to purchase new content and instructional materials, purchase used versions of printed materials, rent printed materials from a number of outlets, or forego the acquisition of course content and materials altogether. Our sales depend heavily on the volume of new content and instructional materials sold and we did not benefit from sales in the used and rental markets prior to the launch of our rental program in the fall of 2018. As digital solutions are adopted by more instructors, and increasingly become part of the instructors' graded curriculum, more students are purchasing our digital solutions. This trend has increased sales of our digital solutions and is resulting in more predictable and recurring revenues as sales volumes begin to more closely align with trends in student enrollment.

For our print products, we recognize revenue at the time of shipment to our distribution partners, who typically order products several weeks before the beginning of an academic semester to ensure sufficient physical product inventory. Revenue relating to our rental program is deferred and subsequently recognized over the rental period which begins when the print product is transferred to the customer and is typically for one semester. Digital products are generally sold as subscriptions, which are paid for at the time of sale or shortly thereafter, and we recognize revenues derived from these products over the life of the subscription. In most cases, students purchase digital products at the beginning of the academic semester, or shortly thereafter, which has tended to shift the timing of revenues to later in the academic year as we sell more digital products and fewer print products. In addition, the difference in our revenue recognition policies between print and digital products has caused comparisons of current and historical revenues to less accurately reflect the actual sales performance of our business during this time of transition. As a result, we use the non-GAAP measure Billings to provide a consistent comparison of sales performance from period to period. See "-Non-GAAP Measures" for a description of Billings.

Revenues are also impacted by our reserve for product returns. Our distribution partners are permitted to return products at any time, though they primarily do so following the heavy student purchasing period at the beginning of each academic semester. To more accurately reflect the economic impact of returns on our operating performance, we reserve a percentage of our gross sales in anticipation of these returns when calculating our net

revenues. This reserve has declined in recent years as we shift from sales of traditional print products to digital learning solutions, which experience a much lower return rate.

K-12

We derive revenue primarily from the sale of digital learning solutions, traditional print offerings and other instructional materials. Our revenues are driven primarily by sales volume and, to a lesser extent, changes in unit pricing. Our revenues are comprised of product and services sales less an allowance for product returns and revenue that is required to be deferred in accordance with U.S. GAAP. The required revenue deferral for digital solutions in K-12 is significantly greater than in Higher Education due to the longer, multi-year contractual terms of our customer arrangements in K-12 (typically five to eight years).

Sales volumes are driven primarily by the availability of funding for instructional materials. Most public school districts are largely dependent on state and local funding for the purchase of instructional materials, which correlate with state and local receipts from income, sales and property taxes. Nationally, total state funding for public schools has been trending upward as state income and sales tax revenues recover from the lows of the 2008-2009 economic recession. The improving economy has driven a recovery in housing, which has led to higher property tax revenues for local governments and increased budgets for public schools.

The purchasing cycles of adoption states also have a significant impact on our sales volumes. We monitor the purchasing cycles for specific disciplines in adoption states in order to manage our product development and to plan sales campaigns. Our sales may be materially impacted by the purchasing schedules of major adoption states such as Florida, California and Texas. For example, Florida purchased new reading/language arts and mathematics programs in 2013-2014, followed by social studies in 2017 and science materials in 2018. Mathematics was previously scheduled for 2019 and has been moved to a purchase year of 2022 and reading/language arts was previously scheduled for 2020 and has been moved to 2021. Texas school districts purchased new mathematics and science materials in 2014, social studies and high school math in 2015 and a new reading/language arts program for grades K-8 in 2019 and scheduled to purchase grades 9-12 in 2020. California adopted new math materials, with purchases over the 2013-2015 period, and reading/language arts with purchases beginning in 2016 and continuing through 2018. California is purchasing social studies over the 2018-2020 period and science over 2019-2020. Florida, Texas and other adoption states provide dedicated state funding for instructional materials and classroom technology, with funding typically appropriated by the legislature in the first half of the year in which materials are to be purchased.

Sales volume in the United States K-12 market is also affected by changes in state curriculum standards and by student enrollment. Changes in state curriculum standards require that instructional materials be revised or replaced to align to the new standards, which historically has driven demand for basal programs. School enrollment is highly predictable, as they correlate with the overall growth in birth rates in the United States, and are expected to continue trending upward over the long term. According to NCES, K-12 enrollment in the United States as of Fall 2016 was over 56 million and enrollment is projected to grow to over 57 million in 2028.

Our product pricing is generally determined at the time our products are adopted by a state or district. Price has historically been of lesser importance than curriculum quality and service levels in state and district purchasing decisions. The vast majority of our program offerings is hybrid, incorporating both print and digital elements.

Revenue from traditional print products is typically recognized at the time of shipment, which closely aligns with when a school district takes possession of the required number of products at the outset of a multi-year adoption. Traditional print products are typically re-used by students over the term of the adoption, and school districts will occasionally purchase replacement products due to wear or increasing enrollment over the life of the adoption. Sales of these replacement products are known as residual sales, from which we derive a significant portion of our revenue. Our online and digital solutions are sold as a subscription, which states and districts pay for at the beginning of a multi-year adoption. We typically defer revenue related to online and digital solutions for the entirety of the contract upfront and recognize it ratably over the term of the contract. Because they are consumable products, revenue for workbooks is deferred when we enter into a multi-year contract and is recognized when delivery takes place, often at the beginning of each academic year over the contract term. As our customers purchase

more of our digital and hybrid learning solutions, the percentage of our revenue that is deferred continues to increase. The total amount of the sale and the cash received upfront for a fully-digital or hybrid program is comparable to a fully print program; however, the time period over which the revenue is recognized increases with the shift to digital. The difference in our revenue recognition policies between print and digital solutions has caused comparisons of current and historical revenues to less accurately reflect the actual sales performance of our business during this time of transition. As a result, we use the non-GAAP measure Billings to provide a consistent comparison of sales performance from period to period. See "-Non-GAAP Measures" for a description of how we define Billings.

Unlike our Higher Education segment, product returns in our K-12 segment have an immaterial impact on net revenues because we sell directly to school districts, which are better able to predict end demand and are limited to primary market purchases.

International

We derive revenue primarily from the sale of digital learning solutions and content, traditional print content and instructional materials to the higher education, K-12 and professional markets in more than 100 countries worldwide. Our revenues are a function of the market conditions in the countries in which we operate and our ability to expand our sales to customers in these countries and to new countries. A majority of our international revenue is generated by selling our unmodified English language products, which were originally created for the United States market, internationally. Our revenues are comprised of product and services sales less an allowance for product returns and revenue that is required to be deferred in accordance with U.S. GAAP.

Our International business covers five major regions. Each of these regions and the underlying country performance can be impacted by the economy, government policy and competitive situations. These regions and the general revenue drivers for each are as follows:

EMEA: the majority of our business is driven by Higher Education, followed by K-12 (including English Language Learning) and Professional. The majority of our Higher Education revenues come from the sale of original United States product translations and adaptations of those products. Our K-12 business in Spain is primarily driven by the development and sale of local original publications and is subject to the cyclical nature of government driven curriculum renewals. Our K-12 business in the Middle East is primarily driven by print and digital orders for United States product as well as translations and adaptations.

Asia Pacific: our business is driven primarily by Higher Education and Professional. China provides the largest share of revenue driven by English Language Learning and translation of United States books from Higher Education and Professional into local language. In addition, in southeast Asia, we operate in 15 countries, some of which are subject to volatile political and economic conditions. Our Australian business is primarily driven by the sale of original United States Higher Education product as well as adaptations.

India: Higher Education is a major driver of our business, followed by Professional and K-12. Our product portfolio in India primarily consists of local publishing programs, followed by adaptations of United States product.

Latin America: this region is primarily driven by K-12 (including English Language Learning), followed by Higher Education and Professional. From a regional perspective, our largest market is Mexico, followed by Colombia, Chile and Venezuela. Latin America's business is exposed to volatile political and economic conditions. The majority of our Higher Education revenues are derived from the sale of original United States products that have been translated and / or adapted. Our K-12 business is primarily driven by the development and sale of local/original publications and is subject to the cyclical nature of government driven curriculum renewals.

Canada: Higher Education is the largest driver of our Canadian business, followed by Professional. Higher Education sales consist primarily of original United States Higher Education product as well as translations and adaptations. We sold our K-12 business in Canada in 2017.

Product pricing varies by region and country with pricing comparable to equivalent products sold in the United States in some instances. Within developing economies, price points tend to be lower than in the United States, dictated by the economic conditions prevalent in that country.

Foreign exchange rates also impact our international revenues as the functional currency is often the foreign currency of the countries in which we operate. As a result, we are exposed to currency fluctuations in translating our financial results into U.S. dollars. In 2019, approximately 77% of our international sales were denominated in currencies other than the U.S. dollar. Recent strengthening of the dollar has resulted in unfavorable foreign exchange impacts. We monitor the impact of foreign currency movements and the correlation between local currencies and the U.S. dollar. We also periodically review our hedging strategy and may enter into other arrangements as appropriate.

Revenue recognition for international products is similar to products sold in the United States. Revenue for traditional print products is typically recognized upon shipment, while digital revenues are recognized over the contractual term of the product. The difference in our revenue recognition policies between print and digital solutions has caused comparisons of current and historical revenues to less accurately reflect the actual sales performance of our business during this time of transition. As a result, we use the non-GAAP measure Billings to provide a consistent comparison of sales performance from period to period. See "-Non-GAAP Measures" for a description of how we define Billings.

Professional

We derive revenue primarily from the sale of digital subscription services and content, both digital and print. Our digital and print revenues are a function of sales volume and, to a lesser extent, changes in unit pricing. Our revenues are comprised of product and services sales less an allowance for product returns and revenue that is required to be deferred in accordance with U.S. GAAP.

Sales volume is driven by demand for subscription based, professional content and by growth in knowledge-based industries, especially in the medical, technical and engineering fields. As the United States economy continues to recover, we expect the market for professional education resources to grow, particularly among professions that are experiencing more rapid job growth. The Professional and Business Services and Healthcare and Social Assistance industry sectors are expected to add over 6 million jobs between 2016 and 2026, more than all other United States industries combined, according to the Bureau of Labor Statistics ("BLS"). We derive a substantial portion of our Professional revenue from these two industries.

Sales of our digital subscription services provide a stable and highly recurring revenue stream, with a retention rate across major platforms of 95% in 2019. Our digital subscription services are sold as annual and multi-year contracts.

Revenue for traditional print products is typically recognized upon shipment, while digital revenues are recognized over the contractual term. The continued shift from print to digital will increase the percentage of our sales that are deferred and recognized over the contractual term. The difference in our revenue recognition policies between print and digital solutions has caused comparisons of current and historical revenues to less accurately reflect the actual sales performance of our business during this time of transition. As a result, we use the non-GAAP measure Billings to provide a consistent comparison of sales performance from period to period. See "-Non-GAAP Measures" for a description of Billings.

Cost of Sales

Cost of sales include variable costs such as paper, printing and binding, certain transportation and freight costs related to our print products, as well as content related royalty expenses and gratis costs (products provided at no charge as part of the sales transaction) for both print and digital products. Gratis costs are predominately incurred in our K-12 business and tend to be higher for adoption state sales as compared to open territory sales. As such, these costs will vary based upon the level of adoption state sales during a given period.

Due to the inherent subjectivity in the classification of costs between cost of sales and operating and administrative expense across the Company's industry, the Company does not focus on gross profit or gross margin as a key metric for the Company's business. Additionally, the classification of costs between cost of sales and operating and administrative expense does not impact the Company's key metrics, including Billings and Adjusted EBITDA by segment.

Operating and Administration Expenses

Our operating and administration expenses include the expenses of our employees and outside vendors engaged in our marketing, selling, editorial and administrative activities as well as pre-publication cost amortization. A significant component of our total operating and administration expense relates to our ongoing investment in DPG. These costs are both fixed and variable in nature and while we are committed to continue significant digital investment, growth rates of spending has declined and our annual expenditures have stabilized as our major initiatives and the build-out of certain foundational capabilities near completion.

Costs associated with design and content creation for both digital and print products are capitalized as a component of pre-publication expenditures. Capitalized pre-publication expenditures are subsequently amortized as a component of operating and administration expenses.

Outside of costs directly associated with DPG, we incur additional digital related costs, including content tagging and digital solutions hosting, which have increased as the digital transformation continues. The Company relies primarily on internal resources to develop the Company's digital platform, host the Company's digital solutions and tag the Company's digital content, and these costs have no clear attribution to specific products or services and do not directly correlate to sales of products or delivery of services. As a result, the Company has classified these costs within operating and administrative expenses.

We incur expense for products provided to decision makers in the educational materials purchasing process as part of our sampling program, primarily in our K-12 business. Annual samples expense can vary significantly depending upon the adoption calendar and the mix of programs being considered for adoption. As our revenues continue to shift from traditional print offerings to digital solutions, we expect the expense incurred for sampling to decline.

In the United States, our products are sold in over 5,000 higher education institutions and approximately 3,000 K-12 school districts across all 50 states. Our nearly 1,100 person sales force, which includes approximately 350 sales people in the United States higher education and approximately 300 sales people in the United States K-12 markets, maintains close relationships with the individual instructors that represent the primary decision makers in the higher education market and the states, school districts, and individual schools that primarily make purchase decisions in the K-12 market. We incur significant selling and market expense to maintain and support our extensive sales force. Subsequent to the Founding Acquisition, we invested in sales and marketing to drive future revenue opportunities and enhance our product branding. As revenues grow in the future, we expect to see modest increases in selling and marketing expense that will vary with the K-12 adoption cycle.

Since the Founding Acquisition, we have incurred significant non-recurring restructuring and separation costs to establish the standalone operations of our business and facilitate cost saving opportunities. The physical separation costs incurred to establish our standalone operations ceased in 2014 upon the completion of the separation from our former parent. Excluding the impact of restructuring and separation costs, we expect our

operating and administration expense to increase nominally as we continue to invest in the business and drive our digital transformation.

Interest Expense

Our interest expense primarily includes interest related to our indebtedness, including the amortization of deferred financing fees and debt discounts, and outstanding capital lease and other financing obligations.

Interest expense varies based on the amount of indebtedness outstanding and the rates at which we were able to secure the indebtedness. The interest rate on certain tranches of indebtedness is based on London InterBank Offered Rate (LIBOR) or the prime lending rate (Prime), plus an applicable margin. As a result, changes in the LIBOR or Prime rate can impact interest expense. Interest expense for the years ended December 31, 2019, 2018 and 2017 was $180.4 million, $180.6 million and $179.4 million, respectively.

Intangible Amortization

Our intangible asset amortization expense primarily includes the amortization of acquired intangible assets consisting of customer relationships, content rights, trade names, non-compete rights and technology. The largest component of our intangibles asset balance is related to content acquired as part of the Founding Acquisition and is being amortized over a period of 8 to 14 years. The remaining balances will be amortized over varying periods of time from 4 to 14 years from the date of acquisition. Intangible asset amortization expense for the years ended December 31, 2019, 2018 and 2017 was $71.8 million, $86.7 million and $88.1 million, respectively.

Pre-publication Expenditures and Amortization

Pre-publication expenditures are capitalized costs incurred and principally consist of design and content creation. Costs incurred prior to the publication date of a title or release date of a product represent activities associated with product development. These may be performed internally or outsourced to subject matter specialists and include, but are not limited to, editorial review and fact verification, graphic art design and layout and the process of conversion from print to digital media or within various formats of digital media. These costs are capitalized when the costs can be directly attributable to a project or title and the title is expected to generate probable future economic benefits. Capitalized costs are amortized upon publication of the title over its estimated useful life of up to six years, with a higher proportion of the amortization typically taken in the earlier years.

Over the last several years, we have optimized our pre-publication expenditures to emphasize investment in content that can be leveraged across our full range of products, which maximizes our long-term returns on this investment. This has been accomplished, in part, by the creation of DPG, which supports ongoing innovation, development and maintenance of our technology platforms. Our total pre-publication cash costs are influenced mostly by the timing of new adoption opportunities in our K-12 business and the timing of investment in front-list titles in our Higher Education business, during any given period.

Pre-publication expenditure demands differ by business segment for a variety of reasons, including the speed with which the digital transformation has occurred. In Higher Education, pre-publication expenditures are highest for the first edition of a new title, and lower for subsequent revisions. Our pre-publication investment to create content used in our adaptive tools, such as the assessment questions in the *LearnSmart,* product is increasing. This foundational investment is expected to reduce the variability of pre-publication expenditures in the future as we are able to leverage the content across the business.

Higher Education

Pre-publication expenditures in the Higher Education segment relate to the development of product across all disciplines, since the content is created by authors on a royalty basis. We develop “first editions,” which are new titles or programs that can be revised over time based on market acceptance. As we continue our digital transformation, our pre-publication expenditure is increasingly related to content used in our adaptive tools, such as

the assessment questions in the *LearnSmart* product. Development of the technology underlying our digital products is either supported by DPG with costs recorded in operating expenses, or capitalized if a new capability is developed (i.e., new product). Pre-publication expenditures are typically incurred in the year before the copyright is acquired on a printed textbook. The cash spend for the years ended December 31, 2019, 2018 and 2017 was $30.2 million, $38.7 million and $33.0 million, respectively.

K-12

Pre-publication expenditures in the K-12 segment relate to content development and are the highest in the company, representing approximately 44% of total spend in 2019. Unlike the Higher Education segment, most content is developed by our K-12 product development teams. Pre-publication expenditures are incurred for external content development (work for hire), permissions, artwork and the physical design and layout of the printed books. Created content is used in our digital offerings as well. New basal programs such as reading, math, social studies or science are published around the adoption cycles for large adoption states such as California, Texas and Florida. Pre-publication expenditures are typically spent up to three years prior to an adoption sales year. The cash spend for the years ended December 31, 2019, 2018 and 2017 was $33.1 million, $43.3 million and $47.0 million, respectively.

International

Pre-publication expenditures in the international segment relate to locally developed products or adaptations and translations of existing Higher Education, K-12 and Professional products in both digital and print format. Similar to our Higher Education and Professional segments, pre-publication is typically spent in the year before the copyright is established. The cash spend for the years ended December 31, 2019, 2018 and 2017 was $7.3 million, $8.9 million and $11.3 million, respectively.

Professional

Pre-publication expenditures in the Professional segment relate to new titles and revisions, similar to the Higher Education segment, and include activities related to the creation of the actual product, since the content is created by authors on a royalty basis. Pre-publication expenditures are typically incurred in the year before the copyright is established. For our *Access* platforms, any additional content needed to supplement the print product will be funded through pre-publication expenditures. The cash spend for the years ended December 31, 2019, 2018 and 2017 was $8.5 million, $8.6 million and $7.9 million, respectively.

Capital Expenditures

Capital expenditures relate to expenditures for fixed assets, leasehold improvements and software development. The expense related to these purchases is recorded as depreciation in our statement of operations over the useful life of the asset. Our capital expenditures vary based upon the level of digital investment being made as well as the timing of asset purchases. For the years ended December 31, 2019, 2018 and 2017 our capital expenditures were $75.2 million, $63.2 million and $45.1 million, respectively.

Consolidated Operating Results

The following tables set forth certain historical consolidated financial information for the years ended December 31, 2019, 2018 and 2017. The following tables and discussion should be read in conjunction with the information contained in our historical consolidated financial statements and the notes thereto included elsewhere in this Annual Report.

Consolidated Operating Results for the Years Ended December 31, 2019 and 2018

(Dollars in thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	$ Change	% Change
Revenue	$ 1,571,388	$ 1,596,945	$ (25,557)	(1.6)%
Cost of sales	371,387	394,531	(23,144)	(5.9)%
Gross profit	1,200,001	1,202,414	(2,413)	(0.2)%
Operating expenses				
Operating and administration expenses	1,030,470	1,038,073	(7,603)	(0.7)%
Depreciation	56,302	46,929	9,373	20.0 %
Amortization of intangibles	71,849	86,722	(14,873)	(17.2)%
Total operating expenses	1,158,621	1,171,724	(13,103)	(1.1)%
Operating income	41,380	30,690	10,690	34.8 %
Interest expense (income), net	180,430	180,576	(146)	(0.1)%
Other (income) expense	(7,962)	—	(7,962)	n/m
(Loss) income from operations before taxes on income	(131,088)	(149,886)	18,798	(12.5)%
Income tax (benefit) provision	12,122	10,535	1,587	15.1 %
Net (loss) income	**$ (143,210)**	**$ (160,421)**	**$ 17,211**	**(10.7)%**

Revenue

(Dollars in thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	$ Change	% Change
Reported Revenue by segment:				
Higher Education	$ 609,730	$ 660,881	$ (51,151)	(7.7)%
K-12	590,244	560,802	29,442	5.2 %
International	248,698	254,995	(6,297)	(2.5)%
Professional	119,227	116,903	2,324	2.0 %
Other	3,489	3,364	125	3.7 %
Total Reported Revenue	**$ 1,571,388**	**$ 1,596,945**	**$ (25,557)**	**(1.6)%**

Revenue for the years ended December 31, 2019 and 2018 was $1,571.4 million and $1,596.9 million, respectively, a decrease of $25.6 million or 1.6%. The decrease was driven by the segment factors described below.

Higher Education

Higher Education revenue for the years ended December 31, 2019 and 2018 was $609.7 million and $660.9 million, respectively, a decrease of $51.2 million or 7.7%. The decrease was primarily due to:

- a decline in print revenue, driven by the ongoing migration from print to digital learning solutions and limited sales of our 2019 and 2020 copyright titles which were primarily available only through our rental program;

- continued price compression as affordability solution offerings are implemented across the industry; partially offset by

- growth in Inclusive Access digital sales of approximately 53%; and

- lower product returns reserve driven by the ongoing shift to digital learning solutions and our rental program introduced in 2018.

K-12

K-12 revenue for the years ended December 31, 2019 and 2018 was $590.2 million and $560.8 million respectively, an increase of $29.4 million or 5.2%. The increase was primarily due to:

- higher adoption market sales driven by a large market opportunity in certain adoptions, most notably California Social Studies and Science, as well as Texas English Language Arts, and

- higher Open Territory sales driven primarily by Social Studies in Illinios; partially offset by

- a decline in California English Language Arts sales as 2018 was the third and final year of purchasing for the adoption cycle.

International

International revenue for the years ended December 31, 2019 and 2018 was $248.7 million and $255.0 million, respectively, a decrease of $6.3 million or 2.5%. The decrease was primarily due to:

- lower print revenue, primarily driven by limited sales of our 2019 and 2020 copyrights titles as part of the Higher Education rental program and stronger controls on sales to distributors to prevent product from being resold in the U.S. secondary market;

- lower print revenue, resulting from an accounting change whereby co-publishing revenue was recorded on a net as opposed to gross basis; and

- a $5.2 million unfavorable foreign exchange rate impact (estimated by re-calculating current period results of foreign operations using the average exchange rate from the prior period); partially offset by

- revenue growth in Asia region resulting from new product release, adoptions and co-publishing arrangements.

Professional

Professional revenue for the years ended December 31, 2019 and 2018 was $119.2 million and $116.9 million, respectively, an increase of $2.3 million or 2.0%. The increase was primarily due to the increase digital subscription revenue related to our *Access* platform offerings partially offset by decrease in our print sales due to the shift towards digital.

Cost of Sales

Cost of sales for the years ended December 31, 2019 and 2018 was $371.4 million and $394.5 million, respectively, a decrease of $23.1 million or 5.9%. The decrease was primarily due to lower manufacturing costs and

freight attributable to lower print sales resulting from ongoing shift to digital learning solutions and lower royalty expense driven by the decline in sales.

Operating and Administration Expenses

Operating and administration expenses for the years ended December 31, 2019 and 2018 were $1,030.5 million and $1,038.1 million, respectively, a decrease of $7.6 million or 0.7%. Included within operating and administration expense is the amortization of pre-publication expenditures which increased by $6.7 million or 8% driven by the higher sales at K-12. The remaining variance was primarily due to:

- lower compensation due to a strategic headcount reductions;
- lower technology related expenditures due to operational improvements and contract negotiations; partially offset by
- an increase in restructuring charges due to strategic headcount reductions.

Depreciation & Amortization of Intangibles

Depreciation and amortization expenses for the years ended December 31, 2019 and 2018 were $128.2 million and $133.7 million, respectively, a decrease of $5.5 million or 4.1%. The decrease was driven by the use of accelerated amortization methods for certain of our acquired intangible assets, partially offset by an increase in depreciation expense associated with our deferred technology costs.

Interest expense, net

Interest expense, net, for the years ended December 31, 2019 and 2018 was $180.4 million and $180.6 million, respectively, a decrease of $0.1 million or 0.1%. The decrease was primarily due to:

- no borrowing under Revolving Facility as compared to $42 million weighted average borrowing in 2018; and
- a reduction in interest expense primarily due to the redemption and discharge of the $243.6 million face value of MHGE PIK Toggle Notes by April 20, 2018; offset by
- a higher applicable LIBOR related to the Term Loan Facility in comparison to the prior year due to higher market interest rates;
- the issuance of $180 million MHGE Parent Term Loan on April 20, 2018; and
- a $60.5 million drawn down on the Receivables Facility entered into on October 29, 2018.

Refer to Note 7, "Debt," of our consolidated financial statements included elsewhere in this Annual Report for further discussion of our debt.

Other (income) expense

During the year ended December 31, 2019, the Company recorded a earn out of $8.0 million related to the sale of CTB business to Data Recognition Corporation in 2015. Refer to Note 3, "Other Income" of our consolidated financial statements included elsewhere in this Annual Report for further discussion of CTB business sale.

Income tax (benefit) provision

Taxes on income from continuing operations for the years ended December 31, 2019 and 2018 were a provision of $12.1 million and $10.5 million, respectively. For the years ended December 31, 2019 and 2018, the effective tax rate on continuing operations was (9.1)% and (7.0)%, respectively. A valuation allowance was recorded for federal and state and certain foreign deferred tax assets due to negative evidence associated with our estimation of the realization of cumulative book losses. For the years ended December 31, 2019 and 2018, no deferred income tax benefit was recognized for the domestic loss and certain foreign losses on operations as a result of the valuation allowance recorded against these tax benefits.

Adjusted EBITDA by Segment for the Years Ended December 31, 2019 and 2018

Adjusted EBITDA by segment, as determined in accordance with Accounting Standards Codification Topic 280, Segment Reporting, is a measure used by management to assess the performance of our segments. We exclude from Adjusted EBITDA by segment: interest expense (income), net, income tax (benefit) provision, depreciation, amortization and pre-publication amortization and certain transactions or adjustments that our management does not consider for the purposes of making decisions to allocate resources among segments or assessing segment performance. In addition, Adjusted EBITDA by segment is calculated in a manner consistent with the definition and meaning of our Adjusted EBITDA non-GAAP debt covenant compliance measure, see "Non-GAAP Measures" - "Debt Covenant Compliance".

(Dollars in thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	$ Change	% Change
Adjusted EBITDA by segment:				
Higher Education	$ 183,252	$ 200,667	$ (17,415)	(8.7)%
K-12	110,525	24,085	86,440	358.9 %
International	15,161	8,038	7,123	88.6 %
Professional	35,453	35,754	(301)	(0.8)%
Other	10,647	(7,620)	18,267	n/m

Higher Education

Adjusted EBITDA for the years ended December 31, 2019 and 2018 was $183.3 million and $200.7 million, respectively, a decrease of $17.4 million or 8.7%. The decrease was primarily due to:

- the impact of the $40.9 million unfavorable Billings variance discussed under "Non-GAAP Measures-Billings for the Year Ended December 31, 2019 and 2018 - Higher Education"; partially offset by
- a decrease in pre-publication investment cash costs related to spend on new front-list titles;
- lower manufacturing costs during the period as a result of ongoing shift to digital learning solution sales; and
- lower compensation due to a strategic headcount reductions.

K-12

Adjusted EBITDA for the years ended December 31, 2019 and 2018 was $110.5 million and $24.1 million, respectively, an increase of $86.4 million or 358.9%. The increase was due primarily to:

- the impact of the $46.8 million favorable Billings variance discussed under "Non-GAAP Measures-Billings for the Year Ended December 31, 2019 and 2018- K-12";
- a decrease in pre-publication investment cash costs due to the timing of new adoptions in comparison to the prior period; and
- lower compensation due to strategic headcount reductions; partially offset by
- higher manufacturing costs due to higher Billings.

International

Adjusted EBITDA for the years ended December 31, 2019 and 2018 was $15.2 million and $8.0 million, respectively, an increase of $7.1 million or 88.6%. The increase was primarily due to:

- a decrease in pre-publication investment cash costs due to timing; and
- lower manufacturing costs due to the decline in revenue and the shift towards digital learning solutions; partially offset by
- the impact of the $6.2 million unfavorable Billings variance discussed under "Non-GAAP Measures-Billings for the Year Ended December 31, 2019 and 2018 - International".

Professional

Adjusted EBITDA for the years ended December 31, 2019 and 2018 was $35.5 million and $35.8 million, respectively, a decrease of $0.3 million or 0.8%. The decrease was due primarily to:

- the gross profit impact of the $3.3 million favorable Billings variance discussed under "Non-GAAP Measures-Billings for the Year Ended December 31, 2019 and 2018 - Professional"
- higher compensation costs due to strategic headcount increase to better manage our business and customer base; offset by

Other

Adjusted EBITDA for the years ended December 31, 2019 and 2018 was $10.6 million and $(7.6) million, respectively, a variance of $18.3 million. The variance was due to the impact of timing related corporate expenses.

Consolidated Operating Results for the Years Ended December 31, 2018 and 2017

(Dollars in thousands)	Year Ended December 31, 2018	Year Ended December 31, 2017	$ Change	% Change
Revenue	$ 1,596,945	$ 1,719,072	$ (122,127)	(7.1)%
Cost of sales	394,531	426,636	(32,105)	(7.5)%
Gross profit	1,202,414	1,292,436	(90,022)	(7.0)%
Operating expenses				
Operating and administration expenses	1,038,073	1,065,755	(27,682)	(2.6)%
Depreciation	46,929	45,243	1,686	3.7 %
Amortization of intangibles	86,722	88,068	(1,346)	(1.5)%
Total operating expenses	1,171,724	1,199,066	(27,342)	(2.3)%
Operating income	30,690	93,370	(62,680)	(67.1)%
Interest expense (income), net	180,576	179,378	1,198	0.7 %
Other (income) expense	—	(12,727)	12,727	n/m
(Loss) income from operations before taxes on income	(149,886)	(73,281)	(76,605)	104.5 %
Income tax (benefit) provision	10,535	(7,351)	17,886	n/m
Net (loss) income	**$ (160,421)**	**$ (65,930)**	**$ (94,491)**	**143.3 %**

Revenue

(Dollars in thousands)	Year Ended December 31, 2018	Year Ended December 31, 2017	$ Change	% Change
Reported Revenue by segment:				
Higher Education	$ 660,881	$ 713,583	$ (52,702)	(7.4)%
K-12	560,802	602,627	(41,825)	(6.9)%
International	254,995	281,486	(26,491)	(9.4)%
Professional	116,903	120,470	(3,567)	(3.0)%
Other	3,364	906	2,458	n/m
Total Reported Revenue	**$ 1,596,945**	**$ 1,719,072**	**$ (122,127)**	**(7.1)%**

Revenue for the years ended December 31, 2018 and 2017 was $1,596.9 million and $1,719.1 million, respectively, a decrease of $122.1 million or 7.1%. Excluding the impact of purchase accounting (which negatively impacted revenue as a result of the adjustment recorded to reduce the carrying value of deferred revenue on the opening balance sheet), revenue for the years ended December 31, 2018 and 2017 was $1,600.0 million and $1,728.6 million, respectively, a decrease of $128.7 million or 7.4%. The decrease was driven by the segment factors described below.

Higher Education

Higher Education revenue for the years ended December 31, 2018 and 2017 was $660.9 million and $713.6 million, respectively, a decrease of $52.7 million or 7.4%. The decrease was primarily due to:

- a decline in print revenue, driven by the limited sales of our 2019 copyright titles which were primarily available only through our new rental program and pricing compression as print affordability solution offerings are implemented across the industry; and

- a non-recurring prior period digital content sale; partially offset by

- growth in back-list digital revenue, driven by inclusive access sales (paid activations of *Connect/ LearnSmart* grew by approximately 8%); and

- lower product returns reserve rate driven by the ongoing shift to digital learning solutions and a continued decline in actual product returns from major distribution partners.

K-12

K-12 revenue for the years ended December 31, 2018 and 2017 was $560.8 million and $602.6 million, respectively, a decrease of $41.8 million or 6.9%. Excluding the impact of purchase accounting, revenue for the years ended December 31, 2018 and 2017 was $563.8 million and $612.2 million, respectively, a decrease of $48.4 million or 7.9%. The decrease was primarily due to:

- a decline in California ELA adoption sales as a result of a smaller market opportunity in the third and final year of purchasing;

- a cyclically smaller adoption market year-over-year as California ELA is replaced by other much smaller adoption opportunities; and

- a decline in open territory due to lower purchasing in core subjects ahead of new editions across the industry for 2019-2020 large adoptions, under-performance in our math, intervention and supplemental program sales and timing of prior period sales, including elementary reading, math and science in Indiana, elementary reading in Arizona, Kentucky and Pennsylvania and social studies in Virginia; partially offset by

- strong performance in California social studies and, Florida and Tennessee science adoptions.

International

International revenue for the years ended December 31, 2018 and 2017 was $255.0 million and $281.5 million, respectively, a decrease of $26.5 million or 9.4%. The decrease was primarily due to:

- lower print revenue, primarily driven by the sale of the K-12 Canadian business in the prior period, limited investment in regional front-list titles, limited 2019 copyright early release sales as part of the Higher Education rental program and stronger controls on sales to distributors to prevent product from being resold in the U.S. secondary market; and

- a $1.0 million unfavorable foreign exchange rate impact (estimated by re-calculating current period results of foreign operations using the average exchange rate from the prior period); partially offset by

- revenue growth in China and Latin America, as well as strong digital revenue growth in Canada driven by Connect sales.

Professional

Professional revenue for the years ended December 31, 2018 and 2017 was $116.9 million and $120.5 million, respectively, a decrease of $3.6 million or 3.0%. The decrease was primarily due to the decline in print and eBook revenue, partially offset by an increase in the recognition of previously deferred revenue as compared to the prior year as a result of the growth in *Access* platform sales.

Cost of Sales

Cost of sales for the years ended December 31, 2018 and 2017 was $394.5 million and $426.6 million, respectively, a decrease of $32.1 million or 7.5%. The decrease was primarily due to lower manufacturing costs attributable to lower print sales and the ongoing shift to digital learning solutions and lower royalty expense driven by the decline in sales.

Operating and Administration Expenses

Operating and administration expenses for the years ended December 31, 2018 and 2017 were $1,038.1 million and $1,065.8 million, respectively, a decrease of $27.7 million or 2.6%. Included within operating and administration expense is the amortization of pre-publication expenditures which decreased by $13.0 million or 13% driven by the timing and level of pre-publication expenditures. The remaining variance was primarily due to:

- lower compensation (including incentives and commissions) due to a decline in revenue and a strategic reduction in headcount;
- lower professional fees, as well as discretionary spending; and
- lower technology related expenditures due to operational improvements and contract negotiations; partially offset by
- an increase in samples expense primarily driven by the large new adoption opportunities in 2019.

Depreciation & Amortization of Intangibles

Depreciation and amortization expenses for the years ended December 31, 2018 and 2017 were $133.7 million and $133.3 million, respectively, an increase of $0.3 million or 0.3%. The increase was driven by:

- an increase in depreciation expense associated with additional capital lease arrangements; and
- a $5.5 million impairment of a technology intangible asset related to our K-12 segment; partially offset by
- a decrease in amortization expense due to the use of accelerated amortization methods for certain of our acquired intangible assets.

Interest expense, net

Interest expense, net, for the years ended December 31, 2018 and 2017 was $180.6 million and $179.4 million, respectively, an increase of $1.2 million or 0.7%. The increase was primarily due to:

- a higher applicable LIBOR rate related to the Term Loan Facility in comparison to the prior period due to rising market interest rates;
- the issuance of $180 million MHGE Parent Term Loan on April 20, 2018; and
- a $50 million Receivables Facility entered into on October 29, 2018; partially offset by
- a reduction in interest expense primarily due to the repurchase of $207.8 million face value of MHGE PIK Toggle Notes during the second half of 2017 (with the remaining $243.6 million face value being repaid in full by April 20, 2018).

Refer to Note 7, "Debt," of our consolidated financial statements included elsewhere in this Annual Report for further discussion of our debt.

Other (income) expense

During the year ended December 31, 2017, the Company recorded a gain of $12.7 million primarily due to:

- a $5.8 million gain on disposal related to the divestiture of the K-12 Canadian business; and
- a $4.9 million gain due to the sale of an equity method investment.

Income tax (benefit) provision

Taxes on income from continuing operations for the years ended December 31, 2018 and 2017 were a provision of $10.5 million and a benefit of $7.4 million, respectively. For the years ended December 31, 2018 and 2017, the effective tax rate on continuing operations was (7.0)% and 10.0%, respectively. A full valuation allowance was recorded for federal and state and certain foreign deferred tax assets due to negative evidence associated with our estimation of the realization of cumulative book losses. For the years ended December 31, 2018 and 2017, no deferred income tax benefit was recognized for the domestic loss and certain foreign losses on operations as a result of the valuation allowance recorded against these tax assets.

The Tax Cuts and Jobs Act (TCJA), signed in to law on December 22, 2017, made significant changes to the Internal Revenue Code, including reducing the federal corporate income tax rate from 35% to 21% effective January 1, 2018. As a result, the Company's domestic deferred tax assets were re-valued downward by $149.5 million to reflect the 21% federal income tax rate. The revaluation was offset by an adjustment in the valuation allowance resulting in no impact to the consolidated statement of operations for the year ended December 31, 2017. The Company's domestic deferred tax liability related to indefinite lived intangibles was also re-valued recognizing a benefit of $14.6 million. Another provision in the TCJA allows an unlimited carry forward period for net operating losses (NOLs) arising after December 31, 2017 while limiting the use of these NOLs to 80% of the year's taxable income. As a result, the domestic deferred tax liability related to indefinite lived intangibles can now be considered a source of income to the extent of 80% and the Company was able to reduce the level of the valuation allowance and record a provision benefit of $17.2 million for the year ended December 31, 2017.

Adjusted EBITDA by Segment for the Years Ended December 31, 2018 and 2017

Adjusted EBITDA by segment, as determined in accordance with Accounting Standards Codification Topic 280, Segment Reporting, is a measure used by management to assess the performance of our segments. We exclude from Adjusted EBITDA by segment: interest expense (income), net, income tax (benefit) provision, depreciation, amortization and pre-publication amortization and certain transactions or adjustments that our management does not consider for the purposes of making decisions to allocate resources among segments or assessing segment performance. In addition, Adjusted EBITDA by segment is calculated in a manner consistent with the definition and meaning of our Adjusted EBITDA non-GAAP debt covenant compliance measure, see "Non-GAAP Measures" - "Debt Covenant Compliance".

(Dollars in thousands)	Year Ended December 31, 2018	Year Ended December 31, 2017	$ Change	% Change
Adjusted EBITDA by segment:				
Higher Education	$ 200,667	$ 227,707	$ (27,040)	(11.9)%
K-12	24,085	112,078	(87,993)	(78.5)%
International	8,038	18,324	(10,286)	(56.1)%
Professional	35,754	39,944	(4,190)	(10.5)%
Other	(7,620)	2,092	(9,712)	n/m

Higher Education

Adjusted EBITDA for the years ended December 31, 2018 and 2017 was $200.7 million and $227.7 million, respectively, a decrease of $27.0 million or 11.9%. The decrease was primarily due to:

- the gross profit impact of the $36.3 million unfavorable Billings variance discussed under “Non-GAAP Measures-Billings for the Year Ended December 31, 2018 and 2017- Higher Education”; and
-
- an increase in pre-publication investment cash costs related to spend on new front-list titles; partially offset by
- lower manufacturing costs and royalty expense as a result of the decline in revenue as well as the ongoing shift to digital learning solution sales; and
- lower discretionary spending and lower compensation (including incentives and commissions) due to the decline in revenue and strategic headcount reductions.

K-12

Adjusted EBITDA for the years ended December 31, 2018 and 2017 was $24.1 million and $112.1 million, respectively, a decrease of $88.0 million or 78.5%. The decrease was due primarily to:

- the gross profit impact of the $132.5 million unfavorable Billings variance discussed under “Non-GAAP Measures-Billings for the Year Ended December 31, 2018 and 2017- K-12”;
- an increase in samples expense primarily driven by the large new adoption opportunities in 2019; partially offset by
- lower compensation (including incentives and commissions) primarily due to the decline in revenue and strategic headcount reductions, as well as lower discretionary spending including professional fees;
- lower manufacturing costs due to the decline in revenue; and
- a decrease in pre-publication investment cash costs due to the timing of new adoptions in comparison to the prior period.

International

Adjusted EBITDA for the years ended December 31, 2018 and 2017 was $8.0 million and $18.3 million, respectively, a decrease of $10.3 million or 56.1%. The decrease was primarily due to:

- the gross profit impact of the $30.9 million unfavorable Billings variance discussed under "Non-GAAP Measures- Billings for the Year Ended December 31, 2018 and 2017 - International"; and
- a $3.4 million unfavorable foreign exchange rate impact (estimated by re-calculating current period results of foreign operations using the average exchange rate from the prior period.); partially offset by
- lower pre-publication investment cash costs, primarily due to the costs incurred in the prior year associated with the development of localized digital offerings for the multi-year United Arab Emirates contract entered into in 2016;
- lower manufacturing costs and royalty expense due to the decline in revenue; and

- lower discretionary spending and lower compensation (including incentives and commissions) due to strategic headcount reductions.

Professional

Adjusted EBITDA for the years ended December 31, 2018 and 2017 was $35.8 million and $39.9 million, respectively, a decrease of $4.2 million or 10.5%. The decrease was due primarily to:

- the gross profit impact of the $6.0 million unfavorable Billings variance discussed under "Non-GAAP Measures-Billings for the Year Ended December 31, 2018 and 2017 - Professional"; and

- higher pre-publication investment cash costs; partially offset by

- lower discretionary spending and lower compensation as a result of strategic headcount reductions in prior periods.

Other

Adjusted EBITDA for the years ended December 31, 2018 and 2017 was $(7.6) million and $2.1 million, respectively, a variance of $9.7 million. The variance was due to the impact of adjustments made for in-transit product sales and timing related corporate expenses.

Non-GAAP Measures

Billings, EBITDA and Adjusted EBITDA

The SEC has adopted rules to regulate the use in filings with the SEC and in public disclosures of "non-GAAP financial measures," such as Billings, EBITDA and Adjusted EBITDA. These measures are derived on the basis of methodologies other than in accordance with U.S. GAAP.

Billings is a non-GAAP performance measure that provides useful information in evaluating our period-to-period performance because it reflects the total amount of revenue that would have been recognized in a period if we recognized all print and digital revenue at the time of sale. We use Billings as a performance measure given that we typically collect full payment for our digital and print solutions at the time of sale or shortly thereafter, but recognize revenue from digital solutions and multi-year deliverables ratably over the term of our customer contracts. As sales of our digital learning solutions have increased, so has the amount of revenue that is deferred in accordance with U.S. GAAP. Billings is a key metric we use to manage our business as it reflects the sales activity in a given period, provides comparability from period-to-period during this time of digital transition and is the basis for all sales incentive compensation. In the K-12 market where customers typically pay for five to eight year contracts upfront and the ongoing costs to service any contractual obligation are limited, the impact of the change in deferred revenue is most significant. Billings is U.S. GAAP revenue plus the net change in deferred revenue.

EBITDA, a measure used by management to assess operating performance, is defined as net income from continuing operations plus net interest, income taxes, depreciation and amortization (including amortization of pre-publication investment cash costs). Adjusted EBITDA is a non-GAAP debt covenant compliance measure that is defined in accordance with our debt agreements. Adjusted EBITDA is a material term in our debt agreements and provides an understanding of our debt covenant compliance, ability to service our indebtedness and make capital allocation decisions in accordance with our debt agreements.

Each of the above described measures is not a recognized term under U.S. GAAP and does not purport to be an alternative to revenue, income from continuing operations, or any other measure derived in accordance with U.S. GAAP as a measure of operating performance, debt covenant compliance or to cash flows from operations as a measure of liquidity. Additionally, each such measure is not intended to be a measure of free cash flows available for management's discretionary use, as it does not consider certain cash requirements such as interest payments, tax

payments and debt service requirements. Such measures have limitations as analytical tools, and you should not consider any of such measures in isolation or as substitutes for our results as reported under U.S. GAAP. Management compensates for the limitations of using non-GAAP financial measures by using them to supplement U.S. GAAP results to provide a more complete understanding of the factors and trends affecting the business than U.S. GAAP results alone. Because not all companies use identical calculations, our measures may not be comparable to other similarly titled measures of other companies.

Management believes Adjusted EBITDA is helpful in highlighting trends because Adjusted EBITDA excludes the results of certain transactions or adjustments that are non-recurring or non-operational and can differ significantly from company to company depending on long-term strategic decisions regarding capital structure, the tax rules in the jurisdictions in which companies operate, and capital investments. In addition, Billings and Adjusted EBITDA provide more comparability between the historical operating results and operating results that reflect purchase accounting and the new capital structure post the Founding Acquisition as well as the digital transformation that we are undertaking which requires different accounting treatment for digital and print solutions in accordance with U.S. GAAP.

Management believes that the presentation of Adjusted EBITDA, which is defined in accordance with our debt agreements, is appropriate to provide additional information to investors about certain material non-cash items and about unusual items that we do not expect to continue at the same level in the future as well as other items to assess our debt covenant compliance, ability to service our indebtedness and make capital allocation decisions in accordance with our debt agreements.

Billings for the Years Ended December 31, 2019 and 2018

(Dollars in thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	$ Change	% Change
Reported Revenue by segment:				
Higher Education	$ 609,730	$ 660,881	$ (51,151)	(7.7)%
K-12	590,244	560,802	29,442	5.2 %
International	248,698	254,995	(6,297)	(2.5)%
Professional	119,227	116,903	2,324	2.0 %
Other	3,489	3,364	125	3.7 %
Total Reported Revenue	**$ 1,571,388**	**$ 1,596,945**	**$ (25,557)**	**(1.6)%**
Change in deferred revenue	91,669	64,492	27,177	42.1 %
Billings	**$ 1,663,057**	**$ 1,661,437**	**$ 1,620**	**0.1 %**
Billings by Segment:				
Higher Education	$ 641,316	$ 682,232	$ (40,916)	(6.0)%
K-12	647,482	600,726	46,756	7.8 %
International	249,657	255,867	(6,210)	(2.4)%
Professional	122,720	119,459	3,261	2.7 %
Other	1,882	3,153	(1,271)	(40.3)%
Total Billings	**$ 1,663,057**	**$ 1,661,437**	**$ 1,620**	**0.1 %**

Billings for the years ended December 31, 2019 and 2018 was $1,663.1 million and $1,661.4 million, respectively, an increase of $1.6 million or 0.1%. These variances were driven by the segment factors described below.

Higher Education

Billings for the years ended December 31, 2019 and 2018 was $641.3 million and $682.2 million, respectively, a decrease of $40.9 million or 6.0%. The decrease was due to:

- a decline in print revenue, driven by the ongoing migration from print to digital learning solutions and limited sales of our 2019 and 2020 copyright titles which were primarily available only through our rental program;
- continued price compression as print affordability solution offerings are implemented across the industry; partially offset by
- growth in Inclusive Access sales of approximately 53%; and
- lower product returns reserve driven by the ongoing shift to digital learning solutions and our rental program introduced in 2018.

K-12

Billings for the years ended December 31, 2019 and 2018 was $647.5 million and $600.7 million, respectively, an increase of $46.8 million or 7.8%. The increase was primarily due to an increase in adoption market sales driven by a larger market opportunity in certain adoptions, most notably California Social Studies and Science, as well as Texas ELA.

International

Billings for the years ended December 31, 2019 and 2018 was $249.7 million and $255.9 million, respectively, a decrease of $6.2 million or 2.4%. The decrease was due to:

- lower print revenue, primarily driven by limited sales of our 2019 and 2020 copyrights titles as part of the Higher Education rental program and stronger controls on sales to distributors to prevent product from being resold in the U.S. secondary market;
- lower print revenue, resulting from an accounting change whereby co-publishing revenue was recorded net of cost of sales; and
- a $5.2 million unfavorable foreign exchange rate impact (estimated by re-calculating current period results of foreign operations using the average exchange rate from the prior period); partially offset by
- revenue growth in Asia region (excluding China) resulting from new product release.

Professional

Billings for the years ended December 31, 2019 and 2018 was $122.7 million and $119.5 million, respectively, an increase of $3.3 million or 2.7%. The increase was primarily due to the increase in digital subscription revenue related to our *Acces* platform offerings partially offset by decrease in our print sales due to the shift towards digital.

Billings for the Years Ended December 31, 2018 and 2017

(Dollars in thousands)	Year Ended December 31, 2018	Year Ended December 31, 2017	$ Change	% Change
Reported Revenue by segment:				
Higher Education	$ 660,881	$ 713,583	$ (52,702)	(7.4)%
K-12	560,802	602,627	(41,825)	(6.9)%
International	254,995	281,486	(26,491)	(9.4)%
Professional	116,903	120,470	(3,567)	(3.0)%
Other	3,364	906	2,458	n/m
Total Reported Revenue	**$ 1,596,945**	**$ 1,719,072**	**$ (122,127)**	**(7.1)%**
Change in deferred revenue	64,492	147,344	(82,852)	(56.2)%
Billings	**$ 1,661,437**	**$ 1,866,416**	**$ (204,979)**	**(11.0)%**
Billings by Segment:				
Higher Education	$ 682,232	$ 718,511	$ (36,279)	(5.0)%
K-12	600,726	733,252	(132,526)	(18.1)%
International	255,867	286,762	(30,895)	(10.8)%
Professional	119,459	125,411	(5,952)	(4.7)%
Other	3,153	2,480	673	27.1 %
Total Billings	**$ 1,661,437**	**$ 1,866,416**	**$ (204,979)**	**(11.0)%**

Billings for the years ended December 31, 2018 and 2017 was $1,661.4 million and $1,866.4 million, respectively, a decrease of $205.0 million or 11.0%. These variances were driven by the segment factors described below.

Higher Education

Billings for the years ended December 31, 2018 and 2017 was $682.2 million and $718.5 million, respectively, a decrease of $36.3 million or 5.0%. The decrease was due to:

- a decline in print revenue, driven by the limited sales of our 2019 copyright titles which were primarily available only through our new rental program and pricing compression as print affordability solution offerings are implemented across the industry; and
- a non-recurring prior period digital content sale; partially offset by
- growth in back-list digital revenue, driven by inclusive access sales (paid activations of Connect/ LearnSmart grew by approximately 8%); and
- lower product returns reserve rate driven by the ongoing shift to digital learning solutions and a continued decline in actual product returns from major distribution partners.

K-12

Billings for the years ended December 31, 2018 and 2017 was $600.7 million and $733.3 million, respectively, a decrease of $132.5 million or 18.1%. The decrease was due to:

- a decline in California ELA adoption sales as a result of a smaller market opportunity in the third and final year of purchasing;

- a cyclically smaller adoption market year-over-year as California ELA is replaced by other much smaller adoption opportunities; and
- a decline in open territory due to lower purchasing in core subjects ahead of new editions across the industry for 2019-2020 large adoptions, under-performance in our math, intervention and supplemental program sales and timing of prior period sales, including elementary reading, math and science in Indiana, elementary reading in Arizona, Kentucky and Pennsylvania and social studies in Virginia; partially offset by
- strong performance in California social studies and, Florida and Tennessee science adoptions.

International

Billings for the years ended December 31, 2018 and 2017 was $255.9 million and $286.8 million, respectively, a decrease of $30.9 million or 10.8%. The decrease was due to:

- lower print revenue, primarily driven by the sale of the K-12 Canadian business in the prior period, limited investment in regional front-list titles, limited 2019 copyright early release sales as part of the Higher Education rental program and stronger controls on sales to distributors to prevent product from being resold in the U.S. secondary market; and
- a $2.8 million unfavorable foreign exchange rate impact (estimated by re-calculating current period results of foreign operations using the average exchange rate from the prior period); partially offset by
- revenue growth in China and Latin America, as well as strong digital revenue growth in Canada driven by Connect sales.

Professional

Billings for the years ended December 31, 2018 and 2017 was $119.5 million and $125.4 million, respectively, a decrease of $6.0 million or 4.7%. The decrease was primarily due to the decline in print and eBook billings, partially offset by an increase in digital subscription billings for our *Access* platform offerings.

Debt Covenant Compliance

Adjusted EBITDA is an important measure because, under our debt agreements, our ability to incur additional indebtedness or issue certain preferred shares, make certain types of acquisitions or investments, operate our business and make dividends, conduct asset sales or dispose of all or substantially all of our assets, all of which will impact our financial performance, is impacted by our Adjusted EBITDA, as our lenders measure our performance with a net first lien leverage ratio by comparing our senior secured bank indebtedness to our Adjusted EBITDA and a fixed charge coverage ratio, and several of our debt, investment and restricted payment baskets are measured using Adjusted EBITDA.

The Senior Facilities and the indentures governing the MHGE Parent Term Loan and the MHGE Senior Notes contain, among other provisions, certain customary covenants regarding indebtedness, payments and distributions, mergers and acquisitions, asset sales and affiliate transactions. Capacity for investments, debt, distributions and certain prepayments is measured in many instances by a multiple of Adjusted EBITDA. Our revolving credit facility requires that MHGE Holdings, after an initial grace period and subject to a testing threshold, comply on a quarterly basis with a maximum net first lien senior secured leverage ratio (the ratio of consolidated net debt secured by first-priority liens on the collateral to Adjusted EBITDA, as defined in the credit agreement governing the Senior Facilities) of (a) with respect to the first, third and fourth fiscal quarters of any year, 4.80 to 1.00 and (b) with respect to the second quarter of any fiscal year, 5.25 to 1.00. The testing threshold is satisfied at any time at which the sum of outstanding revolving credit facility loans, swingline loans and certain letters of credit exceeds thirty percent (30%) of commitments under the revolving credit facility at quarter end. Payment of

borrowings under the debt agreements may be accelerated if there is an event of default. Events of default include the failure to pay principal and interest when due, a material breach of a representation or warranty, certain non-payments or defaults under other indebtedness, covenant defaults, events of bankruptcy and a change of control. Our historical debt agreements, including the MHGE Facilities, the MHSE Revolving Facility and the MHSE Term Loan, contained similar covenants predicated on the same Adjusted EBITDA measure. Failure to comply with these covenants, which are based, in part, upon Adjusted EBITDA could limit our long-term growth prospects by hindering our ability to incur future debt or make acquisitions.

"Adjusted EBITDA" as defined in our Senior Facilities debt agreements, is net income, adjusted for the items summarized in the table below. Adjusted EBITDA is intended to show our unleveraged, pre-tax operating results and therefore reflects our financial performance based on operational factors, excluding non-operational or non-recurring losses or gains. Adjusted EBITDA is not a presentation made in accordance with U.S. GAAP, and our use of the term Adjusted EBITDA varies from others in our industry. This measure should not be considered as an alternative to net income (loss) from continuing operations or any other performance measures derived in accordance with U.S. GAAP. Adjusted EBITDA has important limitations as an analytical tool, and you should not consider it in isolation, or as a substitute for analysis of our results as reported under U.S. GAAP. For example, Adjusted EBITDA does not reflect: (a) our cash capital expenditure requirements for the assets being depreciated and amortized that may have to be replaced in the future; (b) changes in, or cash requirements for, our working capital needs; (c) the significant interest expenses, or the cash requirements necessary to service interest or principal payments, on our debt; (d) tax payments that may represent a reduction in cash available to us; (e) management fees paid to entities and investment funds affiliated with Apollo Global Management, LLC; (f) one-time expenditures to realize the synergies referred to above; or (g) the impact of earnings or charges resulting from matters that we and the lenders under our debt agreements may not consider indicative of our ongoing operations. In particular, our definition of Adjusted EBITDA allows us to add back certain non-cash and other charges or costs that are deducted in calculating net income from continuing operations. However, these are expenses that may recur, vary greatly and are difficult to predict. They can represent the effect of long-term strategies as opposed to short-term results. In addition, certain of these expenses can represent the reduction of cash that could be used for other corporate purposes.

Further, although not included in the calculation of Adjusted EBITDA below, the measure may at times allow us to add estimated cost savings and operating synergies related to operational changes ranging from acquisitions or dispositions to restructurings, and/or exclude one-time transition expenditures that we anticipate we will need to incur to realize cost savings before such savings have occurred.

The calculation of Adjusted EBITDA in accordance with our debt agreements is presented in the table below. The results of such calculation could differ in the future based on the different types of adjustments that may be included in such respective calculations at the time.

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Net (loss) income from continuing operations	$ (143,210)	$ (160,421)	$ (65,930)
Interest (income) expense, net	180,430	180,576	179,378
Income tax provision (benefit)	12,122	10,535	(7,351)
Depreciation, amortization and pre-publication investment amortization	220,785	219,513	232,212
EBITDA	**$ 270,127**	**$ 250,203**	**$ 338,309**
Change in deferred revenue (a)	91,669	64,492	147,344
Change in deferred royalties (b)	(18,727)	(5,426)	(22,426)
Change in deferred commissions (c)	(466)	1,281	—
Restructuring and cost savings implementation charges (d)	21,772	9,770	14,261
Sponsor fees (e)	3,500	3,500	3,500
Transaction costs (f)	21,044	—	—
Merger integration costs (g)	7,030	—	—
Other (h)	38,199	36,643	18,376
Pre-publication investment (i)	(79,110)	(99,539)	(99,219)
Adjusted EBITDA	**$ 355,038**	**$ 260,924**	**$ 400,145**

(a) We receive cash up-front for most sales but recognize revenue (primarily related to digital sales) over time recording a liability for deferred revenue at the time of sale. This adjustment represents the net effect of converting deferred revenues to a cash basis assuming the collection of all receivable balances.

(b) Royalty obligations are generally payable in the period incurred with limited recourse. This adjustment represents the net effect of converting deferred royalties to a cash basis assuming the payment of all amounts owed in the period incurred.

(c) Commissions are generally payable in the period incurred. This adjustment represents the net effect of converting deferred commissions to a cash basis assuming the payment of all amounts owed in the period incurred.

(d) Represents severance and other expenses associated with headcount reductions and other cost savings initiated as part of our formal restructuring initiatives to create a flatter and more agile organization.

(e) Represents $3.5 million of annual management fees and payable to Apollo.

(f) The amount represents the transaction costs associated with the Merger Agreement entered into between the Company and Cengage on May 1, 2019.

(g) The amount represents the integration costs associated with the Merger Agreement entered into between the Company and Cengage on May 1, 2019.

(h) For the Year Ended December 31, 2019, the amount represents (i) non-cash incentive compensation expense of $13.5 million and (ii) other adjustments required or permitted in calculating covenant compliance under our debt agreements.

For the year ended December 31, 2018, the amount represents (i) non-cash incentive compensation expense of $20.2 million and (ii) other adjustments required or permitted in calculating covenant compliance under our debt agreements.

For the year ended December 31, 2017, the amount represents (i) non-cash incentive compensation expense of $14.3 million (ii) elimination of a $5.8 million gain on disposal of the K-12 Canadian business (iii) elimination of a $4.9 million gain related to the sale of an equity method investment and (iv) other adjustments required or permitted in calculating covenant compliance under our debt agreements.

(i) Represents the cash cost for pre-publication investment during the period.

In addition, the Senior Facilities credit agreement, the indentures governing the MHGE Senior Notes and MHGE Parent Term Loan, contain a financial covenant that requires the disclosure of a description of the quantitative differences from the parent, McGraw Hill Education Inc., ("MHE") to MHGE and its subsidiaries (for the Senior Facilities and MHGE Senior Notes) and from MHE to MHGE Parent, LLC ("MHGE Parent") and its subsidiaries (for the MHGE Parent Term Loan).

As of December 31, 2019, the material quantitative differences from MHE to MHGE and its subsidiaries relate to $11.0 million of cash and cash equivalents, of which $10.5 million was held by MHGE Parent and $0.5 million was held by MHE. There were no other material assets or liabilities other than the $175.6 million of MHGE Parent Term Loan due in 2024 and its related accrued interest of $4.1 million.

As of December 31, 2019, the material quantitative differences from MHE to MHGE Parent and its subsidiaries relate to $0.5 million of cash and cash equivalents held by MHE. There were no other material assets or liabilities.

Furthermore, MHE and MHGE Parent do not generate revenue or conduct, transact or engage in any material business or operations other than their direct or indirect ownership of the equity interests in MHGE.

Seasonality and Comparability

Our revenues, operating profit and operating cash flows are affected by the inherent seasonality of the academic calendar. In 2019 we realized approximately 18%, 24%, 35% and 23% of our revenues during the first, second, third and fourth quarters, respectively. This seasonality affects operating cash flow from quarter to quarter and there are certain months when we operate at a net cash deficit. Changes in our customers' ordering patterns may affect the comparison of our results in a quarter with the same quarter of the previous year or in a fiscal year with the prior fiscal year, where our customers may shift the timing of material orders for any number of reasons, including, but not limited to, changes in academic semester start dates or changes to their inventory management practices.

Quarterly Results of Operations

	2018				2019			
	First Quarter 2018	Second Quarter 2018	Third Quarter 2018	Fourth Quarter 2018	First Quarter 2019	Second Quarter 2019	Third Quarter 2019	Fourth Quarter 2019
Reported revenue by segment:								
Higher Education	$ 142,411	$ 127,557	$ 200,798	$ 190,115	$ 138,805	$ 119,089	$ 189,027	$ 162,809
K-12	64,758	172,650	241,362	82,032	68,069	178,255	252,396	91,524
International	43,581	60,990	73,521	76,903	42,643	59,948	68,275	77,832
Professional	25,942	27,356	32,070	31,535	27,079	29,735	30,613	31,800
Other	1,664	(4,342)	4,393	1,649	2,357	(2,053)	2,306	879
Total Reported Revenue	**$ 278,356**	**$ 384,211**	**$ 552,144**	**$ 382,234**	**$ 278,953**	**$ 384,974**	**$ 542,617**	**$ 364,844**
Change in deferred revenue	(57,071)	(31,138)	232,491	(79,790)	(36,640)	8,568	216,807	(97,067)
Billings	**$ 221,285**	**$ 353,073**	**$ 784,635**	**$ 302,444**	**$ 242,313**	**$ 393,542**	**$ 759,424**	**$ 267,777**
Billings by segment:								
Higher Education	$ 135,547	$ 86,248	$ 320,473	$ 139,964	$ 151,996	$ 83,689	$ 294,803	$ 110,828
K-12	29,773	181,126	343,741	46,086	31,301	222,457	350,412	43,312
International	37,976	55,586	90,484	71,821	38,694	55,397	83,696	71,870
Professional	17,903	29,260	28,999	43,297	20,126	31,566	30,186	40,842
Other	86	853	938	1,276	196	433	327	925
Total Billings	**$ 221,285**	**$ 353,073**	**$ 784,635**	**$ 302,444**	**$ 242,313**	**$ 393,542**	**$ 759,424**	**$ 267,777**

	2018				2019			
	First Quarter 2018	Second Quarter 2018	Third Quarter 2018	Fourth Quarter 2018	First Quarter 2019	Second Quarter 2019	Third Quarter 2019	Fourth Quarter 2019
Adjusted EBITDA by segment:								
Higher Education	$ 16,199	$ (15,686)	$ 172,775	$ 27,379	$ 31,525	$ (16,885)	$ 164,551	$ 4,061
K-12	(84,570)	20,616	157,492	(69,453)	(79,943)	71,964	177,179	(58,675)
International	(12,936)	(8,655)	23,237	6,392	(10,183)	(3,137)	16,366	12,115
Professional	(2,290)	7,601	11,900	18,543	(1,374)	9,495	10,532	16,800
Other	(9,620)	7,527	2,830	(8,357)	3,600	1,837	3,046	2,164

Indebtedness and Liquidity

	As of		
	December 31, 2019	December 31, 2018	December 31, 2017
Cash, cash equivalents and restricted cash	$ 401,856	$ 345,920	$ 407,632
Current portion of long-term debt	61,669	31,297	17,269
Long-term debt	2,140,634	2,188,414	2,222,570

Historically, we have generated operating cash flows sufficient to fund our seasonal working capital, capital requirements, expenditure and financing requirements. We use our cash generated from operating activities for a variety of needs, including among others: working capital requirements, pre-publication investment cash costs, capital expenditures and strategic acquisitions.

Our operating cash flows are affected by the inherent seasonality of the academic calendar. This seasonality also impacts cash flow patterns as investments are typically made in the first half of the year to support the significant selling period that occurs in the second half of the year. As a result, our cash flow is typically lower in the first half of the fiscal year and higher in the second half of the fiscal year.

Going forward, we may need cash to fund operating activities, working capital, pre-publication investment cash costs, capital expenditures and strategic investments. Our ability to fund our capital needs will depend on our ongoing ability to generate cash from operations and our access to the bank and capital markets. We believe that our future cash flow from operations, together with our access to funds on hand and capital markets, will provide adequate resources to fund our operating and financing needs for at least the next twelve months. We also expect our working capital requirements to be positively impacted by our migration from print products to digital learning solutions.

If our cash flows from operations are less than we require, we may need to incur debt or issue equity. From time to time we may need to access the long-term and short-term capital markets to obtain financing. Although we believe we can currently finance our operations on acceptable terms and conditions, our access to, and the availability of, financing on acceptable terms and conditions in the future will be affected by many factors, including: (i) our credit ratings, (ii) the liquidity of the overall capital markets and (iii) the current state of the economy. There can be no assurance that we will continue to have access to the capital markets on terms acceptable to us.

Cash, cash equivalents and restricted cash

Cash and cash equivalents include bank deposits and highly liquid investments with original maturities of three months or less that consist primarily of interest bearing demand deposits with daily liquidity, money market and time deposits. The balance also includes cash that is held by the Company outside the United States to fund international operations or to be reinvested outside of the United States. The investments and bank deposits are stated at cost, which approximates market value. These investments are not subject to significant market risk.

Restricted cash, including restricted cash included in other non-current assets, represents interest payable through April 15, 2020 relating to the MHGE Parent Term Loan (refer to Note 7, “Debt”) and collateral for insurance coverage including workers’ compensation, general liability and automobile claims. As of December 31, 2019, the restricted cash was $9.9 million. Refer to Note 1, "Basis of Presentation and Accounting Policies" in the accompanying notes to the consolidated financial statements.

As of December 31, 2019 and 2018, we had cash and cash equivalents of $391.9 million and $314.9 million, respectively. The cash held by foreign subsidiaries as of December 31, 2019 and 2018, was $70.4 million and $67.3 million. These cash balances held outside the United States will be used to fund international operations and to make investments outside of the United States. In the event funds from international operations were needed to fund operations in the United States, we would provide for taxes in the United States, if any, on repatriated funds.

MHGE Senior Notes

On May 4, 2016, the Company issued $400.0 million aggregate principal amount of the 7.875% Senior Notes due 2024, ("MHGE Senior Notes") in a private placement. The MHGE Senior Notes mature on May 15, 2024 and bear interest at a rate of 7.875% per annum, payable semi-annually in arrears on May 15 and November 15 of each year, and commenced on November 15, 2016.

As of December 31, 2019 and 2018, the unamortized debt discount and deferred financing costs were $33.4 million and $15.2 million, respectively, which are amortized over the term of the MHGE Senior Notes using the effective interest method.

The Company may redeem the MHGE Senior Notes at their option, in whole or in part, at any time on or after May 15, 2019, at certain redemption prices.

The MHGE Senior Notes are fully and unconditionally guaranteed by each of McGraw-Hill Global Education Intermediate Holdings, LLC ("MHGE Holdings") domestic restricted subsidiaries that guarantee the Senior Facilities.

The MHGE Senior Notes contain certain customary negative covenants and events of default. The negative covenants limit MHGE Holdings and its restricted subsidiaries’ ability to, among other things: incur additional indebtedness or issue certain preferred shares, create liens on certain assets, pay dividends or prepay junior debt, make certain loans, acquisitions or investments, materially change its business, engage in transactions with affiliates, conduct asset sales, restrict dividends from subsidiaries, restrict liens, or merge, consolidate, sell or otherwise dispose of all or substantially all of MHGE Holdings’ assets.

The fair value of the MHGE Senior Notes was approximately $344.0 million and $310.0 million as of December 31, 2019 and 2018, respectively. The Company estimates the fair value of its MHGE Senior Notes based on trades in the market. Since the MHGE Senior Notes do not trade on a daily basis in an active market, the fair value estimates are based on market observable inputs based on borrowing rates currently available for debt with similar terms and average maturities (Level 2). As of December 31, 2019, the remaining contractual life of the MHGE Senior Notes is approximately 4.25 years.

Senior Facilities

On May 4, 2016, the Company entered into the Senior Facilities. The Senior Facilities provide for senior secured financing of up to $1,925.0 million, consisting of:

- Term Loan Facility in an aggregate principal amount of $1,575.0 million with a maturity of 6 years; and

- a senior secured revolving credit facility in an aggregate principal amount of up to $350.0 million with a maturity of 5 years (the "Revolving Credit Facility"), including both a letter of credit sub-facility and a swingline loan sub-facility.

On December 15, 2017, the Company completed an incremental aggregate principal amount of $150,000 under the existing Term Loan Facility. The incremental Term Loan Facility was issued at a 0.25% discount and will mature concurrently with the existing Term Loan Facility.

Borrowings under the Senior Facilities bear interest at a rate equal to a LIBOR or Prime rate plus an applicable margin, subject to a 1.00% floor in the case of the Term Loan Facility. As of December 31, 2019, the interest rate for the Term Loan Facility was 5.8%. In addition, the Term Loan Facility was issued at a discount of 0.5%. As of December 31, 2019, the unamortized debt discount and deferred financing costs was $8.7 million and $12.6 million, respectively, which are amortized over the term of the facility using the effective interest method.

As of December 31, 2019, the amount available under the Revolving Facility was $350.0 million (excluding outstanding letters of credit of $4.3 million). In addition, we are required to pay a commitment fee of 0.50% per annum to the lenders under the Revolving Facility in respect of the unutilized commitments thereunder.

The Senior Facilities require scheduled quarterly principal payments on the term loans in amounts equal to 0.25% of the original principal amount of the term loans commencing with the end of the first full fiscal quarter ending after the closing date, with the balance payable at maturity. The Term Loan Facility also includes customary mandatory prepayment requirements based on certain events such as asset sales, debt issuances and defined levels of excess cash flow. As of December 31, 2019, the Company determined that a $44.4 million mandatory prepayment of indebtedness is required and is payable five business days after the Company's annual financial statements are delivered. This amount is included within the current portion of long-term debt in the consolidated balance sheets as of December 31, 2019.

All obligations under the Senior Facilities are unconditionally guaranteed by each of MHGE Holdings' existing and future direct and indirect material, wholly owned domestic subsidiaries. The obligations are secured by substantially all of MHGE Holdings' assets and those of each subsidiary guarantor, capital stock of the subsidiary guarantors and 65% of the voting capital stock of the first-tier foreign subsidiaries that are not subsidiary guarantors, in each case subject to exceptions. Such security interests consist of a first priority lien with respect to the collateral.

Our Revolving Facility includes a springing covenant that requires MHGE Holdings, subject to a testing threshold, comply on a quarterly basis with a maximum net first lien senior secured leverage ratio (the ratio of consolidated net debt secured by first-priority liens on the collateral to Adjusted EBITDA) of (a) with respect to the first, third and fourth fiscal quarters of any year, 4.80 to 1.00 and (b) with respect to the second quarter of any fiscal year, 5.25 to 1.00. The testing threshold is satisfied at any time at which the sum of outstanding revolving credit facility loans, swingline loans and certain letters of credit exceeds thirty percent (30%) of commitments under the revolving credit facility at year end.

Adjusted EBITDA reflects EBITDA as defined in the credit agreement governing the Senior Facilities. Solely for the purpose of calculating the springing financial covenant, pre-publication investments should be excluded from the calculation of Adjusted EBITDA.

The Senior Facilities contain certain customary affirmative covenants and events of default. The negative covenants in the Senior Facilities include, among other things, limitations on MHGE Holdings' and its subsidiaries' ability to incur additional debt or issue certain preferred shares; create liens on certain assets; make certain loans or investments (including acquisitions); pay dividends on or make distributions in respect of capital stock or make other restricted payments; consolidate, merge, sell or otherwise dispose of all or substantially all of their assets; sell assets; enter into certain transactions with affiliates; enter into sale-leaseback transactions; change their lines of business; restrict dividends from their subsidiaries or restrict liens; change their fiscal year; and modify the terms of certain debt or organizational agreements.

The fair value of the Term Loan Facility was approximately $1,590.4 million and $1,536.3 million as of December 31, 2019 and 2018, respectively. The Company estimates the fair value of its Term Loan Facility based on trades in the market. Since the Term Loan Facility do not trade on a daily basis in an active market, the fair value estimates are based on market observable inputs based on borrowing rates currently available for debt with similar

terms and average maturities (Level 2). As of December 31, 2019, the remaining contractual life of the Term Loan Facility is approximately 2.25 years.

MHGE Parent Term Loan

On April 20, 2018, the Company, entered into a term loan agreement ("MHGE Parent Term Loan") with Ares Agent Services, L.P., as administrative agent, and clients of Ares Capital Management, LLC and certain funds and accounts advised by Guggenheim Partners Investment Management, LLC, as lenders, providing for a $180,000 term loan facility (the "MHGE Parent Term Loan") with a maturity of April 20, 2022. The MHGE Parent Term Loan was issued at a discount of 2.5%.

The MHGE Parent Term Loan bears interest at 11.00% per annum for interest paid in cash and 11.75% per annum for interest paid in kind. Interest is payable semiannually on April 15 and October 15 of each year, commencing on October 15, 2018. Upon closing, the Company was required to deposit $39.3 million of the MHGE Parent Term Loan proceeds into an escrow account, representing the first four interest payments which must be paid in cash. The deposit in the escrow account was released for the period commencing on June 15, 2019, and ending on and including July 15, 2019. Thereafter, the determination as to whether interest is paid in cash or in kind will be based on the amount of cash available to pay interest and the ability of the MHGE Parent subsidiaries to make distributions and dividends to MHGE Parent to fund such payments. The MHGE Parent Term Loan is unsecured and is not guaranteed by any of the MHGE Parent subsidiaries.

As of December 31, 2019 and 2018, the unamortized debt discount and deferred financing costs was $2.6 million and $1.8 million, respectively, which are amortized over the term of the MHGE Parent Term Loan using the effective interest method.

The MHGE Parent Term Loan contains certain customary affirmative covenants and events of default that are similar to those contained in the indenture governing the MHGE Senior Notes. The negative covenants in the MHGE Parent Term Loan limit MHGE Parent and its subsidiaries' ability to, among other things: incur additional indebtedness or issue certain preferred shares, create liens on certain assets, pay dividends or prepay junior debt, make certain loan, acquisitions or investments, materially change its business, engage into transactions with affiliates, conduct asset sales, restrict dividends from subsidiaries or restrict liens, or merge, consolidate, sell or otherwise dispose of all or substantially all of MHGE Parent's assets.

The fair value of the MHGE Parent Term Loan was approximately $170.7 million and $163.2 million as of December 31, 2019 and 2018, respectively. The Company estimates the fair value of its MHGE Parent Term Loan based on trades in the market. Since the MHGE Parent Term Loan do not trade on a daily basis in an active market, the fair value estimates are based on market observable inputs based on borrowing rates currently available for debt with similar terms and average maturities (Level 2). As of December 31, 2019, the remaining contractual life of the MHGE Parent Term Loan is approximately 2.25 years.

Receivables Facility

On October 29, 2018, MHE Receivables LLC (the "Borrower"), a newly formed special purpose subsidiary of McGraw-Hill Global Education, LLC ("MHGE Global"), entered into a Receivables Financing Agreement ("RFA") with MHGE Global, as initial servicer, the lenders from time to time party thereto, and PNC Bank, National Association, as administrative agent (the "Administrative Agent"), providing for a receivables financing facility up to a committed principal amount of $50.0 million (the "Receivables Facility") with a maturity of October 29, 2021.

Furthermore, an additional principal amount of $100.0 million has been committed for an agreed seasonal period, that expires on September 30, 2020 and an annual renewal feature through to October 2021. The borrowing capacity under the Receivables Facility is subject to a borrowing limit that is based on the Borrower's Eligible Receivables, as defined in the RFA. Under a Purchase and Sale Agreement entered into in connection with the Receivables Facility, with MHGE Global and McGraw-Hill School Education, LLC ("MHSE"), as originators, MHGE Global as initial servicer, and the Borrower, as buyer, all existing receivables of MHGE Global and MHSE

have been assigned to the Borrower and all future receivables of MHGE Global and MHSE will be automatically assigned to the Borrower when they are created.

As of December 31, 2019, $45.0 million was outstanding under the Receivables Facility of which is included in long-term debt within the consolidated balance sheet. Borrowings under the Receivables Facility bear interest at LIBOR plus 2.00%, subject to adjustments and are payable monthly. In addition, we also incur an undrawn fee of 0.50% on unutilized commitments. The unamortized deferred financing costs as of December 31, 2019 was $0.7 million which are amortized over the term of the Receivables Facility using the effective interest method.

Scheduled Principal Payments

The scheduled principal payments required under the terms of the MHGE Senior Notes, Senior Facilities, MHGE Parent Term Loan and Receivables Facility were as follows:

	As of December 31, 2019
2020	$ 61,669
2021	62,269
2022	1,753,385
2023	—
2024	400,000
	2,277,323
Less: Current portion	(61,669)
	$ 2,215,654

Cash Flows

Cash flows from operating, investing and financing activities are presented in the following table:

(Dollars in thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Cash flows from operating activities	$ 262,101	$ 156,353	$ 263,892
Cash flows from investing activities	(151,767)	(160,694)	(135,711)
Cash flows from financing activities	(54,254)	(52,432)	(142,311)

Net cash flows from operating activities consist of profit after income tax, adjusted for changes in net working capital and non-cash items such as depreciation, amortization and write-offs, and provisions.

Operating Activities

- Cash flows provided by operating activities for the year ended December 31, 2019 and 2018 were $262.1 million and $156.4 million, respectively, an increase of $105.7 million. The increase in cash provided by operating activities was primarily driven by changes in accounts receivable.

- Cash flows provided by operating activities for the years ended December 31, 2018 and 2017 were $156.4 million and $263.9 million, respectively, a decrease of $107.5 million. The decrease in cash used for operating activities was primarily driven by:

- ◦ higher inventory levels in comparison to prior periods primarily due to the impact of the inventory investment made in our K-12 segment in advance of the large new adoption opportunities in 2019; and

- ◦ lower sales and accounts receivable primarily related to our K-12 segment (after removing the impact of the reclassification of $90.4 million of sales returns from accounts receivable, net to other current liabilities).

Investing Activities

- Cash flows used for investing activities for the year ended December 31, 2019 and 2018 were $151.8 million and $160.7 million, respectively, an decrease of $8.9 million. Cash flows used for investing activities decreased as a result of $20.4 million lower pre-publication investment cash costs due to timing partially offset by $12.0 million increase in capital expenditures primarily related to capital lease arrangements for assets that were historically purchased outright or were under operating lease.

- Cash flows used for investing activities for the years ended December 31, 2018 and 2017 was $160.7 million and $135.7 million, respectively, an increase of $25.0 million. Cash flows used for investing activities increased as a result of an $18.1 million increase in capital expenditures primarily related to capital lease arrangements for assets that were historically purchased outright, leasehold improvements in our leased properties related to the relocation of multiple locations and the timing of software license renewals.

Financing Activities

- Cash flows used for financing activities for the year ended December 31, 2019 and 2018 were $54.3 million and $52.4 million, respectively, an increase of $1.8 million. Cash flows used for financing activities remained unchanged as additional borrowing under the Receivables Facility was offset by the higher debt service cash outflows related to MHGE Parent Term Loan and Receivables Facility, respectively, as well as lower repurchase of common stock.

- Cash flows used for financing activities for the years ended December 31, 2018 and 2017 was $52.4 million and $142.3 million, respectively. Cash flows used for financing activities decreased primarily as a result of higher borrowings in 2018 of $175.5 million and $50.0 million related to our MHGE Parent Term Loan and Receivables Facility, respectively, compared to borrowings of $149.6 million in 2017.

Capital Expenditures and Pre-publication Expenditures

Part of our plan for growth and stability includes disciplined capital expenditures and pre-publication expenditures.

An important component of our cash flow generation is our pre-publication efficiency. We have been focused on optimizing our pre-publication expenditures to generate content that can be leveraged across our full range of products, maximizing long-term return on investment. Pre-publication expenditures, principally external preparation costs, are amortized from the year of publication over their estimated useful lives, one to five years, using either an accelerated or straight-line method. The majority of the programs are amortized using an accelerated methodology. We periodically evaluate the amortization methods, rates, remaining lives and recoverability of such costs. In evaluating recoverability, we consider our current assessment of the market place, industry trends, and the projected success of programs. Our pre-publication expenditures were $79.1 million, $99.5 million and $99.2 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Capital expenditures include purchases of property, plant and equipment and capitalized technology costs that meet certain internal and external criteria. Capital expenditures were $75.2 million, $63.2 million and $45.1 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Our planned capital expenditures and pre-publication expenditures will require, individually and in the aggregate, significant capital commitments and, if completed, may result in significant additional revenues. Cash needed to finance investments and projects currently in progress, as well as additional investments being pursued, is expected to be made available from operating cash flows and our credit facilities. See “Indebtedness and Liquidity” for further information.

Off-Balance Sheet Arrangements

As of December 31, 2019 we did not have any relationships with unconsolidated entities, such as entities often referred to as specific purpose or variable interest entities where we are the primary beneficiary, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. As such we are not exposed to any financial liquidity, market or credit risk that could arise if we had engaged in such relationships.

Contractual Obligations

We typically have various contractual obligations, which are recorded as liabilities in our consolidated balance sheets, while other items, such as certain purchase commitments and other executory contracts, are not recognized, but are disclosed herein. For example, we are contractually committed to acquire paper and other printing services and make certain minimum lease payments for the use of property under operating and capital lease agreements.

The following table summarizes our significant debt related contractual obligations over the next several years that relate to our continuing operations as of December 31, 2019:

	Payments due by Period				
	Total	**2020**	**2021-2022**	**2023-2024**	**2025 and beyond**
Long-term debt, including current portion (1)	$ 2,277,323	$ 61,669	$ 1,815,654	$ 400,000	$ —
Interest on long-term debt (2)	421,582	152,091	222,241	47,250	—
Operating lease obligations (3)	192,168	18,183	32,582	25,512	115,891
Finance lease obligations (4)	29,320	13,106	14,151	2,063	—
Paper and printing services (5)	213,800	118,600	95,200	—	—
Purchase obligations and other (6)	114,516	59,321	52,068	3,127	—

(1) Amounts shown include principal on the MHGE Senior Notes, Term Loan Facility, Revolving Facility, MHGE Parent Term Loan and Receivables Facility.
(2) Amounts shown include interest on the MHGE Senior Notes, Term Loan Facility, Revolving Facility, MHGE Parent Term Loan and Receivables Facility.
(3) Amounts shown include taxes and escalation payments related to our operating lease obligations, net of sublease income.
(4) Amounts shown include future minimum lease payments on our finace leases.
(5) We have contracts to purchase paper and printing services that have target volume commitments. However, there are no contractual terms that require us to purchase a specified amount of goods or services and if significant volume shortfalls were to occur during a contract period, then revised terms may be renegotiated with the supplier. These obligations are not recorded in our consolidated financial statements until contract payment terms take effect.
(6) “Other” consists primarily of commitments for global technology support and maintenance and enhancement activity related to the Oracle ERP system.

Critical Accounting Policies and Estimates

Critical accounting policies are those that require the Company to make significant judgments, estimates or assumptions that affect amounts reported in the financial statements and accompanying notes. On an on-going basis, we evaluate our estimates and assumptions, including, but not limited to, revenue recognition, allowance for doubtful accounts and sales returns, inventories, pre-publication costs, accounting for the impairment of long-lived assets (including other intangible assets), goodwill and indefinite-lived intangible assets, stock-based compensation, income taxes and contingencies. The Company bases its judgments, estimates and assumptions on current facts, historical experience and various other factors that the Company believes to be reasonable and prudent under the circumstances. Actual results may differ materially from these estimates. For a complete description of our significant accounting policies, see Note 1, "Basis of Presentation and Accounting Policies" of the notes to consolidated financial statements included elsewhere in this Annual Report.

Allowance for Doubtful Accounts and Sales Returns

The allowance for doubtful accounts and sales returns reserves methodologies is based on historical analysis, a review of outstanding balances and current conditions. In determining these reserves, we consider, among other factors, the financial condition and risk profile of our customers, areas of specific or concentrated risk as well as applicable industry trends or market indicators. The allowance for sales returns is a significant estimate, which is based on historical rates of return and current market conditions. The provision for sales returns is reflected as a reduction to “revenues” in our consolidated statements of operations. Sales returns are charged against the reserve as products are returned to inventory. Accounts receivable losses for bad debt are charged against the allowance for doubtful accounts when the receivable is determined to be uncollectible.

Inventories

Inventories, consisting principally of books, are stated at the lower of cost or net realizable value and are valued using the first in first out (FIFO) method. The majority of our inventories relate to finished goods. A significant estimate, the reserve for inventory obsolescence, is reflected in operating and administration expenses. In determining this reserve, we consider management’s current assessment of the marketplace, industry trends and projected product demand as compared to the number of units currently on hand.

Consigned Inventory

Consigned inventory consists mainly of books available through our formal rental program stated at the lower of cost or net realizable value. At the time a rental transaction is completed, the book is moved from inventories, net to property, plant and equipment, net. The cost of the book is amortized down to its estimated residual value over the rental period with the related amortization expense included within cost of sales in the consolidated statements of operations. Returns are moved back into inventories, net at the current residual value.

Pre-publication Costs

Pre-publication costs include both the cost of developing educational content and the development of assessment solution products. Costs incurred prior to the publication date of a title or release date of a product represent activities associated with product development. These may be performed internally or outsourced to subject matter specialists and include, but are not limited to, editorial review and fact verification, graphic art design and layout and the process of conversion from print to digital media or within various formats of digital media. These costs are capitalized when the costs can be directly attributable to a project or title and the title is expected to generate probable future economic benefits. Capitalized costs are amortized upon publication of the title over its estimated useful life of up to five years, with a higher proportion of the amortization typically taken in the earlier years. Amortization expenses for prepublication costs are charged as a component of operating and administration expenses within the accompanying consolidated statement of operations. In evaluating recoverability, we consider management’s current assessment of the marketplace, industry trends and the projected success of programs.

Deferred Technology Costs

We capitalize certain software development and website implementation costs. Capitalized costs only include incremental, direct costs of materials and services incurred to develop the software after the preliminary project stage is completed, funding has been committed and it is probable that the project will be completed and used to perform the function intended. Incremental costs are expenditures that are out-of-pocket to us and are not part of an allocation or existing expense base. Software development and website implementation costs are expensed as incurred during the preliminary project stage. Capitalized costs are amortized from the period the software is ready for its intended use over its estimated useful life, three to seven years, using the straight-line method. Periodically, we evaluate the amortization methods, remaining lives and recoverability of such costs. Capitalized software development and website implementation costs are included in other non-current assets in the consolidated balance sheets and are presented net of accumulated amortization.

Accounting for the Impairment of Long-Lived Assets (Including Other Intangible Assets)

We evaluate long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Upon such an occurrence, recoverability of assets to be held and used is measured by comparing the carrying amount of an asset to current forecasts of undiscounted future net cash flows expected to be generated by the asset. If the carrying amount of the asset exceeds its estimated future cash flows, an impairment charge is recognized equal to the amount by which the carrying amount of the asset exceeds the fair value of the asset. Long-lived assets held for sale are written down to fair value, less cost to sell. Fair value is determined based on market evidence, discounted cash flows, appraised values or management's estimates, depending upon the nature of the assets.

Goodwill and Indefinite-Lived Intangible Assets

Goodwill represents the excess of purchase price and related costs over the fair value of identifiable assets acquired and liabilities assumed in a business combination. Indefinite-lived intangible assets consist of the Company's acquired brands. Goodwill and indefinite-lived intangible assets are not amortized, but instead are tested for impairment annually during the fourth quarter each year, or more frequently if events or changes in circumstances indicate that the asset might be impaired. We have four reporting units, Higher Education, K-12, International and Professional with goodwill and indefinite-lived intangible assets that are evaluated for impairment.

We initially perform a qualitative analysis evaluating whether there are events or circumstances that provide evidence that it is more likely than not that the fair value of any of our reporting units or indefinite-lived intangible assets are less than their carrying amount. If, based on our evaluation we do not believe that it is more likely than not that the fair value of any of our reporting units or indefinite-lived intangible assets are less than their carrying amount, no quantitative impairment test is performed. Conversely, if the results of our qualitative assessment determine that it is more likely than not that the fair value of any of our reporting units or indefinite-lived intangible assets are less than their respective carrying amounts we perform a two-step quantitative impairment test.

During the first step, the estimated fair value of the reporting units are compared to their carrying value including goodwill and the estimated fair value of the intangible assets is compared to their carrying value. Fair values of the reporting units are estimated using the income approach, which incorporates the use of a discounted free cash flow analysis, and are corroborated using the market approach, which incorporates the use of revenue and earnings multiples based on market data. The discounted free cash flow analyses are based on the current operating budgets and estimated long-term growth projections for each reporting unit. Future cash flows are discounted based on a market comparable weighted average cost of capital rate for each reporting unit, adjusted for market and other risks where appropriate. Fair values of indefinite-lived intangible assets are estimated using avoided royalty discounted free cash flow analyses. Significant judgments inherent in these analyses include the selection of appropriate royalty and discount rates and estimating the amount and timing of expected future cash flows. The discount rates used in the discounted free cash flow analyses reflect the risks inherent in the expected future cash flows generated by the respective intangible assets. The royalty rates used in the discounted free cash flow analyses

are based upon an estimate of the royalty rates that a market participant would pay to license the Company's trade names and trademarks.

If the fair value of the reporting units or indefinite-lived intangible assets are less than their carrying value, a second step is performed which compares the implied fair value of the reporting unit's goodwill or indefinite-lived intangible assets to the carrying value. The fair value of the goodwill or indefinite-lived intangible assets is determined based on the difference between the fair value of the reporting unit and the net fair value of the identifiable assets and liabilities of the reporting unit or carrying value of the indefinite-lived intangible asset. If the implied fair value of the goodwill or indefinite-lived intangible assets is less than the carrying value, the difference is recognized as an impairment charge. Significant judgments inherent in this analysis include estimating the amount and timing of future cash flows and the selection of appropriate discount rates, royalty rate and long-term growth rate assumptions. Changes in these estimates and assumptions could materially affect the determination of fair value for each reporting unit and indefinite-lived intangible asset and for some of the reporting units and indefinite-lived intangible assets could result in an impairment charge, which could be material to our financial position and results of operations.

The following table summarizes the changes in the carrying value of goodwill by reporting segment:

	Higher Education	K-12	International	Professional	Total
As of December 31, 2017	**$ 426,165**	**$ 29,936**	**$ 4,089**	**$ 37,078**	**$ 497,268**
Adjustment to goodwill	(1,709)	(1,500)	—	—	(3,209)
As of December 31, 2018	**$ 424,456**	**$ 28,436**	**$ 4,089**	**$ 37,078**	**$ 494,059**
Adjustment to goodwill	(1,399)	—	—	—	(1,399)
As of December 31, 2019	**$ 423,057**	**$ 28,436**	**$ 4,089**	**$ 37,078**	**$ 492,660**

Goodwill in the table above includes a $1.4 million and $3.2 million impact from foreign exchange and other as of December 31, 2019 and 2018, respectively.

Stock-Based Compensation

The Company issues stock options and other stock-based compensation to eligible employees, directors and consultants and accounts for these transactions under the provisions of Accounting Standards Codification ("ASC") 718, *Compensation-Stock Compensation*. For equity awards, total compensation cost is based on the grant date fair value. For liability awards, total compensation cost is based on the fair value of the award on the date the award is granted and is remeasured at each reporting date until settlement. For performance-based options issued, the value of the instrument is measured at the grant date as the fair value of the common stock and expensed over the vesting term when the performance targets are considered probable of being achieved. The Company recognizes stock-based compensation expense for all awards, on a straight-line basis, over the service period required to earn the award, which is typically the vesting period.

Revenue Recognition

Revenue is recognized when control of goods or services are transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. We determine revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer;
- Identification of the performance obligations in the contract;
- Determination of the transaction price;
- Allocation of the transaction price to the performance obligations in the contract; and
- Recognition of revenue when, or as, we satisfy a performance obligation.

Arrangements with multiple deliverables

Revenue relating to products that provide for more than one deliverable is recognized based upon the relative fair value to the customer of each deliverable as each deliverable is provided. Revenue relating to agreements that provide for more than one service is recognized based upon the relative fair value to the customer of each service component as each component is earned. If the fair value to the customer for each service is not determinable based on stand-alone selling price, we make our best estimate of the services' stand-alone selling price and recognize revenue as earned as the services are delivered. Because we determine the basis for allocating consideration to each deliverable primarily on prices experienced from completed sales, the portion of consideration allocated to each deliverable in a multiple deliverable arrangement may increase or decrease depending on the most recent selling price of a comparable product or service sold on a stand-alone basis. For example, as the demand for, and prevalence of, digital products increases, as new sales occur we may be required to increase the amount of consideration allocable to digital products included in multiple deliverable arrangements because the fair value of such products or services may increase relative to other products or services bundled in the arrangement. Conversely, in the event that demand for our print products decreases, thereby causing us to experience reduced prices on our print products, we may be required to allocate less consideration to our print products in our arrangements that include multiple deliverables.

Subscription-based products

Subscription income is recognized over the related subscription period that the subscription is available and is used by the customer. Subscription revenue received or receivable in advance of the delivery of services or publications is included in deferred revenue. Incremental costs that are directly related to the subscription revenue are deferred and amortized over the subscription period. Included among the underlying assumptions related to our estimates that impact the recognition of subscription income is the extent of our responsibility to provide access to our subscription-based products, and the extent of complementary support services customers demand to access our products.

Service arrangements

Revenue relating to arrangements that provide for more than one service is recognized based upon the relative fair value to the customer of each service component as each component is earned. Such arrangements may include digital products bundled with traditional print products, obligations to provide products and services in the future at no additional cost, and periodic training pertinent to products and services previously provided. If the fair value to the customer for each service is not objectively determinable, we make our best estimate of the services' stand-alone selling price and recognize revenue as earned as the services are delivered.

Rental program

Revenue relating to our rental program is deferred and subsequently recognized over the rental period. The rental period begins when the print product is transferred to the customer and are typically for a one semester. All rental periods are less than one year in duration.

Income Taxes

We determine the provision for income taxes using the asset and liability approach. Under this approach, deferred income taxes represent the expected future tax consequences of temporary differences between the carrying amounts and tax bases of assets and liabilities.

Valuation allowances are established when management determines that it is more likely than not that some portion or all of the deferred tax asset will not be realized. Management evaluates the weight of both positive and negative evidence in determining whether a deferred tax asset will be realized. Management will look to a history of losses, future reversal of existing taxable temporary differences, taxable income in carryback years, feasibility of tax

planning strategies, and estimated future taxable income. The valuation allowance can also be affected by changes in tax laws and changes to statutory tax rates.

We prepare and file tax returns based on management's interpretation of tax laws and regulations. As with all businesses, our tax returns are subject to examination by various taxing authorities. Such examinations may result in future tax assessments based on differences in interpretation of the tax law and regulations. We adjust our estimated uncertain tax positions reserves based on audits by and settlements with various taxing authorities as well as changes in tax laws, regulations, and interpretations. The Company recognizes accrued interest and penalties related to uncertain tax positions in income tax (benefit) provision within the consolidated statement of operations.

Recently Adopted Accounting Standards

In February 2016, the FASB issued ASU No. 2016-02, "Leases" (Topic 842): The company adopted ASU No. 2016-02, effective January 1, 2019 using the modified retrospective approach. The adoption of Topic 842 resulted in the recognition of lease liabilities of $56,640 and lease assets of $48,086 (net of lease incentives and deferred rent), as of January 1, 2019 on the consolidated balance sheet, with no material impact on the consolidated statement of operations. For required disclosures relating to the impact of adopting Topic 842 and a discussion on the Company's updated accounting policies relating to leases, see Note 14, "Leases".

In February 2018, the FASB issued ASU No. 2018-02, "Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income", to allow a reclassification from accumulated other comprehensive income (loss) for stranded tax effects resulting from the Tax Cuts and Jobs Act. This standard is effective for interim and annual reporting periods after December 15, 2018, with early adoption permitted. The adoption of this standard has no material impact on the Company's consolidated financial statements.

Recently Issued Accounting Standards

In August 2018, the FASB issued ASU No. 2018-13, "*Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*," which modifies the disclosure requirements on fair value measurements. This standard is effective for interim and annual reporting periods after December 15, 2019, with early adoption permitted. The Company is currently evaluating the impact of this guidance on its consolidated financial statements.

In August 2017, the FASB issued ASU 2017-12, "*Derivative and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities*", which aligns hedge accounting with risk management activities and changes both how companies assess hedge effectiveness and presentation and disclosure requirements. This standard is effective for interim and annual reporting periods after December 15, 2019, with early adoption permitted. The Company is currently evaluating the impact of this guidance on its consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, Financial Instruments - Credit Losses (Topic 326) - Measurement of Credit Losses on Financial Instruments. The FASB's new guidance changes how entities will measure credit losses for most financial assets and certain other instruments that are not measured at fair value through net income, including trade receivables, based on historical experience, current conditions and reasonable and supportable forecasts. This amendment is effective for interim and annual reporting periods beginning after December 15, 2019. We are currently evaluating the impact this amendment may have on our consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, Intangibles - Goodwill and other - Internal-Use Software (Topic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract. This standard requires a customer in a cloud computing arrangement that is a service contract to follow the internal-use software guidance in Topic 350-40 to determine which implementation costs to capitalize as assets. This standard is effective for annual reporting periods beginning after 15 December 2020, and interim periods within annual periods beginning after 15 December 2021, with early adoption permitted. The Company is currently evaluating the impact of this guidance on its consolidated financial statements.

Recently issued FASB accounting standard codification updates, except for the above standards, did not have a material impact to the Company's consolidated financial statements for the year ended December 31, 2019.

ITEM 7A: QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Foreign Exchange Risk

Our exposure to market risk includes changes in foreign exchange rates. We have operations in various foreign countries where the functional currency is primarily the local currency. For international operations that are determined to be extensions of the parent company, the United States dollar is the functional currency. Our principal currency exposures relate to the Australian Dollar, British Pound, Canadian Dollar, Euro, Mexican Peso and Singapore Dollar. From time to time, we may enter into hedging arrangements with respect to foreign currency exposures.

Interest Rate Risk

Term Loan Facility

Borrowings under our Term Loan Facility will accrue interest at variable rates with a LIBOR floor of 1%, and a 100 basis point increase in the LIBOR on our debt balances outstanding as of December 31, 2019 would increase our annual interest expense by $11.6 million.

From time to time we may enter into hedging arrangements with respect to floating interest rate borrowings. While we may enter into agreements limiting our exposure to higher interest rates, any such agreements may not offer complete protection from this risk.

We do not purchase or hold any derivative financial instruments for trading purposes.

ITEM 8: FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Report of Independent Auditors

The Board of Directors and Shareholders of McGraw-Hill Education, Inc. and its subsidiaries

We have audited the accompanying consolidated financial statements of McGraw-Hill Education, Inc. and subsidiaries (the "Company"), which comprise the consolidated balance sheets as of December 31, 2019 and 2018, and the related consolidated statements of operations, comprehensive (loss) income, changes in equity (deficit), and cash flows for each of the years ended December 31, 2019, 2018 and 2017, and the related notes to the consolidated financial statements. Our audits also included the financial statement schedules listed on pages 114 to 116.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements and schedules in conformity with U.S. generally accepted accounting principles; this includes the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free of material misstatement, whether due to fraud or error.

Auditor's Responsibility

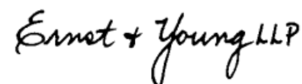
Our responsibility is to express an opinion on these financial statements and schedules based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of McGraw-Hill Education, Inc. and subsidiaries at December 31, 2019 and 2018, and the consolidated results of their operations and their cash flows for the years ended December 31, 2019, 2018, and 2017, in conformity with U.S. generally accepted accounting principles. Also, in our opinion, the related financial statement schedules, when considered in relation to the basic financial statements taken as a whole, present fairly in all material respects the information set forth therein.



New York, New York
March 10, 2020

McGraw-Hill Education, Inc. and subsidiaries
Consolidated Statements of Operations
(Dollars in thousands)

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Revenue	$ 1,571,388	$ 1,596,945	$ 1,719,072
Cost of sales	371,387	394,531	426,636
Gross profit	1,200,001	1,202,414	1,292,436
Operating expenses			
Operating and administration expenses	1,030,470	1,038,073	1,065,755
Depreciation	56,302	46,929	45,243
Amortization of intangibles	71,849	86,722	88,068
Total operating expenses	1,158,621	1,171,724	1,199,066
Operating income	41,380	30,690	93,370
Interest expense (income), net	180,430	180,576	179,378
Other (income) expense	(7,962)	—	(12,727)
(Loss) income from operations before taxes on income	(131,088)	(149,886)	(73,281)
Income tax provision (benefit)	12,122	10,535	(7,351)
Net (loss) income from continuing operations	(143,210)	(160,421)	(65,930)
Net (Loss) income	**$ (143,210)**	**$ (160,421)**	**$ (65,930)**

See accompanying notes to the consolidated financial statements.

McGraw-Hill Education, Inc. and subsidiaries
Consolidated Statements of Comprehensive (Loss) Income
(Dollars in thousands)

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Net (loss) income	$ (143,210)	$ (160,421)	$ (65,930)
Other comprehensive (loss) income:			
Foreign currency translation adjustment, net of tax	(2,123)	(7,922)	15,975
Unrealized gain (loss) on interest rate swap agreements, net of tax	(11,992)	5,052	721
Total other comprehensive (loss) income	$ (14,115)	$ (2,870)	$ 16,696
Comprehensive (loss) income	**$ (157,325)**	**$ (163,291)**	**$ (49,234)**

See accompanying notes to the consolidated financial statements.

McGraw-Hill Education, Inc. and subsidiaries
Consolidated Balance Sheets
(Dollars in thousands)

	December 31, 2019	December 31, 2018
Current assets		
Cash and cash equivalents	$ 391,946	$ 314,945
Restricted cash	9,910	19,800
Accounts receivable, net of allowance for doubtful accounts of $16,883 and $17,000 as of December 31, 2019 and 2018, respectively	323,707	346,350
Inventories, net	164,599	185,531
Prepaid and other current assets	84,421	91,378
Total current assets	974,583	958,004
Pre-publication costs, net	161,871	175,024
Property, plant and equipment, net	135,503	102,483
Goodwill	492,660	494,059
Other intangible assets, net	514,529	581,189
Investments	6,206	6,049
Operating lease right-of-use assets	76,091	—
Deferred income taxes	6,256	6,422
Other non-current assets	185,916	191,206
Total assets	**$ 2,553,615**	**$ 2,514,436**
Liabilities and equity (deficit)		
Current liabilities		
Accounts payable	$ 108,949	$ 132,599
Accrued royalties	103,515	114,759
Accrued compensation	65,654	36,634
Deferred revenue	507,410	450,738
Current portion of long-term debt	61,669	31,297
Operating lease liabilities	14,492	—
Other current liabilities, including sales returns of $81,445 and $90,388 as of December 31, 2019 and December 31, 2018, respectively	179,019	166,095
Total current liabilities	1,040,708	932,122
Long-term debt	2,140,634	2,188,414
Deferred income taxes	12,592	13,318
Long-term deferred revenue	684,450	649,453
Operating lease liabilities	88,070	—
Other non-current liabilities	39,396	37,386
Total liabilities	4,005,850	3,820,693
Commitments and contingencies (Note 16)		
Stockholders' equity (deficit)		
Common stock, par value $0.01 per share; 100,000,000 shares authorized, 11,033,000 and 10,869,767 shares issued as of December 31, 2019 and 2018, respectively; and 10,792,190 and 10,728,489 shares outstanding as of December 31, 2019 and 2018, respectively	106	105
Additional paid in capital	56,251	40,790
Treasury stock, 240,810 and 141,278 shares as of December 31, 2019 and 2018, respectively	(23,529)	(19,414)
Accumulated deficit	(1,427,036)	(1,283,826)
Accumulated other comprehensive loss	(58,027)	(43,912)
Total stockholders' equity (deficit)	(1,452,235)	(1,306,257)
Total liabilities and equity (deficit)	**$ 2,553,615**	**$ 2,514,436**

See accompanying notes to the consolidated financial statements.

McGraw-Hill Education, Inc. and subsidiaries
Consolidated Statements of Cash Flows
(Dollars in thousands)

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Operating activities			
Net (loss) income from continuing operations	$ (143,210)	$ (160,421)	$ (65,930)
Adjustments to reconcile net (loss) income to net cash provided by operating activities			
Depreciation (including amortization of technology projects)	56,302	46,929	45,243
Amortization of intangibles	71,849	86,722	88,068
Amortization of pre-publication costs	92,634	85,862	98,902
Gain on sale of investment	—	—	(4,931)
Gain on disposition	(2,129)	—	(5,750)
Provision for losses on accounts receivable	5,452	6,222	3,804
Inventory obsolescence	25,214	26,669	20,838
Deferred income taxes	(726)	624	(21,369)
Stock-based compensation	13,536	20,190	14,288
Amortization of debt discount	10,197	10,084	9,557
Amortization of deferred financing costs	11,783	12,558	13,215
Amortization of deferred royalties	19,201	17,737	10,131
Amortization of deferred commission costs	8,069	8,048	—
Restructuring charges	26,605	13,202	10,151
Other	(157)	207	1,914
Changes in operating assets and liabilities, net of the effect of acquisitions			
Accounts receivable	18,740	(80,838)	(3,130)
Inventories	(4,208)	(45,345)	(13,728)
Prepaid and other current assets	(20,462)	(17,833)	(5,108)
Accounts payable and accrued expenses	(5,094)	(12,364)	(12,274)
Deferred revenue	90,904	65,171	146,484
Other current liabilities	(1,142)	74,599	(32,936)
Net change in operating assets and liabilities	(11,257)	(1,670)	(33,547)
Cash (used for) provided by operating activities	262,101	156,353	263,892
Investing activities			
Investment in pre-publication costs	(79,110)	(99,539)	(99,219)
Capital expenditures	(75,239)	(63,239)	(45,127)
Proceeds from sale of investments	—	—	4,931
Proceeds from dispositions	2,582	2,084	3,704
Cash (used for) provided by investing activities	(151,767)	(160,694)	(135,711)
Financing activities			
Borrowings on Term Loan Facility	—	—	149,625
Borrowings on MHGE Parent Term Loan	—	175,500	—
Borrowings on Receivables Facility	60,900	50,000	—
Repayment on Receivables Facility	(65,900)	—	—
Repurchase of MHGE PIK Toggle Notes	—	(243,496)	(256,498)
Payment of Term Loan Facility	(31,269)	(17,403)	(16,130)
Payment of deferred financing costs	—	(3,893)	(1,662)
Payment of capital lease obligations	(12,930)	(10,323)	(7,321)
Issuance of common stock	—	10,000	—
Repurchase of common stock	(4,115)	(9,763)	(2,924)

McGraw-Hill Education, Inc. and subsidiaries
Consolidated Statements of Cash Flows
(Dollars in thousands)

Repurchase of vested stock options and restricted stock units	—	—	(3,814)
Dividend equivalents on vested stock options	(940)	(1,656)	(1,966)
Dividend equivalents on vested restricted stock units	—	(1,398)	(1,621)
Cash (used for) provided by financing activities	(54,254)	(52,432)	(142,311)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(144)	(4,939)	3,009
Net change in cash, cash equivalents and restricted cash	55,936	(61,712)	(11,121)
Cash, cash equivalents, and restricted cash at the beginning of the period	345,920	407,632	418,753
Cash, cash equivalents, and restricted cash ending balance	$ 401,856	$ 345,920	$ 407,632
Supplemental disclosures			
Cash paid for interest expense	$ 161,782	$ 164,948	$ 166,030
Cash paid for income taxes	$ 6,927	$ 8,751	$ 11,519

See accompanying notes to the consolidated financial statements.

McGraw-Hill Education, Inc. and subsidiaries
Consolidated Statement of Changes in Equity (Deficit)
(Dollars in thousands, except share data)

	Common Stock						
	Shares	Amount	Additional Paid in Capital	Treasury Stock	Accumulated Deficit	Accumulated Other Comprehensive (Loss) Income	Total Stockholders' Equity (Deficit)
Balance at December 31, 2016	**10,567,864**	**$ 104**	**$ —**	**$ (6,727)**	**$ (1,085,727)**	**$ (57,738)**	**$ (1,150,088)**
Issuance of common stock	12,500	—	—	—	—	—	—
Conversion of restricted stock units	39,113	—	—	—	—	—	—
Net loss	—	—	—	—	(65,930)	—	(65,930)
Other comprehensive loss, net of taxes	—	—	—	—	—	16,696	16,696
Stock-based compensation	—	—	14,288	—	—	—	14,288
Dividend equivalents on vested stock options	—	—	(2,793)	—	—	—	(2,793)
Dividend equivalents on restricted stock units	—	—	(365)	—	—	—	(365)
Repurchase of common stock	(31,002)	—	—	(2,924)	—	—	(2,924)
Repurchase of vested stock options and restricted stock units	—	—	(1,660)	—	—	—	(1,660)
Modification of stock options	—	—	(5,757)	—	—	—	(5,757)
Balance at December 31, 2017	**10,588,475**	**$ 104**	**$ 3,713**	**$ (9,651)**	**$ (1,151,657)**	**$ (41,042)**	**$ (1,198,533)**
Issuance of common stock	83,333	1	9,999	—	—	—	10,000
Conversion of restricted stock units	71,470	—	—	—	—	—	—
Net loss	—	—	—	—	(160,421)	—	(160,421)
Impact from adoption of Topic 606	—	—	—	—	28,252	—	28,252
Other comprehensive loss, net of taxes	—	—	—	—	—	(2,870)	(2,870)
Stock-based compensation	—	—	21,964	—	—	—	21,964
Dividend equivalents on vested stock options	—	—	(695)	—	—	—	(695)
Exercise of stock options	67,215	—	3,329	—	—	—	3,329
Share settlement	—	—	5,913	—	—	—	5,913
Repurchase of common stock	(82,004)	—	—	(9,763)	—	—	(9,763)
Repurchase of vested stock options and restricted stock units	—	—	(3,433)	—	—	—	(3,433)
Balance at December 31, 2018	**10,728,489**	**$ 105**	**$ 40,790**	**$ (19,414)**	**$ (1,283,826)**	**$ (43,912)**	**$ (1,306,257)**
Conversion of restricted stock units	30,582	—	—	—	—	—	—
Net loss	—	—	—	—	(143,210)	—	(143,210)
Other comprehensive loss, net of taxes	—	—	—	—	—	(14,115)	(14,115)
Stock-based compensation	—	—	13,536	—	—	—	13,536
Exercise of stock options	38,353	1	3,450	—	—	—	3,451
Repurchase of common stock	(5,234)	—	—	(4,115)	—	—	(4,115)
Repurchase of vested stock options and restricted stock units	—	—	(3,257)	—	—	—	(3,257)
Modification of Stock Options			1,732				1,732
Balance at December 31, 2019	**10,792,190**	**$ 106**	**$ 56,251**	**$ (23,529)**	**$ (1,427,036)**	**$ (58,027)**	**$ (1,452,235)**

See accompanying notes to the consolidated financial statements.

1. Basis of Presentation and Accounting Policies

McGraw-Hill Education Inc. ("MHE", the "Company", "Parent", "we", "us", or "our"), is a global provider of outcome-focused learning solutions, delivering both curated content and digital learning tools and platforms to the students in the classrooms of approximately 250,000 higher education instructors, 13,000 K-12 school districts and a wide variety of academic institutions, professionals and companies in more than 100 countries. We have evolved our business from a print-centric producer of textbooks and instructional materials to a developer of digital content and technology-enabled adaptive learning solutions that are delivered anywhere, anytime. Our business is comprised of the following four operating segments:

- ***Higher Education:*** In the higher education market in the United States, we provide students, instructors and institutions with adaptive digital learning tools, digital platforms, custom publishing solutions and traditional printed textbook products. The primary users of our solutions are students enrolled in two-and four-year non-profit colleges and universities, and to a lesser extent, for profit institutions. We sell our Higher Education solutions to well-known online retailers, distribution partners and college bookstores, who subsequently sell to students. We also increasingly sell via our proprietary e-commerce platform, primarily directly to students, and through our formal rental program which was introduced in the fall of 2018 with rental agreements with all major distribution partners.

- ***K-12:*** In the K-12 market in the United States, we sell our learning solutions directly to K-12 school districts across the United States. While we offer all of our major curriculum and learning solutions in digital format, given the varying degrees of availability and maturity of our customers' technological infrastructure, a majority of our sales are derived from selling blended print and digital solutions.

- ***International:*** We leverage our global scale, brand recognition and extensive product portfolio to serve students in the higher education, K-12 and professional markets in more than 100 countries outside of the United States. Our products and solutions for the International segment are produced in more than 75 languages and primarily originate from our offerings produced for the United States market and that are later adapted to different international markets.

- **Professional:** We are a leading provider of medical, technical, engineering and business content for the professional, education and test preparation communities.

Proposed Merger

On May 1, 2019, McGraw-Hill Education, Inc. ("McGraw-Hill"), McGraw-Hill Global Educations Holdings, LLC ("McGraw-Hill Issuer"), Cengage Learning Holdings II, Inc. ("Cengage"), Cengage Learning Holdco, Inc. ("Cengage Intermediate Holdco "), and Cengage Learning, Inc. ("Cengage Issuer"), entered into an Agreement and Plan of Merger (the "Merger Agreement"). Pursuant to and subject to the terms and conditions of the Merger Agreement, Cengage Intermediate Holdco will merge with and into Cengage, Cengage Issuer will merge with and into Cengage, and then Cengage will merge with and into McGraw-Hill Issuer (the "Merger"), with McGraw-Hill Issuer continuing as the surviving entity following the Merger. At the effective time of the Merger (the "Effective Time") (1) each share of McGraw-Hill common stock, par value $0.01 per share, will convert into one share of Class A Common Stock of the combined company, and (2) each share of Cengage common stock, par value $0.01 per share, will convert into a certain number of shares of Class B Common Stock of the combined company such that, as of the Effective Time, the aggregate number of issued and outstanding shares of Class A Common Stock will equal the aggregate number of issued and outstanding shares of Class B Common Stock. Accordingly, the legacy stockholders of McGraw-Hill and the legacy stockholders of Cengage will, as of the Effective Time, each collectively own exactly 50% of the issued and outstanding shares of voting common stock of the combined company.

The proposed transaction is subject to certain closing conditions, including receipt of regulatory approvals. McGraw-Hill and Cengage submitted Hart-Scott-Rodino Act filings with the U.S. Department of Justice and Federal Trade Commission on May 31, 2019. McGraw-Hill is working towards closing the transaction in 2020.

McGraw-Hill has also agreed to various customary covenants and agreements, including, among others, to conduct its business in the ordinary course during the period between the execution of the Merger Agreement and the Effective Time, and to use reasonable best efforts to obtain all requisite regulatory approvals.

Merger-related costs are expensed as incurred and consist of integration planning costs, legal fees, rating agency fees and professional services. For the year ended December 31, 2019, transaction and merger integration costs were $21.0 million and $7.0 million, respectively.

Principles of Consolidation

The accompanying consolidated financial statements have been prepared in accordance with U.S. Generally Accepted Accounting Principles ("U.S. GAAP") and all significant intercompany transactions and balances have been eliminated. In the opinion of management, the accompanying consolidated financial statements include all adjustments (consisting of normal recurring accruals) considered necessary for a fair presentation.

These consolidated financial statements and notes reflect the Company’s evaluation of events occurring subsequent to the balance sheet date through March 10, 2020, the date the financial statements were available for issuance.

Seasonality and Comparability

Our revenues, operating profit and operating cash flows are affected by the inherent seasonality of the academic calendar, which varies by country. Changes in our customers’ ordering patterns may impact the comparison of our results in a quarter with the same quarter of the previous year, or in a fiscal year with the prior fiscal year, where our customers may shift the timing of material orders for any number of reasons, including, but not limited to, changes in academic semester start dates or changes to their inventory management practices.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

On an ongoing basis, we evaluate our estimates and assumptions, including those related to revenue recognition, allowance for doubtful accounts and sales returns, inventories, pre-publication costs, accounting for the impairment of long-lived assets (including other intangible assets), goodwill and indefinite-lived intangible assets, restructuring, stock-based compensation, income taxes and contingencies.

Cash, Cash Equivalents and Restricted Cash

Cash and cash equivalents include bank deposits and highly liquid investments with original maturities of three months or less that consist primarily of interest bearing demand deposits with daily liquidity, money market and time deposits. The balance also includes cash that is held by the Company outside the United States to fund international operations or to be reinvested outside of the United States. The investments and bank deposits are stated at cost, which approximates market value. These investments are not subject to significant market risk.

Restricted cash, including restricted cash included in other non-current assets, represents interest payable through April 15, 2020 relating to the MHGE Parent Term Loan (refer to Note 7, “Debt”) and collateral for insurance coverage including workers’ compensation, general liability and automobile claims.

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported in the consolidated balance sheets to the total of the same amounts reported in the consolidated statements of cash flows:

	As of	
	December 31, 2019	December 31, 2018
Cash and cash equivalents	$ 391,946	$ 314,945
Restricted cash	9,910	19,800
Restricted cash included in other non-current assets	—	11,175
Total Cash, Cash Equivalents and Restricted Cash	**$ 401,856**	**$ 345,920**

Accounts Receivable

Credit is extended to customers based upon an evaluation of the customer’s financial condition. Accounts receivable are recorded at net realizable value.

Allowance for Doubtful Accounts and Sales Returns

The allowance for doubtful accounts and sales returns reserves methodology is based on historical analysis, a review of outstanding balances and current conditions. In determining these reserves, we consider, among other factors, the financial condition and risk profile of our customers, areas of specific or concentrated risk as well as applicable industry trends or market indicators. The allowance for sales returns is a significant estimate, which is based on historical rates of return and current market conditions. The provision for sales returns is reflected as a reduction to “Revenues” in our consolidated statements of operations. Sales returns are charged against the reserve as products are returned to inventory. Accounts receivable losses for bad debt are charged against the allowance for doubtful accounts when the receivable is determined to be uncollectible. The change in the allowance for doubtful accounts is reflected as part of operating and administrative expenses in our consolidated statement of operations.

Concentration of Credit Risk

As of December 31, 2019 and 2018, two customers comprised 23% of the gross accounts receivable balance, which is reflective of concentration and seasonality in our industry. In addition, the Company mitigates concentration of credit risk with respect to accounts receivable by performing ongoing credit evaluations of its customers and by periodically entering into arrangements with third parties who have agreed to provide credit insurance or purchase our accounts receivables of certain customers in the event of the customer's financial inability to pay, subject to certain limitations.

The Company had no single customer that accounted for 10% of our gross revenue for the years ended December 31, 2019, 2018, and 2017. The loss of, or any reduction in sales from, a significant customer or deterioration in their ability to pay could harm our business and financial results.

Inventories, net

Inventories, consisting principally of books, are stated at the lower of cost or net realizable value and are valued using the first in first out (FIFO) method. The majority of our inventories relate to finished goods. A significant estimate, the reserve for inventory obsolescence, is reflected in inventories, net within the accompanying consolidated balance sheets. In determining this reserve, we consider management’s current assessment of the marketplace, industry trends and projected product demand as compared to the number of units currently on hand.

Pre-publication Costs, net

Pre-publication costs include both the cost of developing educational content and the development of assessment solution products. Costs incurred prior to the publication date of a title or release date of a product represent activities associated with product development. These may be performed internally or outsourced to subject matter specialists and include, but are not limited to, editorial review and fact verification, graphic art design and layout and the process of conversion from print to digital media or within various formats of digital media. These costs are capitalized when the costs can be directly attributable to a project or title and the title is expected to generate probable future economic benefits. Capitalized costs are amortized upon publication of the title over its estimated useful life of up to five years, with a higher proportion of the amortization typically taken in the earlier years. Amortization expenses for prepublication costs are charged as a component of operating and administration expenses within the accompanying consolidated statement of operations. In evaluating recoverability, we consider management's current assessment of the marketplace, industry trends and the projected success of programs.

Property, Plant and Equipment, net

Property, plant and equipment are stated at cost less accumulated depreciation as of December 31, 2019 and December 31, 2018. Depreciation and amortization are recorded on a straight-line basis, over the assets' estimated useful lives. Buildings have an estimated useful life, for purposes of depreciation, from ten to forty years. Furniture, fixtures and equipment are depreciated over periods not exceeding twelve years. Leasehold improvements are amortized over the life of the lease or the life of the assets, whichever is shorter. The Company evaluates the depreciation periods of property, plant and equipment to determine whether events or circumstances warrant revised estimates of useful lives.

Consigned Inventory

Consigned inventory consists mainly of books available through our formal rental program stated at the lower of cost or net realizable value. At the time a rental transaction is completed, the book is moved from inventories, net to property, plant and equipment, net. The cost of the book is amortized down to its estimated residual value over the rental period with the related amortization expense included within cost of sales within the accompanying consolidated statement of operations. Returns are moved back into inventories, net at the current residual value.

Royalty Advances

Royalty advances are initially capitalized and subsequently expensed as related revenues are earned or when the Company determines future recovery is not probable. The Company has a long history of providing authors with royalty advances, and it tracks each advance earned with respect to the sale of the related publication. Historically, the longer the unearned portion of the advance remains outstanding, the less likely it is that the Company will recover the advance through the sale of the publication, as the related royalties earned are applied first against the remaining unearned portion of the advance. The Company applies this historical experience to its existing outstanding royalty advances to estimate the likelihood of recovery. Additionally, the Company's editorial staff reviews its portfolio of royalty advances at a minimum quarterly to determine if individual royalty advances are not recoverable for discrete reasons, such as the death of an author prior to completion of a title or titles, a Company decision to not publish a title, poor market demand or other relevant factors that could impact recoverability. Based on this information, the portion of any advance that we believe is not recoverable is expensed. The net amount of royalty advances was $4,923 and $4,518 as of December 31, 2019 and 2018, respectively and is included within other non-current assets in the consolidated balance sheets.

Deferred Technology Costs

We capitalize certain software development and website implementation costs. Capitalized costs only include incremental, direct costs of materials and services incurred to develop the software after the preliminary project stage is completed, funding has been committed and it is probable that the project will be completed and used to perform the function intended. Incremental costs are expenditures that are out-of-pocket to us and are not

part of an allocation or existing expense base. Software development and website implementation costs are expensed as incurred during the preliminary project stage. Capitalized costs are amortized from the period the software is ready for its intended use over its estimated useful life, generally three years, using the straight-line method and are included within depreciation in the consolidated statements of operations. Periodically, we evaluate the amortization methods, remaining lives and recoverability of such costs. Capitalized software development and website implementation costs are included in other non-current assets in the consolidated balance sheets and are presented net of accumulated amortization. Gross deferred technology costs were $199,121 and $164,297 as of December 31, 2019 and December 31, 2018, respectively. Accumulated amortization of deferred technology costs were $115,567 and $89,248 as of December 31, 2019 and December 31, 2018, respectively. Amortization of deferred technology costs were $31,988, $23,068, and $23,802 for the period ended December 31, 2019, 2018, and 2017, respectively.

Accounting for the Impairment of Long-Lived Assets (Including Other Intangible Assets)

We evaluate long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Upon such an occurrence, recoverability of assets to be held and used is measured by comparing the carrying amount of an asset to current forecasts of undiscounted future net cash flows expected to be generated by the asset. If the carrying amount of the asset exceeds its estimated future cash flows, an impairment charge is recognized equal to the amount by which the carrying amount of the asset exceeds the fair value of the asset. Long-lived assets held for sale are written down to fair value, less cost to sell. Fair value is determined based on market evidence, discounted cash flows, appraised values or management's estimates, depending upon the nature of the assets.

Goodwill and Indefinite-Lived Intangible Assets

Goodwill represents the excess of purchase price and related costs over the fair value of identifiable assets acquired and liabilities assumed in a business combination. Indefinite-lived intangible assets consist of the Company's acquired brands. Goodwill and indefinite-lived intangible assets are not amortized, but instead are tested for impairment annually during the fourth quarter each year, or more frequently if events or changes in circumstances indicate that the asset might be impaired. We have four reporting units, Higher Education, K-12, International, and Professional with goodwill and indefinite-lived intangible assets that are evaluated for impairment.

We initially perform a qualitative analysis evaluating whether there are events or circumstances that provide evidence that it is more likely than not that the fair value of any of our reporting units or indefinite-lived intangible assets are less than their carrying amount. If, based on our evaluation we do not believe that it is more likely than not that the fair value of any of our reporting units or indefinite-lived intangible assets are less than their carrying amount, no quantitative impairment test is performed. Conversely, if the results of our qualitative assessment determine that it is more likely than not that the fair value of any of our reporting units or indefinite-lived intangible assets are less than their respective carrying amounts we perform a two-step quantitative impairment test.

During the first step, the estimated fair value of the reporting units are compared to their carrying value including goodwill and the estimated fair value of the intangible assets is compared to their carrying value. Fair values of the reporting units are estimated using the income approach, which incorporates the use of a discounted free cash flow analysis, and are corroborated using the market approach, which incorporates the use of revenue and earnings multiples based on market data. The discounted free cash flow analyses are based on the current operating budgets and estimated long-term growth projections for each reporting unit. Future cash flows are discounted based on a market comparable weighted average cost of capital rate for each reporting unit, adjusted for market and other risks where appropriate. Fair values of indefinite-lived intangible assets are estimated using avoided royalty discounted free cash flow analyses. Significant judgments inherent in these analyses include the selection of appropriate royalty and discount rates and estimating the amount and timing of expected future cash flows. The discount rates used in the discounted free cash flow analyses reflect the risks inherent in the expected future cash flows generated by the respective intangible assets. The royalty rates used in the discounted free cash flow analyses

are based upon an estimate of the royalty rates that a market participant would pay to license the Company's trade names and trademarks.

If the fair value of the reporting units or indefinite-lived intangible assets are less than their carrying value, a second step is performed which compares the implied fair value of the reporting unit’s goodwill or indefinite-lived intangible assets to the carrying value. The fair value of the goodwill or indefinite-lived intangible assets is determined based on the difference between the fair value of the reporting unit and the net fair value of the identifiable assets and liabilities of the reporting unit or carrying value of the indefinite-lived intangible asset. If the implied fair value of the goodwill or indefinite-lived intangible assets is less than the carrying value, the difference is recognized as an impairment charge. Significant judgments inherent in this analysis include estimating the amount and timing of future cash flows and the selection of appropriate discount rates, royalty rate and long-term growth rate assumptions. Changes in these estimates and assumptions could materially affect the determination of fair value for each reporting unit and indefinite-lived intangible asset and for some of the reporting units and indefinite-lived intangible assets could result in an impairment charge, which could be material to our financial position and results of operations.

Fair Value Measurements

In accordance with authoritative guidance for fair value measurements, certain assets and liabilities are required to be recorded at fair value on a recurring basis. Fair value is defined as the amount that would be received to sell an asset or transfer a liability in an orderly transaction between market participants. A fair value hierarchy has been established which requires us to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The three levels of inputs used to measure fair value are as follows:

- Level 1 - Unadjusted quoted prices in active markets for identical assets or liabilities.
- Level 2 - Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the asset or liabilities.
- Level 3 - Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Financial Instruments

We enter into interest rate hedge agreements to manage risks associated with interest rate exposures and are not used for trading or speculative purposes. Interest rate swap agreements are derivative financial instruments and generally involve the conversion of variable-rate debt to fixed-rate debt over the life of the interest rate swap agreement without exchange of the underlying notional amount.

Interest rate swap agreements which are designated and qualify as a hedge of the exposure to variability in expected future cash flows are considered cash flow hedges. The Company prepares written hedge documentation for all interest rate swap agreements which are designated as cash flow hedges. The written hedge documentation includes identification of, among other items, the risk management objective, hedging instrument, hedged item and methodologies for assessing and measuring hedge effectiveness and ineffectiveness, along with support for management’s assertion that the hedge will be highly effective.

For designated hedging relationships, the Company performs retrospective and prospective effectiveness testing to determine whether the hedging relationship has been highly effective in offsetting changes in cash flows of hedged items and whether the relationship is expected to continue to be highly effective in the future. Assessments of hedge effectiveness and measurements of hedge ineffectiveness are performed at least quarterly. The effective portion of the changes in the fair value of an interest rate swap that is highly effective and that has been designated and qualifies as a cash flow hedge are initially recorded in accumulated other comprehensive income (loss) and

reclassified to earnings in the same period that the hedged item impacts earnings or when the hedging relationship is terminated. The ineffective portion of the gain or loss, if any, is recognized in earnings.

The Company recognizes all interest rate swap agreements as assets or liabilities in the balance sheet at fair value and is included with other non-current assets or other non-current liabilities, respectively. Cash flows from interest rate swap agreements used to manage interest rate risk are classified as operating activities. In addition, we enter into interest rate swap agreements with a variety of financial institutions that we believe are creditworthy in order to reduce our concentration of credit risk.

Foreign Currency Translation

We have operations in many foreign countries. For most international operations, the local currency is the functional currency. For international operations that are determined to be extensions of the U.S. operations or where a majority of revenue and/or expenses is USD denominated, the United States dollar is the functional currency. For local currency operations, assets and liabilities are translated into United States dollars using end-of-period exchange rates, and revenue and expenses are translated into United States dollars using weighted-average exchange rates. Foreign currency translation adjustments are accumulated in a separate component of equity.

Stock-Based Compensation

The Company issues stock options and other stock-based compensation to eligible employees, directors and consultants and accounts for these transactions under the provisions of Accounting Standards Codification ("ASC") 718, *Compensation - Stock Compensation*. For equity awards, total compensation cost is based on the grant date fair value. For liability awards, total compensation cost is based on the fair value of the award on the date the award is granted and is remeasured at each reporting date until settlement. For performance-based options issued, the value of the instrument is measured at the grant date as the fair value of the common stock and expensed over the vesting term when the performance targets are considered probable of being achieved. The Company recognizes stock-based compensation expense for all awards, on a straight-line basis, over the service period required to earn the award, which is typically the vesting period.

Revenue Recognition

Revenue is recognized when control of goods or services are transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. We determine revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer;
- Identification of the performance obligations in the contract;
- Determination of the transaction price;
- Allocation of the transaction price to the performance obligations in the contract; and
- Recognition of revenue when, or as, we satisfy a performance obligation.

Arrangements with multiple deliverables

Revenue relating to products that provide for more than one deliverable is recognized based upon the relative fair value to the customer of each deliverable as each deliverable is provided. Revenue relating to agreements that provide for more than one service is recognized based upon the relative fair value to the customer of each service component as each component is earned. If the fair value to the customer for each service is not determinable based on stand-alone selling price, we make our best estimate of the services' stand-alone selling price and recognize revenue as earned as the services are delivered. Because we determine the basis for allocating consideration to each deliverable primarily on prices experienced from completed sales, the portion of consideration allocated to each deliverable in a multiple deliverable arrangement may increase or decrease depending on the most recent selling price of a comparable product or service sold on a stand-alone basis. For example, as the demand for, and prevalence of, digital products increases, as new sales occur we may be required to increase the amount of

consideration allocable to digital products included in multiple deliverable arrangements because the fair value of such products or services may increase relative to other products or services bundled in the arrangement. Conversely, in the event that demand for our print products decreases, thereby causing us to experience reduced prices on our print products, we may be required to allocate less consideration to our print products in our arrangements that include multiple deliverables.

Subscription-based products

Subscription revenue is recognized over the related subscription period that the subscription is available and is used by the customer. Subscription revenue received or receivable in advance of the delivery of services or publications is included in deferred revenue. Incremental costs that are directly related to the subscription revenue are deferred and amortized over the subscription period. Included among the underlying assumptions related to our estimates that impact the recognition of subscription income is the extent of our responsibility to provide access to our subscription-based products, and the extent of complementary support services customers demand to access our products.

Service arrangements

Revenue relating to arrangements that provide for more than one service is recognized based upon the relative fair value to the customer of each service component as each component is earned. Such arrangements may include digital products bundled with traditional print products, obligations to provide products and services in the future at no additional cost, and periodic training pertinent to products and services previously provided. If the fair value to the customer for each service is not objectively determinable, we make our best estimate of the services' stand-alone selling price and recognize revenue as earned as the services are delivered.

Rental program

Revenue relating to our rental program is deferred and subsequently recognized over the rental period. The rental period begins when the print product is transferred to the customer and are typically for a semester. All rental periods are less than one year in duration.

Shipping and Handling Costs

All amounts billed to customers in a sales transaction for shipping and handling are classified as revenue. Shipping and handling costs are also a component of cost of sales. We recognized revenues in the amount of $17,037, $18,600 and $20,322 in shipping and handling costs for the years ended December 31, 2019, 2018 and 2017, respectively.

Income Taxes

The Company's operations are subject to United States federal, state and local income taxes, and foreign income taxes.

We determine the provision for income taxes using the asset and liability approach. Under this approach, deferred income taxes represent the expected future tax consequences of temporary differences between the carrying amounts and tax bases of assets and liabilities.

Valuation allowances are established when management determines that it is more-likely-than not that some portion or all of the deferred tax asset will not be realized. Management evaluates the weight of both positive and negative evidence in determining whether a deferred tax asset will be realized. Management will look to a history of losses, future reversal of existing taxable temporary differences, taxable income in carryback years, feasibility of tax planning strategies, and estimated future taxable income. The valuation allowance can also be affected by changes in tax laws and changes to statutory tax rates.

We prepare and file tax returns based on management's interpretation of tax laws and regulations. As with all businesses, our tax returns are subject to examination by various taxing authorities. Such examinations may result in future tax assessments based on differences in interpretation of the tax law and regulations. We adjust our estimated uncertain tax positions reserves based on audits by and settlements with various taxing authorities as well as changes in tax laws, regulations, and interpretations. The Company recognizes accrued interest and penalties related to uncertain tax positions in income tax provision (benefit) within the consolidated statement of operations. The Company elected to account for Global intangible low-taxed income (GILTI) as a current period tax expense when incurred.

Contingencies

We accrue for loss contingencies when both (a) information available prior to issuance of the financial statements indicates that it is probable that a loss had been incurred at the date of the financial statements and (b) the amount of loss can reasonably be estimated. When we accrue for loss contingencies and the reasonable estimate of the loss is within a range, we record its best estimate within the range. We disclose an estimated possible loss or a range of loss when it is at least reasonably possible that a loss may have been incurred. Neither an accrual nor disclosure is required for losses that are deemed remote.

Recently Adopted Accounting Standards

In February 2016, the FASB issued ASU No. 2016-02, "*Leases*" *(Topic 842):* The company adopted ASU No. 2016-02, effective January 1, 2019 using the modified retrospective approach. The adoption of Topic 842 resulted in the recognition of lease liabilities of $56,640 and lease assets of $48,086 (net of lease incentives and deferred rent), as of January 1, 2019 on the consolidated balance sheet, with no material impact on the consolidated statement of operations. For required disclosures relating to the impact of adopting Topic 842 and a discussion on the Company's updated accounting policies relating to leases, see Note 14, "Leases".

In February 2018, the FASB issued ASU No. 2018-02, "*Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*", to allow a reclassification from accumulated other comprehensive income (loss) for stranded tax effects resulting from the Tax Cuts and Jobs Act. This standard is effective for interim and annual reporting periods after December 15, 2018, with early adoption permitted. The adoption of this standard has no material impact on the Company's consolidated financial statements.

Recently Issued Accounting Standards

In August 2018, the FASB issued ASU No. 2018-13, "*Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*," which modifies the disclosure requirements on fair value measurements. This standard is effective for interim and annual reporting periods after December 15, 2019, with early adoption permitted. The Company is currently evaluating the impact of this guidance on its consolidated financial statements.

In August 2017, the FASB issued ASU 2017-12, "*Derivative and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities*", which aligns hedge accounting with risk management activities and changes both how companies assess hedge effectiveness and presentation and disclosure requirements. This standard is effective for interim and annual reporting periods after December 15, 2019, with early adoption permitted. The Company is currently evaluating the impact of this guidance on its consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, Financial Instruments - Credit Losses (Topic 326) - Measurement of Credit Losses on Financial Instruments. The FASB's new guidance changes how entities will measure credit losses for most financial assets and certain other instruments that are not measured at fair value through net income, including trade receivables, based on historical experience, current conditions and reasonable and supportable forecasts. This amendment is effective for interim and annual reporting periods beginning after December 15, 2019. We are currently evaluating the impact this amendment may have on our consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, Intangibles - Goodwill and other - Internal-Use Software (Topic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract. This standard requires a customer in a cloud computing arrangement that is a service contract to follow the internal-use software guidance in Topic 350-40 to determine which implementation costs to capitalize as assets. This standard is effective for annual reporting periods beginning after December 15, 2020, and interim periods within annual periods beginning after December 15, 2021, with early adoption permitted. The Company is currently evaluating the impact of this guidance on its consolidated financial statements.

Recently issued FASB accounting standard codification updates, except for the above standards, did not have a material impact to the Company's consolidated financial statements for the year ended December 31, 2019.

2. Revenue from Contracts with Customers

On January 1, 2018, we adopted ASU 2014-09, *"Revenue from Contracts with Customers"* ("Topic 606"), applying the modified retrospective method to all contracts that were not completed as of that date. Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while prior period results are not adjusted and continue to be reported under the accounting standards in effect for the prior period. We recorded an increase to opening equity of $28,252 as of January 1, 2018 due to the cumulative impact of adopting Topic 606.

Disaggregation of Revenue

The following table summarizes our revenue from contracts with our customers disaggregated by segment and product type for the year ended December 31, 2019 and 2018:

	Year Ended December 31, 2019			Year Ended December 31, 2018		
	Digital	**Print (1)**	**Total**	**Digital**	**Print (1)**	**Total**
Reported Revenue by segment:						
Higher Education	$ 439,063	$ 170,667	$ 609,730	$ 415,803	$ 245,078	$ 660,881
K-12	229,376	360,868	590,244	197,895	362,907	560,802
International	57,602	191,096	248,698	51,522	203,473	254,995
Professional	69,750	49,477	119,227	65,235	51,668	116,903
Other	2,241	1,248	3,489	2,831	533	3,364
Total Reported Revenue	**$ 798,032**	**$ 773,356**	**$1,571,388**	**$ 733,286**	**$ 863,659**	**$1,596,945**

(1) Print revenue contains traditional print, consumable print workbooks and custom revenue.

Higher Education

For our print products, our performance obligation is typically satisfied at the time of shipment directly to the student or to our distribution partners, who typically order products several weeks before the beginning of an academic semester to ensure sufficient physical product inventory. Digital products are generally sold as subscriptions, which are paid for at the time of sale or shortly thereafter, and our performance obligation is satisfied over the life of the subscription.

K-12

Our performance obligation from traditional print products is typically satisfied at the time of shipment, which closely aligns with when a school district takes possession of the required number of products at the outset of a multi-year adoption. Traditional print products are typically re-used by students over the term of the adoption, and school districts will occasionally purchase replacement products due to wear or increasing enrollment over the life of the adoption. Sales of these replacement products are known as residual sales, from which we derive a significant

portion of our revenue. Our digital solutions are sold as a subscription, which states and districts generally pay for at the beginning of a multi-year adoption. We defer revenue related to digital solutions for the entirety of the contract upfront and satisfy our performance obligation ratably over the term of the contract. Revenues for print workbooks are deferred when we enter into a multi-year contract and our performance obligation is satisfied when delivery takes place, often at the beginning of each academic year over the contract term.

International

Revenue recognition for international products is similar to products sold in the United States, primarily in the Higher Education market. Our performance obligations for traditional print products are typically satisfied upon shipment, while digital performance obligations are satisfied over the contractual term of the product.

Professional

Our performance obligations for traditional print products are typically satisfied upon shipment, while our performance obligations for digital products are satisfied over the contractual term.

In addition, revenues are also impacted by our reserve for product returns. To more accurately reflect the economic impact of returns on our operating performance, we reserve a percentage of our gross sales in anticipation of these returns when calculating our net revenues.

Significant Judgments

Our contracts with customers often include promises to transfer multiple products and services to a customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment. We use an observable price to determine the stand-alone selling price for separate performance obligations if available or when not available, an estimate that maximizes the use of observable inputs and faithfully depicts the selling price of the promised goods or services if the entity sold those goods or services separately to a similar customer in similar circumstances.

Deferred Commission Costs

Our incremental direct costs of obtaining a contract, which consist of sales commissions, are deferred and amortized over the expected period of benefit or the related contractual renewal period, depending on whether the contract is an initial or renewal contract, respectively. We classify deferred commission costs as current or non-current based on the timing of when we expect to recognize the expense. The current and non-current portions of deferred commission costs are included in prepaid and other current assets, and other non-current assets, respectively, in our consolidated balance sheets. Deferred commission costs were as follows:

	As of	
	December 31, 2019	**December 31, 2018**
Current	$ 8,107	$ 7,270
Non-current	20,441	20,812
Total Deferred Commission Costs	**$ 28,548**	**$ 28,082**

Amortization expense related to deferred commission costs were $8,069 and $8,048 for the year ended December 31, 2019 and 2018, respectively.

In addition, there were no impairment losses of deferred commission costs for the year ended December 31, 2019 and 2018.

Contract Assets and Contract Liabilities

Our contract assets consist of unbilled receivables that are recorded for contracts with performance obligations that have been satisfied but have not yet been billed. Contract assets are included in accounts receivable, net, on our consolidated balance sheets.

Our contract liabilities consist of revenues from our digital subscription products and multi-year consumable products that are deferred at the time of sale and are recognized in earnings on a pro-rata basis over the term of the subscription or contract period. We classify contract liabilities as current or non-current deferred revenue on our consolidated balance sheets based on the timing of when we expect to recognize revenue.

Contract assets and contract liabilities consisted of the following:

	As of	
	December 31, 2019	**December 31, 2018**
Contract assets	$ 2,147	$ 4,975
Contract liabilities (deferred revenue):		
Current	507,410	450,738
Non-current	684,450	649,453
Total Contract liabilities	**$ 1,191,860**	**$ 1,100,191**

Revenue recognized from amounts included within deferred revenue at January 1, 2019 and 2018 was approximately $427,348 and $398,815 for the year ended December 31, 2019 and 2018, respectively.

In addition, estimated revenue expected to be recognized in the future related to the deferred revenue as of December 31, 2019 is approximately 78% over the next one to three years.

Practical expedients

We expense commission costs when incurred related to customer contracts that have a duration of less than one year. We recognize these costs within operating and administration expenses in our consolidated statements of operations.

3. Other Income

On June 30, 2015, the Company entered into a definitive agreement and consummated the sale of substantially all of the assets and certain liabilities of the Company's wholly owned CTB business to Data Recognition Corporation ("DRC"). As part of the agreement, the Company was entitled to receive an earn-out in the event that the performance of the CTB business exceeded certain thresholds over a five year period. In 2019, the Company recognized $7,962 related to the earn-out arrangement in Other (income) expense.

On May 10, 2017, the Company entered into a definitive agreement and consummated the sale of substantially all of the assets and certain liabilities of the Company’s wholly-owned K-12 Canadian business to Nelson Education Ltd. (“Nelson”). The aggregate sales price was $7,884, subject to a working capital adjustment, of which $2,205 was received at closing on June 1, 2017. On November 30, 2017, the working capital adjustment was finalized resulting in the Company making a payment of $49. The remaining proceeds will be received in semi-annual installments with the first received on November 30, 2017 and ending May 31, 2020. As the disposal does not represent a strategic shift that will have a major effect on the Company’s operations and financial results, the K-12 Canadian business does not qualify as discontinued operations. As a result, the gain on disposal of $5,750 was recognized in Other (income) expense within the consolidated statement of operations.

In addition, during the year ended December 31, 2017, the Company recorded a gain of $4,931 within other (income) expense in the consolidated statement of operations related to the sale of an equity method investment.

4. Inventories, net

Inventories consist of the following:

	As of	
	December 31, 2019	**December 31, 2018**
Raw materials	$ 1,994	$ 3,199
Work-in-progress	1,531	1,063
Finished goods	224,290	249,691
	227,815	253,953
Reserves	(63,216)	(68,422)
Inventories, net	**$ 164,599**	**$ 185,531**

5. Property, Plant and Equipment

		As of	
	Useful Life	**December 31, 2019**	**December 31, 2018**
Furniture and equipment	2 - 12 years	$ 118,213	$ 100,323
Buildings and leasehold improvements	2 - 40 years	111,675	76,881
Consigned inventory	2 years	2,878	1,790
Land and land improvements		7,852	8,302
Less: accumulated depreciation and amortization		(105,115)	(84,813)
Total Property, plant and equipment, net		**$ 135,503**	**$ 102,483**

Depreciation expense related to property, plant and equipment was $24,314, $23,861 and $21,441 for the years ended December 31, 2019, 2018 and 2017, respectively. Depreciation expense related to consigned inventory was $1,163 and $344 for the year ended December 31, 2019 and 2018, respectively, and is included in cost of sales in the consolidated statements of operations.

There were no impairments of property, plant and equipment for the years ended December 31, 2019, 2018 and 2017.

6. Goodwill and Other Intangible Assets

Goodwill

Goodwill represents the excess of purchase price and related costs over the value assigned to the net tangible and identifiable assets and liabilities assumed of businesses acquired. The Company performs an annual impairment test of goodwill and intangible assets with indefinite lives during the fourth quarter and also between annual tests if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit or an indefinite-lived intangible asset below its carrying value.

The following table summarizes the changes in the carrying value of goodwill by reporting segment:

	Higher Education	K-12	International	Professional	Total
As of December 31, 2017	**$ 426,165**	**$ 29,936**	**$ 4,089**	**$ 37,078**	**$ 497,268**
Adjustment to goodwill	(1,709)	(1,500)	—	—	(3,209)
As of December 31, 2018	**$ 424,456**	**$ 28,436**	**$ 4,089**	**$ 37,078**	**$ 494,059**
Adjustment to goodwill	(1,399)	—	—	—	(1,399)
As of December 31, 2019	**$ 423,057**	**$ 28,436**	**$ 4,089**	**$ 37,078**	**$ 492,660**

Goodwill in the table above includes a $1,399 and $3,209 impact from foreign exchange and other as of December 31, 2019 and 2018, respectively.

Based on the results of the impairment analysis performed by the Company, there were no impairment charges recognized relating to the goodwill recorded within the Higher Education, K-12, International or Professional reporting units for the years ended December 31, 2019, 2018 and 2017.

Other Intangible Assets

The following information details the carrying amounts and accumulated amortization of the Company's intangible assets:

		December 31, 2019				December 31, 2018			
	Useful Lives	Gross amount	Accumulated amortization	Foreign exchange	Net amount	Gross amount	Accumulated amortization	Foreign exchange	Net amount
Content	8 - 14 years	$ 571,457	$ (422,955)	$ —	$ 148,502	$ 571,457	$ (377,867)	$ —	$ 193,590
Brands	Indefinite	284,000	—	—	284,000	284,000	—	—	284,000
Customers	11 -14 years	147,700	(75,611)	—	72,089	147,700	(64,387)	—	83,313
Technology	5 years	91,550	(78,412)	(5,171)	7,967	91,550	(67,762)	(6,021)	17,767
Other intangibles	4 to 10 years	9,050	(6,842)	(237)	1,971	9,050	(6,365)	(166)	2,519
Total		**$ 1,103,757**	**$ (583,820)**	**$ (5,408)**	**$ 514,529**	**$ 1,103,757**	**$ (516,381)**	**$ (6,187)**	**$ 581,189**

The fair values of the definite-lived acquired intangible assets are amortized over their useful lives, which is consistent with the estimated useful life of considerations used in determining their fair values. Customer and Technology intangibles are amortized on a straight-line basis while Content intangibles are amortized using the sum of years digits method. The weighted average amortization period is 12.8 years. Amortization expense was $67,439, $81,039, and $82,415 for the years ended December 31, 2019, 2018 and 2017, respectively.

The Company's expected aggregate annual amortization expense for existing intangible assets subject to amortization assuming no further acquisitions or dispositions, is as follows:

	Expected Amortization Expense
2020	$ 59,176
2021	44,013
2022	37,082
2023	31,231
2024	23,975
2025 and beyond	35,052

There were no impairments of definite-lived intangible assets for the years ended December 31, 2019. During the year end December 31, 2018, we recognized an impairment charge of $5.5 million related to a definite-lived technology intangible within our K-12 segment which resulted from changes in estimated future revenues of the related intangible. There were no impairments of definite-lived intangible assets for the years ended December 31, 2017 and 2019.

7. Debt

Long-term debt consisted of the following:

	As of	
	December 31, 2019	December 31, 2018
MHGE Senior Notes	$ 400,000	$ 400,000
Term Loan Facility	1,652,323	1,683,593
MHGE Parent Term Loan	180,000	180,000
Receivables Facility	45,000	50,000
Total long-term debt outstanding	2,277,323	2,313,593
Less: unamortized debt discount	(44,763)	(54,960)
Less: unamortized deferred financing costs	(30,257)	(38,922)
Less: current portion of long-term debt	(61,669)	(31,297)
Long-Term Debt	**$ 2,140,634**	**$ 2,188,414**

MHGE Senior Notes

On May 4, 2016, the Company issued $400,000 aggregate principal amount of the 7.875% Senior Notes due 2024, ("MHGE Senior Notes") in a private placement. The MHGE Senior Notes mature on May 15, 2024 and bear interest at a rate of 7.875% per annum, payable semi-annually in arrears on May 15 and November 15 of each year, and commenced on November 15, 2016.

As of December 31, 2019, the unamortized debt discount and deferred financing costs were $33,403 and $15,215, respectively, which are amortized over the term of the MHGE Senior Notes using the effective interest method.

The Company may redeem the MHGE Senior Notes at their option, in whole or in part, at any time on or after May 15, 2019, at certain redemption prices.

The MHGE Senior Notes are fully and unconditionally guaranteed by each of McGraw-Hill Global Education Intermediate Holdings, LLC ("MHGE Holdings") domestic restricted subsidiaries that guarantee the Senior Facilities.

The MHGE Senior Notes contain certain customary negative covenants and events of default. The negative covenants limit MHGE Holdings and its restricted subsidiaries' ability to, among other things: incur additional indebtedness or issue certain preferred shares, create liens on certain assets, pay dividends or prepay junior debt, make certain loans, acquisitions or investments, materially change its business, engage in transactions with affiliates, conduct asset sales, restrict dividends from subsidiaries, restrict liens, or merge, consolidate, sell or otherwise dispose of all or substantially all of MHGE Holdings' assets.

The fair value of the MHGE Senior Notes was approximately $344,000 and $310,000 as of December 31, 2019 and 2018, respectively. The Company estimates the fair value of its MHGE Senior Notes based on trades in the market. Since the MHGE Senior Notes do not trade on a daily basis in an active market, the fair value estimates are based on market observable inputs based on borrowing rates currently available for debt with similar terms and

average maturities (Level 2). As of December 31, 2019, the remaining contractual life of the MHGE Senior Notes is approximately 4.25 years.

Senior Facilities

On May 4, 2016, the Company entered into the Senior Facilities. The Senior Facilities provide for senior secured financing of up to $1,925,000, consisting of:

- Term Loan Facility in an aggregate principal amount of $1,575,000 with a maturity of 6 years; and
- a senior secured revolving credit facility in an aggregate principal amount of up to $350,000 with a maturity of 5 years (the "Revolving Credit Facility"), including both a letter of credit sub-facility and a swingline loan sub-facility.

On December 15, 2017, the Company completed an incremental aggregate principal amount of $150,000 under the existing Term Loan Facility. The incremental Term Loan Facility was issued at a 0.25% discount and will mature concurrently with the existing Term Loan Facility.

Borrowings under the Senior Facilities bear interest at a rate equal to a LIBOR or Prime rate plus an applicable margin, subject to a 1.00% floor in the case of the Term Loan Facility. As of December 31, 2019, the interest rate for the Term Loan Facility was 5.8%. In addition, the Term Loan Facility was issued at a discount of 0.5%. As of December 31, 2019, the unamortized debt discount and deferred financing costs was $8,717 and $12,591, respectively, which are amortized over the term of the facility using the effective interest method.

As of December 31, 2019, the amount available under the Revolving Facility was $350,000 (excluding outstanding letters of credit of $4,271). In addition, we are required to pay a commitment fee of 0.50% per annum to the lenders under the Revolving Facility in respect of the unutilized commitments thereunder.

The Senior Facilities require scheduled quarterly principal payments on the term loans in amounts equal to 0.25% of the original principal amount of the term loans commencing with the end of the first full fiscal quarter ending after the closing date, with the balance payable at maturity. The Term Loan Facility also includes customary mandatory prepayment requirements based on certain events such as asset sales, debt issuances and defined levels of excess cash flow. As of December 31, 2019, the Company determined that a $44,400 mandatory prepayment of indebtedness is required and is payable five business days after the Company's annual financial statements are delivered. This amount is included within the current portion of long-term debt in the consolidated balance sheets as of December 31, 2019.

All obligations under the Senior Facilities are unconditionally guaranteed by each of MHGE Holdings' existing and future direct and indirect material, wholly owned domestic subsidiaries. The obligations are secured by substantially all of MHGE Holdings' assets and those of each subsidiary guarantor, capital stock of the subsidiary guarantors and 65% of the voting capital stock of the first-tier foreign subsidiaries that are not subsidiary guarantors, in each case subject to exceptions. Such security interests consist of a first priority lien with respect to the collateral.

Our Revolving Facility includes a springing covenant that requires MHGE Holdings, subject to a testing threshold, comply on a quarterly basis with a maximum net first lien senior secured leverage ratio (the ratio of consolidated net debt secured by first-priority liens on the collateral to Adjusted EBITDA) of (a) with respect to the first, third and fourth fiscal quarters of any year, 4.80 to 1.00 and (b) with respect to the second quarter of any fiscal year, 5.25 to 1.00. The testing threshold is satisfied at any time at which the sum of outstanding revolving credit facility loans, swingline loans and certain letters of credit exceeds thirty percent (30%) of commitments under the revolving credit facility at year end.

Adjusted EBITDA reflects EBITDA as defined in the credit agreement governing the Senior Facilities. Solely for the purpose of calculating the springing financial covenant, pre-publication investments should be excluded from the calculation of Adjusted EBITDA.

The Senior Facilities contain certain customary affirmative covenants and events of default. The negative covenants in the Senior Facilities include, among other things, limitations on MHGE Holdings' and its subsidiaries' ability to incur additional debt or issue certain preferred shares; create liens on certain assets; make certain loans or investments (including acquisitions); pay dividends on or make distributions in respect of capital stock or make other restricted payments; consolidate, merge, sell or otherwise dispose of all or substantially all of their assets; sell assets; enter into certain transactions with affiliates; enter into sale-leaseback transactions; change their lines of business; restrict dividends from their subsidiaries or restrict liens; change their fiscal year; and modify the terms of certain debt or organizational agreements.

The fair value of the Term Loan Facility was approximately $1,590,361 and $1,536,279 as of December 31, 2019 and 2018, respectively. The Company estimates the fair value of its Term Loan Facility based on trades in the market. Since the Term Loan Facility do not trade on a daily basis in an active market, the fair value estimates are based on market observable inputs based on borrowing rates currently available for debt with similar terms and average maturities (Level 2). As of December 31, 2019, the remaining contractual life of the Term Loan Facility is approximately 2.25 years.

MHGE Parent Term Loan

On April 20, 2018, the Company, entered into a term loan agreement ("MHGE Parent Term Loan") with Ares Agent Services, L.P., as administrative agent, and clients of Ares Capital Management, LLC and certain funds and accounts advised by Guggenheim Partners Investment Management, LLC, as lenders, providing for a $180,000 term loan facility (the "MHGE Parent Term Loan") with a maturity of April 20, 2022. The MHGE Parent Term Loan was issued at a discount of 2.5%.

The MHGE Parent Term Loan bears interest at 11.00% per annum for interest paid in cash and 11.75% per annum for interest paid in kind. Interest is payable semiannually on April 15 and October 15 of each year, commencing on October 15, 2018. Upon closing, the Company was required to deposit $39,325 of the MHGE Parent Term Loan proceeds into an escrow account, representing the first four interest payments which must be paid in cash. The deposit in the escrow account was released for the period commencing on June 15, 2019, and ending on and including July 15, 2019. Thereafter, the determination as to whether interest is paid in cash or in kind will be based on the amount of cash available to pay interest and the ability of the MHGE Parent subsidiaries to make distributions and dividends to MHGE Parent to fund such payments. The MHGE Parent Term Loan is unsecured and is not guaranteed by any of the MHGE Parent subsidiaries.

As of December 31, 2019, the unamortized debt discount and deferred financing costs was $2,643 and $1,765, respectively, which are amortized over the term of the MHGE Parent Term Loan using the effective interest method.

The MHGE Parent Term Loan contains certain customary affirmative covenants and events of default that are similar to those contained in the indenture governing the MHGE Senior Notes. The negative covenants in the MHGE Parent Term Loan limit MHGE Parent and its subsidiaries' ability to, among other things: incur additional indebtedness or issue certain preferred shares, create liens on certain assets, pay dividends or prepay junior debt, make certain loan, acquisitions or investments, materially change its business, engage into transactions with affiliates, conduct asset sales, restrict dividends from subsidiaries or restrict liens, or merge, consolidate, sell or otherwise dispose of all or substantially all of MHGE Parent's assets.

The fair value of the MHGE Parent Term Loan was approximately $170,706 and $163,244 as of December 31, 2019 and 2018, respectively. The Company estimates the fair value of its MHGE Parent Term Loan based on trades in the market. Since the MHGE Parent Term Loan do not trade on a daily basis in an active market, the fair value estimates are based on market observable inputs based on borrowing rates currently available for debt with similar terms and average maturities (Level 2). As of December 31, 2019, the remaining contractual life of the MHGE Parent Term Loan is approximately 2.25 years.

Receivables Facility

On October 29, 2018, MHE Receivables LLC (the "Borrower"), a newly formed special purpose subsidiary of McGraw-Hill Global Education, LLC ("MHGE Global"), entered into a Receivables Financing Agreement ("RFA") with MHGE Global, as initial servicer, the lenders from time to time party thereto, and PNC Bank, National Association, as administrative agent (the "Administrative Agent"), providing for a receivables financing facility up to a committed principal amount of $50,000 (the "Receivables Facility") with a maturity of October 29, 2021.

Furthermore, an additional principal amount of $100,000 has been committed for an agreed seasonal period, which has a maturity of October 28, 2019 and an annual renewal feature through to October 2021. The borrowing capacity under the Receivables Facility is subject to a borrowing limit that is based on the Borrower's Eligible Receivables, as defined in the RFA. Under a Purchase and Sale Agreement entered into in connection with the Receivables Facility, with MHGE Global and McGraw-Hill School Education, LLC ("MHSE"), as originators, MHGE Global as initial servicer, and the Borrower, as buyer, all existing receivables of MHGE Global and MHSE have been assigned to the Borrower and all future receivables of MHGE Global and MHSE will be automatically assigned to the Borrower when they are created.

As of December 31, 2019, $45,000 was outstanding under the Receivables Facility which is included in long-term debt, within the consolidated balance sheet. Borrowings under the Receivables Facility bear interest at LIBOR plus 2.00%, subject to adjustments, and are payable monthly. In addition, we also incur an undrawn fee of 0.50% on unutilized commitments. The unamortized deferred financing costs as of December 31, 2019 was $686 which are amortized over the term of the Receivables Facility using the effective interest method.

Scheduled Principal Payments

The scheduled principal payments required under the terms of the MHGE Senior Notes, Senior Facilities, MHGE Parent Term Loan and Receivables Facility were as follows:

	As of December 31, 2019
2020	$ 61,669
2021	62,269
2022	1,753,385
2023	—
2024	400,000
	2,277,323
Less: Current portion	(61,669)
	$ 2,215,654

8. Interest Rate Hedge

In the normal course of business, the Company may enter into interest rate hedge agreements to manage exposure to interest rate risk. Interest rate swap agreements are derivative financial instruments and generally involve the conversion of variable-rate debt to fixed-rate debt over the life of the interest rate swap agreement without exchange of the underlying notional amount.

Interest rate swap agreements which are designated and qualify as a hedge of the exposure to variability in expected future cash flows are considered cash flow hedges. The Company prepares written hedge documentation for all interest rate swap agreements which are designated as cash flow hedges. The written hedge documentation includes identification of, among other items, the risk management objective, hedging instrument, hedged item and methodologies for assessing and measuring hedge effectiveness and ineffectiveness, along with support for management's assertion that the hedge will be highly effective.

For designated hedging relationships, the Company performs retrospective and prospective effectiveness testing to determine whether the hedging relationship has been highly effective in offsetting changes in cash flows of hedged items and whether the relationship is expected to continue to be highly effective in the future. Assessments of hedge effectiveness and measurements of hedge ineffectiveness are performed at least quarterly. The effective portion of the changes in the fair value of an interest rate swap that is highly effective and that has been designated and qualifies as a cash flow hedge are initially recorded in accumulated other comprehensive income and reclassified to earnings in the same period that the hedged item impacts earnings or when the hedging relationship is terminated. The ineffective portion of the gain or loss, if any, is recognized in earnings.

The Company recognizes all interest rate swap agreements as assets or liabilities in the balance sheet at fair value and is included with other non-current assets or other non-current liabilities, respectively. Cash flows from interest rate swap agreements used to manage interest rate risk are classified as operating activities. We do not use derivative instruments for trading or speculative purposes. In addition, we enter into interest rate swap agreements with a variety of financial institutions that we believe are creditworthy in order to reduce our concentration of credit risk.

On March 15, 2017, the Company entered into interest rate swap agreements with various financial institutions having an aggregate notional value of $500,000 to convert a portion of its variable-rate debt to a fixed rate debt. The Company will receive payments from the counterparties at one-month LIBOR and make payments to the counterparties at a fixed rate of 2.07%. The cash flow payments on the interest rate swap agreements began in April 2017 and terminate April 2022. The notional amount and interest payment date of the interest rate and interest rate swaps match the principal, interest payment and maturity date of the related debt.

The interest rate swap agreements have been designated as a cash flow hedge and qualifies for hedge accounting under the accounting guidance related to derivatives and hedging. Accordingly, we recorded an unrealized loss of $(11,992) in our consolidated statements of comprehensive income (loss) to account for the changes in fair value of these derivatives as of December 31, 2019 and a unrealized gain of $5,052 as of December 31, 2018. The corresponding hedge liability of $6,219 and an asset of $5,773 is included within other non-current liabilities and other non-current assets in our consolidated balance sheets as of December 31, 2019 and December 31, 2018, respectively. Ineffectiveness of the cash flow hedge was not material for the periods presented. The Company records the fair value of its interest rate swap agreements on a recurring basis using Level 2 inputs of quoted prices for similar assets or liabilities in active markets.

9. Segment Reporting

The Company manages and reports its businesses in the following segments:

- **Higher Education:** We provide students, instructors and institutions with adaptive digital learning, tools, digital platforms, custom publishing solutions, traditional printed textbook and rental textbook products.

- **K - 12:** Provides curriculum and learning solutions to the K-12 market. We sell our learning solutions directly to K-12 school districts across the United States. While we offer all of our major curriculum and learning solutions in digital format, given the varying degrees of availability and maturity of our customers' technological infrastructure, a majority of our sales are derived from selling blended print and digital solutions.

- **International:**We leverage our global scale, brand recognition and extensive product portfolio to serve students in the higher education, K-12 and professional markets in more than 100 countries outside of the United States. Our products and solutions for the International segment are produced in more than 75 languages and primarily originate from our offerings produced for the United States market and that are later adapted to different international markets.

- **Professional:** We are a leading provider of medical, technical, engineering and business content for the professional, education and test preparation communities.

- **Other:** Includes certain transactions or adjustments that our Chief Operating Decision Maker ("CODM") considers to be unusual and/or non-operational.

The Company's business segments are consistent with how management views the markets served by the Company. The CODM reviews their separate financial information to assess performance and to allocate resources. We measure and evaluate our reportable segments based on segment Billings and Adjusted EBITDA and believe they provide additional information to management and investors to measure our performance and evaluate our ability to service our indebtedness. We include the change in deferred revenue to GAAP revenue to arrive at Billings. Billings is a key metric that we use to manage our business as it reflects the sales activity in a given period and provides comparability during this time of digital transition, particularly in the K-12 market, in which our customers typically pay for five to eight-year contracts upfront. Furthermore, Billings incorporates the change in deferred revenue that is reflected in the calculation of Adjusted EBITDA. Therefore when the Company uses a margin calculation based on Adjusted EBITDA, the margin has to be based on Billings. We exclude from segment Adjusted EBITDA: interest expense (income), net, income tax provision (benefit), depreciation, amortization and pre-publication amortization and certain transactions or adjustments that our CODM does not consider for the purposes of making decisions to allocate resources among segments or assessing segment performance. Although we exclude these amounts from segment Adjusted EBITDA, they are included in reported consolidated net (loss) income and are included in the reconciliation below.

Billings and Adjusted EBITDA are not presentations made in accordance with U.S. GAAP and the use of the terms, Billings and Adjusted EBITDA, varies from others in our industry. Billings and Adjusted EBITDA should be considered in addition to, not as a substitute for, revenue and net (loss) income, or other measures of financial performance derived in accordance with U.S. GAAP as measures of operating performance or cash flows as measures of liquidity.

Segment asset disclosure is not used by the CODM as a measure of segment performance since the segment evaluation is driven by Billings and Adjusted EBITDA. As such, segment assets are not disclosed in the notes to the accompanying consolidated financial statements.

The following tables set forth information about the Company's operations by its segments:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Billings:			
Higher Education	$ 641,316	$ 682,232	$ 718,511
K - 12	647,482	600,726	733,252
International	249,657	255,867	286,762
Professional	122,720	119,459	125,411
Other	1,882	3,153	2,480
Total Billings (1)	1,663,057	1,661,437	1,866,416
Change in deferred revenue	(91,669)	(64,492)	(147,344)
Total Consolidated Revenue	**$ 1,571,388**	**$ 1,596,945**	**$ 1,719,072**

(1) The elimination of inter-segment revenues was not significant to the revenues of any one segment.

Adjusted EBITDA:			
Higher Education	$ 183,252	$ 200,667	$ 227,707
K - 12	110,525	24,085	112,078
International	15,161	8,038	18,324
Professional	35,453	35,754	39,944
Other	10,647	(7,620)	2,092
Total Adjusted EBITDA	**$ 355,038**	**$ 260,924**	**$ 400,145**

Reconciliation of Adjusted EBITDA to the consolidated statements of operations is as follows:

	Year Ended December 31, 2019	**Year Ended December 31, 2018**	**Year Ended December 31, 2017**
Total Adjusted EBITDA	$ 355,038	$ 260,924	$ 400,145
Interest (expense) income, net	(180,430)	(180,576)	(179,378)
Income tax (provision) benefit	(12,122)	(10,535)	7,351
Depreciation, amortization and pre-publication amortization	(220,785)	(219,513)	(232,212)
Change in deferred revenue	(91,669)	(64,492)	(147,344)
Change in deferred royalties	18,727	5,426	22,426
Change in deferred commissions	466	(1,281)	—
Restructuring and cost savings implementation charges	(21,772)	(9,770)	(14,261)
Sponsor fees	(3,500)	(3,500)	(3,500)
Transaction Costs	(21,044)	—	—
Merger Integration Costs	(7,030)	—	—
Other	(38,199)	(36,643)	(18,376)
Pre-publication investment	79,110	99,539	99,219
Net loss from continuing operations	(143,210)	(160,421)	(65,930)
Net (loss) income	**$ (143,210)**	**$ (160,421)**	**$ (65,930)**

The following is a schedule of revenue and long-lived assets by geographic region:

	Revenue (1)		
	Year Ended December 31, 2019	**Year Ended December 31, 2018**	**Year Ended December 31, 2017**
United States	$ 1,322,688	$ 1,341,950	$ 1,437,586
International	248,700	254,995	281,486
Total	**$ 1,571,388**	**$ 1,596,945**	**$ 1,719,072**

(1) Revenues are attributed to a geographic region based on the location of customer.

	Long-lived Assets (2)	
	As of	
	December 31, 2019	December 31, 2018
United States	$ 515,424	$ 420,405
International	37,850	41,005
Total	**$ 553,274**	**$ 461,410**

(2) Reflects total assets less current assets, goodwill, intangible assets, investments, deferred financing costs and non-current deferred tax assets.

10. Taxes on Income (Loss)

(Loss) income before taxes on income that resulted from domestic and foreign operations is as follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Domestic operations	$ (154,194)	$ (158,952)	$ (103,642)
Foreign operations	23,106	9,066	30,361
Total (loss) income before taxes	**$ (131,088)**	**$ (149,886)**	**$ (73,281)**

The provision for taxes on income consists of the following:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Federal:			
Current	$ —	$ —	$ —
Deferred	(325)	(416)	(27,119)
Total federal	(325)	(416)	(27,119)
Foreign:			
Current	10,909	8,745	15,449
Deferred	(925)	(54)	2,543
Total foreign	9,984	8,691	17,992
State and local:			
Current	1,863	1,459	82
Deferred	600	801	1,694
Total state and local	2,463	2,260	1,776
Total provision (benefit) for taxes	**$ 12,122**	**$ 10,535**	**$ (7,351)**

A reconciliation of the U.S. federal statutory tax rate to our effective income tax rate for financial reporting purposes is as follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
U.S. federal statutory income tax rate	21.0 %	21.0 %	35.0 %
Effect of state and local income taxes	(1.5)	(1.2)	(1.6)
Foreign rate differential	(0.9)	(3.0)	4.9
Foreign withholding and branch taxes	(1.1)	(4.5)	(6.3)
Research and development credit	4.4	3.4	5.1
Inventory contribution	—	0.4	1.6
Unrecognized tax benefit	(1.7)	(1.1)	(6.6)
Valuation allowance on deferred tax assets	(25.3)	(22.2)	176.2
U.S. Federal rate change on deferred tax assets	—	—	(194.3)
Previously taxed deferred revenue	—	—	0.8
Deferred tax adjustment for intangibles	—	—	(3.7)
Nontaxable royalty and interest income	1.9	2.1	4.6
Stock Option expirations	(1.2)	—	—
Transaction Costs	(1.2)	—	—
Other - net	(3.5)	(1.9)	(5.7)
Effective income tax rate	**(9.1)%**	**(7.0)%**	**10.0%**

The principal temporary differences between accounting for income and expenses for financial reporting and income tax purposes as of December 31, 2019 and 2018 are as follows:

	December 31, 2019	December 31, 2018
Deferred tax assets:		
Inventory and pre-publication costs	$ 36,140	$ 27,486
Intangible and fixed assets	55,291	49,787
Capitalized research and development	47,198	23,692
Employee compensation	19,193	13,934
Deferred revenue	188,809	180,516
Loss carryforwards	87,808	107,641
Operating lease liability	24,903	—
Interest expense carryforward	6,059	894
Other	1,265	737
Total deferred tax assets	**466,666**	**404,687**
Deferred tax liabilities:		
Accrued expenses	(28,073)	(25,955)
Deferred financing costs	(12,760)	(16,721)
Operating lease right of use asset	(18,206)	—
Indefinite lived intangibles and goodwill	(37,399)	(33,036)
Total deferred tax liabilities	**(96,438)**	**(75,712)**
Net deferred income tax asset (liability) before valuation allowance	370,228	328,975
Valuation allowance	(376,564)	(335,871)
Net deferred income tax asset (liability)	**$ (6,336)**	**$ (6,896)**
Reported as:		
Non-current deferred tax assets	6,256	6,422
Non-current deferred tax liabilities	(12,592)	(13,318)
Net deferred income tax asset (liability)	**$ (6,336)**	**$ (6,896)**

We record valuation allowances against deferred income tax assets when we determine that it is more likely than not based upon all the current evidence that such deferred income tax assets will not be realized. Management assesses the available positive and negative evidence to estimate if sufficient future income will be available to use the existing deferred tax assets. A significant piece of objective evidence evaluated was the cumulative book loss incurred which limits the ability to consider other subjective evidence such as future taxable income. On the basis of this evaluation, as of December 31, 2019, a valuation allowance of $366,615 has been recorded for federal and state and $9,949 for select international deferred tax assets, including carryover of net operating losses, charitable contributions, capital loss, and research and development credits. The Company will continue to assess the available positive and negative evidence to estimate if sufficient future book income will be available to use the existing tax assets. As a result, the amount of the deferred tax asset considered realizable could be adjusted if estimates of future taxable income during the carryforward period improve or objective negative evidence in the form of the level of cumulative book losses is reduced, and additional weight may be given to subjective evidence.

As of December 31, 2019, the Company had U.S. federal net operating losses of $142,011 which are subject to expiration in 2035-2037 and $32,124 of net operating losses which will not expire. The Company's state

net operating loss carryforwards of $163,261 are subject to expiration in 2020-2037. The Company also has charitable contribution carryforwards of $26,020 which are subject to expiration in 2020-2022 and carryforwards of research and development credits of $21,925 which are subject to expiration in 2033-2038. International net operating loss carryforwards as of December 31, 2019 are $27,884, predominately in UK, Spain, Taiwan, and Australia which are subject to expiration in 2022-indefinite.

The undistributed earnings of the Company's foreign subsidiaries have been retained and permanently reinvested by the subsidiaries as of December 31, 2019. Accordingly, no provision has been made for foreign withholding taxes, which may become payable if the undistributed earnings of foreign subsidiaries were paid as dividends.

For the years ended December 31, 2019 and 2018, we made net state, local and foreign income tax payments of $6,927 and $8,751, respectively.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Balance at the beginning of the year	$ 11,835	$ 9,932	$ 3,874
Additions based on tax positions related to the current year	—	—	1,571
Additions for tax positions of prior years	2,986	1,914	4,639
Reduction for tax positions of prior year	(5)	(11)	(152)
Balance at end of year	**$ 14,816**	**$ 11,835**	**$ 9,932**

As of December 31, 2019, there is $10,007 of unrecognized tax benefits that if recognized would affect the annual effective tax rate after considering the valuation allowance.

McGraw-Hill Education, Inc. is under examination by the Internal Revenue Service as part of the Compliance Assurance Process for tax year 2019. The 2018 federal income tax audit was completed. For state and local, and foreign jurisdictions, generally tax years 2013 to 2018 are open and subject to examination.

We believe that our accrual for tax liabilities is adequate for all open audit years based on an assessment of past experience and interpretations of tax law. This assessment relies on estimates and assumptions and may involve a series of complex judgments about future events. Until formal resolutions are reached with tax authorities, the determination of a possible audit settlement range with respect to the impact on unrecognized tax benefits is not practicable. On the basis of present information, it is our opinion that any assessments resulting from the current audits will not have a material adverse effect on our financial statements. Total uncertain tax liabilities as of December 31, 2019 are $16,533 of which $11,725 is included in other non-current liabilities and $4,808 is included in deferred income taxes non-current within the balance sheet. Total uncertain tax liabilities as of December 31, 2018 were $12,845 of which $9,085 is included in other non-current liabilities and $3,760 is included in deferred income taxes non-current within the consolidated balance sheet. Although the timing of income tax audit resolution and negotiations with taxing authorities is highly uncertain, we do not anticipate a significant change to the total amount of unrecognized income tax benefits as a result of audit developments within the next twelve months.

11. Employee Benefits

A majority of the Company’s employees are participants in voluntary 401(k) plans sponsored by the Company under which the Company matches employee contributions up to certain levels of compensation. The Company's contributions were $20,094 and $19,481 for the year ended December 31, 2019 and 2018, respectively, and is included within operating and administration expenses in the consolidated statement of operations.

12. Stock-Based Compensation

The Company issues share based compensation under the Management Equity Plan (the "Plan") which was established during the quarter ended June 30, 2013. The Plan permits the grant of stock options, restricted stock, restricted stock units and other equity based awards to the Company's employees and directors. As of December 31, 2019, the Board of Directors of the Company authorized up to 1,717,871 shares under the plan. The number of shares available for grant under the Plan are 443,719.

The Company measures compensation cost for share based awards according to the equity method. In accordance with the expense recognition provisions of those standards, the Company amortizes unearned compensation associated with share based awards on a straight-line basis over the vesting period of the option or award.

The following table sets forth the total recognized compensation expense related to stock option grants and restricted stock and restricted stock units issuances for all periods presented:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Stock option expense	$ 2,594	$ 6,321	$ 6,838
Market stock option expense	2,513	1,901	—
Restricted stock and unit awards expense	8,429	11,968	7,450
Total stock-based compensation expense	**$ 13,536**	**$ 20,190**	**$ 14,288**

An income tax benefit for stock options and restricted stock units was recognized and subsequently offset with a full valuation allowance for the years ended December 31, 2019, 2018 and 2017.

Stock Options

Stock options issued prior to 2018 generally vest up to five years with 50% vesting on cumulative financial performance measures under the Plan and the remaining 50% vest in annually in equal installments, in each case subject to continued service. Stock options issued during the years ended December 31, 2019 and 2018 generally vest up to three years annually in equal installments and are subject to continued service. Stock options terminate on the earliest of the tenth year from the date of the grant or other committee action, as defined under the Plan.

During the year ended December 31, 2016, the Board of Directors authorized a modification to certain unvested stock options, which converted their vesting requirements from performance based grants to service based grants. Due to the modification, the Company recognized incremental compensation expense related to stock options of $7,732 of which was recognized during the years 2016 through 2018.

The following table presents a summary of stock option activity as of December 31, 2019:

	Number of Shares	Weighted-Average Exercise Price per Share (1)	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding as of December 31, 2016	653,144	$ 65.80	6.9	$ 47,713
Granted	311,000	135.00		
Exercised	(32,491)	60.51		
Forfeited and expired	(137,024)	116.73		
Outstanding as of December 31, 2017	794,629	$ 82.43	7.0	$ 35,224
Granted	265,932	120.00		
Exercised	(94,377)	35.27		
Forfeited and expired	(212,422)	126.82		
Outstanding as of December 31, 2018	753,762	$ 89.08	6.1	$ 12,773
Granted	62,500	$ 75.00		
Exercised	(112,838)	$ 28.74		
Forfeited and expired	(294,569)	$ 141.73		
Outstanding as of December 31, 2019	408,855	$ 82.61	5.4	$ 7,297
Vested and expected to vest as of December 31, 2019	408,855	82.61	5.4	7,297
Exercisable as of December 31, 2019	375,562	85.26	3.1	6,803

(1) As disclosed in Note 17 - Related Party Transactions, the Company has paid dividends to common stockholders. The Company's stock options are issued in accordance to the provisions of the Management Equity Plan, which contains mandatory anti-dilution provisions requiring modification of the options in the event of an equity restructuring, such as the dividends repaid. Accordingly, through April 2015, on payment of each dividend, the exercise price per share of each outstanding option is reduced in an amount equal to the value of the dividend, in compliance with applicable tax laws and regulatory guidance. The Company evaluated the fair value of the stock options following the reduction of the exercise price associated with the dividend issuance as compared to the fair value prior to the modification. As a result, since the fair value of the award after the modification was unchanged, the Company did not record any additional incremental compensation expense associated with the dividends.

The total intrinsic value of stock options exercised during the years ended December 31, 2019, 2018 and 2017 was $5,210, $7,996 and $2,559, respectively.

The Company uses the Black-Scholes closed-form option pricing model to estimate the fair value of stock options granted which incorporates the assumptions as presented in the following table, shown at their weighted-average values:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Expected dividend yield	—%	—%	—%
Expected stock price volatility (a)	50.0%	50.0%	40.0%
Risk-free interest rate (b)	2.6%	2.6%	2.2%
Expected option term (years) (c)	6.50	6.00	6.00

(a) *Expected volatility.* The Company bases its expected volatility on a group of companies believed to be a representative peer group, selected based on industry and market capitalization.
(b) *Risk free rate.* The risk-free rate for periods within the expected term of the award is based on the U.S. Government Bond yield with a term equal to the awards' expected term on the date of grant.
(c) *Expected term.* Expected term represents the period of time that awards granted are expected to be outstanding. The Company elected to use the "simplified" calculation method, as applicable companies that lack extensive historical data. The mid-point between the vesting date and the contractual expiration date is used as the expected term under this method.

The weighted-average grant date fair value of the stock options issued in 2019, 2018 and 2017 were $38.95, $49.80 and $55.70, respectively.

As of December 31, 2019, there was $2,944 of unrecognized compensation expense related to the Company's stock options. Unrecognized compensation expense related to stock options issued to employees is expected to be recognized over a weighted-average period of 0.4 years.

Market Stock Options

During 2018, the Company issued market stock options ("MSOs") to certain employees of the Company. The MSOs vest over two to four years pursuant to certain market conditions set forth by the Company and subject to continued service. Employees can earn between 0% and 150% of the number of MSOs issued based on the attainment of these market-based conditions. These MSOs terminate on the earliest of the tenth year from the date of grant or other committee action, as defined under the Plan.

The following table presents a summary of MSO activity as of December 31, 2019:

	Number of Shares	Weighted-Average Exercise Price per Share	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding as of December 31, 2018	245,000	$ 120.00	9.5	$ —
Granted	—	—	—	$ —
Exercised	—	—	—	$ —
Forfeited and expired	(65,000)	120.00	—	$ —
Outstanding as of December 31, 2019	180,000	$ 120.00	8.1	$ —
Vested and expected to vest as of December 31, 2019	180,000	$ 120.00	8.1	—
Exercisable as of December 31, 2019	—	—	—	—

As of December 31, 2019, there was $573 of unrecognized compensation expense related to the Company's MSOs. Unrecognized compensation expense related to MSOs issued to employees is expected to be recognized over a weighted-average period of 0.3 years.

Restricted Stock and Restricted Stock Units

Restricted stock and restricted stock units (collectively, "RSUs") issued prior to 2017 vest either subject to the achievement of certain performance measures and continued service over a three year period, or vest in equal installments over a three period subject only to continued service. RSUs issued during the year ended December 31, 2017 and 2018 vest in equal installments over a two to four year period subject only to continued service.

The following table table presents a summary of RSU unit activity as of December 31, 2019:

	Number of Restricted Stock Units		Weighted-Average Grant Date Fair Value
Non-vested as of December 31, 2016	106,132	$	145.95
Granted	49,085		135.00
Vested	(52,014)		177.19
Forfeited	(7,856)		140.12
Non-vested as of December 31, 2017	95,347	$	146.12
Granted	167,581		120.00
Vested	(49,464)		147.54
Forfeited	(27,075)		134.31
Non-vested as of December 31, 2018	186,389	$	124.36
Granted	59,672		75.00
Vested	(34,549)		(87.16)
Forfeited	(30,081)		(84.26)
Non-vested as of December 31, 2019	181,431	$	(107.47)

As of December 31, 2019, there was $6,651 of unrecognized compensation expense related to the Company's grant of RSUs to employees. Unrecognized compensation expense related to RSUs issued to employees is expected to be recognized over a weighted-average period of 1.1 years.

13. Restructuring

In order to contain costs and mitigate the impact of current and expected future economic and market conditions, as well as a continued focus on process improvements, we have initiated various restructuring plans over the last several years. The charges for each restructuring plan are classified as operating and administration expenses within the consolidated statements of operations.

In certain circumstances, reserves are no longer needed because of efficiencies in carrying out the plans, or because employees previously identified for separation resigned from the Company and did not receive severance or were reassigned due to circumstances not foreseen when the original plans were initiated. In these cases, we reverse reserves through the consolidated statements of operations when it is determined they are no longer needed.

The following table summarizes restructuring information by reporting segment:

	Higher Education	K-12	International	Professional	Other	Total
As of December 31, 2016	**$ 9,461**	**$ 488**	**$ 4,922**	**$ 105**	**$ 2,818**	**$ 17,794**
Charges:						
Employee severance and other personal benefits	7,493	2,658	—	—	—	10,151
Payments:						
Employee severance and other personal benefits	(10,259)	(1,358)	(4,565)	(60)	(2,278)	(18,520)
As of December 31, 2017	**$ 6,695**	**$ 1,788**	**$ 357**	**$ 45**	**$ 540**	**$ 9,425**
Charges:						
Employee severance and other personal benefits	4,360	2,380	6,463	—	—	13,203
Payments:						
Employee severance and other personal benefits	(7,414)	(2,808)	(5,167)	(45)	(540)	(15,974)
As of December 31, 2018	**$ 3,641**	**$ 1,360**	**$ 1,653**	**$ —**	**$ —**	**$ 6,654**
Charges:						
Employee severance and other personal benefits	6,551	19,164	890	—	—	26,605
Payments:						
Employee severance and other personal benefits	(6,976)	(8,416)	(1,952)	—	—	(17,344)
As of December 31, 2019	**$ 3,216**	**$ 12,108**	**$ 591**	**$ —**	**$ —**	**$ 15,915**

The Company expects to utilize the remaining reserves of $15,449 and $466 in 2020 and 2021 respectively.

14. Leases

On January 1, 2019, the Company adopted Topic 842 using the modified retrospective transition for all leases that existed as of the date of adoption. Because of the transition method we used, Topic 842 was not applied to periods prior to adoption and the adoption of Topic 842 had no impact on our previously reported results. We elected to apply the package of practical expedients available for leases that expired prior to or existed as of January 1, 2019, and therefore did not reassess (1) whether contractual arrangements are or contain leases; (2) the classification of leases; and (3) initial direct costs for leases.

We lease property under operating leases with expiration dates through 2035 as well as computer systems and office equipment under finance leases with lease terms ranging from 12 to 50 months. For operating lease arrangements with terms greater than 12 months, we record a lease liability and right-of-use asset on our consolidated balance sheets at the lease commencement date. We measure lease liabilities based on the present value of the total lease payments not yet paid. As most of our leases do not provide an implicit rate, we use our estimated incremental borrowing rate at the lease commencement date to determine the present value of the total lease payments. We measure right-of-use assets based on the corresponding lease liability adjusted for (i) payments made to the lessor at or before the commencement date, (ii) initial direct costs we incur and (iii) tenant incentives under the lease. Certain lease arrangements contain escalation clauses covering increased costs for various defined real estate taxes and operating services which are factored into our determination of lease payments, however, we do not assume renewals or early terminations unless we are reasonably certain to exercise these options at commencement, and we do not allocate consideration between lease and non-lease components.

For short-term leases, we record expense in our consolidated statement of operations on a straight-line basis over the lease term.

In addition, the adoption of Topic 842 had no material impact to our consolidated statement of operations, cash flows from or used in operating, financing, or investing activities on our consolidated cash flow statements, Billings or Adjusted EBITDA.

Lease position as of December 31, 2019

The table below presents the lease-related assets and liabilities recorded on the consolidated balance sheet:

	Classification on the Balance Sheet	As of December 31, 2019
Assets		
Operating leases	Operating lease right-of-use assets	$ 76,091
Finance leases	Property and equipment, net	23,183
Total lease assets		**$ 99,274**
Liabilities		
Current:		
Operating leases	Operating lease liabilities	$ 14,492
Finance Leases	Other current liabilities	11,619
Non-current:		
Operating leases	Operating lease liabilities	88,070
Finance leases	Other non-current liabilities	14,936
Total lease liabilities		**$ 129,117**
Weighted-average remaining lease term:		
Operating leases		11.28
Finance Leases		2.18
Weighted-average discount rate:		
Operating leases		10.94%
Finance Leases		7.50%

Lease costs

The table below presents certain information related to the lease costs for operating and finance leases during the Year Ended December 31, 2019:

	Year Ended December 31, 2019
Operating lease cost	$ 29,162
Short-term lease cost	1,268
Finance lease cost:	
Amortization of assets	9,513
Interest on lease liabilities	1,356
Sub-lease income	(3,739)
Total net lease cost	**$ 37,560**

Other Information

Supplemental cash flow information related to leases was as follows:

	Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	23,719
Operating cash flows from finance leases	11,381

Undiscounted cash flows

The table below reconciles the undiscounted cash flows for each of the first five years and total of the remaining years to the operating and finance lease liabilities recorded on the balance sheet:

	Year Ended December 31, 2019	
	Operating Leases	**Finance Leases**
2020	$ 18,183	$ 13,106
2021	18,996	8,860
2022	13,586	5,291
2023	13,563	1,701
2024	11,949	362
2025 and beyond	115,891	—
Total lease payments	192,168	29,320
Less: amounts related to interest	(89,606)	(2,765)
Total lease liabilities	102,562	26,555
Less: Current liabilities	(14,492)	(11,619)
Non-current lease liabilities	**$ 88,070**	**$ 14,936**

15. Transactions with Apollo Global Management LLC (the "Sponsors")

Transactions Fee Agreement

The Company entered into a transaction fee agreement on March 22, 2013 (the "Transactions Fee Agreement") with Apollo Global Securities, LLC (the "Service Provider") relating to the provision of certain structuring, financial, investment banking and other similar advisory services by the Service Provider to the Company, its direct and indirect divisions and subsidiaries, parent entities or controlled affiliates (collectively, the "Company Group") in connection with future transactions. Subject to the terms and conditions of the Transactions Fee Agreement, a transaction fee equal to 1% of the aggregate enterprise value is payable in connection with any merger, acquisition, disposition, recapitalization, divestiture, sale of assets, joint venture, issuance of securities (whether equity, equity-linked, debt or otherwise), financing or any similar transaction effected by a member of the Company Group. For the years ended December 31, 2019 and 2018, no transaction fees were recorded. For year ended December 31, 2017, $150 was recorded.

Management Fee Agreement

The Company entered into a management fee agreement (the "Management Fee Agreement") with Apollo Management VII, L.P. (the "Advisor") on March 22, 2013, relating to the provision of certain management consulting and advisory services to the members of the Company Group. In exchange for the provision of such services, the Advisor will receive a non-refundable annual management fee of $3,500 in the aggregate. Subject to the terms and conditions of the Management Fee Agreement, upon a change of control or an initial public offering ("IPO") of a member of the Company Group, the Advisor may elect to receive a lump sum payment in lieu of future management fees payable to them under the Management Fee Agreement. For the years ended December 31, 2019, 2018 and 2017, the Company recorded an expense of $3,500 for management fees, respectively.

16. Commitments and Contingencies

Legal Matters

In 2016, MHE filed a complaint against Illinois National Insurance Company ("INIC") in the Supreme Court of the State of New York seeking a declaration that it is entitled to full insurance benefits under several multi-media policies with INIC which has denied liability and asserted a counterclaim on November 28, 2016 in the Action seeking (i) a declaratory judgment that MHE is not entitled to the coverage sought; (ii) recoupment of indemnity payments already made by INIC on the claims; and (3) recoupment of defense costs reimbursed by INIC. On December 17, 2019, the First Department ruled that MHE is entitled to coverage for damages related to the Copyright Actions under the policies and referred the case back to the trial court for a determination of damages.

In the normal course of business both in the United States and abroad, the Company is a defendant in various lawsuits and legal proceedings which may result in adverse judgments, damages, fines or penalties and is subject to inquiries and investigations by various governmental and regulatory agencies concerning compliance with applicable laws and regulations. In view of the inherent difficulty of predicting the outcome of legal matters, we cannot state with confidence what the timing, eventual outcome, or eventual judgment, damages, fines, penalties or other impact of these pending matters will be. We believe, based on our current knowledge, that the outcome of the legal actions, proceedings and investigations currently pending should not have a material adverse effect on the Company's financial condition.

17. Related Party Transactions

In the normal course of business, the Company has transactions with its wholly owned consolidated subsidiaries and affiliated entities.

RackSpace

The Company has an agreement with RackSpace, Inc., a portfolio company of the Sponsors, primarily related to managed cloud and hosting services. For the years ended December 31, 2019, 2018 and 2017 the Company paid this vendor $16,000, $13,917 and $1,060, respectively.

Presidio

In addition, the Company purchases technology equipment from Presidio Networked Solutions ("Presidio Networked"), a portfolio company of the Sponsors. For the years ended December 31, 2019, 2018 and 2017 the Company paid Presidio Networked $849, $677 and $1,890, respectively.

University of Phoenix

University of Phoenix is owned by Apollo Education Group, which was acquired by the Sponsors and certain co-investors in February 2017. For the year ended December 31, 2019 and 2018, the Company's sales to University of Phoenix totaled $5,624 and $2,324, respectively.

CEVA Group

The Company utilizes CEVA Freight Management, a wholly owned subsidiary of CEVA Group PLC, a U.K. based portfolio company of the Sponsors, as one of our freight forwarding contractors. For the years ended December 31, 2019, 2018 and 2017 the Company paid CEVA $2,244, $1,069 and $1,600, respectively.

18. Subsequent Events

In December 2019, a novel strain of coronavirus ("COVID-19") was reported in Wuhan, China. The World Health Organization has declared COVID-19 to constitute a "Public Health Emergency of International Concern." On January 30, 2020, the U.S. Department of State issued a Level 4 "do not travel" advisory for China. The U.S. government has also implemented enhanced screenings, quarantine requirements and travel restrictions in connection with the COVID-19 outbreak. The extent of the impact of the COVID-19 on the Company's operational and financial performance will depend on future developments, including the duration and spread of the outbreak.

The Company has evaluated events occurring subsequent to the balance sheet date through March 10, 2020, the date the financial statements were available for issuance. Based upon this evaluation, it was determined that no subsequent events occurred that require recognition or disclosure in the financial statements.

McGraw-Hill Education, Inc. and subsidiaries
Condensed Financial Information of Registrant
Parent Company Information
(Dollars in thousands)

Consolidated Statements of Operations

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Revenue	$ —	$ —	$ —
Cost of sales	—	—	—
Gross profit	—	—	—
Operating expenses			
Operating and administration expenses	895	5,967	1,394
Depreciation	—	—	—
Amortization of intangibles	—	—	—
Equity in income/loss of subsidiaries	142,315	155,582	64,536
Total operating expenses	143,210	161,549	65,930
Operating (loss) income	(143,210)	(161,549)	(65,930)
Interest expense (income), net	—	—	—
(Loss) income from operations before taxes on income	(143,210)	(161,549)	(65,930)
Income tax (benefit) provision	—	(1,128)	—
Net (loss) income	**$ (143,210)**	**$ (160,421)**	**$ (65,930)**

Consolidated Balance Sheets

	December 31, 2019	December 31, 2018
Current assets		
Cash and equivalents	$ 513	$ 385
Prepaid and other current assets	1,129	1,129
Total current assets	1,642	1,514
Other non-current assets	—	—
Total assets	**$ 1,642**	**$ 1,514**
Liabilities and equity		
Current liabilities		
Accounts payable	$ 250	$ 4
Intercompany	35,586	34,810
Total current liabilities	35,836	34,814
Investment losses in subsidiaries	1,360,014	1,229,045
Total liabilities	1,395,850	1,263,859
Stockholders' equity (deficit)		
Common stock	106	105
Additional paid in capital	56,251	40,790
Treasury stock	(23,529)	(19,414)
Accumulated deficit	(1,427,036)	(1,283,826)
Total stockholders' equity (deficit)	(1,394,208)	(1,262,345)
Total liabilities and stockholders' equity (deficit)	**$ 1,642**	**$ 1,514**

McGraw-Hill Education, Inc. and subsidiaries
Condensed Financial Information of Registrant
Parent Company Information
(Dollars in thousands)

Consolidated Statement of Cash Flows

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Operating activities			
Cash provided by (used for) operating activities	$ 4,243	$ (82)	$ (3,899)
Financing activities			
Issuance of common stock	—	10,000	—
Repurchase of common stock	(4,115)	(9,763)	(2,924)
Cash provided by (used for) financing activities	(4,115)	237	(2,924)
Net change in cash and cash equivalents	128	155	(6,823)
Cash and cash equivalents at the beginning of the period	385	230	7,053
Cash and cash equivalents, ending balance	$ 513	$ 385	$ 230

1. Basis of Presentation

McGraw-Hill Education, Inc. (formerly known as Georgia Holdings, Inc.) (the "Company") became the ultimate parent of MHE Acquisition, LLC pursuant to the Founding Acquisition on March 22, 2013. Pursuant to the terms of the credit agreements governing the MHGE Senior Notes, the Term Loan Facility and the MHGE PIK Toggle Notes as discussed in Note 7, "Debt", within the accompanying notes to consolidated financial statements included in this filing, the Company and certain of its subsidiaries have restrictions on their ability to, among other things, incur additional indebtedness, pay dividends or make certain intercompany loans and advances. As a result of these restrictions, these parent company financial statements have been prepared in accordance with Rule 12-04 of Regulation S-X, as restricted net assets of the Company's subsidiaries (as defined in Rule 4-08(e)(3) of Regulation S-X) exceed 25% of the Company's consolidated net assets as of December 31, 2019.

The Company on a standalone basis has accounted for all investments in subsidiaries using the equity method. Under the equity method, the investment in subsidiaries is stated at cost plus contributions and equity in undistributed income (loss) of subsidiaries. The accounting policies used in the preparation of the parent financial statements are generally consistent with those used in the preparation of the consolidated financial statements of the Company. The accompanying condensed financial information should be read in conjunction with the consolidated financial statements and accompanying notes to the consolidated financial statements included in this filing.

McGraw-Hill Education, Inc. and subsidiaries
Consolidated Financial Statements
Valuation and Qualifying Accounts
(Dollars in thousands)

	Balance at beginning of the year	Additions	Deductions	Balance at end of the year
Year ended December 31, 2019				
Allowance for Doubtful Accounts	$ 17,000	$ 6,135	$ (6,252)	$ 16,883
Allowance for returns	90,388	81,445	(90,388)	81,445
Inventory	68,422	26,382	(31,588)	63,216
Valuation Allowance	335,871	41,551	(858)	376,564
Year ended December 31, 2018				
Allowance for Doubtful Accounts	$ 15,185	$ 7,760	$ (5,945)	$ 17,000
Allowance for returns	119,483	112,481	(141,576)	90,388
Inventory	63,424	27,591	(22,593)	68,422
Valuation Allowance	299,356	38,152	(1,637)	335,871
Year ended December 31, 2017				
Allowance for Doubtful Accounts	$ 14,086	$ 6,924	$ (5,825)	$ 15,185
Allowance for returns	121,951	100,712	(103,180)	119,483
Inventory	64,152	22,606	(23,334)	63,424
Valuation Allowance	392,997	5,958	(99,599)	299,356

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

Item 9B. OTHER INFORMATION

Change in Fiscal Year

Pursuant to authority conferred on the Board under the Company's Bylaws, on November 22, 2019, the Board approved a change in the Company's fiscal year end from December 31 to March 31. The change in fiscal year is effective after the issuance of the Company's fiscal year ended December 31, 2019 financial statements. The Company will file an Annual Report for the twelve month period ended March 31, 2020 and December 31, 2019.

PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The following table provides information regarding the executive officers and the members of the Board of MHE, as of the date of this annual report.

Name	Age	Position
Simon Allen	58	Interim President & CEO
Garet Guthrie	40	Executive Vice President and Chief Financial Officer
David Stafford	57	Senior Vice President, General Counsel and Secretary
Angelo T. DeGenaro	61	Chief Information and Operations Officer
Larry Berg	53	Chairman and Director
Lloyd G. Waterhouse	68	Director
Nancy Lublin	48	Director
Jonathan Mariner	65	Director
Antoine Munfakh	37	Director
Ronald Schlosser	71	Director
Itai Wallach	32	Director
Mark Wolsey-Paige	58	Director

Simon Allen was named Interim CEO of McGraw-Hill in October 2019. While serving as Interim CEO, Simon continues in his role as President of McGraw-Hill's International Group (appointed in March 2018). As the leader of McGraw-Hill's International group, he is responsible for a business that provides content, educational services and customized learning solutions in more than 75 languages to K-12 schools and higher education institutions in more than 100 countries outside of the United States.

Simon has deep experience in educational publishing having led large teams across six continents focused on K-12 and higher education, as well as science, technical and medical digital and print products for professional, governmental and institutional markets. Before joining McGraw-Hill, he was the CEO of Macmillan Education, leading the company's transition from print to blended learning products and solutions. Previously, he was Senior Vice President, International at The McGraw-Hill Companies and during that time was elected President of The Publishers Association in the U.K., serving for three years on its council. Before that, Simon was President, Higher Education at both Pearson Education EMEA and Prentice Hall Europe. Earlier in his career, he held sales leadership roles with the Times Mirror Group in the U.S., Europe and the Middle East.

Simon received his BA with honors from Middlesex University School of Business and completed Executive Education programs in Leadership and Strategic Management at the London Business School.

Garet Guthrie Garet Guthrie was named Chief Financial Officer for McGraw-Hill in July 2019. As CFO, Garet is responsible for Accounting, Finance, Global Business Services, Investor Relations, Real Estate, Tax and Treasury.

Previously Garet served as McGraw-Hill's Senior Vice President of Financial Planning and Analysis, responsible for providing management, the company's Board of Directors and investors with insight and analysis on financial performance and overseeing corporate costs. In addition, he supported investor relations activities, including capital market transactions and oversaw financial aspects of mergers, acquisitions, investments and divestitures.

Before joining McGraw-Hill in 2013, Garet was part of PwC's Deals practice focused on global private equity and multinational corporate transactions for many of PwC's largest clients. His experience with PwC spanned

multiple industries and technology sectors and provided a diverse combination of strategic, financial and capital market experiences. He earned his bachelor's degree in Accounting from Oklahoma State University and his Master of Business Administration from Texas A&M University, is a Certified Financial Analyst charterholder and is a Certified Public Accountant

David Stafford was appointed general counsel and secretary of McGraw-Hill Education in May 2012. As general counsel, he is responsible for all legal matters affecting McGraw-Hill Education and manages McGraw-Hill Education's legal, compliance and risk and government affairs departments. Prior to May 2012, Mr. Stafford was vice president and associate general counsel at The McGraw-Hill Companies. As a senior member of the company's legal department, he practiced in a wide variety of legal areas, with a focus on the company's financial information businesses.

From 2006 to 2009, Mr. Stafford served as senior vice president, Corporate Affairs, and assistant to the chairman and chief executive officer, where he was responsible for the marketing, communications, government affairs, and community relations activities of the company and advising the chairman and chief executive officer on matters involving the Board of Directors and the management and operation of the company generally. Prior to 2006 he was associate general counsel at The McGraw-Hill Companies. Before joining The McGraw-Hill Companies in 1992, he was an associate at two different New York City law firms, where he specialized in corporate law. Mr Stafford is a graduate of Columbia University, where he received his bachelor's degree, and a graduate of Cornell Law School, where he received his J.D. degree. He also serves on the Board of Directors of the Association of American Publishers and as Vice Chairman of the Board of Trustees of YAI Network, a not-for-profit that provides a variety of services to people in the New York metropolitan area who have developmental disabilities.

Angelo T. DeGenaro joined the company in 2015 and serves as Chief Information and Operations Officer for McGraw-Hill. He leads McGraw-Hill's Global Technology and Digital Platform Groups, including the development and support of customer-facing products, as well as the IT architecture, infrastructure, operations, and cybersecurity of front and back-office systems. He oversees Global Supply Chain Management, including manufacturing, inventory planning, fulfillment, and order management. Angelo also leads the Customer Experience Group, providing customer support for students using our digital products. In May 2019, after McGraw-Hill and Cengage announced their intent to merge, Angelo was appointed to lead McGraw-Hill's Integration Management Office.

Angelo began working for The McGraw-Hill Companies in 2004, with his last position being Senior Vice President and Chief Technology Officer at McGraw-Hill Financial. In that role, he was responsible for enterprise architecture, global infrastructure delivery, business systems, and IT risk management. Before joining The McGraw-Hill Companies, Angelo held senior technology leadership positions at Cigna and Citi. He spent seven years at Cigna as the Senior Vice President of Infrastructure Implementation Services and also held several operational and engineering leadership roles during his earlier 18-year tenure at Citi.

Angelo is a member of The Research Board, a New York-based international think tank. He holds a bachelor's degree in Economics from New York University and a Master of Science in telecommunications and computing management from Polytechnic University.

Larry Berg has been the Chairman of the Board of McGraw-Hill Education since March 2014 and has been a Director since March 2013. Mr. Berg is a Senior Partner at Apollo having joined in 1992, and oversees the Firm's efforts in industrials and education. Before that time, Mr. Berg was a member of the Mergers and Acquisitions group of Drexel Burnham Lambert Incorporated. Mr. Berg serves on the board of directors of Maxim Crane, University of Phoenix and Los Angeles Football Club and he previously served on the boards of Laureate International Universities, Sylvan Learning, Berlitz, Connections Academy and Crisis Text Line. Mr. Berg graduated magna cum laude with a BS in Economics from the University of Pennsylvania's Wharton School of Business and received an MBA from the Harvard Business School.

Lloyd G. Waterhouse has been a Director of McGraw-Hill Education since March 2013. Mr. Waterhouse served as interim President and Chief Executive Officer of McGraw-Hill Education from October 2017 until April

2018. He was previously the President and Chief Executive Officer from March 2013 until April 8, 2014 and, before that, the President of the McGraw-Hill Education segment of MHC from June 2012 until March 2013. Mr. Waterhouse began his career with International Business Machines Corporation ("IBM") in 1973 in the firm's data processing division. He later became General Manager of Marketing and Services for IBM Asia Pacific. In 1992, he was appointed President of IBM's Asia Pacific Services Corporation and later became Director of Global Strategy at IBM. In 1996, Mr. Waterhouse was named General Manager Marketing and Business Development, IBM Global Services, before being promoted to General Manager, E-Business Services, a division focused on consulting, education and training for customers. In 1999, Mr. Waterhouse became President and Chief Operating Officer, and later Chief Executive Officer of Reynolds & Reynolds Co., a company primarily focused on software for the automotive industry. In 2006, he was appointed Chief Executive Officer of Harcourt Education, a leader in the United States School Education sector. The parent company of Harcourt Education decided to sell the business in 2007 and it merged with Houghton Mifflin Harcourt at the end of that year. Mr. Waterhouse has since served on the board of directors of SolarWinds, Inc., ITT Educational Services, Ascend Learning LLC, Digimarc Corporation, i2 Technologies, Inc., Atlantic Mutual Insurance Companies, JDA, Instructure, Larry H. Miller Companies and Sparta in addition to being a Senior Advisor at New Mountain Capital LLC. Mr. Waterhouse is a graduate of Pennsylvania State University and holds an MBA from Youngstown State University.

Nancy Lublin has been a Director of McGraw-Hill Education since November 2015. Ms. Lublin has served as CEO of Crisis Text Line since 2015. From 2003 until 2015, Ms. Lublin has served as CEO of DoSomething.org. In 2013, while still the CEO of DoSomething.org, Ms. Lublin turned her popular TED talk into Crisis Text Line. Crisis Text Line is the first 24/7, free, nationwide-text line for people in crisis. Prior to her work at DoSomething.org and Crisis Text Line, Ms. Lublin founded Dress for Success, a global entity that provides interview suits and career development training to women in need. Ms. Lublin is the author of the best-selling business books, Zilch: The Power of Zero in Business and XYZ Factor.

Jonathan Mariner has been a Director of McGraw-Hill Education since February 2016. Mr. Mariner is a private investor and entrepreneur, and is currently the Founder and President of TaxDay, LLC, a private software firm that helps users track their multi-state travel for tax purposes. Mr. Mariner recently retired from Major League Baseball, Office of the Commissioner, having served as Executive VP and CFO for 12 years, and as Chief Investment Officer. He previously served as Executive VP and CFO of the Florida Marlins Baseball Club. Mr. Mariner currently serves on the board of directors of Ultimate Software Inc., IEX Stock Exchange and Little League Baseball. Mr. Mariner holds a bachelor's degree in accounting from the University of Virginia, an MBA from Harvard Business School and is a former Certified Public Accountant.

Antoine Munfakh has been a Director of McGraw-Hill Education since March 2013. Mr. Munfakh is a Partner at Apollo having joined in 2008. Before that time, Mr. Munfakh spent two years as an Associate at the private equity firm Court Square Capital Partners, where he focused on investments into the Business & Industrial Services sectors. Prior thereto, he started his career as an Analyst in the Financial Sponsor Investment Banking group at JPMorgan, where he provided M&A and financing services in support of private equity transactions. Mr. Munfakh serves on the board of directors of Sun Country Airlines, Volotea Airlines, Maxim Crane Works, and Apollo Education Group. He previously served on the board of directors of CH2M HILL Companies. Mr. Munfakh graduated summa cum laude from Duke University with a BS in Economics, where he was elected to Phi Beta Kappa.

Ronald Schlosser has been a Director of McGraw-Hill Education since March 2013 and previously served as Executive Chairman of McGraw-Hill Education since March 2013 through May 1, 2014. Mr. Schlosser currently advises global leaders in private equity investing in information services, including healthcare, data services and education. He has served as Chairman and Chief Executive Officer of Haights Cross Communications, an educational and library information company, and has served as a Senior Advisor to Providence Equity Partners and Chairman of several education and information services portfolio companies, including Jones & Bartlett, Assessment Technologies Institute, Edline and Survey Sampling International. Mr. Schlosser served as Chief Executive Officer of Thomson Learning Group, after serving as Chief Executive Officer of Thomson Scientific and Healthcare, after joining Thomson Financial Publishing as its President & Chief Executive Officer in 1995. He serves on the board of directors of Copyright Clearance Center and the Warehouse Arts District in Florida. Mr.

Schlosser is currently a private investor in several information businesses. Mr. Schlosser is a graduate of Rider University and holds an MBA from Fairleigh Dickinson University.

Itai Wallach has been a Director of McGraw-Hill Education since March 2017. Mr. Wallach is a Principal at Apollo, having joined in 2012. Before joining Apollo, Mr. Wallach was a member of the Financial Sponsors Group at Barclays Capital. Mr. Wallach also serves on the Board of Directors of The Fresh Market and formerly on Jacuzzi Brands. He graduated with distinction from the Richard Ivey School of Business at the University of Western Ontario where he was an Ivey Scholar.

Mark Wolsey-Paige has been a Director of McGraw-Hill Education since May 2013. From 2010 to 2014 Mr. Wolsey-Paige served as an advisor to Apollo, largely on healthcare-related deals. Before becoming an advisor to Apollo, Mr. Wolsey-Paige served as Executive Vice President, Product Development & Supply at Siemens Healthcare Diagnostics from 2007 to 2009. In 2007, he was appointed Chief Strategy and Technology Officer for Dade Behring Inc. before its acquisition by Siemens. Previously, Mr. Wolsey-Paige worked at Baxter Diagnostics, which became a part of Dade Behring, and became Vice President, Strategy and Business Development in 2000; he remained in this role until the company was acquired, while also becoming head of Research and Development, Instrument Manufacturing and Supply Chain Management. Before joining Dade Behring, he was a consultant at Bain & Company in Boston. Before that, Mr. Wolsey-Paige served four years in the U.S. Army, achieving the rank of Captain and worked in the Strategic Plans and Policy Directorate on the Army staff in the Pentagon. Mr. Wolsey-Paige holds a bachelor's degree in Business Administration from Washington University and an MBA from Harvard University.

Committees of the Board

Audit Committee. The Audit Committee consists of four members: Ms. Lublin and Messrs. Mariner, Wallach and Wolsey-Paige, all of whom qualify as audit committee financial experts, as such term is defined in Item 407(d)(5) of Regulation S-K. Mr. Mariner is the chair of the Audit Committee. In light of our status as a privately-held company and the absence of a public trading market for our common stock, there are no requirements that we have an independent audit committee.

The Audit Committee is directly responsible for the appointment, compensation, retention (including termination) and oversight of the independent auditors, the granting of appropriate pre-approvals of all auditing services and nonaudit services to be provided by the independent auditors, meeting and discussing with management, the internal audit group and independent auditors the annual audited and quarterly unaudited financial statements, any legal, regulatory any compliance matters (including tax) that could have a significant impact on financial statements, reviewing and discussing with management major financial risk exposures and steps taken to monitor, controlling and managing them and review the responsibilities and results of the internal audit group.

Compensation Committee. The Compensation Committee is responsible for formulating, evaluating and approving the compensation and employment arrangements of the officers of McGraw-Hill Education and the Company. The Compensation Committee consists of three members: Messrs. Berg, Schlosser and Wallach.

Nominating and Corporate Governance Committee. The Nominating and Corporate Governance Committee is responsible for assisting McGraw-Hill Education in identifying and recommending candidates to the Board, recommending composition of the Board and committees and reviewing and recommend revisions to the corporate governance guidelines. The Nominating and Corporate Governance Committee consists of three members: Ms. Lublin and Messrs. Berg and Waterhouse.

Code of Ethics

We have adopted a code of ethics, referred to as our “Code of Business Ethics,” that applies to all of our employees, including our Chief Executive Officer, Chief Financial Officer and senior financial and accounting officers. A copy of our Code of Business Ethics is available on our website at www.mheducation.com.

Item 13. CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

We or one of our subsidiaries may occasionally enter into transactions with certain “related parties.” Related parties include its executive officers, directors, nominees for directors, a beneficial owner of 5% or more of its common stock and immediate family members of these parties. We refer to transactions in which the related party has a direct or indirect material interest as “related party transactions.”

Transactions Fee Agreement

The Company entered into a transaction fee agreement on March 22, 2013 (the "Transactions Fee Agreement") with Apollo Global Securities, LLC (the “Service Provider”) relating to the provision of certain structuring, financial, investment banking and other similar advisory services by the Service Provider to the Company, its direct and indirect divisions and subsidiaries, parent entities or controlled affiliates (collectively, the “Company Group”) in connection with future transactions. Subject to the terms and conditions of the Transactions Fee Agreement, a transaction fee equal to 1% of the aggregate enterprise value is payable in connection with any merger, acquisition, disposition, recapitalization, divestiture, sale of assets, joint venture, issuance of securities (whether equity, equity-linked, debt or otherwise), financing or any similar transaction effected by a member of the Company Group. For the years ended December 31, 2019 and 2018, no transaction fees were recorded. For year ended December 31, 2017, $150 was recorded.

Management Fee Agreement

The Company entered into a management fee agreement (the “Management Fee Agreement”) with Apollo Management VII, L.P. (the “Advisor”) on March 22, 2013, relating to the provision of certain management consulting and advisory services to the members of the Company Group. In exchange for the provision of such services, the Advisor will receive a non-refundable annual management fee of $3,500 in the aggregate. Subject to the terms and conditions of the Management Fee Agreement, upon a change of control or an initial public offering (“IPO”) of a member of the Company Group, the Advisor may elect to receive a lump sum payment in lieu of future management fees payable to them under the Management Fee Agreement.

RackSpace

The Company has an agreement with RackSpace, Inc., a portfolio company of the Sponsors, primarily related to managed cloud and hosting services. For the years ended December 31, 2019, 2018 and 2017 the Company paid this vendor $16,000, $13,917 and $1,060, respectively.

Presidio

In addition, the Company purchases technology equipment from Presidio Networked Solutions ("Presidio Networked"), a portfolio company of the Sponsors. For the years ended December 31, 2019, 2018 and 2017 the Company paid Presidio Networked $849, $677 and $2,705, respectively.

University of Phoenix

University of Phoenix is owned by Apollo Education Group, which was acquired by the Sponsors and certain co-investors in February 2017. For the year ended December 31, 2019 and 2018, the Company’s sales to University of Phoenix totaled $5,624 and $2,324, respectively.

CEVA Group

The Company utilizes CEVA Freight Management, a wholly owned subsidiary of CEVA Group PLC, a U.K. based portfolio company of the Sponsors, as one of our freight forwarding contractors. For the years ended December 31, 2019, 2018 and 2017 the Company paid CEVA $2,244, $1,069 and $1,600, respectively.

Item 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Fees for professional services provided by our independent auditors, Ernst & Young LLP, for fiscal year 2019 and 2018, in each of the following categories, including related expenses, are:

	2019	2018
Audit Fees (1)	$ 3,715	$ 5,005
Audit Related Fees (2)	50	47
Tax Fees (3)	803	936
Other (4)	610	—
	$ 5,178	**$ 5,988**

(1) This category includes the aggregate fees billed for professional services rendered for the audit of the Company's annual financial statements, the reviews of the financial statements included in the Company's quarterly reports, statutory audits of certain international subsidiaries and services normally provided by the independent auditor in connection with statutory and regulatory filings.

(2) Audit-Related Fees consisted of fees for services that are reasonably related to the performance of the audit and the review of our financial statements.

(3) This category includes the aggregate fees billed for tax services. Tax Fees consisted of fees for federal, state, local and international tax compliance and tax advisory services.

(4) This category includes professional services provided for due diligence, costs related to organizational & talent integration and culture & leadership assessment services.