INSTRUCTURE INC
Form 10-K
February 20, 2019

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to

Commission file number 001-37629

Instructure, Inc.

(Exact name of registrant as specified in its charter)

Delaware	26-3505687
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

6330 South 3000 East, Suite 700

Salt Lake City, UT 84121

(Address of principal executive offices) (Zip code)

Registrant’s telephone number, including area code: (800) 203-6755

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, par value $0.0001 per share	New York Stock Exchange

Securities registered pursuant to section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	Accelerated filer
Non-accelerated filer	Smaller reporting company
	Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the Registrant's common stock on the New York Stock Exchange on June 30, 2018, the last business day of its most recently completed second fiscal quarter, was $1,343,145,810. Excludes an aggregate of 3,199,141 shares of the Registrant's common stock held as of such date by officers, directors and stockholders that the Registrant has concluded are or were affiliates of the Registrant. Exclusion of such shares should not be construed to indicate that the holder of any such shares possesses the power, direct or indirect, to direct or cause the direction of the management or policies of the Registrant or that such person is controlled by or under common control with the Registrant.

The number of shares of Registrant's Common Stock outstanding as of February 12, 2019 was 35,406,972.

DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates information by reference from the Registrant's definitive proxy statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A, not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K, in connection with the Registrant's 2019 Annual Meeting of Stockholders (the "2019 Proxy Statement").

Instructure, Inc.

Annual Report on Form 10-K

For the Year Ended December 31, 2018

INDEX

In this Annual Report on Form 10-K, "we," "our," "us," "Instructure," and the "Company" refer to Instructure, Inc. and its wholly-owned subsidiaries.

PART I

Special Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. All statements other than statements of historical facts are "forward-looking statements" for purposes of these provisions, including those relating to future events or our future financial performance and financial guidance. In some cases, you can identify forward-looking statements by terminology such as "may," "might," "will," "should," "expect," "plan," "anticipate," "project," "believe," "estimate," "predict," "potential," "intend" or "continue," terms like these or other comparable terminology, and other words or terms of similar meaning in connection with any discussion of future operating or financial performance. These statements are only predictions. All forward-looking statements included in this Annual Report on Form 10-K are based on information available to us on the date hereof, and we assume no obligation to update any such forward-looking statements. Any or all of our forward-looking statements in this document may turn out to be wrong. Actual events or results may differ materially. Our forward-looking statements can be affected by inaccurate assumptions we might make or by known or unknown risks, uncertainties and other factors. We discuss many of these risks, uncertainties and other factors in this Annual Report on Form 10-K in greater detail under the heading "Item 1A—Risk Factors." We caution investors that our business and financial performance are subject to substantial risks and uncertainties.

Item 1. Business.

Mission and Vision

Instructure's mission is to help people learn and develop, from their first day of school to their last day of work. Our vision is to help organizations everywhere leverage technology to maximize the potential of their people.

Overview

In today's dynamic, knowledge-driven economy, quality education and constant learning are critical to the success of people and organizations. Academic institutions recognize that for students to reach their maximum potential, they require an interactive and accessible learning environment. Similarly, companies strive to compete by delivering continuous learning and feedback to better attract, develop, retain and promote the best people. Organizations in both markets—education and corporate—also require actionable data to measure, track and improve individual and organizational performance.

With applications for learning, assessment and performance management, Instructure enables organizations worldwide to develop, deliver, manage and track engaging academic and employee development programs. Built on our innovative, cloud-based platform, our applications combine powerful, elegant and easy-to-use functionality with the reliability, security, scalability and support our customers require. They include:

- Canvas. Learning management platform for K–12 and higher education;
- Bridge. Employee development and engagement platform;

For the millions of students, teachers and employees who use our applications to achieve their educational and professional goals, we provide a native-cloud, engaging and intuitive user experience designed for frequent and open interactions, a streamlined workflow and the creation and sharing of content. Our open standards allow for integration with third-party publishers and software providers to deliver additional learning content and applications. We also provide data analytics capabilities, enabling real-time reaction to information and benchmarking in order to personalize curricula and goal setting; and to increase the efficacy of the learning, assessment and performance management processes.

We deliver our applications through a Software-as-a-Service, or SaaS, business model. Customers can rapidly deploy our systems with minimal upfront implementation. They also benefit from regular software updates and 99.9% uptime. Our SaaS business model reduces the need for our customers to buy and support a broad range of IT infrastructure, and reduces the cost, complexity and disruptions associated with implementations and upgrades of on-premise software.

We launched our first offering, Canvas, in February 2011 and have experienced rapid customer adoption in the education market. To better meet the needs of the corporate market, we leveraged a portion of the foundational code underlying Canvas to develop Bridge, which we launched in February 2015. Subsequent offerings include Canvas Interactive Video, which we launched in 2016, and Canvas Assessment, which we launched in 2017. As of December 31, 2018, we had over 4,000 customers, representing colleges, universities, K–12 schools and companies in more than 70 countries.

For 2018, 2017 and 2016, our revenue was $209.5 million, $161.0 million and $112.6 million, respectively, representing year-over-year growth of 30% and 43%. We have experienced net revenue retention rates of over 100% at each of December 31, 2018, 2017 and 2016. For 2018, 2017 and 2016, our net losses were, $43.5 million, $43.1 million and $48.2 million, respectively, as we focused on growing our business.

Our Platform

We designed our platform from the ground up with modern, web-based design features that enable users to teach, learn and collaborate anytime, anywhere, across a wide variety of application environments, operating systems, devices and locations. We believe our platform offers the following key benefits:

- Intuitive User Experience. Our research-driven approach creates a differentiated user experience with elegant and intuitive user interfaces that leverage familiar, consumer web navigation techniques, such as drag and drop, to make using the applications built on our platform easy and intuitive. We enable seamless collaboration among instructors and learners to share feedback and encourage online discussion. These interactive features extend beyond the physical location and facilitate a more engaging experience.
- Optimized for Mobile. Our mobile-optimized platform allows users to access their applications anytime and anywhere. We offer a responsive design to ensure an optimal experience on most mobile devices and, for Canvas, we also offer iOS and Android native mobile applications for free download on both phones and tablets.
- High Availability and Uptime. Our software is mission-critical for our users and customers and we focus on maintaining enterprise-grade and industry leading reliability with 99.9% uptime.
- High Utilization. Millions of instructors, students and employees have used our software. We believe that the intuitive user experience enabled by our platform helps increase organization-wide adoption and utilization of our applications, which increases the return on investment for our customers.
- Native Cloud-based Software. Our cloud-based delivery model enables customers to rapidly deploy our platform to experience immediate benefit. Software updates are implemented regularly and transparently. Our single-instance, multi-tenant architecture is designed to scale for rapid growth. Our cloud-based platform provides upfront cost savings over on-premise solutions by reducing the need for expensive IT resources and hardware infrastructure.
- Open Access to Data Analytics. For Canvas and Bridge, we provide users with access to data analytics through open application programming interfaces, or API. We deliver the analytics in a way that is easy-to-understand, consumable and optimized for independent analysis. This open visibility allows users to view their own progress in real-time, educators to adjust programs and personalize curricula for maximum effectiveness and organizations to benchmark user data internally and respond to patterns observed.
- Open Platform. We are committed to collaboration and openness. Our open standards allow organizations to easily deliver additional content and applications from third-party publishers and software providers. This extends the content, tools and services necessary to satisfy the diverse needs of our customers without sacrificing the innate simplicity of our platform. Canvas users can deploy third-party content and software applications within the application interface or browse our growing catalog of approximately 300 integrations at EduAppCenter.com. Bridge was specifically designed to integrate easily via open APIs with a variety of enterprise resource planning and human resources information systems.

Our Growth Strategy

We are pursuing the following strategies to grow our business:

- Grow our U.S. Customer Base. We believe that the market for cloud-based learning, assessment and performance applications remains underserved. K–12 academic institutions have yet to widely adopt learning management systems, while higher education institutions have adopted legacy systems with which they are often unsatisfied. In the corporate market, there are both greenfield opportunities and opportunities to displace legacy solutions that do not meet customer needs. As a result, we believe there is opportunity to expand our base of U.S. academic and corporate customers. Toward that end, we are making investments in growing our direct sales team, particularly focused on the corporate market.

- Further Maximize our Existing Customer Base. The majority of our academic customers implement Canvas widely within their institutions and across school districts. This approach to wide initial deployments allows us to efficiently and broadly promote adoption and utilization of Canvas by students and faculty. We plan to increase revenue from this customer base by selling additional applications and services, including Canvas Interactive Video and Canvas Assessment. We plan to further penetrate our existing corporate customer base by growing the number of users of Bridge, expanding enterprise-wide and selling additional applications and services, including Canvas Interactive Video and Practice. We believe our user-based pricing model and innovative applications provide us with a substantial opportunity to increase the value of our existing customer base.
- Continue to Expand Internationally. We believe there is an opportunity for our cloud-based applications outside the United States and we intend to expand our direct and indirect sales force to further penetrate international markets. We opened our international headquarters in London in June 2014, and for the year ended December 31, 2018, international customers accounted for 19% of our revenue.
- Continue to Innovate and Offer New Applications. We will continue to make investments to further enhance the functionality of our existing applications, expand the number of applications on our extensible learning platform and develop into adjacent markets that will benefit our customers. We take a strategic approach to research and development investment. For example, in February 2015, we launched Bridge to better serve our corporate customers because we saw corporate customers adopt Canvas, due to a lack of suitable alternatives. In October 2016, we announced the launch of Canvas Interactive Video, our next-generation video platform for interactive learning and intuitive collaboration. In July 2017, we announced the launch of Canvas Assessment, our assessment management system for K–12 schools and districts. We intend to enhance the functionality of our existing applications, expand the number of applications on our extensible learning platform and develop into adjacent markets through strategic acquisitions or partnering.

Our Systems

Our applications enhance academic and corporate learning by providing a system of engagement for teachers and learners, enabling frequent and open interactions, a streamlined workflow and the creation and sharing of content with anytime, anywhere access to information. Our applications also provide users with powerful, easy-to-use functionality for intuitive interactions with course content and activities. All of our applications run on our extensible platform, which allows us to easily deploy new applications and features to support the needs of our customers. We use modern, mobile technology to provide anytime, anywhere access to our applications from a wide array of devices, including personal computers, tablets and smartphones. We offer native mobile applications for Canvas on iOS and Android for free download.

Canvas Learning Management Platform

The Canvas Learning Management Platform is an extendable, customizable, highly integrated set of solutions designed to meet the teaching and learning needs of every K–12 and higher education institution, including the Canvas LMS, Canvas Assessment, Canvas Network, Canvas Catalog, and Canvas Interactive Video. With its cloud-based offerings, Canvas streamlines digital tools and content for teachers and students, creating a simpler and more connected learning experience.

Canvas LMS

Canvas LMS is a learning management system designed to give our K–12 and higher education customers an extensive set of flexible tools to support and enhance content creation, management and delivery of face-to-face and online instruction.

Canvas LMS enables instructors and learners to:

- communicate through announcements, messages and conferences;
- interact with content and collaborate with peers through group assignments and discussions;
- create, deliver and analyze quizzes and assignments;
- perform outcomes-based assessments;
- choose, manage and change courses;
- automate classroom activities, including the syllabus, attendance and calendar of course events;
- grade assignments, using SpeedGrader, and post grades online;
- facilitate audio and video communications for enhanced teacher and student engagement;
- access an integrated learning object repository;

- analyze course and student data to improve learning outcomes and teaching methods;
- set personalized academic goals and track performance;
- provide parental or advisor access to assignments and grades;
- find and add third-party activities and content from the Edu App Center; and
- exchange data and integrate with popular student information systems.

Canvas provides access to a critical set of user and course activity data, including user and device characteristics, discrete page views, user engagement, individual curricula and assessments and evaluations. Data is delivered to administrators in a format optimized for warehousing, performing queries, reporting and making it easier for administrators to benchmark, customize teaching and improve learning outcomes.

Additionally, Canvas supports standards-based integration with hundreds of third-party publishers and software providers. The extensibility of the Canvas application enables our customers to build a learning and teaching environment that meets their unique organizational needs.

Canvas Network

Canvas Network allows anyone around the world access to open online courses for personal and professional development. Through Canvas Network, academic institutions have the flexibility to offer and deliver courses over the internet to a much broader audience than just their own employees or on-campus students. Some institutions choose to pursue a massive open online course (MOOC) format, and some choose to pursue a smaller online course format with more interaction. Institutions already using Canvas can easily move courses onto Canvas Network, extending their reach and enhancing their brand.

Canvas Catalog

Canvas Catalog is a white-label, web-based course catalog and registration system built on top of the Canvas LMS that enables organizations to create and maintain a branded marketplace for their online course offerings. Catalog provides a searchable course index, online payment gateways for student registration and enrollment, custom course landing pages, collections of courses in specialized programs, automatically distributed certificates and other ways to recognize completion.

Canvas Interactive Video

Canvas Interactive Video is a next-generation online video platform designed to enable corporate, K–12 and higher education customers to host, manage and deliver impactful video learning experiences. Our customers who also use Canvas or Bridge can seamlessly integrate Interactive Video for a modern, streamlined, easy-to-use video learning solution that provides the interactivity, insights and reliability organizations need to engage their employees and students.

Canvas Interactive Video enables instructors and learners to:

- easily upload media and publish videos to courses that can be viewed across devices and in multiple playback formats;
- experience high-quality, low-latency video playback around the world;
- seamlessly create content through integrated webcam and screen capture tools;
- interact directly with video content through real-time contextual commenting;
- understand exactly how students and employees are engaging with media to help inform video strategy effectiveness;
- make video content fully accessible through automatic speech recognition, or ASR, captioning technology; and

- manage and share videos between educators, students or employees.

Canvas Assessment

Canvas Assessment is a comprehensive assessment management system that empowers K–12 schools and districts to measure student learning and preparedness for high-stakes exams mandated by federal and state regulations. With our simple, elegant and scalable testing platform, educators can create and deliver effective benchmark exams with simple deployment workflows, leveraging data collected to guide instruction and enhance curricula school- or district-wide. Our customers who also use Canvas LMS can integrate Canvas Assessment for a seamless user experience.

Canvas Assessment enables schools to:

- create online assessments with rich multimedia, linked course content and a variety of attempt, grading, viewing and moderation settings;
- automatically import user profile demographics from student information systems, or SIS;
- use intelligent item banks to create, manage and update items used across courses;
- integrate third-party content, applications and standards-based QTI importing and exporting;
- link questions to Common Core or state standards to facilitate modern competency- or standards-based grading models;
- deploy district-wide, device-agnostic assessments on modern, cloud-based architecture, which allows for nearly unlimited scale and prevents data loss; and
- generate reports showing the performance and progress of entire districts, schools or individual students.

Bridge

Bridge is an employee development and engagement platform designed to enable our corporate customers to develop, retain and promote employees by improving performance and engagement. The Bridge platform includes:

- Bridge Learn. A complete learning solution, Bridge Learn helps companies focus on the strategic and innovative side of talent development. Informed by learning science, Bridge Learn gives companies a competitive advantage with a learning program that aligns to business goals.

- Bridge Perform. An impactful talent management solution, Bridge Perform expands the manager-employee relationship through meaningful dialogue and continuous feedback based on targeted 1:1 conversations, providing data that empowers leadership to make critical business decisions. The tool focuses on performance enablement and alignment that support efforts to move away from traditional performance management processes.

- Bridge Practice. An on-demand assessment and video microlearning practice solution, Bridge Practice facilitates untethered, collaborative, peer-to-peer assessment and coaching opportunities that empower learners to actively master their professional skills and competencies.

Bridge enables organizations to:

- provide timely feedback and development for employees inside the 1:1 tool;
- create and align individual goals with company-wide goals and initiatives;
- reinforce skills and provide feedback through peer-to-peer video assessment and coaching;
- create, organize, group and assign courses and training content;
- deliver and track compliance and regulatory requirements;
- administer quizzes and provide instant feedback to increase employee retention of training content;

- track employee learning, performance and progress, including milestones, tasks, areas for improvement and goals;
- identify training gaps and growth opportunities for individuals or teams with peer and skills assessments;
- provide a mobile experience to allow access and management anywhere, from any device; and
- extend training to reseller channels and other distribution networks.

Technology and Standards

Built on a modern technology stack, our native-cloud, multi-tenant platform and applications scale to millions of users and enable us to leverage advancements in web design, open source technologies and security. We adhere to industry-standard best security practices to protect our servers and our customers' critical information.

We host our platform and applications on cloud infrastructure provided by Amazon Web Services, or AWS. We primarily use Amazon Elastic Compute Cloud, or Amazon EC2, along with load balancing, auto scaling and storage services provided by AWS. Our hosting services provide full support, rolling release upgrades/updates, backup and disaster recovery services. Our infrastructure enables us to scale both horizontally and vertically in order to rapidly adjust to variances in usage at the server, database and file store level. Our applications run on virtualized instances in Tier III and Tier IV AWS data center facilities, which provide industry-standard best security practices. As of December 31, 2018, we used domestic AWS data center facilities in Oregon and Virginia, and international facilities in Australia, Canada, Germany, Ireland and Singapore. We intend to expand operations into other regions based on market conditions. These AWS managed facilities have earned multiple certifications including, but not limited to, SOC 2 Type II, ISO9001 and ISO27001.

We designed our platform for resilience and rapid recovery from component failure. We apply a wide variety of strategies to achieve enterprise-grade reliability and durability. We have automated procedures in place to handle coordinated changes across our various instances and store backups of key data stores in multiple redundant and geographically isolated locations.

Our technology stack is a dynamic web application built with our own automated scaling and provisioning technologies. We use Web 2.0 technologies like Ruby on Rails, Java and Node.js, which provide users a familiar web experience. Our platform was built on underlying open source technologies, allowing us to take full advantage of advancements in scalability and flexibility. We utilize the Linux operating system, Postgres and Cassandra databases, and Redis data structure store. Our platform also provides an API that third-parties can use to add new features and functionality.

Keeping our platform secure is a primary focus of our dedicated enterprise security team due to the sensitive nature of the data contained within the applications. We are diligent about data security and have adopted the AICPA SOC 2 set of security controls. We demonstrate compliance with these controls through annual audits and web application vulnerability assessments.

Customers

As of December 31, 2018, we had over 4,000 customers representing colleges, universities, school districts and companies in more than 70 countries. Canvas is used by seven Ivy League schools and we have K–12 customers in nearly all states. The majority of our academic customers implement Canvas widely within their institutions and across school districts. We define a customer as an entity with an active subscription contract. In situations where there is a single contract that applies to entities with multiple subsidiaries or divisions, universities or schools, only the entity that has contracted for our platform is counted as a customer. For example, a contracting school district is counted as a single customer even though the school district encompasses multiple schools. In 2018, no single customer represented more than 10% of our revenue.

Sales and Marketing

We sell our applications and services through a direct sales force. Our sales organization includes technical sales engineers who serve as experts in the technical aspects of our applications and customer implementations. Many of our sales efforts require us to respond to request for proposals, particularly in the higher education space and to a lesser extent in K–12, and to a minimal extent in the corporate market. As we grow internationally, we may use reseller partnerships as needed to penetrate certain new markets.

We engage in a variety of traditional and online marketing activities designed to provide sales lead generation and sales support and promote brand awareness. Our specific marketing activities for lead generation include advertising in trade publications, digital advertising, including search engine optimization and search engine marketing, display search, email, and referral marketing. Brand awareness activities include press relations in business, human resources, education publications and blogs, market specific advertising campaigns and speaking engagements, and industry trade-shows and seminars. We also host InstructureCon, our annual user conference for current customers and prospects. More than 2,700 people attended InstructureCon 2018 in Keystone, Colorado.

Customer Success

Although our software is easy to adopt and use, we believe strong customer support and services are essential for customer retention. We provide most services and support by phone or online video and audio conferencing rather than in person, resulting in a more efficient and cost-effective business model for us and our customers. Our Customer Success department is responsible for all customer post-sale interactions and comprises employees located in the United States, the United Kingdom, Brazil and Australia. Our services and support efforts include the following:

- Customer Success Management. Every customer has a Customer Success Manager who advocates for the customer's needs and serves as first point of contact for all non-Support questions and requests. They learn about each customer's vision and the role our software will play, help craft and execute plans to deploy and use the software effectively, and provide regular updates throughout the customer's experience with us to show them the return on their investment.
- Implementation Services. We believe that a positive onboarding experience leads to more satisfied customers, longer customer relationships and greater lifetime value. Implementation includes standard training and consulting services that generally take between 30 and 90 days to complete, depending on customer-side preparedness, complexity and timelines. Regularly-scheduled, highly-structured implementation activities help customers use our applications fully and effectively from the start. Most interactions take place over the phone and through online audio and video conferencing.
- Training Services. Also critical to customer success is our customers' comfort level with the features and functionality of our software. We include standard training with every implementation and offer additional and custom training for a fee. Training creates confidence among users that they can use our software effectively. We perform most training remotely by online audio and video conferencing.
- Consulting Services. We offer custom application development, integrations, content services and change management consulting services to boost customer adoption of our applications and drive usage of features and capabilities that are unique to Instructure. We believe this increases brand loyalty and lifetime value.
- Support. We provide standard support services for all customers. Customers can upgrade to our premium support services, which include 24/7 coverage and a more stringent service level agreement. Our Tier 1 offering includes our premium support services as well as direct support to users by our agents. We also provide extensive user guides, online videos and a vibrant online community for the ongoing education and assistance of our users.

Partner Ecosystem and Integration

We are committed to enabling our customers to build an ecosystem for successful learning, assessment, development and engagement. Our open platform is central to both our technology and our strategy.

From a technological perspective, we remain focused on implementing industry standards like IMS Global Learning Consortium's Learning Tools Interoperability, or LTI, enabling Canvas and Bridge to integrate with a broad spectrum of third-party solutions used by our customers.

Our partnership program invites third-party software, service and content providers, through a library of APIs, to easily integrate with our applications and at no or minimal charge to the partner. This allows us to broaden and efficiently extend the functionality of our applications. We have more than 250 partners, including Pearson, McGraw-Hill Education, Cengage, AspirEDU, Microsoft, and ProctorU.

Research and Development

Our product, customer success, and sales and marketing teams operate cross-functionally and regularly engage with customers, partners and industry analysts to understand customer needs and general industry trends to enhance our existing applications and identify opportunities for new product innovations. Additionally, our research and education team analyzes user data and current online learning trends and collaborates with customers to inform application development and growth into adjacent markets. Once improvements are identified, prioritized and resourced, the entire development organization works closely together to design, develop, test and launch new functionality and application updates. We have made, and will continue to make, significant investments to strengthen our existing applications, and expand the number of applications on our extensible platform that will benefit our customers and allow us to expand into new markets.

Culture and Employees

We are passionate about making learning and working more engaging and accessible for people everywhere and we apply that same vision at Instructure every day. We maintain seven values that we believe set us apart, define our company culture and serve as a strategic advantage as they align directly with the experience we strive to provide to our customers.

- Customer Experience. We aspire to create an awesome customer experience in every interaction with our applications and people.
- Openness. Instructure is built on openness—it's part of who we are. Open doors. Open office. Open source. We have created an open work environment without offices to increase collaboration and transparency—and to reflect the open learning environment we provide to our customers.
- Ownership. Everyone's an owner because each of us can have a significant impact on our ability to succeed. Full-time Instructure employees receive equity grants and can participate in the success and growth of the company.
- Trust. We have a clear "tell us if we're doing something stupid" policy. Everyone is encouraged to offer input and feedback regardless of their level of experience or position. Questioning the status quo is part of our DNA and supports us in continuing to disrupt and transform our markets.
- Integrity. Simply put, we say what we're going to do and then we do it. We hold people accountable for results and commitments. Our objectives and commitments are openly shared throughout the company.
- Excellence. Achieving excellence isn't easy. But we believe it can be simple. Instructure pursues the leading edge of innovation in our technology, support and business operations. We do this by hiring smart, creative, passionate people and giving them opportunities to create awesome.
- Simplicity. Our platform is designed to make teaching, learning and engaging easier. Everything we do—from designing software to how we communicate—should reflect that. Keep it simple and easy to understand.

Since our founding, we have worked hard to retain our open and engaging culture with people who are passionate about improving learning. We have received multiple "best places to work" awards and have maintained high ratings on recruiting websites. As of December 31, 2018, we had 1,219 employees.

Competition

We operate in highly competitive markets. Canvas primarily competes with systems offered by Blackboard, D2L and Moodle in the education market. Bridge primarily competes with systems offered by Cornerstone OnDemand, Saba Software and SumTotal Systems (owned by Skillsoft) along with dozens of small, specialized systems for specific industries to large, generalized systems provided as part of a larger human resources management suite.

We may face future competition in our markets from other large, established companies, as well as from smaller specialized companies.

The principal competitive factors in our markets include the following:

- usability and features;
- pricing;
- reliability and uptime;
- service and support for users and staff;
- software integration and third-party publisher partnerships;
- mobile capabilities;
- data analytics; and
- collaboration and engagement.

We believe that we compete favorably on the basis of these factors. Our ability to remain competitive will depend to a great extent upon our ongoing performance in the areas of product development, partner ecosystem development and customer support. In addition, many of our competitors, particularly the large software companies named above, may have greater name recognition, longer operating histories and significantly greater resources. Some competitors may be able to devote greater resources to the development, promotion and sale of their products than we can to ours, which could allow them to respond more quickly than we can to changes in customer needs. We cannot assure you that our competitors will not offer or develop products or services that are superior to ours or achieve greater market acceptance.

Intellectual Property

We rely on a combination of trade secret, copyright, and trademark laws, a variety of contractual arrangements, such as license agreements, assignment agreements, confidentiality and non-disclosure agreements, and confidentiality procedures and technical measures to gain rights to and protect the intellectual property used in our business. We actively pursue registration of our trademarks, logos, service marks, and domain names in the United States and in other key jurisdictions, but we have not, to date, applied for patent protection for any of our inventions. We are the registered holder of a variety of U.S. and international domain names that include the term Instructure, Canvas and Bridge.

A substantial portion of our Canvas application, including the base code, uses "open source" software we license from third parties. Open source software is made available to the general public on an "as-is" basis under the terms of a non-negotiable license. Open source software is generally freely accessible, usable and modifiable. Certain open source licenses, like the GNU Affero General Public License may require us to offer the components of our software that incorporate the open source software for no cost, make available source code for modifications or derivative works we create based upon incorporating or using the open source software, and license such modifications or derivative works under the terms of the particular open source license. We also rely on certain intellectual property rights that we license from third parties under proprietary licenses. Though such third-party technologies may not continue to be available to us on commercially reasonable terms, we believe that alternative technologies would be available to us.

To promote our open platform philosophy, we make available a substantial portion of the source code for Canvas available to the public on the "GitHub" platform for no charge, under the terms of the GNU Affero General Public License. We accept modifications of the source code for Canvas from contributors who agree to the terms of our contributor agreement. Our contributor agreement provides for assignment of joint ownership in the copyright to the contribution, and a license to any patent rights of the contributor. Contributors must also represent that it is an original work and that the contribution does not violate any third-party intellectual property right.

We control access to and use of our proprietary technology and other confidential information through the use of internal and external controls, including contractual protections with employees, contractors, customers, and partners, and our software is protected by U.S. and international copyright laws. Our policy is to require employees and independent contractors to sign agreements assigning to us any inventions, trade secrets, works of authorship, developments and other processes generated by them on our behalf and agreeing to protect our confidential information, and all of our key employees and contractors have done so. In addition, we generally enter into confidentiality agreements with our vendors and customers. We also control and monitor access to, and distribution of our software, documentation and other proprietary information. In addition, we intend to expand our international operations, and effective copyright, trademark, and trade secret protection may not be available to us in every country in which our software is available.

Regulatory

The legal environment of internet-based businesses is evolving rapidly in the United States and elsewhere. The manner in which existing laws and regulations are applied in this environment, and how they will relate to our business in particular, both in the United States and internationally, is often unclear. For example, we sometimes cannot be certain which laws will be deemed applicable to us given the global nature of our business, including with respect to such topics as data privacy and security, pricing, credit card fraud, advertising, taxation, content regulation, and intellectual property ownership and infringement. Moreover, our academic customers are regulated at the state and federal levels by legislatures, administrative agencies and other policymaking bodies that can directly impact their ability to procure and deploy technology products.

Our customers, and those with whom they communicate using our applications, upload and store customer data onto our platform. This presents legal challenges to our business and operations, such as rights of privacy or intellectual property rights related to the content loaded onto our platform. Both in the United States and internationally, we must monitor and comply with a wide variety of laws and regulations regarding the data stored and processed on our platform as well as the operation of our business.

Data Privacy and Security Laws

Data privacy and security with respect to the collection of personally identifiable information, or PII, continues to be the focus of worldwide legislation and regulation. We are subject to data privacy and security regulation by regulatory authorities in the U.S. (including the states in which we conduct our business) and potentially in other countries.

In recent years, there have been a number of well-publicized data breaches involving the unauthorized use and disclosure of individuals' PII. Many states have responded to these incidents by enacting laws requiring holders of personal information to maintain safeguards and to take certain actions in response to a data breach, such as providing prompt notification of the breach to affected individuals and state officials or amending existing laws to expand compliance obligations. Federal laws are also under consideration that may create additional compliance obligations and penalties. In the EU, where companies must meet specified privacy and security standards, the General Data Protection Regulation, or GDPR, and data protection laws of each of the European Member countries require comprehensive information privacy and security protections for consumers with respect to PII collected about them. We rely on adherence to the EU-U.S. Privacy Shield and Swiss-U.S. Privacy Shield Frameworks, as agreed to and set forth by the U.S. Department of Commerce, and the EU and Switzerland, concerning U.S. companies doing business in Europe, collecting PII from European citizens, and transferring such PII to the United States under the Privacy Shield Frameworks. In light of the continued uncertainty around cross-border data transfer, we have engaged in efforts to legitimize data transfers from the EEA through means other than the Privacy Shield Frameworks, such as through the use of so-called 'model contract clauses' developed by the European Commission. The GDPR introduced new data protection requirements in the EU and significant penalties of up to the greater of 4% of worldwide turnover and €20 million for violations of data protection rules. We have adopted additional mechanisms necessary to comply with the GDPR. We post on our website our privacy policies and practices concerning the processing, use and disclosure of PII. Our publication of our privacy policy and other statements we publish that provide promises and assurances about privacy and security can subject us to potential state and federal action if they are found to deceptive or misrepresentative of our practices.

Through contractual obligations with our customers we sometimes agree to certain obligations related to the Family Educational Rights and Privacy Act, or FERPA, which generally prohibits educational institutions that receive federal funding from disclosing PII from a student's education records without the student's consent. We are also subject to the Children's Online Privacy Protection Act, or COPPA, which applies to operators of commercial websites and online services directed to U.S. children under the age of 13 that collect personal information from children, and to operators of general audience websites with actual knowledge that they are collecting information from U.S. children under the age of 13. Also, certain laws and regulations that protect the collection, use and disclosure of particular types of data may hinder our ability to provide services to customers and potential customers subjected to such laws.

Copyrights

U.S. and international copyright and trademark laws protect the rights of third parties from infringement of their works of authorship. Our customers and users can generally use our platform to upload and present a wide variety of content. We maintain an active copyright infringement policy and respond to takedown requests by third-party intellectual property right owners that might result from content uploaded to our platform. As our business expands to other countries, we must also respond to regional and country-specific intellectual property considerations, including takedown and cease-and-desist notices in foreign languages, and we must build infrastructure to support these processes. The Digital Millennium Copyright Act, or DMCA, also applies to our business. This statute includes a safe harbor that is intended to reduce the liability of online service providers for hosting content provided by users that infringes copyrights of others. The copyright infringement policies that we have implemented for our platform are intended to satisfy the DMCA safe harbor.

Corporate Information

We were incorporated in Delaware in September 2008. Our principal executive offices are located at 6330 South 3000 East, Suite 700, Salt Lake City, UT 84121 and our telephone number is (800) 203-6755. Our corporate website address is www.instructure.com. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this Annual Report on Form 10-K.

We file electronically with the Securities and Exchange Commission our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended. We make available on our website at www.instructure.com, free of charge, through a hyperlink on our website, copies of these reports, as soon as reasonably practicable after electronically filing such reports with, or furnishing them to, the Securities and Exchange Commission. In addition, the SEC maintains an internet site at www.sec.gov that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC.

Item 1A. Risk Factors.

You should carefully consider the following risk factors, in addition to the other information contained in this report on Form 10-K, including the section of this report titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes. If any of the events described in the following risk factors and the risks described elsewhere in this report occurs, our business, operating results and financial condition could be seriously harmed. This report on Form 10-K also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in this report.

Risks Related to Our Business and Industry

We have a history of losses and anticipate that we will continue to incur losses for the foreseeable future and may not achieve or maintain profitability in the future.

We have incurred net losses of $43.5 million, $43.1 million and $48.2 million in 2018, 2017 and 2016, respectively. We had an accumulated deficit of $267.4 million at December 31, 2018. We must generate and sustain higher revenue levels in future periods to become profitable, and, even if we do, we may not be able to maintain or increase our profitability. We expect to continue to incur losses for the foreseeable future as we expend substantial financial and other resources on, among other things:

- sales and marketing, including expanding our direct sales organization and marketing programs, particularly for larger customers;
- investments in our research and development team, and the development of new applications and new features for, and enhancements of, our existing applications;
- expansion of our operations and infrastructure, both domestically and internationally; and
- general administration, including legal, accounting, and other expenses related to being a public company.

These expenditures may not result in additional revenue or the growth of our business. We also expect that our revenue growth rate will decline over time. Accordingly, we may not be able to generate sufficient revenue to offset our expected cost increases and achieve and sustain profitability. If we fail to achieve and sustain profitability, the market price of our common stock could decline.

We have a limited operating history, which makes it difficult to evaluate our prospects and future operating results.

We launched Canvas in February 2011 and launched Bridge in February 2015. Our limited operating history makes our ability to forecast future operating results difficult and subjects us to a number of uncertainties, including our ability to plan and model future growth. Our revenue grew 30%, 43% and 54% in 2018, 2017 and 2016, respectively, compared to the prior year; however, our historical revenue growth is not necessarily indicative of our future performance. We expect our revenue growth rates to slow in future periods due to a number of reasons, which may include the maturation of our business, slowing demand for our platform and applications, increasing competition, a decrease in the growth of our overall markets, or if we fail, for any reason, to continue to capitalize on growth opportunities, our relative lack of experience with renewals or a decline in available opportunities as a result of our increased market penetration in one or more of our markets.

We have encountered and will encounter risks and uncertainties frequently experienced by growing companies in rapidly changing industries, such as determining appropriate investments of our limited resources, market adoption of our current and future applications, competition from other companies, acquiring and retaining customers, hiring, integrating, training and retaining skilled personnel, developing new applications, determining prices and contract terms for our applications, unforeseen expenses and challenges in forecasting accuracy. If our assumptions regarding these risks and uncertainties, which we use to plan our business, are incorrect or change, or if we do not address these risks successfully, our prospects, operating results and business could be harmed.

We depend on new customer acquisition and expansion and customer renewals to grow our business.

We derive, and expect to continue to derive, a substantial majority of our revenue from the sale of new subscriptions or renewals of subscriptions to our learning management platform and applications. Our growth today is primarily driven by new subscriptions. Our contracts typically vary in length between one and five years and our customers have no obligation to renew their subscriptions after the expiration of their initial subscription periods. Our customers may elect not to renew or may seek to renew for lower subscription amounts or for shorter contract lengths. Our renewal rates may decline or fluctuate as a result of a number of factors, including limited customer resources, pricing changes, adoption and utilization of our applications and services by our customers, customer satisfaction with our learning management platform and applications, the acquisition of our customers by other companies, procurement or budgetary decisions from legislative or other regulatory bodies, and deteriorating general economic conditions. As our customer base continues to grow, renewals will become an increasingly important part of our results. If our customers do not renew their subscriptions for our learning management platform and applications, or decrease the amount they spend with us, our revenue will decline and our business will be harmed.

Because our recent growth has resulted in the rapid expansion of our business, we do not have a long history upon which to base forecasts of customer renewal rates or future revenue. As a result, our future operating results may be significantly below the expectations of investors, which could harm the market price of our common stock.

We have a limited history with our subscription and pricing models and changes in our models could adversely affect our revenue, gross profit and financial position.

We have limited experience with respect to determining the optimal prices and contract length for our platform and applications, in particular with Bridge, and as a result, we have in the past and expect in the future that we will need to change our pricing model or contract length from time to time. For example, in January 2017, we raised our subscription prices for Canvas for higher education institutions. As the market for our platform and applications grows, as new competitors introduce new competitive applications or services, or as we enter into new international markets, we may be unable to attract new customers at the same price or based on the same pricing models we have historically used, or for contract lengths consistent with our historical averages. Pricing and contract length decisions may also impact the mix of adoption among our applications and negatively impact our overall revenue. Moreover, larger organizations may demand substantial price concessions or shorter contract duration. As a result, in the future we may be required to reduce our prices or offer shorter contract durations, which could adversely affect our revenue, gross profit and financial position.

We may experience quarterly fluctuations in our operating results due to a number of factors, which makes our future results difficult to predict and could cause our operating results to fall below expectations.

Our quarterly operating results have fluctuated in the past and we expect them to fluctuate in the future due to a variety of factors, many of which are outside of our control. As a result, our past results may not be indicative of our future performance, and comparing our operating results on a period-to-period basis may not be meaningful. In addition to the other risks described in this Annual Report on Form 10-K, factors that may affect our quarterly operating results include:

- changes in spending on learning, assessment, development and engagement systems by our current or prospective customers;
- pricing our applications effectively so that we are able to attract and retain customers without compromising our operating results;
- attracting new customers and increasing our existing customers' use of our applications;
- customer renewal rates and the amounts for which agreements are renewed;

- awareness of our brands;
- changes in the competitive dynamics of our market, including consolidation among competitors or customers and the introduction of new applications or application enhancements;
- changes to the commission plans, quotas and other compensation-related metrics for our sales representatives;
- the amount and timing of payment for operating expenses, particularly research and development, sales and marketing expenses and employee benefit expenses;
- our ability to manage our existing business and future growth, including increases in the number of customers on our platform and the introduction and adoption of our platform in new markets outside of the United States;

- unforeseen costs and expenses related to the expansion of our business, operations and infrastructure, including disruptions in our hosting network infrastructure and privacy and data security;
- foreign currency exchange rate fluctuations; and
- general economic and political conditions in our domestic and international markets.

We may not be able to accurately forecast the amount and mix of future subscriptions, size or duration of contracts, revenue and expenses and, as a result, our operating results may fall below our estimates or the expectations of public market analysts and investors. If our revenue or operating results fall below the expectations of investors, or below any estimates we may provide, the market price of our common stock could decline.

Our business is subject to seasonal sales and customer growth fluctuations which could result in volatility in our operating results.

We have historically experienced a pattern of higher sales and new academic customers in the second and third quarters, as a result of school procurement periods, which are typically based on a fiscal year ending June 30. This has resulted in lower sequential sales and customer growth in the other quarters of the year. As we attempt to expand the number of our corporate customers, we may see changes to this pattern of seasonality. Seasonality may cause our sales and customer growth to vary from quarter-to-quarter depending on the variability in the volume and timing of sales and renewals. These factors, among other things, make forecasting more difficult and may adversely affect our ability to predict financial results accurately, which could result in volatility or adversely affect the market price of our common stock.

We could lose revenue if there are changes in the spending policies or budget priorities for government funding of colleges, universities, schools and other education providers.

Our Canvas customers include colleges, universities, K-12 schools and other education providers, many of which depend substantially on government funding. Accordingly, any general decrease, delay or change in federal, state or local funding for colleges, universities, schools and other education providers could cause our current and potential customers to reduce their purchases of Canvas and related services, or decide not to renew their subscriptions, any of which could cause us to lose customers and revenue. In addition, a specific reduction in governmental funding support for learning management systems could also cause us to lose customers and revenue.

Because we generally recognize revenue from subscriptions ratably over the term of the agreement, near term changes in sales may not be reflected immediately in our operating results.

We offer our platform and learning, assessment, development and engagement applications primarily through multi-year subscription agreements and generally recognize revenue ratably over the related subscription period. As a result, much of the revenue we report in each quarter is derived from agreements entered into during prior quarters or years. A decline in new or renewed subscriptions in any one quarter is not likely to be reflected immediately in our revenue results for that quarter. However, declines would negatively affect our revenue and deferred revenue balances in future periods, and the effect of significant downturns in sales and market acceptance of our platform and applications, and potential changes in our rate of renewals, may not be fully reflected in our results of operations until future periods. Our subscription model also makes it difficult for us to rapidly increase our total revenue and deferred revenue balance through additional sales in any period, as revenue from new customers is recognized over the applicable subscription term.

If the markets for our applications develop more slowly than we expect, our growth may slow or stall, and our operating results would be harmed.

The markets for learning, assessment, development and engagement systems is still evolving, and we depend on continued growth of these markets. In particular, we do not know whether the trend of adoption of cloud-based learning management systems we have experienced with our academic customers in the past will continue in the future. To date, we have derived a substantial majority of our revenue from Canvas. A critical factor for our continued growth is our ability to sell Canvas to new customers in K-12 and higher education. The adoption trend for our academic customers is subject to influence from federal, state and local policymakers. We launched Bridge in February 2015. Given our limited history with corporate customers, we do not know whether companies will adopt cloud-based learning, development and engagement systems, or what prices or contract terms to which they will agree. We will incur substantial operating costs, particularly in sales and marketing and research and development, in attempting to develop these markets. If the market for Canvas does not continue to grow, or grows more slowly than we expect, or if the market for Bridge does not develop as we anticipate, our operating results would be harmed.

If we fail to effectively develop and expand our sales and marketing capabilities, our ability to increase our customer base and increase the market share of our learning management platform and applications could be harmed.

To increase the number of customers and increase the market share of our platform and applications, we will need to expand our sales and marketing operations, including our domestic and international sales force. We will continue to dedicate significant resources to sales and marketing programs. The effectiveness of our inbound sales and marketing has varied over time and, together with the effectiveness of any international resellers we may engage, may vary in the future. Our business will be harmed if our efforts do not generate a correspondingly significant increase in revenue. We may not achieve anticipated revenue growth from expanding our sales force if we are unable to hire, develop and retain talented sales personnel, if our new sales personnel are unable to achieve desired productivity levels in a reasonable period of time or if our sales and marketing programs are not effective.

We face significant competition from both established and new companies offering learning assessment, development and engagement systems, which may harm our ability to gain new customers, retain existing customers and grow our business.

The learning, assessment, development and engagement systems market is evolving, highly competitive and significantly fragmented, particularly in the K-12 and corporate markets. With the introduction of new technologies and the potential entry of new competitors into the market, we expect competition to persist and intensify in the future, which could harm our ability to increase sales, maintain or increase renewals and maintain our prices.

We face intense competition from other software companies that develop learning management systems. Canvas primarily competes with systems offered by Blackboard, D2L and Moodle. Bridge primarily competes with systems offered by Cornerstone OnDemand, Saba Software and SumTotal Systems (owned by Skillsoft) along with dozens of small, specialized systems for specific industries to large, generalized systems provided as part of a larger human resources management suite. Competition could significantly impede our ability to sell or renew subscriptions to our platform and applications on terms favorable to us. Our current and potential competitors may develop and market new technologies that render our existing or future applications less competitive, unmarketable or obsolete. In addition, if these competitors develop applications with similar or superior functionality to our software, we may need to decrease the prices or accept less favorable terms for our subscriptions in order to remain competitive. If we are unable to maintain our pricing due to competitive pressures, margins will be reduced and operating results will be negatively affected.

Current competitors have, and potential competitors may have, significantly more financial, technical, marketing and other resources than us, and may be able to devote greater resources to the development, promotion, sale and support of their applications and services, have more extensive customer bases and broader customer relationships, and longer operating histories and greater name recognition than us. As a result, these competitors may be better able to respond quickly to new technologies and to undertake more extensive marketing campaigns. In a few cases, these vendors may also be able to offer additional software at little or no additional cost by bundling them with their existing suite of applications. To the extent any competitor has existing relationships with potential customers for other applications, those customers may be unwilling to purchase our software because of their existing relationships with the competitor. If we are unable to compete with such companies, the demand for our platform and applications could be adversely affected.

In addition, if one or more competitors were to merge or partner with another competitor, our ability to compete effectively could be adversely affected. Competitors may also establish or strengthen cooperative relationships with current or future distribution or technology partners or other parties with whom we have relationships, thereby limiting our ability to sell our applications. We may not be able to compete successfully against current or future competitors, and competitive pressures may harm our business, operating results and financial condition.

If we fail to adapt and respond effectively to rapidly changing technology, evolving industry standards and changing customer needs or requirements, our platform and applications may become less competitive.

Our future success depends on our ability to adapt and enhance our platform and applications. To attract new customers and increase revenue from existing customers, we need to continue to enhance and improve our application offerings, features and enhancements to meet customer needs at prices that our customers are willing to pay. Such efforts will require adding new functionality and responding to technological advancements, which will increase our research and development costs. If we are unable to develop applications that address customers' needs, or enhance and improve our platform in a timely manner, we may not be able to maintain or increase market acceptance of our platform and applications. Further, our competitors may expend a considerably greater amount of funds on their research and development programs, and those that do not may be acquired by larger companies that would allocate greater resources to our competitors' research and development programs. If we fail to maintain adequate research and development resources or compete effectively with the research and development programs of our competitors our business could be harmed. Our ability to grow is also subject to the risk of future disruptive technologies. Access and use of our platform and applications is provided via the internet, which, itself, was disruptive to the previous enterprise software model. If new technologies emerge that are able to deliver learning management software and related applications at lower prices, more efficiently, more conveniently or more securely, such technologies could adversely affect our ability to compete.

The length and unpredictability of the sales cycle for our platform and applications could delay new sales and cause our revenue for any given quarter to fail to meet our estimates or market expectations.

The sales cycle between our initial contact with a potential customer and the signing of a subscription agreement varies. As a result of the variability and length of the sales cycle, we have only a limited ability to forecast the timing of sales. A delay in or failure to complete sales could harm our business and financial results, and could cause our financial results to vary significantly from period to period. Our sales cycle varies widely, reflecting differences in potential customers' decision-making processes, procurement requirements and budget cycles, and is subject to significant risks over which we have little or no control, including:

- customers' budgetary constraints and priorities;
- the timing of customers' budget cycles;
- the need by some customers for lengthy evaluations that often include both their administrators and faculties; and
- the length and timing of customers' approval processes.

Potential customers typically conduct extensive and lengthy evaluations before committing to our applications and services and generally require us to expend substantial time, effort and money educating them as to the value of our offerings.

Our business outside the United States exposes us to risks associated with international operations.

For 2018, 19% of our revenue was derived from outside the United States. We opened our international headquarters in London, England in June 2014 and have offices in Sydney, Australia, Hong Kong, Sao Paulo, Brazil and Hungary. Our growth strategy involves the further expansion of our operations and customer base internationally. Our current international operations and future initiatives will involve a variety of risks, including:

- more stringent regulations relating to data security and the unauthorized use of, or access to, commercial and personal information, particularly in the European Union;
- technical or latency issues in delivering our platform and applications;
- dependence on certain third parties, including potentially resellers with whom we do not have extensive experience;
- unexpected changes in regulatory requirements, taxes or trade laws;

- differing labor regulations, especially in the European Union, where labor laws are generally more advantageous to employees as compared to the United States, including deemed hourly wage and overtime regulations in these locations;
- challenges inherent in efficiently managing an increased number of employees over large geographic distances, including the need to implement appropriate systems, policies, benefits and compliance programs;
- difficulties in maintaining our company culture with a dispersed and distant workforce;
- difficulties in managing a business in new markets with diverse cultures, languages, customs, legal systems, alternative dispute systems and regulatory systems;

- currency exchange rate fluctuations and the resulting effect on our revenue and expenses, and the cost and risk of entering into hedging transactions if we choose to do so in the future;
- limitations on our ability to reinvest earnings from operations in one country to fund the capital needs of our operations in other countries;
- limited or insufficient intellectual property protection;
- political instability or terrorist activities;
- requirements to comply with foreign privacy and information security laws and regulations and the risks and costs of non-compliance;
- likelihood of potential or actual violations of domestic and international anticorruption laws, such as the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act, or of U.S. and international export control and sanctions regulations, which likelihood may increase with an increase of sales or operations in foreign jurisdictions and operations in certain industries; and
- adverse tax burdens and foreign exchange controls that could make it difficult to repatriate earnings and cash.

For example, in June 2016, the electorate in the United Kingdom voted in favor of leaving the European Union (commonly referred to as “Brexit”). The withdrawal of the U.K. from the European Union will take effect either on the effective date of the withdrawal agreement or, in the absence of agreement, two years after the United Kingdom provides a notice of withdrawal pursuant to the EU Treaty. The U.K. government delivered a notice of withdrawal in March 2017. It is likely that the withdrawal of the U.K. from the European Union will involve a process of lengthy negotiations between the U.K. and European Union member states to determine the future terms of the U.K.’s relationship with the European Union. Depending on the terms of Brexit, the U.K., where we operate our international headquarters, could lose the benefits of global trade agreements negotiated by the European Union on behalf of its members, which may result in increased trade barriers which could make our doing business in Europe more difficult. In addition, currency exchange rates for the British Pound and the Euro with respect to each other and the U.S. dollar have already been affected by Brexit. Should this foreign exchange volatility continue, it could cause volatility in our quarterly financial results. In any event, we cannot predict to what extent these changes will impact our business or results of operations, or our ability to conduct operations in Europe.

Our limited experience in operating our business internationally increases the risk that any potential future expansion efforts that we may undertake will not be successful. If we invest substantial time and resources to expand our international operations and are unable to do so successfully and in a timely manner, our business and operating results will be harmed.

If we fail to offer high-quality professional services and support, our business and reputation may suffer.

High-quality professional services and support, including training, implementation and consulting services, are important for the successful marketing, sale and use of our learning management platform and applications and for the renewal of existing customers. The importance of high-quality professional services and support will increase as we expand our business and pursue new customers. If we do not provide effective ongoing support, our ability to sell additional functionality and services to, or to retain, existing customers may suffer and our reputation with existing or potential customers may be harmed.

If we fail to manage our growth effectively or our business does not grow as we expect, our operating results may suffer.

Our growth has placed, and will continue to place, a significant strain on our operational, financial and management infrastructure. To manage this growth effectively, we must continue to improve our operational, financial and management systems and controls by, among other things:

-

effectively attracting, training and integrating new employees, particularly technical personnel and members of our management and sales teams;

- further improving our key business systems, processes and information technology infrastructure to support our business needs;
- enhancing our information and communication systems to ensure that our employees are well-coordinated and can effectively communicate with each other and our customers; and
- improving our internal control over financial reporting and disclosure controls and procedures to ensure timely and accurate reporting of our operational and financial results.

If we fail to manage our expansion or implement new systems, or if we fail to implement improvements or maintain effective internal controls and procedures, costs and expenses may increase more than expected and we may not expand our customer base, increase renewal rates, enhance existing applications, develop new applications, satisfy customers, respond to competitive pressures, or otherwise execute our business plan. If we are unable to effectively manage our growth, our operating results will be harmed.

We rely on our management team and other key employees, and the loss of one or more key employees could harm our business.

Our success and future growth depend upon the continued services of our management team, including Joshua Coates, our Chief Executive Officer, Dan Goldsmith, our President, and other key employees in the areas of engineering, marketing, sales, services and general and administrative functions. From time to time, there may be changes in our management team resulting from the hiring or departure of executives. For example, the Board of Directors has appointed Mr. Goldsmith as our Chief Executive Officer, effective as of January 1, 2019. On that date, Mr. Coates will transition from his role as Chief Executive Officer to Executive Chairman of the Board. Changes such as these could disrupt our business. We also are dependent on the continued service of our existing software engineers and information technology personnel because of the complexity of our software, technologies and infrastructure. We may terminate any employee’s employment at any time, with or without cause, and any employee may resign at any time, with or without cause. We do not maintain any “key man” insurance for any employee. The loss of one or more of our key employees could harm our business.

If we fail to attract and retain additional qualified personnel, we may be unable to execute our business strategy.

To execute our business strategy, we must attract and retain highly qualified personnel. In particular, we compete with many other companies for software developers with high levels of experience in designing, developing and managing cloud-based software, as well as for skilled information technology, marketing, sales and operations professionals, and we may not be successful in attracting and retaining the professionals we need, in particular in Utah, where we are headquartered. We have from time to time experienced, and we expect to continue to experience, difficulty in hiring and retaining highly skilled employees with appropriate qualifications which may, among other things, impede our ability to execute our software development and sales strategies. Many of the companies with which we compete for experienced personnel have greater resources than we do. In addition, in making employment decisions, particularly in the software industry, job candidates often consider the value of the stock options or other equity incentives they are to receive in connection with their employment. If the price of our stock declines, or experiences significant volatility, our ability to attract or retain qualified employees will be adversely affected. If we fail to attract new personnel or fail to retain and motivate our current personnel, our growth prospects could be harmed.

If we cannot maintain our company culture as we grow, we could lose the innovation, teamwork, passion and focus on execution that we believe contribute to our success and our business may be harmed.

We believe that a critical component to our success has been our company culture, which is based on dedication to customer experience, openness, ownership, trust, integrity, excellence and simplicity. We have invested substantial time and resources in building our team within this company culture. If we fail to preserve our culture our ability to retain and recruit personnel and to effectively focus on and pursue our corporate objectives could be harmed. As we grow and develop the infrastructure of a public company, we may find it difficult to maintain these important aspects of our company culture. If we fail to maintain our company culture, our business may be harmed.

If we do not maintain the compatibility of our applications and platform with third-party applications that our customers use in their businesses or schools, our revenue will decline.

A significant percentage of our customers choose to integrate our applications and platform with certain capabilities of third-party publishers and software providers using application programming interfaces, or APIs. The functionality and popularity of our platform depends, in part, on our ability to integrate our platform with third-party applications and software. Third-party providers of applications may change the features of their applications and software, restrict our access to their applications and software or alter the terms governing use of their applications and access to those applications and software in an adverse manner. Such changes could functionally limit or terminate our ability to use these third-party applications and software in conjunction with our platform, which could negatively impact our offerings and harm our business. If we fail to integrate our platform with new third-party applications and software that our customers utilize, we may not be able to offer the functionality that our customers need, which would negatively impact our ability to generate revenue and adversely impact our business.

If our network or computer systems are breached or unauthorized access to customer data is otherwise obtained, platform and applications may be perceived as insecure and we may lose existing customers or fail to attract new customers, our reputation may be damaged and we may incur significant liabilities.

Use of our platform and applications involve the storage, transmission and processing of our customers' data, including personal or identifying information regarding their students or employees. Cyber-attacks and other malicious internet-based activities continue to increase generally, and cloud-based platform providers of software and services have been targeted. If any unauthorized access to or security breaches of our platform, or those of our service providers, occurs, or is believed to have occurred, such an event or perceived event could result in the loss of data, loss of intellectual property or trade secrets, loss of business, severe reputational or brand damage adversely affecting customer or investor confidence, regulatory investigations and orders, litigation, indemnity obligations, damages for contract breach, penalties for violation of applicable laws, regulations, or contractual obligations, and significant costs for remediation that may include liability for stolen assets or information and repair of system damage that may have been caused, incentives offered to customers or other business partners in an effort to maintain business relationships after a breach, and other liabilities. Additionally, any such event or perceived event could impact our reputation, harm customer confidence, hurt our sales and expansion into existing and new markets, or cause us to lose existing customers. We could be required to expend significant capital and other resources to alleviate problems caused by such actual or perceived breaches and to remediate our systems, we could be exposed to a risk of loss, litigation or regulatory action and possible liability, and our ability to operate our business may be impaired. Additionally, actual, potential or anticipated attacks may cause us to incur increasing costs, including costs to deploy additional personnel and protection technologies, train employees and engage third-party experts and consultants. Moreover, failure to maintain effective internal accounting controls related to data security breaches and cybersecurity in general could impact our ability to produce timely and accurate financial statements and could subject us to regulatory scrutiny. Moreover, failure to maintain effective internal accounting controls related to data security breaches and cybersecurity in general could impact our ability to produce timely and accurate financial statements and could subject us to regulatory scrutiny.

In addition, if the security measures of our customers are compromised, even without any actual compromise of our own systems, we may face negative publicity or reputational harm if our customers or anyone else incorrectly attributes the blame for such security breaches to us or our systems. If customers believe that our platform and applications do not provide adequate security for the storage of personal or other sensitive information or its transmission over the internet, our business will be harmed. Customers' concerns about security or privacy may deter them from using our platform for activities that involve personal or other sensitive information.

Our errors and omissions insurance covering certain security and privacy damages and claim expenses may not be sufficient to compensate for all liability. Although we maintain liability insurance for liabilities incurred as a result of some security and privacy damages, we cannot be certain that our coverage will be adequate for liabilities actually incurred or that insurance will continue to be available to us on economically reasonable terms, or at all. Because the techniques used and vulnerabilities exploited to obtain unauthorized access or to sabotage systems change frequently and generally are not identified until they are launched against a target, we may be unable to anticipate these techniques or vulnerabilities or implement adequate preventative measures. We may also experience security breaches that may remain undetected for an extended period.

Because data security is a critical competitive factor in our industry, we make public statements in our privacy policies describing the security of our platform. Should any of these statements be untrue, become untrue, or be perceived to be untrue, even if through circumstances beyond our reasonable control, we may face claims, including claims of unfair or deceptive trade practices, brought by the U.S. Federal Trade Commission, or FTC, state, local, or foreign regulators, and private litigants.

Interruptions or performance problems associated with our technology and infrastructure may adversely affect our business and operating results.

Our continued growth depends in part on the ability of our existing and potential customers to access our applications at any time. We have experienced, and may in the future experience, disruptions, outages, and other performance problems due to a variety of factors, including infrastructure changes, introductions of new functionality, human or software errors, distributed denial of service attacks, or other security related incidents. In some instances, we may not be able to identify the cause or causes of these performance problems within an acceptable period of time. It may become increasingly difficult to maintain and improve our performance, especially during peak usage times and as our platform becomes more complex and our user traffic increases. If our platform and applications are unavailable or if our users are unable to access our applications within a reasonable amount of time or at all, our business will be harmed.

Moreover, our standard customer agreements include performance guarantees and service level standards that obligate us to provide credits or termination rights in the event of a significant disruption in our platform. To the extent that our third-party service providers experience outages, or to the extent we do not effectively address capacity constraints, upgrade our systems as needed, and continually develop our technology and network architecture to accommodate actual and anticipated changes in technology, our business and operating results may be adversely affected.

Our use of "open source" software could negatively affect our ability to offer our platform and applications and subject us to possible litigation.

Our applications, in particular a substantial portion of Canvas, use "open source" software that we, in some cases, have obtained from third parties. Open source software is generally freely accessible, usable and modifiable, and is made available to the general public on an "as-is" basis under the terms of a non-negotiable license. Use and distribution of open source software may entail greater risks than use of third-party commercial software. Open source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the code. In addition, certain open source licenses, like the GNU Affero General Public License, or AGPL, may require us to offer for no cost the components of our software that incorporate the open source software, to make available source code for modifications or derivative works we create based upon incorporating or using the open source software, or to license our modifications or derivative works under the terms of the particular open source license. If we are required, under the terms of an open source license, to release the source code of our proprietary software to the public, our competitors could create similar applications with lower development effort and time, which ultimately could result in a loss of sales for us.

We may also face claims alleging noncompliance with open source license terms or infringement or misappropriation of proprietary software. These claims could result in litigation, require us to purchase a costly license or require us to devote additional research and development resources to change our software, any of which would have a negative effect on our business and operating results, including being enjoined from the offering of the components of our software that contained the open source software. In addition, if the license terms for open source software that we use change, and we cannot continue to use the version of such software that we had been using, we may be forced to re-engineer our applications, incur additional costs, or discontinue the sale of applications or services if re-engineering could not be accomplished on a timely basis.

We could also be subject to suits by parties claiming ownership of what we believe to be open source software. Litigation could be costly for us to defend, have a negative effect on our operating results and financial condition and require us to devote additional research and development resources to change our applications. Although we monitor our use of open source software to avoid subjecting our applications to unintended conditions, few courts have interpreted open source licenses, and there is a risk that these licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our applications. We cannot guarantee that we have incorporated open source software in our software in a manner that will not subject us to liability, or in a manner that is consistent with our current policies and procedures.

We make a substantial portion of the source code for Canvas available under the terms of an open source license, and accept contributions of modifications to that source code, each of which could negatively affect our ability to offer our platform and applications and subject us to possible litigation.

To promote our open platform philosophy, we make a substantial portion of the source code for Canvas available to the public on the "GitHub" platform for no charge, under the terms of the AGPL. An individual or entity with the appropriate technical and human resources may choose to use this open source version of Canvas to try to self-host the platform to avoid paying any fees to us. In addition, some individuals or entities may try to use the open source version of Canvas for commercial purposes and directly compete with us for customers. We are aware of a few entities that currently self-host the platform and are aware of some entities that are currently selling hosting and support services. If more customers decide to self-host or other entities use the base code to compete with us, we may experience lower revenue and our business may be harmed.

We accept modifications of the source code for Canvas from contributors who agree to the terms of our contributor agreement. Our contributor agreement provides for assignment of joint ownership in the copyright to the contribution, and a license to any patent rights of the contributor. Contributors must also represent that it is an original work and that the contribution does not violate any third-party intellectual property right. However, we cannot ensure that any of these contributions is free of all third-party rights and claims of intellectual property infringement or misappropriation. By incorporating any contribution into our code base, we may be subject to intellectual property infringement or misappropriation claims, which as discussed elsewhere, are costly to defend and could require costly re-writing of our code base or licensing of replacement third-party solutions. Third-party alternatives may not be available to us on commercially reasonable terms.

Our business is dependent upon our brand recognition and reputation, and if we fail to maintain or enhance our brand recognition or reputation, our business could be harmed.

We believe that maintaining and enhancing our brands and our reputation are critical to our relationships with our customers and to our ability to attract new customers. We also believe that our brands and reputation will be increasingly important as competition in our markets continues to develop. Our success in this area will depend on a wide range of factors, some of which are beyond our control, including the following:

- the efficacy of our marketing efforts;
- our ability to continue to offer high-quality, innovative and error- and bug-free applications;
- our ability to retain existing customers and obtain new customers;
- our ability to maintain high customer satisfaction;
- the quality and perceived value of our applications;
- our ability to successfully differentiate our applications from those of our competitors;
- actions of competitors and other third parties;
- our ability to provide customer support and professional services;
- any misuse or perceived misuse of our applications;
- positive or negative publicity;
- interruptions or delays on our platform or applications;
- cyber-attacks on or security breaches of our platform and applications or the platforms of certain of our subcontractors; and
- litigation, legislative or regulatory-related developments.

If our brand promotion activities are not successful, our operating results and growth may be harmed.

Furthermore, negative publicity, whether or not justified, relating to events or activities attributed to us, our employees, our partners or others associated with any of these parties, may tarnish our reputation and reduce the value of our brand. Damage to our reputation and loss of brand equity may reduce demand for our applications and have an adverse effect on our business, operating results and financial condition. Moreover, any attempts to rebuild our reputation and restore the value of our brands may be costly and time consuming, and such efforts may not ultimately be successful.

We rely upon Amazon Web Services to operate certain aspects of our service and any disruption of or interference with our use of Amazon Web Services could impair our ability to deliver our platform and applications to our customers, resulting in customer dissatisfaction, damage to our reputation, loss of customers and harm to our business.

Amazon Web Services, or AWS, provides a distributed computing infrastructure platform for business operations, or what is commonly referred to as a cloud computing service. We have designed our software and computer systems to use data processing, storage capabilities and other services provided by AWS. Currently, our cloud service infrastructure is run on AWS. Given this, we cannot easily switch our AWS operations to another cloud provider, so any disruption of or interference with our use of AWS would impact our operations and our business would be adversely impacted. AWS provides us with computing and storage capacity pursuant to an agreement that continues until terminated by either party. AWS may terminate the agreement without cause by providing 90 days’ prior written notice, and may terminate the agreement with 30 days’ prior written notice for cause, including any material default or breach of the agreement by us that we do not cure within the 30 day period. The agreement requires AWS to provide us their standard computing and storage capacity and related support in exchange for timely payment by us. If any of our arrangements with AWS is terminated, we could experience interruptions in our software as well as delays and additional expenses in arranging new facilities and services.

We utilize third-party data center hosting facilities operated by AWS, located in various sites within the states of Virginia and Oregon. For international customers, we utilize third-party data center hosting facilities operated by AWS located in Dublin, Ireland, Frankfurt, Germany, Sydney, Australia, Montreal, Canada and Singapore.

Our operations depend, in part, on AWS's abilities to protect these facilities against damage or interruption from natural disasters, power or telecommunications failures, criminal acts and similar events. Despite precautions taken at our data centers, the occurrence of spikes in usage volume, a natural disaster, an act of terrorism, vandalism or sabotage, a decision to close a facility without adequate notice, or other unanticipated problems at a facility could result in lengthy interruptions in the availability of our platform. Even with current and planned disaster recovery arrangements, our business could be harmed. Also, in the event of damage or interruption, our insurance policies may not adequately compensate us for any losses that we may incur. These factors in turn could further reduce our revenue, subject us to liability and cause us to issue credits or cause customers to fail to renew their subscriptions, any of which could harm our business.

We are dependent on the continued availability of the internet and third-party computer and communications systems.

Our ability to provide our platform and applications to our customers depends on our ability to communicate with our customers through the public internet and third-party computer and communications systems. A severe disruption of one or more of these systems could impair our ability to process information, which could impede our ability to provide services to our customers, harm our reputation, result in a loss of customers and harm our business and operating results.

Real or perceived errors, failures, or bugs in our platform or applications could adversely affect our operating results and growth prospects.

We push updates to our platform on a frequent basis. Despite testing by us, errors, failures or bugs may not be found in our platform or applications until after they are deployed to our customers. We have discovered and expect we will continue to discover software errors, failures and bugs in our platform or applications and anticipate that certain of these errors, failures and bugs will only be discovered and remediated after deployment to customers. Real or perceived errors, failures or bugs in our platform and applications could result in negative publicity, loss of or delay in market acceptance of our platform and applications, loss of competitive position, or claims by customers for losses sustained by them. In such an event, we may be required, or may choose, for customer relations or other reasons, to expend additional resources in order to help correct the problem.

We implement bug fixes and upgrades as part of our regular system maintenance, which may lead to system downtime. Even if we are able to implement the bug fixes and upgrades in a timely manner, any history of defects or inaccuracies in the data we collect for our customers, or the loss, damage or inadvertent release of confidential data could cause our reputation to be harmed, and customers may elect not to purchase or renew their agreements with us or we may incur increased insurance costs. The costs associated with any material defects or errors in our software or other performance problems may be substantial and could harm our operating results.

Because many of our customers use our applications to store and retrieve critical information, we may be subject to liability claims if our applications do not work properly. We cannot be certain that the limitations of liability set forth in our licenses and agreements would be enforceable or would otherwise protect us from liability for damages. A material liability claim against us, regardless of its merit or its outcome, could result in substantial costs, significantly harm our business reputation and divert management's attention from our operations.

We are subject to governmental laws, regulation and other legal obligations, particularly related to privacy, data protection and information security, and any actual or perceived failure to comply with such obligations could harm our business.

Personal privacy and information security are significant issues in the U.S. and the other jurisdictions where we offer our applications. The legislative and regulatory framework for privacy and security issues worldwide is rapidly evolving and is likely to remain uncertain for the foreseeable future. Our handling of data is subject to a variety of laws and regulations, including laws and regulations enforced by various government agencies, such as the Federal Trade Commission, or FTC, and various state, local and foreign agencies. We collect personally identifiable information, or PII, and other data from our employees, customers and users. We use this information to provide services to our customers and users and to operate, support, expand and improve our business. We may also share customers' or users' PII with third parties as allowed by applicable law and agreements, as authorized by the customer, or as described in our privacy policies

The U.S. federal and various state and foreign governments have adopted or proposed limitations on the collection, distribution, use and storage of PII. In the U.S., the FTC and many state attorneys general are applying federal and state consumer protection laws to impose standards on the online collection, use and dissemination of data. Furthermore, many states have enacted laws that apply directly to the operators of online services that are intended for K-12 school purposes or are proposing legislation to mandate privacy and data security obligations on the collection, use, and disclosure of PII generally. For example, the recently enacted California Consumer Privacy Act, or CCPA, which is scheduled to take effect on January 1, 2020, imposes a number of privacy and security obligations on companies who process PII of California residents. These laws may impose limits on the collection, distribution, use and storage of student PII. Many foreign countries and governmental bodies, including the European Union, or EU, Canada, Australia and other jurisdictions, have laws and regulations concerning the collection and use of PII obtained from their residents or by businesses operating within their jurisdiction. These laws and regulations often are more restrictive than those in the U.S. Laws and regulations in these jurisdictions may apply broadly to the collection, use, storage, disclosure and security of data that identifies or may be used to identify or locate an individual, such as names, email addresses and, in some jurisdictions, Internet Protocol, or IP, addresses and other online identifiers. We publicly post our privacy policies and practices concerning our processing, use and disclosure of PII. Our publication of our privacy policy and other statements we publish that provide promises and assurances about privacy and security can subject us to potential state and federal action if they are found to be deceptive or misrepresentative of our practices.

In the EU, where companies must meet specified privacy and security standards, the General Data Protection Regulation, or GDPR, became enforceable on May 25, 2018. The GDPR introduced new and enhanced data protection requirements throughout the EU and significant penalties of up to the greater of 4% of worldwide turnover and €20 million for violations of data protection rules. We are actively working to ensure ongoing compliance with the GDPR. We may find it necessary to establish systems to maintain EU-origin data in the European Economic Area, or EEA, or to amend agreements with our customers which may involve substantial expense and distraction from other aspects of our business. In addition, data protection authorities in each member state of the EU will still have the ability to interpret certain aspects of the GDPR, which has the potential to create inconsistencies on a country-by-country basis. Ongoing implementation of the GDPR could require us to change certain business practices and result in increased costs. Further, the EU's proposed ePrivacy Regulation is currently under discussion by EU member states to complement and bring electronic communications services in line with the GDPR and force a harmonized approach across EU member states. Although it remains under debate, drafts of the proposed ePrivacy Regulation would alter rules on third-party cookies, web beacons and similar technologies, and significantly increase penalties for non-compliance. We cannot yet determine the impact such future laws, regulations, and standards may have on our business.

We rely on adherence to the EU-U.S. Privacy Shield and Swiss-U.S. Privacy Shield Frameworks, as agreed to and set forth by the U.S. Department of Commerce, and the European Union and Switzerland, which established a means for legitimizing the transfer of PII by U.S. companies doing business in the EU from the EEA to the U.S. In light of the continued uncertainty around cross-border data transfer, we have engaged in efforts to legitimize data transfers from the EEA through means other than the Privacy Shield Frameworks, such as through the use of so-called 'model contract clauses' developed by the European Commission. We may experience hesitancy, reluctance, or refusal by European or multi-national customers to continue to use our services due to the potential risk exposure to such customers as a result of the uncertainty around the legality of cross-border data transfer methods on which we rely. Ongoing legal challenges to the Privacy Shield Framework and 'model contract clauses' may render either or both methods invalid or could result in further limitations on the ability to transfer data across borders. Additionally, certain countries have passed or are considering passing laws requiring local data residency.

Although we are working to comply with those federal, state, and foreign laws and regulations, industry standards, contractual obligations and other legal obligations that apply to us, those laws, regulations, standards and obligations are evolving and may be modified, interpreted and applied in an inconsistent manner from one jurisdiction to another, and may conflict with one another, other requirements or legal obligations, our practices or the features of our applications or platform. Any failure or perceived failure by us to comply with federal, state or foreign laws or regulations, industry standards, contractual obligations or other legal obligations, or any actual or suspected security incident, whether or not resulting in unauthorized access to, or acquisition, release or transfer of PII or other data, may result in governmental enforcement actions and prosecutions, private litigation, fines and penalties or adverse publicity and could cause our customers to lose trust in us, which could have an adverse effect on our reputation and business. Any inability to adequately address privacy and security concerns, even if unfounded, or comply with applicable laws, regulations, policies, industry standards, contractual obligations, or other legal obligations could result in additional cost and liability to us, damage our reputation, inhibit sales, and materially adversely affect our business.

We also expect that there will continue to be new proposed laws, regulations and industry standards concerning privacy, data protection and information security in the U.S., the EU and other jurisdictions, and we cannot yet determine the impact such future laws, regulations and standards may have on our business. Future laws, regulations, standards and other obligations, and changes in the interpretation of existing laws, regulations, standards and other obligations could impair our or our customers' ability to collect, use or disclose information relating to consumers, which could decrease demand for our applications, increase our costs and impair our ability to maintain and grow our customer base and increase our revenue. New laws, amendments to or re-interpretations of existing laws and regulations, industry standards, contractual obligations and other obligations may require us to incur additional costs and restrict our business operations. Such laws and regulations may require companies to implement or update privacy and security policies, permit users to access, correct and delete personal information stored or maintained by such companies, inform individuals of security breaches that affect their personal information, and, in some cases, obtain individuals' consent to use PII for certain purposes. In addition, a foreign government could require that any PII collected in a country not be disseminated outside of that country, and we are not currently equipped to comply with such a requirement. Other proposed legislation could, if enacted, impose additional requirements and prohibit the use of certain technologies that track individuals' activities on web pages or that record when individuals click through to an internet address contained in an email message. Such laws and regulations could require us to change features of our software or restrict our customers' ability to collect and use email addresses, page viewing data and personal information, which may reduce demand for our software. If we fail to comply with federal, state and international data privacy laws and regulations our ability to successfully operate our business and pursue our business goals could be harmed.

We also may find it necessary or desirable to join industry or other self-regulatory bodies or other privacy- or data protection-related organizations that require compliance with their rules pertaining to privacy and data protection. We also may be bound by additional, more stringent contractual obligations relating to our collection, use and disclosure of personal, financial and other data.

We are subject to contractual clauses that require us to comply with certain provisions of the Family Educational Rights and Privacy Act and we are subject to the Children's Online Privacy Protection Act, and if we fail to comply with these laws, our reputation and business could be harmed.

The Family Educational Rights and Privacy Act, or FERPA, generally prohibits educational institutions that receive federal funding from disclosing PII from a student's education records without the student's consent. Through Canvas, our academic learning management application, our customers and users disclose to us certain information that may originate from or comprise a student education record, as the term is defined under FERPA. As an entity that provides services to institutions, we are often subject to contractual clauses that impose restrictions derived from FERPA on our ability to collect, process, transfer, disclose, and store student data, under which we may not transfer or otherwise disclose any PII from a student record to another party other than in a manner permitted under the statute. If we violate our obligations to any of our educational institution customers relating to the privacy of student records subject to FERPA, such a violation could constitute material breach of contract with one or more of our customers and could harm our reputation. Further, in the event that we disclose student information in a manner that results in a violation of FERPA by one of our educational customers, the U.S. Department of Education could require that customer to suspend our access to the customer's student information that is covered under FERPA for a period of at least five years.

We are subject to the Children's Online Privacy Protection Act, or COPPA, which applies to operators of commercial websites and online services directed to U.S. children under the age of 13 that collect personal information from children, and to operators of general audience websites with actual knowledge that they are collecting information from U.S. children under the age of 13. Canvas is directed, in part, at children under the age of 13. Through Canvas and other means, we collect certain personal information, including names and email addresses from children. COPPA is subject to interpretation by courts and other governmental authorities, including the FTC, and the FTC is authorized to promulgate, and has promulgated, revisions to regulations implementing provisions of COPPA, and provides non-binding interpretive guidance regarding COPPA that changes periodically with little or no public notice. Although we strive to ensure that our platform and applications are compliant with applicable COPPA provisions, these provisions may be modified, interpreted, or applied in new manners that we may be unable to anticipate or prepare for appropriately, and we may incur substantial costs or expenses in attempting to modify our systems, platform, applications, or other technology to address changes in COPPA or interpretations thereof. If we fail to accurately anticipate the application, interpretation or legislative expansion of COPPA we could be subject to governmental enforcement actions, litigation, fines and penalties or adverse publicity and we could be in breach of our customer contracts and our customers could lose trust in us, which could harm our reputation and business.

Third-party claims that we are infringing the intellectual property rights of others, whether successful or not, could subject us to costly and time-consuming litigation or require us to purchase expensive licenses, and our business could be harmed.

The software industry is characterized by the existence of a large number of patents, copyrights, trademarks, trade secrets and other intellectual property rights. Companies in the software industry must often defend against litigation claims based on allegations of infringement or other violations of intellectual property rights. Third parties, including our competitors, may own patents or other intellectual property rights that cover aspects of our technology or business methods and may assert patent or other intellectual property rights within the industry. Moreover, in recent years, individuals and groups that are non-practicing entities, commonly referred to as “patent trolls,” have purchased patents and other intellectual property assets for the purpose of making claims of infringement in order to extract settlements. From time to time, we may receive threatening letters, notices or “invitations to license,” or may be the subject of claims that our services or software and underlying technology infringe or violate the intellectual property rights of others. Responding to such claims, regardless of their merit, can be time consuming, costly to defend in litigation, divert management’s attention and resources, damage our reputation and brand and cause us to incur significant expenses. Our technologies may not be able to withstand any third-party claims against their use. Claims of intellectual property infringement might require us to stop using technology found to be in violation of a third-party’s rights, redesign our application, which could require significant effort and expense, and cause delays of releases, enter into costly settlement or license agreements or pay costly damage awards, or face a temporary or permanent injunction prohibiting us from marketing or selling our software. If we cannot or do not license the infringed technology on reasonable terms or at all, or substitute similar technology from another source, we could be forced to limit or stop selling our software, we may not be able to meet our obligations to customers under our customer contracts, our revenue and operating results could be adversely impacted, and we may be unable to compete effectively. Additionally, our customers may not purchase our applications if they are concerned that they may infringe third-party intellectual property rights. The occurrence of any of these events may harm our business.

In our subscription agreements with our customers, we generally agree to indemnify our customers against any losses or costs incurred in connection with claims by a third-party alleging that the customer’s use of our services or software infringes the intellectual property rights of the third-party. Our customers who are accused of intellectual property infringement may seek indemnification from us. If any claim is successful, or if we are required to indemnify or defend our customers from any of these or other claims, these matters could be disruptive to our business and management and result in additional legal expenses.

The success of our business depends in part on our ability to protect and enforce our intellectual property rights.

Our success is dependent, in part, upon protecting our proprietary technology. We do not own any patents and we rely on a combination of copyrights, trademarks, service marks, trade secret laws and contractual restrictions to establish and protect our proprietary rights in our applications and services. However, the steps we take to protect our intellectual property may be inadequate. We will not be able to protect our intellectual property if we are unable to enforce our rights or if we do not detect unauthorized use of our intellectual property. Any of our trademarks or other intellectual property rights may be challenged by others or invalidated through administrative process or litigation. Furthermore, legal standards relating to the validity, enforceability and scope of protection of intellectual property rights are uncertain. Despite our precautions, it may be possible for unauthorized third parties to copy our technology and use information that we regard as proprietary to create applications and services that compete with ours. Some license provisions protecting against unauthorized use, copying, transfer and disclosure of our offerings may be unenforceable under the laws of certain jurisdictions and foreign countries. Our corporate name and the name of our platform and applications have not been trademarked in each market where we operate and plan to operate. If we do not secure registrations for our trademarks, we may encounter more difficulty in enforcing them against third parties. Effective copyright, trademark and trade secret protection may not be available in every country in which our platform and applications are available. The laws of some foreign countries may not be as protective of intellectual property rights as those in the United States, and mechanisms for enforcement of intellectual property rights may be inadequate. To the extent we expand our international operations, our exposure to unauthorized copying and use of our technology and proprietary information may increase. Accordingly, despite our efforts, we may be unable to prevent third parties from infringing upon or misappropriating our technology and intellectual property.

Although we enter into confidentiality and invention assignment agreements with our employees and consultants and enter into confidentiality agreements with the parties with whom we have strategic relationships and business alliances, no assurance can be given that these agreements will be effective in controlling access to and distribution of our applications and proprietary information or prevent reverse engineering. Further, these agreements may not prevent our competitors from independently developing technologies that are substantially equivalent or superior to our software and offerings, and we may be unable to prevent this competition.

We may be required to spend significant resources to monitor and protect our intellectual property rights. Litigation may be necessary in the future to enforce our intellectual property rights and to protect our trade secrets. Such litigation could be costly, time consuming and distracting to management and could result in the impairment or loss of portions of our intellectual property. Furthermore, our efforts to enforce our intellectual property rights may be met with defenses, counterclaims and countersuits attacking the validity and enforceability of our intellectual property rights. We may not prevail in any lawsuits that we initiate. Any litigation, whether or not resolved in our favor, could subject us to substantial costs, divert resources and the attention of management and technical personnel from our business and adversely affect our business. Our inability to protect our proprietary technology against unauthorized copying or use, as well as any costly litigation, could delay further sales or the implementation of our software and offerings, impair the functionality of our software and offerings, delay introductions of new features or enhancements, result in our substituting inferior or more costly technologies into our software and offerings, or injure our reputation.

We could face liability, or our reputation might be harmed, as a result of the activities of our customers or users, the content in our platform or the data they store on our servers.

As a provider of cloud-based software, we may be subject to potential liability for the activities of our customers or users on or in connection with the data they store on our servers. Although our customer terms of use prohibit illegal use of our services by our customers and permit us to take down content or take other appropriate actions for illegal use, customers may nonetheless engage in prohibited activities or upload or store content with us in violation of applicable law or the customer's own policies, which could subject us to liability or harm our reputation.

Various U.S. federal statutes may apply to us with respect to various customer activities. The Digital Millennium Copyright Act of 1998, or DMCA, provides recourse for owners of copyrighted material who believe that their rights under U.S. copyright law have been infringed on the internet. Under the DMCA, based on our current business activity as an internet service provider that does not own or control website content posted by our customers, we generally are not liable for infringing content posted by our customers or other third parties, provided that we follow the procedures for handling copyright infringement claims set forth in the DMCA. Generally, if we receive a proper notice from, or on behalf, of a copyright owner alleging infringement of copyrighted material located on websites we host, and we fail to expeditiously remove or disable access to the allegedly infringing material or otherwise fail to meet the requirements of the safe harbor provided by the DMCA, the copyright owner may seek to impose liability on us. Technical mistakes in complying with the detailed DMCA take-down procedures, or if we fail to otherwise comply with the other requirements of the safe harbor, could subject us to liability for copyright infringement.

Although statutes and case law in the United States have generally shielded us from liability for customer activities to date, court rulings in pending or future litigation may narrow the scope of protection afforded us under these laws. In addition, laws governing these activities are unsettled in many international jurisdictions, or may prove difficult or impossible for us to comply with in some international jurisdictions. Also, notwithstanding the exculpatory language of these bodies of law, we may become involved in complaints and lawsuits which, even if ultimately resolved in our favor, add cost to our doing business and may divert management's time and attention. Finally, other existing bodies of law, including the criminal laws of various states, may be deemed to apply or new statutes or regulations may be adopted in the future, any of which could expose us to further liability and increase our costs of doing business.

Additionally, our customers could use our platform or applications to store or process PII, including sensitive PII, without our knowledge of such storage or processing. In the event that our systems experience a data security incident, or an individual or entity accesses information without, or in excess of, proper authorization, we could be subject to data security incident notification laws, as described elsewhere, which may require prompt remediation and notification to individuals. If we are unaware of the data and information stored on our systems, we may be unable to appropriately comply with all legal obligations, and we may be exposed to governmental enforcement or prosecution actions, private litigation, fines and penalties or adverse publicity and these incidents could cause our customers to lose trust in us, which could harm our reputation and business.

Future acquisitions could disrupt our business and may divert management’s attention and if unsuccessful, harm our business.

We intend to expand by making acquisitions that could be material to our business. To date, we have only completed two acquisitions and our ability as an organization to successfully acquire and integrate technologies or businesses is unproven and limited. Acquisitions involve many risks, including the following:

- an acquisition may negatively affect our results of operations and financial condition because it may require us to incur charges or assume substantial debt or other liabilities, may cause adverse tax consequences or unfavorable accounting treatment, may expose us to claims and disputes by third parties, including intellectual property claims and disputes, or may not generate sufficient financial return to offset additional costs and expenses related to the acquisition;
- we may encounter difficulties or unforeseen expenditures in integrating the business, technologies, products, personnel or operations of any company that we acquire, particularly if key personnel of the acquired company decide not to work for us;
- an acquisition may disrupt our ongoing business, divert resources, increase our expenses and distract our management;
- an acquisition may result in a delay or reduction of customer purchases for both us and the company we acquired due to customer uncertainty about continuity and effectiveness of service from either company;
- we may encounter difficulties in, or may be unable to, successfully sell any acquired products;
- an acquisition may involve the entry into geographic or business markets in which we have little or no prior experience or where competitors have stronger market positions;
- challenges inherent in effectively managing an increased number of employees in diverse locations;
- the potential strain on our financial and managerial controls and reporting systems and procedures;
- potential known and unknown liabilities associated with an acquired company;
- our use of cash to pay for acquisitions would limit other potential uses for our cash;
- if we incur debt to fund such acquisitions, such debt may subject us to material restrictions on our ability to conduct our business as well as financial maintenance covenants;
- the risk of impairment charges related to potential write-downs of acquired assets or goodwill in future acquisitions;
- to the extent that we issue a significant amount of equity or equity-linked securities in connection with future acquisitions, existing stockholders may be diluted and earnings per share may decrease; and
- managing the varying intellectual property protection strategies and other activities of an acquired company.

We may not succeed in addressing these or other risks or any other problems encountered in connection with the integration of any acquired business. The inability to integrate successfully the business, technologies, products, personnel or operations of any acquired business, or any significant delay in achieving integration, could harm our business and operating results.

Our ability to raise capital in the future may be limited, and if we fail to raise capital when needed, we could be prevented from growing.

Our business and operations may consume resources faster than we anticipate. While we believe our cash, cash equivalents, short-term marketable securities and cash flows from operations will be sufficient to support our planned operations for at least the next 12 months, in the future, we may need to raise additional funds to invest in future growth opportunities. Additional financing may not be available on favorable terms, if at all. If adequate funds are not available on acceptable terms, we may be unable to invest in future growth opportunities, which could harm our business and operating results. If we incur debt, the debt holders would have rights senior to common stockholders to make claims on our assets. In addition, our credit facility imposes, and future debt instruments may impose, restrictions on our ability to dispose property, make changes in our business, engage in mergers or acquisitions, incur additional indebtedness, and make investments and distributions. Furthermore, if we issue additional equity securities, stockholders will experience dilution, and the new equity securities could have rights senior to those of our common stock. Because our decision to issue securities in any future offering will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing or nature of our future offerings. As a result, stockholders bear the risk that future securities offerings reduce the market price of our common stock and dilute their interest.

We may be subject to additional obligations to collect and remit sales tax and other taxes, and we may be subject to tax liability for past sales, which could harm our business.

State, local and foreign jurisdictions have differing rules and regulations governing sales, use, value added and other taxes, and these rules and regulations are subject to varying interpretations that may change over time. In particular, the applicability of such taxes to our learning management software in various jurisdictions is unclear. Further, these jurisdictions' rules regarding tax nexus are complex and vary significantly. As a result, we could face the possibility of tax assessments and audits, and our liability for these taxes and associated penalties could exceed our original estimates. A successful assertion that we should be collecting additional sales, use, value added or other taxes in those jurisdictions where we have not historically done so and do not accrue for such taxes could result in substantial tax liabilities and related penalties for past sales, discourage customers from purchasing our application or otherwise harm our business and operating results.

Changes in tax laws or regulations that are applied adversely to us or our customers could increase the costs of learning management software and adversely impact our business.

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time. Any new taxes could adversely affect our domestic and international business operations, and our business and financial performance. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to us. These events could require us or our customers to pay additional tax amounts on a prospective or retroactive basis, as well as require us or our customers to pay fines or penalties and interest for past amounts deemed to be due. If we raise our prices to offset the costs of these changes, existing and potential future customers may elect not to purchase our learning management platform or applications in the future. Additionally, new, changed, modified or newly interpreted or applied tax laws could increase our customers' and our compliance, operating and other costs, as well as the costs of our software. Any or all of these events could harm our business and operating results.

The recently passed comprehensive tax reform bill could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law new legislation that significantly revises the Internal Revenue Code of 1986, as amended. The newly enacted federal income tax law, among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses), limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks, one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the new federal tax law is uncertain and our business and financial condition could be adversely affected. In addition, it is uncertain if and to what extent various states will conform to the newly enacted federal tax law. The impact of this tax reform on holders of our common stock is also uncertain and could be adverse. We urge our stockholders to consult with their legal and tax advisors with respect to this legislation and the potential tax consequences of investing in or holding our common stock.

Our ability to use net operating losses to offset future taxable income may be subject to limitations.

As of December 31, 2018, we had approximately $262.7 million and $305.7 million of federal and state net operating loss carryforwards, respectively, available to reduce future taxable income that will begin to expire in 2028 for federal purposes and 2019 for state tax purposes. These net operating loss carryforwards could expire unused and be unavailable to offset future income tax liabilities. Under the newly enacted federal income tax law, federal net operating losses incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal net operating losses is limited. It is uncertain if and to what extent various states will conform to the newly enacted federal tax law. In addition, under Section 382 of the Internal Revenue Code of 1986, as amended, and corresponding provisions of state law, if a corporation undergoes an "ownership change," which is generally defined as a greater than 50% change, by value, in its equity ownership over a three-year period, the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes to offset its post-change income or taxes may be limited. We may experience ownership changes in the future as a result of subsequent shifts in our stock ownership, some of which may be outside of our control. If an ownership change occurs and our ability to use our net operating loss carryforwards is materially limited, it would harm our future operating results by effectively increasing our future tax obligations.

We are a multinational organization faced with increasingly complex tax issues in many jurisdictions, and we could be obligated to pay additional taxes in various jurisdictions.

As a multinational organization, we are subject to taxation in several jurisdictions around the world with increasingly complex tax laws, the application of which can be uncertain. The amount of taxes we pay in these jurisdictions could increase substantially as a result of changes in the applicable tax principles, including increased tax rates, new tax laws or revised interpretations of existing tax laws and precedents, which could harm our liquidity and operating results. In addition, the authorities in these jurisdictions could review our tax returns and impose additional tax, interest and penalties, and the authorities could claim that various withholding requirements apply to us or our subsidiaries or assert that benefits of tax treaties are not available to us or our subsidiaries, any of which could adversely affect our operating results.

Risks Related to Our Common Stock

Our stock price has been and will likely continue to be volatile and may decline regardless of our operating performance.

The trading price of our common stock has been, and is likely to continue to be, volatile for the foreseeable future. For example, during 2018, our common stock's daily price on the New York Stock Exchange has ranged from $29.48 to $49.17. The market price of our common stock may fluctuate significantly in response to numerous factors, many of which are beyond our control, including:

- actual or anticipated fluctuations in our revenue and other operating results, including as a result of the addition or loss of any number of customers;
- announcements by us or our competitors of new products or applications, significant technical innovations, acquisitions, strategic partnerships, joint ventures or capital commitments;
- the financial projections we may provide to the public, any changes in these projections or our failure to meet these projections;
- failure of securities analysts to maintain coverage of us, changes in ratings and financial estimates and the publication of other news by any securities analysts who follow our company, or our failure to meet these estimates or the expectations of investors;
-

changes in operating performance and stock market valuations of cloud-based software or other technology companies, or those in our industry in particular;
- the size of our public float;
- price and volume fluctuations in the trading of our common stock and in the overall stock market, including as a result of trends in the economy as a whole;
- new laws or regulations or new interpretations of existing laws or regulations applicable to our business or industry, including data privacy and data security;
- lawsuits threatened or filed against us for claims relating to intellectual property, employment issues or otherwise;
- changes in our board of directors or management;
- short sales, hedging and other derivative transactions involving our common stock;

- sales of large blocks of our common stock including sales by our executive officers, directors and significant stockholders; and
- other events or factors, including changes in general economic, industry and market conditions and trends, as well as any natural disasters that may affect our operations.

In addition, the stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many technology companies, including providers of cloud-based software. Stock prices of many technology companies have fluctuated in a manner unrelated or disproportionate to the operating performance of those companies.

In the past, stockholders have instituted securities class action litigation following periods of market volatility. If we were to become involved in securities litigation, it could subject us to substantial costs, divert resources and the attention of management and harm our business.

Future sales of shares by stockholders could cause our stock price to decline.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. If our stockholders sell, or the market perceives that our stockholders intend to sell, substantial amounts of our common stock in the public market, the market price of our common stock could decline. We are unable to predict the effect that such sales may have on the prevailing market price of our common stock.

As of December 31, 2018, we had options outstanding that, if fully exercised, would result in the issuance of 1,303,126 shares of common stock and RSUs outstanding that, upon vesting, would result in the issuance of 1,690,509 shares of common stock. In addition, as of December 31, 2018, there were 2,478,979 shares of common stock reserved for future issuance under our 2015 Equity Incentive Plan and 457,799 shares of common stock reserved for issuance under our 2015 Employee Stock Purchase Plan. The authorized number of shares under both such benefit plans are subject to automatic annual increases in the number of shares of common stock reserved for future issuance on January 1 of each year. Further, as part of our acquisition of Practice XYZ, Inc. (“Practice”) we assumed Practice’s 2014 Equity Incentive Plan (the “2014 Plan”). No shares are available for issuance under the 2014 Plan; however, any outstanding options granted under the 2014 Plan will remain outstanding and subject to the terms of that plan until exercised, terminated or expired by their terms. As of December 31, 2018, options to purchase 1,093 shares of common stock remained outstanding under the 2014 Plan. All of the shares of common stock issuable pursuant to our equity compensation plans have been registered for public resale under the Securities Act of 1933, as amended, or the Securities Act. Accordingly, these shares will be able to be freely sold in the public market upon issuance as permitted by any applicable vesting requirements.

The concentration of our stock ownership will likely limit your ability to influence corporate matters, including the ability to influence the outcome of director elections and other matters requiring stockholder approval.

Based upon shares outstanding as of December 31, 2018, our executive officers, directors and the holders of more than 5% of our outstanding common stock, in the aggregate, beneficially owned approximately 36.4% of our common stock. As a result, these stockholders, acting together, will have significant influence over all matters that require approval by our stockholders, including the election of directors and approval of significant corporate transactions. Corporate actions might be taken even if other stockholders oppose them. This concentration of ownership might also have the effect of delaying or preventing a change of control of our company that other stockholders may view as beneficial.

If securities or industry analysts do not publish research or reports about our business, or if they downgrade our common stock, the price of our common stock could decline.

The trading market for our common stock depends, in part, on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. If one or more of the analysts who cover us downgrade our stock, publish inaccurate or unfavorable research about our business or cease to maintain coverage, our stock price would likely decline. In addition, if our operating results fail to meet the forecast of analysts, our stock price would likely decline. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, demand for our common stock could decrease, which might cause our stock price and trading volume to decline.

If we do not continue to develop effective internal controls, we may not be able to accurately report our financial results and our business could be harmed.

The Sarbanes-Oxley Act requires, among other things, that we assess the effectiveness of our internal control over financial reporting annually and the effectiveness of our disclosure controls and procedures quarterly. In particular, Section 404 of the Sarbanes-Oxley Act, or Section 404, requires us to perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on, and our independent registered public accounting firm potentially to attest to, the effectiveness of our internal control over financial reporting. If we are not able to comply with the requirements of Section 404 applicable to us, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources.

Investor perceptions of our company may suffer if material weaknesses are found, and this could cause a decline in the market price of our common stock. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could harm our operating results and reputation. If we are unable to implement these requirements effectively or efficiently, it could harm our operations, financial reporting, or financial results and could result in an adverse opinion on our internal controls from our independent registered public accounting firm.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws and under Delaware law might discourage, delay or prevent a change of control of our company or changes in our management and, therefore, depress the trading price of our common stock.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could depress the trading price of our common stock by acting to discourage, delay or prevent a change of control of our company or changes in our management that the stockholders of our company may deem advantageous. These provisions:

- authorize the issuance of “blank check” preferred stock that our board of directors could issue to increase the number of outstanding shares to discourage a takeover attempt;
- prohibit stockholder action by written consent, which requires all stockholder actions to be taken at a meeting of our stockholders;
- prohibit stockholders from calling a special meeting of our stockholders;
- provide that the board of directors is expressly authorized to make, alter or repeal our bylaws; and
- establish advance notice requirements for nominations for elections to our board of directors or for proposing matters that can be acted upon by stockholders at stockholder meetings.

Additionally, we are subject to Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any “interested” stockholder for a period of three years following the date on which the stockholder became an “interested” stockholder and which may discourage, delay or prevent a change of control of our company.

Any provision of our amended and restated certificate of incorporation, bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders’ ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for: any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. The choice of forum provision may limit a stockholder’s ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officer and other employees. If a court were to find the choice of forum provision contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business and financial condition.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

We lease space for our corporate headquarters in Salt Lake City, Utah pursuant to leases that expire in February 2025 and October 2027. We also lease space in Chicago, Illinois, Pleasant Grove, Utah, Seattle, Washington, and Philadelphia, Pennsylvania with leases that expire through 2029. We maintain our international headquarters in London, England and sales offices in Sydney, Australia, Hong Kong, Sao Paulo, Brazil, and Hungary. We believe our facilities are adequate for our current needs.

Item 3. Legal Proceedings.

We are, and from time to time may be, party to litigation and subject to claims incident to the ordinary course of business. As our growth continues, we may become party to an increasing number of litigation matters and claims. The outcome of litigation and claims cannot be predicted with certainty, and the resolution of these matters could materially affect our future results of operations, cash flows or financial position. We are not presently party to any legal proceedings that in the opinion of management, if determined adversely to us, would individually or taken together have a material adverse effect on our business, operating results, financial condition or cash flows.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Our common stock is traded on the New York Stock Exchange under the symbol “INST.”

Holders

As of February 12, 2019, there were approximately 59 holders of record of our common stock. The actual number of stockholders is greater than this number of record holders and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees.

Dividends

We have never declared or paid cash dividends on our capital stock. We intend to retain all available funds and future earnings, if any, to fund the development and expansion of our business and we do not anticipate paying any cash dividends in the foreseeable future. The terms of our credit facility also restrict our ability to pay dividends, and we may also enter into debt instruments in the future that will restrict our ability to declare or pay cash dividends on our common stock. Any future determination related to dividend policy will be made at the discretion of our board of directors and will be dependent on a number of factors, including our earnings, capital requirements and overall financial condition.

Performance Graph

The following graph compares the performance of our common stock for the period indicated with the performance of the S&P 500 and the S&P 1500 Application Software Index. This graph assumes an investment of $100 at the close of market on November 13, 2015 in each of our common stock, the S&P 500 and the S&P 1500 Application Software Index, and assumes reinvestment of dividends, if any. The stock price performance shown on the graph below is not necessarily indicative of future stock price performance.

This information under “Stock Performance Graph” is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference in any filing of Instructure, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Annual Report on Form 10-K and irrespective of any general incorporation language in those filings.

Sales of Unregistered Securities

None.

Item 6. Selected Consolidated Financial Data.

SELECTED CONSOLIDATED FINANCIAL DATA

You should read the selected consolidated financial data below in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements, related notes and other financial information included elsewhere in this Annual Report on Form 10-K. The selected consolidated financial data in this section are not intended to replace the consolidated financial statements and are qualified in their entirety by the consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K.

The following selected consolidated statements of operations data for the years ended December 31, 2018, 2017 and 2016 and the consolidated balance sheet data as of December 31, 2018 and 2017 have been derived from our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K. The consolidated statement of operations data for the years ended December 31, 2015 and 2014 and consolidated balance sheets data as of December 31, 2016 and 2015 have been derived from our audited financial statements not included in this Annual Report on Form 10-K. Our historical results are not necessarily indicative of the results that may be expected in the future. Prior period adjustments have been made as a result of the adoption of Topic 606, see footnote 1 in the Notes to Consolidated Financial Statements for a summary of adjustments made.

	Year Ended December 31,				
	2018	2017 *As Adjusted	2016 *As Adjusted	**2015	**2014
	(in thousands, except per share data)				
Consolidated Statements of Operations Data:					
Revenue:					
Subscription and support	$188,501	$144,108	$100,270	$62,463	$38,093
Professional services and other	21,043	16,867	12,347	10,730	6,259
Total revenue	209,544	160,975	112,617	73,193	44,352
Cost of revenue:					
Subscription and support(1)(2)(3)	46,706	34,351	24,252	17,682	12,131
Professional services and other(1)	15,137	12,211	8,750	6,391	2,982
Total cost of revenue	61,843	46,562	33,002	24,073	15,113
Gross profit	147,701	114,413	79,615	49,120	29,239
Operating expenses:					
Sales and marketing(1)(2)(3)	97,481	78,726	65,907	53,459	35,390
Research and development(1)(2)(3)	59,391	48,293	35,973	24,151	21,290
General and administrative(1)(2)	35,602	31,196	25,542	23,482	11,268
Total operating expenses	192,474	158,215	127,422	101,092	67,948
Loss from operations	(44,773)	(43,802)	(47,807)	(51,972)	(38,709)
Other income (expense):					
Interest income	2,413	361	352	39	32
Interest expense	(68)	(55)	(87)	(74)	(136)
Other income (expense), net	(698)	257	(343)	(854)	(2,557)
Total other income (expense), net	1,647	563	(78)	(889)	(2,661)
Loss before income tax benefit (expense)	(43,126)	(43,239)	(47,885)	(52,861)	(41,370)

Income tax benefit (expense)	(339)	155	(317)	(117)	(57)
Net loss	$(43,465)	$(43,084)	$(48,202)	$(52,978)	$(41,427)

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	Year Ended December 31, 2018	2017 *As Adjusted	2016 *As Adjusted	**2015	**2014
	(in thousands, except per share data)				
Deemed dividends to investors	$—	$—	$—	$(632)	$—
Net loss attributable to common stockholders	$(43,465)	$(43,084)	$(48,202)	$(53,610)	$(41,427)
Net loss per common share attributable to common stockholders, basic and diluted	$(1.27)	$(1.47)	$(1.73)	$(6.07)	$(7.50)
Weighted-average common shares used in computing basic and diluted net loss per common share attributable to common stockholders	34,248	29,401	27,838	8,838	5,525

(1) Includes stock-based compensation as follows:

	Year Ended December 31, 2018	2017	2016	2015	2014
	(in thousands)				
Cost of revenue:					
Subscription and support	$1,235	$762	$488	$177	$258
Professional services and other	975	596	474	166	39
Sales and marketing	6,022	4,331	3,030	1,228	2,877
Research and development	8,338	6,023	3,862	1,403	3,971
General and administrative	6,177	3,958	2,820	6,262	1,053
Total stock-based compensation	$22,747	$15,670	$10,674	$9,236	$8,198

(2) Includes payroll tax expense on secondary stock purchase transactions or the reversal of such expense due to the reduction of the estimated liability as follows:

	Year Ended December 31, 2018	2017	2016	2015	2014
	(in thousands)				
Cost of revenue:					
Subscription and support	$(49)	$-	$-	$-	$30
Professional services and other	-	-	-	-	-
Sales and marketing	(430)	(256)	(57)	-	461

Research and development	(616)	(256)	(57)	-	653
General and administrative	(130)	(22)	(103)	1,327	81
Total payroll tax expense	$(1,225)	$(534)	$(217)	$1,327	$1,225

(3) Includes amortization of acquisition-related intangibles as follows:

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(in thousands)				
Cost of revenue:					
Subscription and support	$1,339	$135	$ -	$ -	$ -
Professional services and other	-	-	-	-	-
Sales and marketing	1,158	36	-	-	-
Research and development	-	-	9	9	6
General and administrative	-	-	-	-	-
Total amortization of acquisition-related intangibles	$2,497	$171	$ 9	$ 9	$ 6

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	As of December 31,				
	2018 (1)	2017 *As Adjusted	2016 *As Adjusted	**2015	**2014
	(in thousands)				
Consolidated Balance Sheet Data:					
Cash and cash equivalents	$94,320	$35,693	$44,539	$90,471	$43,915
Working capital, excluding deferred revenue	197,908	79,169	90,728	92,638	47,440
Total assets	273,997	156,623	125,930	121,060	67,026
Deferred revenue	120,670	101,662	74,636	52,325	31,954
Total liabilities	145,559	129,679	100,117	75,441	53,568
Redeemable convertible preferred stock	—	—	—	—	88,989
Total stockholders' equity (deficit)	128,438	26,944	25,813	45,619	(75,531)

(1) In February 2018, we completed an underwritten public offering of 2,875,000 shares of common stock, which included 375,000 shares of common stock issued pursuant to the underwriters' exercise of their option to purchase additional shares. We received $109.8 million in net proceeds, after deducting underwriting discounts and commissions and offering expenses.

Non-GAAP Financial Measures

In addition to our results determined in accordance with U.S. generally accepted accounting principles, or GAAP, we believe the following non-GAAP measures are useful in evaluating our operating performance. We regularly review the measures set forth below as we evaluate our business.

	Year Ended December 31,				
	2018	2017 *As Adjusted	2016 *As Adjusted	**2015	**2014
	(unaudited) (in thousands)				
Other Financial Data:					
Non-GAAP Operating Loss (1)	(21,898)	(28,495)	(37,341)	(41,400)	(29,280)
Free Cash Flow (2)	(10,946)	(37,113)	(29,287)	(25,983)	(22,798)

(1) We define non-GAAP operating loss as operating loss before stock-based compensation, accrual and reversal of payroll tax expense on secondary stock purchase transactions, amortization of acquisition-related intangibles and change in fair value of contingent liability.

(2) We define free cash flow as net cash provided by (used in) operating activities less purchases of property and equipment and intangible assets, net of proceeds from disposals of property and equipment.

We believe non-GAAP operating loss and free cash flow provide investors and other users of our financial information consistency and comparability with our past financial performance and facilitates period-to-period comparisons of operations and liquidity. We believe non-GAAP operating loss is useful in evaluating our operating performance compared to that of other companies in our industry, as this metric generally eliminates the effects of certain items that may vary for different companies for reasons unrelated to overall operating performance. We consider free cash flow to be an important measure because it measures the amount of cash we generate and reflects changes in working capital. We use non-GAAP operating loss and free cash flow in conjunction with traditional GAAP measures as part of our overall assessment of our performance, including the preparation of our annual operating budget and quarterly forecasts, to evaluate the effectiveness of our business strategies and to communicate with our board of directors concerning our financial performance and liquidity.

Our definitions may differ from the definitions used by other companies and therefore comparability may be limited. In addition, other companies may not publish these or similar metrics. Thus, our non-GAAP operating loss and free cash flow should be considered in addition to, not as substitutes for, or in isolation from, measures prepared in accordance with GAAP.

We compensate for these limitations by providing investors and other users of our financial information, reconciliations of non-GAAP operating loss to the related GAAP financial measure, loss from operations and reconciliations of free cash flow to the related GAAP financial measure net cash provided by (used in) operating activities. We encourage investors and others to review our financial information in its entirety, not to rely on any single financial measure and to view non-GAAP operating loss and free cash flow in conjunction with the related GAAP financial measure.

The following table provides a reconciliation of loss from operations to non-GAAP operating loss:

	Year Ended December 31,				
	2018	2017 *As Adjusted	2016 *As Adjusted	**2015	**2014
	(unaudited) (in thousands)				
Loss from operations	$(44,773)	$(43,802)	$(47,807)	$(51,972)	$(38,709)
Stock-based compensation	22,747	15,670	10,674	9,236	8,198
Payroll tax expense on secondary stock purchase transactions	—	—	—	1,327	1,225
Reversal of payroll tax expense on secondary stock purchase transactions	(1,225)	(534)	(217)	—	—
Amortization of acquisition related intangibles	2,497	171	9	9	6
Change in fair value of contingent liability	(1,144)	—	—	—	—
Non-GAAP operating loss	$(21,898)	$(28,495)	$(37,341)	$(41,400)	$(29,280)

The following table provides a reconciliation of net cash provided by operating activities to free cash flow:

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(unaudited) (in thousands)				
Net cash provided by (used in) operating activities	$98	$(21,129)	$(21,608)	$(19,351)	$(20,395)
Less: purchases of property and equipment and intangible assets	11,132	16,060	7,742	6,696	2,440
Plus: proceeds from disposals of propertyand equipment	88	76	63	64	37
Free cash flow	$(10,946)	$(37,113)	$(29,287)	$(25,983)	$(22,798)

* The summary consolidated financial data as of and for the years ended December 31, 2018, 2017, and 2016 reflects the adoption of Accounting Standards Update ("ASU") No. 2014-09, Revenue from Contracts with Customers ("Topic 606"). See Note 1 of the notes to the consolidated financial statements for a summary of adjustments.

** The summary consolidated financial data as of and for the years ended December 31, 2015 and 2014 does not reflect the adoption of Topic 606 or ASU No. 2016-18.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

You should read the following discussion and analysis together with the financial statements and the related notes to those statements included elsewhere in this report. This discussion contains forward-looking statements that involve risks and uncertainties. As a result of many factors, such as those set forth in the section of this report captioned "Risk Factors" and elsewhere in this report, our actual results may differ materially from those anticipated in these forward-looking statements.

Overview

Instructure provides innovative applications for learning, assessment and performance management. We enable organizations worldwide to develop, deliver, manage and track engaging academic and employee development programs. Our platform combines powerful, elegant and easy-to-use functionality with the reliability, security, scalability and support required by our customers.

We offer our platform through a Software-as-a-Service, or SaaS, business model. Customers can rapidly deploy our applications with minimal upfront implementation. They also benefit from regular software benefits and 99.9% uptime. Our SaaS business model reduces the cost, complexity and disruptions associated with implementations and upgrades of on-premise software.

We were founded in 2008, and in 2011, we launched Canvas, with the goal to make teaching and learning easier. Initially, we focused on the U.S. education market, targeting colleges and universities. In 2012, we expanded our focus to include the K-12 market in the United States. We opened our international headquarters in London, England in June 2014 and have offices in Sydney, Australia, Hong Kong, Sao Paulo, Brazil, and Hungary. To date, a substantial majority of our revenue has been derived from our sales of Canvas to the U.S. education market. While our initial efforts were focused on the education market, we discovered that companies also needed a cloud-based platform to enable them to better train their employees. Our initial corporate customers licensed Canvas for this purpose. In February 2015, we launched Bridge to enable companies to further realize the benefits of our cloud-based platform with an application specifically designed to address their needs.

We sell our applications and services through a direct sales force. Our sales organization includes technical sales engineers who serve as experts in the technical aspects of our applications and customer implementations. Many of our sales efforts require us to respond to request for proposals, particularly in the higher education space and to a lesser extent in K–12, and to a minimal extent in the corporate market. As we grow internationally, we may use reseller partnerships as needed to penetrate certain new markets.

As of December 31, 2018, we have grown to serve more than 4,000 customers, representing colleges, universities, K-12 school districts, and companies in more than 70 countries. Our customers range from a single school to large corporations and academic institutions and accordingly our total contract values range from thousands of dollars to several million dollars. We generally define a customer as an entity with a subscription contract as of the measurement date. In situations where there is a single contract that applies to entities with multiple subsidiaries or divisions, universities, or governmental organizations, only the entity that has contracted for our platform is counted as a customer. For example, a contracting school district is counted as a single customer even though the school district encompasses multiple schools. In 2018, no single customer represented more than 10% of our revenue.

Our subscription fee includes the use of our platform and our technical support and is based on the number of users. We also generate revenue from training, implementation services and other types of professional services. We have experienced net revenue retention rates of over 100% at each of December 31, 2018, 2017 and 2016. For 2018, 2017 and 2016, our revenue was $209.5 million, $161.0 million and $112.6 million, respectively, representing year-over-year growth of 30% and 43%. For 2018, 2017 and 2016, our net losses were, $43.5 million, $43.1 million and $48.2 million, respectively.

Key Factors Affecting Our Performance

Investment in Sales and Marketing Organization

We continue to invest in our sales and marketing organization to drive additional revenue and support the growth of our customer base. Any investments we make in our sales and marketing organization will occur in advance of experiencing any benefits from such investments, so it may be difficult for us to determine if we are efficiently allocating our resources in these areas. We plan to continue to expand sales and marketing to grow our customer base and increase sales to existing customers. This expansion is expected to include adding sales personnel and expanding our marketing activities to continue to generate additional leads and build brand awareness.

We intend to expand and continue to invest in our international sales and marketing organization, which we believe will be an important factor in our continued growth. As we grow internationally, we may use reseller partnerships as needed to penetrate new markets. In 2018, 2017 and 2016, 19%, 15% and 9%, respectively, of our revenue was derived from outside the United States. Our international operations are relatively new and we have limited experience operating in international markets, which increases the risk that our international expansion efforts may not be successful.

Investment in Technology

We have aggressively invested, and intend to continue to invest, in developing technology to support our growth. We expect our research and development expenses to increase as we expand headcount. While we invest heavily in research and development, we have also built a foundation for innovation through our approach to the learning management system as a learning platform. However, our investments in research and development may result in enhancements or new applications that may not achieve market adoption, are more expensive to develop than anticipated, may take longer to generate revenue or may generate less revenue than we anticipate.

Development of Markets and Complementary Products or Services

As our more developed markets, such as higher education, continue to mature, our opportunities for future growth may be increasingly dependent on less developed markets, such as K-12 or corporate, or on new or complementary products or services.

Net Revenue Retention Rate

We calculate our net revenue retention rate by dividing the total revenue obtained from a particular customer in a given month by the total revenue from that customer from the same month in the immediately preceding year. This calculation contemplates all changes to revenue for the designated customer, which includes customer terminations, changes in quantities of users, changes in pricing, additional applications purchased or applications no longer used. We calculate the net revenue retention for our entire customer base at a given point in time. We believe our net revenue retention rate is an important metric to measure the long-term value of customer agreements and our ability to retain our customers. Our net revenue retention rate was over 100% at each of December 31, 2018, 2017 and 2016.

Backlog

Backlog represents future non-cancellable amounts to be invoiced under our agreements. We have generally signed multiple year subscription contracts for our applications. For these agreements, it is common to invoice an initial amount at contract signing followed by subsequent periodic invoices, generally annually. At any point in the contract term, there can be amounts that we have not yet been contractually able to invoice. Until such time as these amounts are invoiced, they are not recorded in revenue, deferred revenue, accounts receivable or elsewhere in our consolidated financial statements, and are considered by us to be backlog. Multiple-year payments are recorded as deferred revenue until recognized as revenue according to our revenue recognition policies and are not considered a component of backlog. As of December 31, 2018, 2017 and 2016, we had backlog of approximately, $345.4 million, $288.9 million and $221.1 million, respectively. We expect backlog to fluctuate up or down from period to period for several reasons, including the timing and duration of customer contracts, varying billing cycles and the timing of customer renewals.

Focus on Free Cash Flow

We define free cash flow as net cash provided by (used in) operating activities less purchases of property and equipment and intangible assets, net of proceeds from disposals of property and equipment. We consider free cash flow to be an important measure that we are focused on to run our business. For more information about free cash flow, see the section titled “Selected Consolidated Financial Data—Non-GAAP Financial Measures.”

Financial Operations Overview

Revenue

We generate revenue primarily from two main sources: (1) subscription and support revenue, which is comprised of SaaS fees from customers accessing our learning management systems and from customers purchasing additional support beyond the standard support that is included in the basic SaaS fees; and (2) related professional services revenue, which is comprised of training, implementation services and other types of professional services.

Subscription revenue is derived from customers using our cloud-based learning platform and is driven primarily by the number of customers, the number of users at each customer, the price of our applications and renewal rates. Support revenue is derived from customers purchasing additional support beyond the standard support that is included in the basic SaaS fee. Our contracts typically vary in length between one and five years. Subscriptions and support are non-cancelable and are billed in advance on an annual basis. All subscription and support fees billed are initially recorded in deferred revenue and recognized ratably over the subscription term.

Professional services and other revenue are derived primarily from implementation, training, and other consulting fees. Implementation services includes training and consulting services that generally take anywhere from 30 to 90 days to complete depending on customer-side complexity and timelines. It includes regularly scheduled and highly-structured activities to ensure customers progress toward better utilizing our applications. Most of these interactions take place over the phone and through the use of web meeting technology. Implementation services are recognized over time as the services are rendered, using an efforts-expended input method. Implementation services also include nonrefundable upfront setup fees, which are allocated to the remaining performance obligations.

We include training with every implementation and offer additional training for a fee. The training offered is focused on creating confidence among users so they can be successful with our applications. Most training is performed remotely using web meeting technology. Because we have determined that trainings are distinct, we record training revenue upon the delivery of the training. Subscription training was introduced in 2016 and is recognized ratably in the same manner as subscription and support revenue described above.

In addition to our implementation and training offerings, we provide consulting services for custom application development, integrations, content services and change management consulting. These services are architected to boost customer adoption of our applications and to drive usage of features and capabilities that are unique to our company. We have determined that these services are distinct. Professional services revenue is typically recognized over time as the services are rendered, using an efforts-expended (labor hours) input method.

Cost of Revenue

Cost of subscription and support revenue consists primarily of the costs of our managed hosting provider and other third-party service providers, employee-related costs including payroll, benefits and stock-based compensation expense for our operations and customer support teams, amortization of capitalized software development costs and acquired technology, and allocated overhead costs, which we define as rent, facilities and costs related to information technology, or IT.

Cost of professional services and other revenue consists primarily of personnel costs of our professional services organization, including salaries, benefits, travel, bonuses and stock-based compensation, as well as allocated overhead costs.

Operating Expenses

Sales and Marketing. Sales and marketing expenses consist primarily of personnel costs of our sales and marketing employees, including sales commissions and incentives, benefits and stock-based compensation expense, marketing programs, including lead generation, costs of our annual InstructureCon user conference and allocated overhead costs. Prior to January 1, 2018 we immediately expensed sales commissions related to acquiring new customers and upsells from existing customers. We expect sales and marketing expenses will increase as a result of hiring net new quota-carrying sales representatives inside and outside the United States, adding to the marketing staff and expanding our annual InstructureCon user conference and potentially adding other annual conferences. Over time, we expect sales and marketing expenses will decline as a percentage of total revenue.

Research and Development. Research and development expenses consist primarily of personnel costs of our development team, including payroll, benefits and stock-based compensation expense and allocated overhead costs. We capitalize certain software development costs that are attributable to developing new applications, features and adding incremental functionality to our platform and amortize such costs as costs of subscription revenue over the estimated life of the new application or incremental functionality, which is generally three years. We expect research and development expenses to increase in absolute dollars as we continue to increase the functionality of our software platform.

General and Administrative. General and administrative expenses consist of personnel costs and related expenses for executive, finance, legal, human resources, recruiting, employee-related information technology, administrative personnel, including payroll, benefits and stock-based compensation expense; professional fees for external legal, accounting and other consulting services; and allocated overhead costs. We expect that general and administrative expenses will increase on an absolute dollar basis but decrease as a percentage of total revenue as we focus on processes, systems and controls to enable our internal support functions to scale with the growth of our business.

Other Income (Expense)

Other income (expense) consists primarily of interest income, interest expense and change in fair value of warrant liability which is subject to mark-to-market adjustments as of each reporting period, and the impact of foreign currency transaction gains and losses. We have historically had a minimal amount of debt outstanding on which we pay interest. As we have expanded our international operations our exposure to fluctuations in foreign currencies has increased.

Income Tax Expense

We are subject to income taxes in the United States and foreign jurisdictions in which we do business. These foreign jurisdictions have statutory tax rates different from those in the United States. Accordingly, our effective tax rates will vary depending on the relative proportion of foreign to U.S. income and changes in tax laws. Income tax expense consists primarily of state income taxes in the United States and income taxes in certain foreign jurisdictions in which we conduct business.

Results of Operations

The following tables set forth certain consolidated financial data in dollar amounts and as a percentage of total revenue. Prior period adjustments have been made as a result of the adoption of Topic 606, see footnote 1 in the Notes to Consolidated Financial Statements for a summary of adjustments made.

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
	(in thousands)		
Revenue:			
Subscription and support	$188,501	$144,108	$100,270
Professional services and other	21,043	16,867	12,347
Total revenue	209,544	160,975	112,617
Cost of revenue:			
Subscription and support	46,706	34,351	24,252
Professional services and other	15,137	12,211	8,750
Total cost of revenue	61,843	46,562	33,002
Gross profit	147,701	114,413	79,615
Operating expenses:			
Sales and marketing	97,481	78,726	65,907
Research and development	59,391	48,293	35,973
General and administrative	35,602	31,196	25,542
Total operating expenses	192,474	158,215	127,422
Loss from operations	(44,773)	(43,802)	(47,807)
Other income (expense):			
Interest income	2,413	361	352
Interest expense	(68)	(55)	(87)
Other income (expense), net	(698)	257	(343)
Total other income (expense), net	1,647	563	(78)

Loss before income tax benefit (expense)	(43,126)	(43,239)	(47,885)
Income tax benefit (expense)	(339)	155	(317)
Net loss	$(43,465)	$(43,084)	$(48,202)

*See Note 1 of the notes to the consolidated financial statements for a summary of adjustments.

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	Year Ended December 31, 2018	2017 *As Adjusted	2016 *As Adjusted
	(as a percentage of total revenue)		
Revenue:			
Subscription and support	90 %	90 %	89 %
Professional services and other	10	10	11
Total revenue	100	100	100
Cost of revenue:			
Subscription and support	22	21	22
Professional services and other	7	8	8
Total cost of revenue	29	29	30
Gross profit	71	71	70
Operating expenses:			
Sales and marketing	47	49	59
Research and development	28	30	32
General and administrative	17	19	23
Total operating expenses	92	98	114
Loss from operations	(21)	(27)	(44)
Other income (expense):			
Interest income	1	0	0
Interest expense	(0)	(0)	(0)
Other income (expense), net	(0)	0	(0)
Total other income, net	1	0	0
Loss before income tax benefit (expense)	(20)	(27)	(44)
Income tax benefit (expense)	(0)	0	(0)
Net loss	(20)%	(27)%	(44)%

*See Note 1 of the notes to the consolidated financial statements for a summary of adjustments.

Year Ended December 31, 2018 Compared to the Year Ended December 31, 2017

Revenue

	Year Ended December 31, 2018	2017 *As Adjusted	Change Amount	%
	(dollars in thousands)			
Subscription and support	$188,501	$144,108	$44,393	31%
Professional services and other	21,043	16,867	4,176	25
Total revenue	$209,544	$160,975	$48,569	30%

Subscription and support revenue increased $44.4 million for the year ended December 31, 2018, primarily due to an increase in the total number of customers, which has grown to over 4,000 as of December 31, 2018, net revenue retention in excess of 100% and continued growth in international revenue, which contributed 19% of total revenue for the year ended December 31, 2018, versus 15% December 31, 2017.

Professional services and other revenue increased $4.2 million for the year ended December 31, 2018, primarily due to the increase in new customers discussed above.

Cost of Revenue and Gross Margin

	Year Ended December 31, 2018	2017 *As Adjusted	Change Amount	%
	(dollars in thousands)			
Cost of revenue:				
Subscription and support	$46,706	$ 34,351	$12,355	36%
Professional services and other	15,137	12,211	2,926	24
Total cost of revenue	$61,843	$ 46,562	$15,281	33%
Gross margin percentage:				
Subscription and support	75 %	76 %		
Professional services and other	28	28		
Total gross margin	70 %	71 %		

Total cost of revenue increased $15.3 million for the year ended December 31, 2018 primarily due to an increase in employee-related costs, web hosting costs and amortization of developed technology.

Subscription and support cost of revenue increased $12.4 million for the year ended December 31, 2018 primarily due to an increase in web hosting and third-party software license costs, employee-related costs, amortization of developed and acquisition-related technology and overhead allocations. Web hosting costs and third-party software license costs increased $5.1 million due to the increase in total customers. Employee-related costs increased $3.4 million as we continued to grow our customer support organization to support our customer growth and improve service levels and offerings. Amortization of capitalized software development costs increased $3.4 million due to the continued development of our software platform and amortization of acquisition-related technology. Allocated overhead expenses increased $0.5 million primarily due to higher rent and communication expense.

Professional services and other costs of revenue increased $2.9 million for the year ended December 31, 2018 primarily due to an increase in employee-related costs as we continue to grow our professional services organization to support our customer growth and improve service level offerings.

Operating Expenses

Sales and Marketing

	Year Ended December 31, 2018	2017 *As Adjusted	Change Amount	%

(dollars in thousands)				
Sales and marketing	$97,481	$78,726	$18,755	24%

Sales and marketing expenses increased $18.8 million for the year ended December 31, 2018 primarily due to an increase in employee-related and sales commission costs, expansion of our marketing programs, information technology expenses, overhead allocations, travel and amortization of acquisition-related technology. Employee-related and sales commission costs increased $12.3 million as a result of hiring additional employees domestically and internationally, growth in our customer base and increase in allocated medical insurance costs. Marketing program and travel costs increased $3.2 million due to continued expansion into international and corporate markets. Depreciation and amortization expense increased $1.5 million due to an increase in capital equipment and amortization of acquisition-related identified intangible assets. Allocated overhead expenses increased $1.3 million primarily due to higher rent and maintenance on our facilities. Information technology expenses increased $0.5 million as we continue to automate our internal systems.

Research and Development

	Year Ended December 31,		Change	
	2018	2017	Amount	%
	(dollars in thousands)			
Research and development	$59,391	$48,293	$11,098	23%

Research and development expenses increased $11.1 million for the year ended December 31, 2018 primarily due to an increase in employee-related costs, outside services, allocated overhead expenses and information technology expenses. Employee-related costs increased $9.8 million as we continue to grow our engineering organization to develop new applications and continue to develop additional features for Canvas and Bridge. Third-party contractor costs increased $0.4 million due to increased use of third-party engineering contractors to assist with product development planning. Allocated overhead expenses increased $0.4 million primarily due to higher rent and maintenance on our facilities. Information technology expenses increased $0.5 million as we continue to automate our internal systems.

General and Administrative

	Year Ended December 31,		Change	
	2018	2017	Amount	%
	(dollars in thousands)			
General and administrative	$35,602	$31,196	$4,406	14%

General and administrative expenses increased $4.4 million for the year ended December 31, 2018 primarily due to an increase in employee-related costs, allowance for doubtful accounts expense, information technology expenses, allocated overhead expenses and travel-related costs and were offset by decreases in the estimated fair value of the contingent liability. Employee-related costs increased $3.4 million as a result of increased stock compensation expense and hiring additional employees domestically and internationally to support continued growth. Allowance for doubtful accounts expense increased $1.2 million in response to aging invoices. Our information technology expenses increased $0.3 million as we continued to automate our internal systems. Allocated overhead and other insignificant items increased $0.6 million primarily due to higher rent and travel expense. Offsetting these increases was a decrease in the estimated fair value of the contingent liability of $1.1 million.

Other Income

	Year Ended	Change

	December 31,			
	2018	2017	Amount	%
	(dollars in thousands)			
Other income	$1,647	$563	$1,084	193%

Other income, net includes interest income, interest expense and the impact of foreign currency transaction gains and losses. Other income, net increased $1.1 million for the year ended December 31, 2018, primarily as a result of recognized gross interest income on marketable securities.

Income Tax Benefit (Expense)

	Year Ended			
	December 31,		Change	
	2018	2017 *As Adjusted	Amount	%
	(dollars in thousands)			
Income tax benefit (expense)	$(339)	$ 155	$(494)	-319%

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Income tax benefit (expense) consists of current and deferred taxes for U.S. and foreign income taxes. The income tax expense increase in 2018 of $0.5 million compared to 2017 was primarily due to a one-time tax benefit in 2017 related to the acquisition of a business. On December 22, 2017, federal tax legislation was enacted which included lowering the U.S. corporate income tax rate to 21% effective in 2018. We remeasured certain deferred tax assets and liabilities based on the tax rates at which they are expected to reverse in the future, which is generally 21%. As we have a full valuation allowance on US deferred assets, the allowance was adjusted accordingly based on the remeasured deferred tax asset and liability position. As a result, the federal tax legislation had a limited impact on our income tax benefit (expense).

Year Ended December 31, 2017 Compared to the Year Ended December 31, 2016

Revenue

	Year Ended December 31,		Change	
	2017 *As Adjusted	2016 *As Adjusted	Amount	%
	(dollars in thousands)			
Subscription and support	$144,108	$100,270	$43,838	44%
Professional services and other	16,867	12,347	4,520	37
Total revenue	$160,975	$112,617	$48,358	43%

Subscription and support revenue increased $43.8 million for the year ended December 31, 2017, primarily due to an increase in the total number of customers, which has grown to over 3,000 as of December 31, 2017, net revenue retention in excess of 100% and continued growth in international revenue, which contributed 15% of total revenue for the year ended December 31, 2017, versus 9% December 31, 2016.

Professional services and other revenue increased $4.5 million for the year ended December 31, 2017, primarily due to the increase in new customers discussed above.

Cost of Revenue and Gross Margin

	Year Ended December 31,		Change	
	2017 *As Adjusted	2016 *As Adjusted	Amount	%
	(dollars in thousands)			
Cost of revenue:				

Subscription and support	$34,351	$24,252	$10,099	42%
Professional services and other	12,211	8,750	3,461	40
Total cost of revenue	$46,562	$33,002	$13,560	41%
Gross margin percentage:				
Subscription and support	76%	76%		
Professional services and other	28	29		
Total gross margin	71	71		

Total cost of revenue increased $13.6 million for the year ended December 31, 2017 primarily due to an increase in employee-related costs, web hosting costs, amortization of developed technology and outside contractor costs. Total gross margin increased due to the impact of improved leverage of our web hosting costs relative to the growth in subscription and support revenue.

Subscription and support cost of revenue increased $10.1 million for the year ended December 31, 2017 primarily due to an increase in web hosting and third-party software license costs, employee-related costs, amortization of developed technology and overhead allocations. Web hosting costs and third-party license costs increased $5.0 million due to the increase in total customers. Employee-related costs increased $3.5 million as we continued to grow our customer support organization to support our customer growth and improve service levels and offerings. Amortization of capitalized software development costs increased $1.2 million due to the continued development of our software platform. Allocated overhead expenses and other insignificant items increased $0.4 million primarily due to higher rent and communication expense and maintenance on our facilities.

Professional services and other costs of revenue increased $3.5 million for the year ended December 31, 2017 primarily due to an increase in employee-related costs, travel, information technology expenses and allocated overhead expenses. Employee-related costs increased $2.3 million as we continued to grow our professional services organization to support our customer growth and improve service levels and offerings. Travel and outside contractor costs increased $0.6 million due to the increase in total customers and demand for training and professional services. Information technology expenses increased $0.4 million as we continue to automate internal systems. Allocated overhead expenses and other insignificant items increased $0.2 million primarily due to higher rent and communication expense and maintenance on our facilities.

Operating Expenses

Sales and Marketing

	Year Ended December 31,		Change	
	2017 *As Adjusted	2016 *As Adjusted	Amount	%
	(dollars in thousands)			
Sales and marketing	$78,726	$65,907	$12,819	19%

Sales and marketing expenses increased $12.8 million for the year ended December 31, 2017 primarily due to an increase in employee-related and sales commission costs, expansion of our marketing programs, travel, information technology and allocated overhead expenses. Employee-related and sales commission costs increased $10.5 million as a result of hiring of additional employees domestically and internationally and growth in our customer base. Marketing program costs increased $0.5 million due to continued expansion into international and corporate markets and growth in our annual user conference, InstructureCon. Travel and outside contractor costs increased $0.6 million as we continue to expand our sales and marketing organization and grow our customer base. Information technology expenses increased $0.4 million as we continue to automate our internal systems. Allocated overhead expenses increased $0.5 million primarily due to higher rent and communication expense and maintenance on our facilities. Depreciation expense increased $0.3 million due to increases in capital equipment.

Research and Development

	Year Ended December 31,		Change	
	2017	2016	Amount	%
	(dollars in thousands)			
Research and development	$48,293	$35,973	$12,320	34%

Research and development expenses increased $12.3 million for the year ended December 31, 2017 primarily due to an increase in employee-related costs, information technology, and allocated overhead expenses. Employee-related costs increased $9.2 million, outside contractors and travel increased by $1.7 million primarily due to outsourced development, and information technology expenses increased $0.7 million, as we continue to grow our engineering organization to develop new applications and continue to develop additional features for Canvas and Bridge. Allocated overhead expenses and other insignificant items increased $0.7 million primarily due to higher rent and communication expense and maintenance on our facilities.

General and Administrative

	Year Ended December 31,		Change	
	2017	2016	Amount	%
	(dollars in thousands)			
General and administrative	$31,196	$25,542	$5,654	22%

General and administrative expenses increased $5.7 million for the year ended December 31, 2017 primarily due to an increase in employee-related costs, information technology, third-party services and allocated overhead. Employee-related costs increased $4.0 million as a result of increased stock compensation expense and hiring additional employees domestically and internationally to support continued growth. Our information technology expenses increased $0.8 million as we continue to automate our internal systems. Third-party services increased $0.4 million primarily due to accounting costs relating to our adoption of the new revenue recognition accounting standard, ASU 2014-09, “Revenue from Contracts with Customers: Topic 606”, as amended, or ASC 606, and compliance with Section 404 of the Sarbanes-Oxley Act. Allocated overhead and other insignificant expenses increased $0.5 million primarily due to increased business insurance, higher rent and communication expense, maintenance on our facilities, taxes and depreciation of capital equipment.

Other Income (Expense)

	Year Ended December 31,		Change	
	2017 *As Adjusted	2016 *As Adjusted	Amount	%
	(dollars in thousands)			
Other income (expense), net	$563	$ (78)	$641	(822)%

*See Note 1 of the notes to the consolidated financial statements for a summary of adjustments.

Other income (expense), net includes interest income and expense, the change in fair value of warrant liability and the impact of foreign currency transaction gains and losses. Other income (expense), net increased $0.6 million for the year ended December 31, 2017 primarily due to foreign currency transaction gain of $0.8 million offset by the change in fair value of warrant liability, which decreased $0.2 million due to a net decrease in the fair value of the warrant liability for the period.

Liquidity and Capital Resources

As of December 31, 2018, we had $94.3 million of cash and cash equivalents and $58.6 million in short-term marketable securities. We believe our cash, cash equivalents, short-term marketable securities and cash flows from operations will be sufficient to support our planned operations for at least the next 12 months. Our future capital requirements will depend on many factors including our growth rate, net revenue retention rates, the timing and extent of spending to support the expansion of sales and marketing and research and development activities, the introduction of new and enhanced offerings, and the continuing market acceptance of our platform. We may in the future enter into arrangements to acquire or invest in complementary businesses, services and technologies, and intellectual property rights. If additional financing is required from outside sources, we may not be able to raise it on terms acceptable to us or at all. If we are unable to raise additional capital when desired, our business, operating results and financial condition may be adversely affected.

In June 2018, we entered into an amended and restated loan and security agreement, or credit facility, with Silicon Valley Bank (“SVB”), which was most recently amended on June 28, 2018. The agreement provides for up to $5.0 million in revolving borrowings with an accordion feature of an additional $30 million. Availability is subject to a formula based upon a certain adjusted quick ratio. Advances under the credit facility accrue interest at a floating per year rate equal to the prime rate plus 0.5%. The credit facility terminates in June 2019, at which time the principal amount of all outstanding advances becomes due and payable. As of December 31, 2018, we did not have any outstanding borrowing under the credit facility.

To secure our obligations under the credit facility, we granted SVB a security interest in substantially all of our tangible and intangible assets, excluding intellectual property. The credit facility contains customary events of default, conditions to borrowing, and covenants, including restrictions on our ability to make acquisitions, make distributions and dividends to stockholders, and maintain certain amounts of cash or debt with other financial institutions. The agreement also includes a financial covenant to maintain a certain adjusted quick ratio, reported quarterly. In the event the accordion feature of the line is utilized the covenants convert to a recurring revenue measurement. During the continuance of an event of default, SVB may accelerate amounts outstanding, terminate the credit facility and foreclose on the collateral. As of December 31, 2018, we were in compliance with all covenants under the terms of the credit facility.

The following table shows our cash flows for 2018, 2017 and 2016:

	Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Net cash provided by (used in) operating activities	$98	$(21,129)	$(21,608)
Net cash provided by (used in) investing activities	(63,304)	2,231	(31,306)
Net cash provided by financing activities	121,833	10,052	6,982

Our cash flows are subject to seasonal fluctuations. A significant portion of our contracts have terms that coincide with our academic customers' typical fiscal year-end of June 30. Historical experience has shown an increase in new and renewed contracts as well as anniversary billings, all of which immediately precede the beginning of our academic customers' typical fiscal year-end. We typically invoice SaaS fees annually upfront with credit terms of net 30 or 60 days. In turn, our cash flows from operations are affected by this seasonality and are typically reflected in higher cash flow, accounts receivable and deferred revenue balances for the second and third quarter of each year.

Operating Activities

Net cash provided by operating activities consists primarily of net loss adjusted for certain non-cash items, including stock-based compensation, depreciation and amortization and other non-cash charges, net.

Net cash provided by operating activities during 2018 was $0.1 million, which primarily reflected our net loss of $43.5 million, offset by non-cash expenses including $22.7 million of stock-based compensation and $11.3 million of depreciation, amortization and other insignificant items. Working capital sources of cash included a net increase of $16.4 million in deferred revenue and accounts receivable primarily resulting from the growth in customers during the period. These sources were partially offset by an increase in prepaids and other assets of $2.6 million, a decrease in accounts payable and accrued liabilities of $2.8 million and an increase in deferred commissions of $1.4 million.

Net cash used in operating activities during 2017 was $21.1 million, which primarily reflected our net loss of $43.1 million, offset by non-cash expenses that included $15.7 million of stock-based compensation and $6.9 million of depreciation and other insignificant items. Working capital sources of cash included a net increase of $11.9 million in deferred revenue and accounts receivable primarily resulting from the growth in customers during the period, a $1.0 million increase in deferred rent and a $0.7 million increase in accounts payable and accrued liabilities. These sources were partially offset by an increase in prepaids and other assets of $9.2 million and an increase in deferred commissions of $5.0 million.

Net cash used in operating activities during 2016 was $21.6 million, which primarily reflected our net loss of $48.2 million, offset by non-cash expenses that included $10.7 million of stock-based compensation and $4.1 million of depreciation and other insignificant items. Working capital sources of cash included a net increase of $13.0 million in deferred revenue primarily resulting from the growth in customers during the period and a $3.7 million increase in accounts payable and accrued liabilities. These sources were partially offset by an increase in deferred rent and other liabilities of $0.8 million and a decrease to deferred commissions of $4.1 million.

Investing Activities

Our investing activities have consisted primarily of purchases of marketable securities, property and equipment purchases for computer-related equipment and capitalization of software development costs. Capitalized software development costs are related to new applications or improvements to our existing software platform that expand the functionality for our customers. As our business grows, we expect that we will continue to invest in the expansion of, and improvements to, our leased spaces, both domestically and internationally.

Net cash used in investing activities during 2018 was $63.3 million, consisting primarily of purchases of marketable securities of $113.9 million, and purchases of property plant and equipment and capitalized software development costs of $11.1 million. These were offset by $61.7 million primarily due to cash maturities from our marketable securities and other insignificant items.

Net cash provided by investing activities during 2017 was $2.2 million, consisting primarily of cash maturities from our marketable securities of $29.3 million, offset by purchases of marketable securities of $11.1 million, purchases of property plant and equipment of $15.8 million and purchases of intangible assets and other insignificant items of $0.2 million.

Net cash used in investing activities during 2016 was $31.3 million, consisting primarily of purchases of marketable securities of $28.8 million, partially offset by $5.1 million of cash maturities from our marketable securities. Other cash used in investing activities includes $7.7 million of purchased software licenses, classified within intangible assets, and property and equipment, including capitalized software development costs. These uses were offset by $0.1 million of proceeds from disposals of property and equipment.

Financing Activities

Our financing activities have consisted primarily of proceeds from the common stock offering and the issuance of common stock from employee equity plans.

Net cash provided by financing activities for 2018 was $121.8 million and consisted of $109.8 million in net proceeds received from a common stock offering, after deducting underwriting discounts and commissions and offering expenses, and $12.5 million in proceeds received from the issuance of common stock under employee equity plans, including the exercise of stock options and the purchase of common stock under our employee stock purchase plan, offset by $0.5 million in shares repurchased for tax withholdings on vesting of restricted stock and other insignificant items.

Net cash provided by financing activities for 2017 was $10.1 million consisting of $10.4 million in proceeds received from the issuance of common stock under employee equity plans, including the exercise of stock options and employee stock purchase plan; offset by $0.3 million in shares repurchased for tax withholdings on vesting of restricted stock.

Net cash provided by financing activities for 2016 was $7.0 million and consisted of proceeds received from the issuance of common stock under employee equity plans.

Contractual Obligations and Commitments

Contractual obligations are cash that we are obligated to pay as part of certain contracts that we have entered into during the course of business. Below is a table that shows the projected outlays as of December 31, 2018:

		Payments due by Period:			
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
	(in thousands)				
Operating lease obligations	$66,541	$8,469	$17,086	$17,373	$23,613

We lease our office facilities under non-cancelable operating leases. As of December 31, 2018, we had leases that expire at various dates through 2029.

Letters of Credit

As of December 31, 2018, we had a total of $2.4 million in letters of credit outstanding in favor of certain landlords for office space. These letters of credit renew annually and expire at various dates through November 2027.

Off-Balance Sheet Arrangements

During 2018, 2017 and 2016, we did not have any relationships with any entities or financial partnerships, such as structured finance or special purpose entities established for the purpose of facilitating off-balance sheet arrangements or other purposes.

Income Taxes

As of December 31, 2018, we had approximately $262.7 million and $305.7 million of federal and state net operating loss carryforwards, respectively, available to reduce future taxable income that will begin to expire in 2028 for federal purposes and 2018 for state tax purposes. As of December 31, 2018, we also had federal research and development tax credit carryforwards of approximately $8.5 million and state research and investment credit carryforwards of $3.0 million. If not utilized, the federal and state carryforwards will expire at various dates through 2038.

Utilization of the net operating loss carryforwards may be subject to a substantial annual limitation due to the ownership change limitations provided by the Internal Revenue Code of 1986, as amended, and similar state provisions. The annual limitation may result in the expiration of net operating losses and credits before utilization.

Due to our cumulative losses, we maintain a full valuation allowance against our net deferred tax assets as of December 31, 2018. We consider all available evidence, both positive and negative, in assessing the extent to which a valuation allowance should be applied against our deferred tax assets.

Critical Accounting Policies and Estimates

Our management's discussion and analysis of financial condition and results of operations is based on our consolidated financial statements which have been prepared in accordance with GAAP. In preparing our financial statements, we make estimates, assumptions and judgments that can have a significant impact on our reported revenue, results of operations and net income or loss, as well as on the value of certain assets and liabilities on our balance sheet during and as of the reporting periods. These estimates, assumptions and judgments are necessary because future events and their effects on our results and the value of our assets cannot be determined with certainty, and are made based on our historical experience and on other assumptions that we believe to be reasonable under the circumstances. These estimates may change as new events occur or additional information is obtained, and we may periodically be faced with uncertainties, the outcomes of which are not within our control and may not be known for a prolonged period of time. Because the use of estimates is inherent in the financial reporting process, actual results could differ from those estimates.

The critical accounting estimates, assumptions and judgments that we believe have the most significant impact on our consolidated financial statements are described below.

Revenue Recognition

We generate revenue primarily from two main sources: (1) subscription and support revenue, which is comprised of SaaS fees from customers accessing our learning, assessment and talent management systems and from customers purchasing additional support beyond the standard support that is included in the basic SaaS fees; and (2) related professional services revenue, which is comprised of training, implementation services and other types of professional services. Revenue is recognized when control of these services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those services.

We determined 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
- Recognition of revenue when, or as, we satisfy a performance obligation

The following describes the nature of our primary types of revenue and the revenue recognition policies and significant payment terms as they pertain to the types of transactions we enter into with our customers.

Subscription and Support

Subscription and support revenue is derived from fees from customers to access our learning, assessment and talent management systems and support beyond the standard support that is included with all subscriptions. The terms of our subscriptions do not provide customers the right to take possession of the software. Subscription and support revenue is generally recognized on a ratable basis over the contract term. Payments from customers are primarily due annually in advance.

Professional Services and Other

Professional services revenue is derived from implementation, training, and consulting services. Our professional services are typically considered distinct from the related subscription services as the promise to transfer the subscription can be fulfilled independently from the promise to deliver the professional services (i.e., customer receives standalone functionality from the subscription and the customer obtains the intended benefit of the subscription without the professional services). Professional services revenue is typically recognized over time as the services are rendered, using an efforts-expended (labor hours) input method. Implementation services also include nonrefundable upfront setup fees, which are allocated to the remaining performance obligations.

Contracts with Multiple Performance Obligations

Many of our contracts with customers contain multiple performance obligations. We account for individual performance obligations separately if they are distinct. The transaction price is allocated to the separate performance obligations on a relative standalone selling price (SSP) basis. We determine the standalone selling prices based on our overall pricing objectives by reviewing our significant pricing practices, including discounting practices, geographical locations, the size and volume of our transactions, the customer type, price lists, our pricing strategy, and historical standalone sales. Standalone selling price is analyzed on a periodic basis to identify if we have experienced significant changes in our selling prices.

Deferred Commissions

Sales commissions earned by our sales force, as well as related payroll taxes, are considered incremental and recoverable costs of obtaining a contract with a customer. These costs are deferred and then amortized on a straight-line basis over a period of benefit that we have determined to be generally four years. We determined the period of benefit by taking into consideration our customer contracts, our technology and other factors. Amortization of deferred commissions is included in sales and marketing expenses in the accompanying consolidated statements of operations.

Deferred Revenue

Deferred revenue consists of billings and payments received in advance of revenue recognition generated by our subscription and support services and professional services and other, as described above. ASC 606 introduced the concept of contract liabilities, which is substantially similar to deferred revenue under previous accounting guidance.

Stock-Based Compensation

We account for all stock options and awards granted to employees and nonemployees using a fair value method. Stock-based compensation is recognized as an expense and is measured at the fair value of the award. The measurement date for employee awards is generally the date of the grant. Stock-based compensation costs are recognized as expense over the requisite service period, which is generally the vesting period for awards, on a straight-line basis for awards with only a service condition, and using the accelerated attribution method for awards with both a performance and service condition. Forfeitures are accounted for as they occur.

We use the market closing price of our common stock as reported on the New York Stock Exchange for the fair value of restricted stock units ("RSUs") granted.

We use the Black-Scholes option pricing model to measure the fair value of our stock options and purchase rights issued to employees under our 2015 Employee Stock Purchase Plan, or ESPP, when they are granted. We make several estimates in determining our stock-based compensation for these stock options and purchase rights. These assumptions and estimates are as follows:

- Fair Value of Common Stock. We rely on the closing price of our common stock as reported by the New York Stock Exchange on the date of grant to determine the fair value of our common stock.
- Expected Term. The expected term represents the period that our stock-based awards are expected to be outstanding. The expected term assumptions were determined based on the vesting terms, exercise terms and contractual lives of the options. The expected term of employee option awards is determined using the average midpoint between vesting and the contractual term for outstanding awards, or the simplified method, because we do not yet have a sufficient history of option exercises. We consider this appropriate as we plan to see significant changes to our equity structure in the future and there is no other method that would be more indicative of exercise activity. For the ESPP, we use an expected term of 0.5 years to match the offering period.

- Expected Volatility. Since, we did not have a trading history of our common stock, the expected volatility was determined based on the historical stock volatilities of our comparable companies. To determine our peer companies, we used the following criteria: software or software-as-a-service companies; similar histories and relatively comparable financial leverage; sufficient public company trading history; and in similar businesses and geographical markets. We used the peers' stock price volatility over the expected life of our granted options to calculate the expected volatility. We intend to continue to apply this process using the same or similar public companies until a sufficient amount of historical information regarding the volatility of our own share price becomes available, or unless circumstances change such that the identified companies are no longer similar to us, in which case, more suitable companies whose share prices are publicly available would be used in the calculation. For the ESPP, we use the trading history of our own common stock to determine expected volatility.
- Risk-Free Interest Rate. The risk-free interest rate is based on the implied yield available on U.S. Treasury zero-coupon issues with remaining terms similar to the expected term on the options.
- Expected Dividend Yield. We have never declared or paid any cash dividends and do not plan to pay cash dividends in the foreseeable future, and, therefore, use an expected dividend yield of zero.

We will continue to use judgment in evaluating the assumptions related to our stock-based compensation expense calculations on a prospective basis.

Recent Accounting Pronouncement

For information on recent accounting pronouncements, see Recent Accounting Pronouncements in the notes to the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

The primary objective of our investment activities is to preserve our capital to fund our operations. We also seek to maximize income from our investments without assuming significant risk. To achieve our objectives, we maintain a portfolio of cash equivalents and investments in a variety of securities of high credit quality. As of December 31, 2018, we had cash, cash equivalents and investments of $153.0 million consisting of cash, marketable securities and money market accounts in highly rated financial institutions in the United States. A portion of our investments may be subject to interest rate risk and could fall in value if market interest rates increase. However, because our investments are primarily short-term in duration, we believe that our exposure to interest rate risk is not significant and a 1% movement in market interest rates would not have a significant impact on the total value of our portfolio. We actively monitor changes in interest rates.

Item 8. Financial Statements and Supplementary Data.

INSTRUCTURE, INC.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Instructure, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Instructure, Inc. (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 20, 2019 expressed an unqualified opinion thereon.

Adoption of Accounting Standards Update (ASU) No. 2014-09

As discussed in Note 1 to the consolidated financial statements, the Company changed its method of accounting for revenue from contracts with customers in 2018 due to the full retrospective adoption of ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606), as amended.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2012.

Salt Lake City, Utah

February 20, 2019

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Instructure, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Instructure Inc.'s internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Instructure, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of Instructure, Inc. as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2018, and the related notes, of the Company and our report dated February 20, 2019 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Salt Lake City, Utah

February 20, 2019

INSTRUCTURE, INC.

Consolidated Balance Sheets

(in thousands, except per share data)

	December 31, 2018	December 31, 2017 *As Adjusted
Assets		
Current assets:		
Cash and cash equivalents	$94,320	$35,693
Short term marketable securities	58,630	5,697
Accounts receivable—net of allowance of $1,092 and $318 at December 31, 2018 and 2017, respectively	35,514	34,312
Prepaid expenses	13,918	11,492
Deferred commissions	8,226	7,086
Other current assets	2,019	2,419
Total current assets	212,627	96,699
Property and equipment, net	27,388	23,926
Goodwill	12,354	12,354
Intangible assets, net	6,262	9,048
Noncurrent prepaid expenses	3,516	2,939
Deferred commissions, net of current portion	11,404	11,160
Other assets	446	497
Total assets	$273,997	$156,623
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$3,581	$2,892
Accrued liabilities	9,809	13,702
Deferred rent	1,329	936
Deferred revenue	117,298	99,773
Total current liabilities	132,017	117,303
Deferred revenue, net of current portion	3,372	1,889
Deferred rent, net of current portion	10,150	9,201
Other long-term liabilities	20	1,286
Total liabilities	145,559	129,679
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, par value of $0.0001 per share; 10,000 shares authorized as of December 31, 2018 and 2017; no shares issued and outstanding as of December 31, 2018 and 2017	—	—
Common stock, par value of $0.0001 per share; 200,000 shares authorized as of December 31, 2018	3	3

and 2017; 35,386 shares issued and outstanding as of December 31, 2018; 30,860 shares issued and outstanding at December 31, 2017		
Additional paid-in capital	395,865	250,899
Accumulated other comprehensive loss	(8)	(1)
Accumulated deficit	(267,422)	(223,957)
Total stockholders' equity	128,438	26,944
Total liabilities and stockholders' equity	$273,997	$156,623

*See Note 1 for a summary of adjustments

See accompanying notes.

INSTRUCTURE, INC.

Consolidated Statements of Operations

(in thousands, except per share amounts)

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
Revenue:			
Subscription and support	$188,501	$144,108	$100,270
Professional services and other	21,043	16,867	12,347
Total revenue	209,544	160,975	112,617
Cost of revenue:			
Subscription and support	46,706	34,351	24,252
Professional services and other	15,137	12,211	8,750
Total cost of revenue	61,843	46,562	33,002
Gross profit	147,701	114,413	79,615
Operating expenses:			
Sales and marketing	97,481	78,726	65,907
Research and development	59,391	48,293	35,973
General and administrative	35,602	31,196	25,542
Total operating expenses	192,474	158,215	127,422
Loss from operations	(44,773)	(43,802)	(47,807)
Other income (expense):			
Interest income	2,413	361	352
Interest expense	(68)	(55)	(87)
Other income (expense), net	(698)	257	(343)
Total other income (expense), net	1,647	563	(78)
Loss before income tax benefit (expense)	(43,126)	(43,239)	(47,885)
Income tax benefit (expense)	(339)	155	(317)
Net loss	$(43,465)	$(43,084)	$(48,202)
Net loss per common share, basic and diluted	$(1.27)	$(1.47)	$(1.73)
Weighted-average common shares used in computing basic and diluted net loss per common share attributable to common stockholders	34,248	29,401	27,838

*See Note 1 for a summary of adjustments

See accompanying notes.

INSTRUCTURE, INC.

Consolidated Statements of Comprehensive Loss

(in thousands)

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
Net loss	$(43,465)	$(43,084)	$(48,202)
Other comprehensive income (loss):			
Net change in unrealized gains (losses) on marketable securities	(7)	11	(12)
Comprehensive loss	$(43,472)	$(43,073)	$(48,214)

* See Note 1 for a summary of adjustments
See accompanying notes.

INSTRUCTURE, INC.

Consolidated Statements of Stockholders' Equity

(in thousands)

	Common Stock, $0.001 Par Value		Common Treasury Stock		Additional Paid-In	Accumulated Other Comprehensive	Accumulated Deficit *As	Total Stockholders' Equity *As
	Shares	Amount	Shares	Amount	Capital	Income	Adjusted	Adjusted
Balances at December 31, 2015	28,368	4	(1,128)	(1)	188,517	—	(132,418)	56,102
Issuance of common stock under employee stock purchase plans	1,051	—	—	—	7,009	—	—	7,009
Vesting of common stock subject to repurchase	—	—	—	—	25	—	—	25
Vested restricted stock units, net	185	—	—	—	—	—	—	—
Shares withheld for tax withholding on vesting of restricted stock	—	—	—	—	(27)	—	—	(27)
Stock-based compensation	—	—	—	—	10,674	—	—	10,674
Retirement of treasury stock	(1,128)	(1)	1,128	1	—	—	—	—
Exercise of common stock warrant	78	—	—	—	244	—	—	244
Unrealized loss on marketable securities	—	—	—	—	—	(12)	—	(12)
Net loss	—	—	—	—	—	—	(48,202)	(48,202)
Balances at December 31, 2016	28,554	3	—	—	206,442	(12)	(180,620)	25,813
Cumulative-effect of change in accounting policy					253		(253)	—
Exercise of common stock options	1,083	—	—	—	5,371	—	—	5,371
Vesting of restricted stock units, net	465	—	—	—	—	—	—	—
Purchase of ESPP shares	254	—	—	—	5,004	—	—	5,004
Stock-based compensation	—	—	—	—	15,670	—	—	15,670
Common stock and options issued in acquisition	504	—	—	—	18,451	—	—	18,451
Unrealized gain on marketable securities	—	—	—	—	—	11	—	11
Shares withheld for tax withholding on vesting of	—	—	—	—	(292)	—	—	(292)

restricted stock								
Net loss	—	—	—	—	—	—	(43,084)	(43,084)
Balances at December 31, 2017	30,860	3	—	—	250,899	(1)	(223,957)	26,944
Exercise of common stock options	845	—	—	—	6,281	—	—	6,281
Vesting of restricted stock units, net	601	—	—	—	—	—	—	—
Purchase of ESPP shares	203	—	—	—	6,186	—	—	6,186
Stock-based compensation	—	—	—	—	23,115	—	—	23,115
Common stock and options issued in acquisition	2	—	—	—	—	—	—	—
Secondary offering	2,875	—	—	—	109,789	—	—	109,789
Unrealized gain on marketable securities	—	—	—	—	—	(7)	—	(7)
Shares withheld for tax withholding on vesting of restricted stock	—	—	—	—	(405)	—	—	(405)
Net loss	—	—	—	—	—	—	(43,465)	(43,465)
Balances at December 31, 2018	35,386	$ 3	—	$ —	$ 395,865	$ (8)	$ (267,422)	$ 128,438

*See Note 1 for a summary of adjustments

See accompanying notes.

INSTRUCTURE, INC.

Consolidated Statements of Cash Flows

(in thousands)

	Year Ended December 31, 2018	2017 *As Adjusted	2016 *As Adjusted
Operating Activities:			
Net loss	$(43,465)	$(43,084)	$(48,202)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation of property and equipment	8,749	6,187	3,981
Amortization of intangible assets	2,786	572	405
Amortization of deferred financing costs	19	31	46
Change in fair value of mark-to-market liabilities	(1,266)	97	(62)
Stock-based compensation	22,747	15,670	10,674
Other	(437)	(17)	92
Changes in assets and liabilities:			
Accounts receivable, net	(2,643)	(14,882)	(8,733)
Prepaid expenses and other assets	(2,553)	(9,176)	(416)
Deferred commissions	(1,384)	(4,990)	(4,084)
Accounts payable and accrued liabilities	(2,805)	740	3,732
Deferred revenue	19,008	26,763	21,778
Deferred rent	1,342	992	(474)
Other liabilities	—	(32)	(345)
Net cash provided by (used in) operating activities	98	(21,129)	(21,608)
Investing Activities:			
Purchases of property and equipment	(11,132)	(15,750)	(7,021)
Purchases of intangible assets	—	(310)	(721)
Proceeds from disposal of property and equipment	88	76	63
Purchases of marketable securities	(113,860)	(11,085)	(28,752)
Maturities of marketable securities	61,600	29,300	5,125
Net cash provided by (used in) investing activities	(63,304)	2,231	(31,306)
Financing Activities:			
Proceeds from common stock offerings, net of offering costs	109,789	—	—
Proceeds from issuance of common stock from employee equity plans	12,467	10,375	7,009
Shares repurchased for tax withholdings on vesting of restricted stock	(405)	(292)	(27)
Payments of line of credit financing costs	(18)	(31)	—
Net cash provided by financing activities	121,833	10,052	6,982
Net increase (decrease) in cash and cash equivalents	58,627	(8,846)	(45,932)
Cash and cash equivalents, beginning of period	35,693	44,539	90,471
Cash and cash equivalents, end of period	$94,320	$35,693	$44,539
Supplemental cash flow disclosure:			
Cash taxes paid	$198	$276	$163
Non-cash investing and financing activities:			

Issuance of common stock for exercise of common stock warrant	$—	$—	$244
Capital expenditures incurred but not yet paid	$373	$274	$174
Issuance of common stock for acquisition	$—	$18,451	$—
Vesting of common stock subject to repurchase	$—	$—	$25

* See Note 1 for a summary of adjustments

See accompanying notes.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

1. Description of Business and Summary of Significant Accounting Policies

Organization

Instructure provides innovative applications for learning, assessment, development and engagement. We enable organizations worldwide to develop, deliver, manage and track engaging academic and employee development programs. We offer our platform through a Software-as-a-Service, or SaaS, business model. We were incorporated in the state of Delaware in September 2008. We are headquartered in Salt Lake City, Utah, and have wholly-owned subsidiaries in the United Kingdom, Australia, the Netherlands, Hong Kong, Sweden, Brazil, Mexico and Hungary.

Basis of Presentation

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States, or U.S. GAAP. The accompanying consolidated financial statements include our accounts and those of our wholly-owned subsidiaries. All intercompany transactions have been eliminated in consolidation.

Effective January 1, 2018, we adopted the requirements of Accounting Standards Update ("ASU") No. 2014-09, Revenue from Contracts with Customers as discussed in Note 1. All amounts and disclosures set forth in this Form 10-K have been updated to comply with the new standard, as indicated by the "as adjusted" column heading.

Certain prior period amounts reported in our consolidated financial statements and notes thereto have been reclassified to conform to current period presentation.

Use of Estimates

The preparation of the consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect reported amounts and disclosures. Accordingly, actual results could differ from those estimates. Such estimates, which we evaluate on an on-going basis, include allowances for doubtful accounts, useful lives for property and equipment and intangible assets, valuation of marketable securities, valuation allowances for net deferred income tax assets, valuation of stock-based compensation and common stock, the fair value of contingent liability, the standalone selling price of performance obligations and the determination of the period of benefit for deferred commissions. We base our estimates on historical experience and on various other assumptions which we believe to be reasonable.

Operating Segments

We operate in a single operating segment, cloud-based learning management, assessment and performance systems. Operating segments are defined as components of an enterprise for which separate financial information is regularly evaluated by the chief operating decision makers, or CODMs, which are our chief executive officer and chief financial officer, in deciding how to allocate resources and assess performance. Our CODMs evaluate our financial information and resources and assess the performance of these resources on a consolidated basis. Since we operate in one operating segment, all required financial segment information can be found on the consolidated financial statements.

Net Loss Per Share Attributable to Common Stockholders

Basic net loss per share attributable to common stockholders is computed by dividing net loss attributable to common stockholders by the weighted-average number of common shares outstanding for the period, less the weighted-average unvested common stock subject to repurchase or forfeiture. Diluted net loss per share attributable to common stockholders is computed by giving effect to all potential dilutive common stock equivalents outstanding for the period. For purposes of this calculation, options to purchase common stock and common stock warrants are considered to be common stock equivalents.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

A reconciliation of the denominator used in the calculation of basic and diluted net loss per share is as follows (in thousands, except per share amounts):

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
Numerator:			
Net loss	$(43,465)	$(43,084)	$(48,202)
Denominator:			
Weighted-average common shares outstanding—basic	34,248	29,401	27,852
Less: Weighted-average common stock subject to repurchase	—	—	(14)
Total weighted-average common shares outstanding—basic	34,248	29,401	27,838
Dilutive effect of share equivalents resulting from stock options, unvested restricted stock awards and common stock warrants	—	—	—
Weighted-average common shares outstanding-diluted	34,248	29,401	27,838
Net loss per common share	$(1.27)	$(1.47)	$(1.73)

For the years ended December 31, 2018, 2017 and 2016, we incurred net losses and, therefore, the effect of our outstanding options to purchase common stock, common stock warrants and restricted stock units were not included in the calculation of diluted net loss per share as the effect would be anti-dilutive. The following table contains share totals with a potentially dilutive impact (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Options to purchase common stock	1,303	2,010	3,106
Common stock warrants	—	17	17
Restricted stock units	1,690	1,514	1,133
Total	2,993	3,541	4,256

Concentration of Credit Risk, Significant Customers and International Operations

Financial instruments that potentially subject us to a concentration of credit risk consist principally of cash and accounts receivable. We deposit cash with high credit quality financial institutions, which at times, may exceed federally insured amounts. We have not experienced any losses on our deposits. We perform ongoing credit evaluations of our customers' financial condition and generally require no collateral from our customers. We review the expected collectability of accounts receivable and record an allowance for doubtful accounts receivable for amounts that we determine are not collectible.

There were no customers with revenue as a percentage of total revenue exceeding 10% for the periods presented.

The following table depicts the largest customers' outstanding net accounts receivable balance as a percentage of the total outstanding net accounts receivable balance:

	Year Ended December 31,	
	2018	2017
Customer A	14.0%	10.0%

There were no other customers with outstanding net accounts receivable balances as a percentage of the total outstanding net accounts receivable balance greater than 10% as of December 31, 2018 and 2017.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

In 2014, we began international operations. Because our long-term growth strategy involves further expansion of our sales to customers outside of the United States, our business will be susceptible to risks associated with international operations. Refer to Note 7— Geographic Data for details.

Cash and Cash Equivalents

We consider all short-term highly liquid investments purchased with original maturities of three months or less at the time of acquisition to be cash equivalents.

Marketable Securities

We hold investments in marketable securities, consisting of corporate debt securities and commercial paper. We classify our marketable securities as available-for-sale investments as we neither buy and hold securities for the purpose of selling them in the near future nor intend to hold securities to maturity. We classify our marketable securities as short term on the consolidated balance sheets for all purchased investments with contractual maturities that are less than one year as of the balance sheet date. Our marketable securities are carried at estimated fair value with any unrealized gains and losses, net of taxes, included in accumulated other comprehensive income in stockholders' equity. Unrealized losses are charged against other income (expense), net when a decline in fair value is determined to be other-than-temporary. We have not recorded any such impairment charge in the periods presented. We determine realized gains or losses on sale or maturity of marketable securities on a specific identification method, and record such gains or losses as other income (expense), net.

Accounts Receivable

Accounts receivable are carried at the original invoiced amount less an allowance for doubtful accounts based on the probability of future collection. When management becomes aware of circumstances that may decrease the likelihood of collection, it records a specific allowance against amounts due, which reduces the receivable to the amount that management reasonably believes will be collected. For all other customers, management determines the adequacy of the allowance based on historical loss patterns, the number of days that billings are past due and an evaluation of the potential risk of loss associated with specific accounts. Account balances are written off against the allowance for doubtful accounts receivable when the potential for recovery is remote. Recoveries of receivables previously written off are recorded when payment is received. Unbilled receivable balances as of December 31, 2018 and 2017 were $6,032,000 and $4,177,000, respectively.

The following is a roll-forward of our allowance for doubtful accounts (in thousands):

	Balance Beginning of Period	Charged to Costs or Expenses	Deductions[1]	Balance at End of Period
Allowance for Doubtful Accounts				
Year ended December 31, 2018	$ 318	$ 1,399	$ (625)	$ 1,092
Year ended December 31, 2017	$ 241	$ 197	$ (120)	$ 318

Year ended December 31, 2016	$ 225	$ 262	$ (246)	$ 241

(1) Deductions include actual accounts written-off, net of recoveries and revaluations.

Property and Equipment and Intangible Assets

Property and equipment are stated at cost less accumulated depreciation. Expenditures that materially increase values or capacities or extend useful lives of property and equipment are capitalized.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

Repairs and maintenance costs that do not extend the useful life or improve the related assets are expensed as incurred. Depreciation is computed using the straight-line method over the estimated useful lives of the assets or over the related lease terms (if shorter). The estimated useful life of each asset category is as follows:

	Estimated Useful Life
Computer and office equipment	2-3 years
Purchased software	2-3 years
Furniture and fixtures	2-5 years
Capitalized software development costs	3 years
Leasehold improvements and other	lesser of lease term or useful life (2-10 years)

Certain costs incurred to develop software applications used in the cloud-based learning, assessment, development and engagement system are capitalized and included in property and equipment, net on the balance sheets. Capitalizable costs consist of (1) certain external direct costs of materials and services incurred in developing or obtaining internal-use software; and (2) payroll and payroll-related costs for employees who are directly associated with and who devote time to the project. These costs generally consist of internal labor during configuration, coding and testing activities. Research and development costs incurred during the preliminary project stage, or costs incurred for data conversion activities, training, maintenance and general and administrative or overhead costs, are expensed as incurred. Costs that cannot be separated between the maintenance of, and relatively minor upgrades and enhancements to, internal-use software are also expensed as incurred. Costs incurred during the application development stage that significantly enhance and add new functionality to the cloud-based learning, assessment, development and engagement system are capitalized as capitalized software development costs. Capitalization begins when: (1) the preliminary project stage is complete; (2) management with the relevant authority authorizes and commits to the funding of the software project; (3) it is probable the project will be completed; (4) the software will be used to perform the functions intended; and (5) certain functional and quality standards have been met.

Acquired finite-lived intangibles are amortized on a straight-line basis over the estimated useful life of the asset, which is generally five years.

When there are indicators of potential impairment, we evaluate recoverability of the carrying values of property and equipment and intangible assets by comparing the carrying amount of an asset to the estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of the asset exceeds our estimated undiscounted future net cash flows, an impairment charge is recognized based on the amount by which the carrying value of the asset exceeds the fair value of the asset. We did not incur any impairment charges during the periods presented.

Leases

We lease our facilities under operating leases. For leases that contain rent escalation or rent concession provisions, we record rent expense for the total rent payable during the lease term on a straight-line basis over the term of the lease. We record the difference between the rent paid and the straight-line rent as a deferred rent liability in the accompanying balance sheets.

Fair Value

Our short-term financial instruments include accounts receivable, accounts payable and accrued liabilities and are carried on the consolidated financial statements as of December 31, 2018 and 2017 at amounts that approximate fair value due to their short-term maturity dates.

Goodwill

Goodwill represents the excess cost of the fair value of the net tangible and identifiable intangible assets acquired in a business combination. Goodwill is not subject to amortization, but is monitored annually for impairment or more frequently if there are indicators of impairment. Management considers the following potential indicators of impairment: (1) significant underperformance relative to historical or projected future operating results; (2) significant changes in our use of acquired assets or the strategy of our overall business; (3) significant negative industry or economic trends; and (4) a significant decline in our stock price for a sustained period. We operate under one reporting unit and, as a result, evaluate goodwill impairment based on our fair value as a whole. Our current year impairment test did not result in any impairment of the goodwill balance. We did not recognize an impairment charge in any of the periods presented. We have no other intangible assets with indefinite useful lives.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

Change in Fair-Value of Contingent Liability

We remeasure the estimated carrying value of the contingent liability each quarter, with any changes in the estimated fair value recorded within general and administrative expense on the statements of operations. The fair value is determined using significant unobservable inputs with a Monte Carlo simulation model. We remeasured the contingent liability at December 31, 2018, and as of that date we had $20,000 accrued in other long-term liabilities in connection with the estimated contingent liability associated with the acquisition of Practice (as defined below). Refer to Note 3—Acquisition for details.

Revenue Recognition

We generate revenue primarily from two main sources: (1) subscription and support revenue, which is comprised of SaaS fees from customers accessing our learning, assessment and talent management systems and from customers purchasing additional support beyond the standard support that is included in the basic SaaS fees; and (2) related professional services revenue, which is comprised of training, implementation services and other types of professional services. Revenue is recognized when control of these services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those services.

We determined 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
- Recognition of revenue when, or as, we satisfy a performance obligation

The following describes the nature of our primary types of revenue and the revenue recognition policies and significant payment terms as they pertain to the types of transactions we enter into with our customers.

Subscription and Support

Subscription and support revenue is derived from fees from customers to access our learning, assessment and talent management systems and support beyond the standard support that is included with all subscriptions. The terms of our subscriptions do not provide customers the right to take possession of the software. Subscription and support revenue is generally recognized on a ratable basis over the contract term. Payments from customers are primarily due annually in advance.

Professional Services and Other

Professional services revenue is derived from implementation, training, and consulting services. Our professional services are typically considered distinct from the related subscription services as the promise to transfer the subscription can be fulfilled independently from the promise to deliver the professional services (i.e., customer receives standalone functionality from the subscription and the customer obtains the intended benefit of the subscription without the professional services). Professional services revenue is typically recognized over time as the services are rendered, using an efforts-expended (labor hours) input method. Implementation services also include nonrefundable upfront setup fees, which are allocated to the remaining performance obligations.

Contracts with Multiple Performance Obligations

Many of our contracts with customers contain multiple performance obligations. We account for individual performance obligations separately if they are distinct. The transaction price is allocated to the separate performance obligations on a relative standalone selling price (SSP) basis. We determine the standalone selling prices based on our overall pricing objectives by reviewing our significant pricing practices, including discounting practices, geographical locations, the size and volume of our transactions, the customer type, price lists, our pricing strategy, and historical standalone sales. Standalone selling price is analyzed on a periodic basis to identify if we have experienced significant changes in our selling prices.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

Deferred Commissions

Sales commissions earned by our sales force, as well as related payroll taxes, are considered incremental and recoverable costs of obtaining a contract with a customer. These costs are deferred and then amortized on a straight-line basis over a period of benefit that we have determined to be generally four years. We determined the period of benefit by taking into consideration our customer contracts, our technology and other factors. Amortization of deferred commissions is included in sales and marketing expenses in the accompanying consolidated statements of operations.

Deferred Revenue

Deferred revenue consists of billings and payments received in advance of revenue recognition generated by our subscription and support services and professional services and other, as described above. ASC 606 introduced the concept of contract liabilities, which is substantially similar to deferred revenue under previous accounting guidance.

Cost of Revenue

Cost of subscription revenue consists primarily of our managed hosting provider and other third-party service providers, employee-related costs including payroll, benefits and stock-based compensation expense for our operations and customer support teams, amortization of capitalized software development costs and acquired technology, and allocated overhead costs, which we define as rent, facilities and costs related to information technology, or IT.

Cost of professional services and other revenue consists primarily of personnel costs of our professional services organization, including salaries, benefits, travel, bonuses and stock-based compensation, as well as allocated overhead costs.

Service Availability Warranty

We warrant to our customers: (1) that commercially reasonable efforts will be made to maintain the online availability of the platform for a minimum availability in a trailing 365-day period (excluding scheduled outages, standard maintenance windows, force majeure, and outages that result from any technology issue originating from any customer or user); (2) the functionality or features of the platform may change but will not materially degrade during any paid term; and (3) that support may change but will not materially degrade during any paid term. To date, we have not experienced any significant losses under these warranties.

Advertising Costs

Advertising costs are expensed as incurred and are included in sales and marketing expenses. Advertising expenses totaled $11,387,000, $9,274,000, and $8,673,000 for 2018, 2017 and 2016, respectively.

Stock-Based Compensation

The Company accounts for all stock options and awards granted to employees and nonemployees using a fair value method. Stock-based compensation is recognized as an expense and is measured at the fair value of the award. The measurement date for employee awards is generally the date of the grant. Stock-based compensation costs are recognized as expense over the requisite service period, which is generally the vesting period for awards, on a straight-line basis for awards with only a service condition, and using the accelerated attribution method for awards with both a performance and service condition. Forfeitures are accounted for as they occur.

We use the market closing price of our common stock as reported on the New York Stock Exchange for the fair value of restricted stock units ("RSUs") granted.

We use the Black-Scholes option pricing model to determine the fair value of stock options issued to our employees, as well as purchase rights issued to employees under our ESPP. The Black-Scholes option pricing model is affected by the unit price and a number of assumptions, including the award's expected life, risk-free interest rate, the expected volatility of the underlying stock and expected dividends.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

These assumptions are estimated as follows:

- Fair Value of Our Common Stock. We rely on the closing price of our common stock as reported by the New York Stock Exchange on the date of grant to determine the fair value of our common stock.
- Risk-Free Interest Rate. We base the risk-free interest rate used in the Black-Scholes option pricing model on the implied yield available on U.S. Treasury zero-coupon issues with remaining terms similar to the expected term on the options.
- Expected Term. We estimate the expected term for stock options using the simplified method due to the lack of historical exercise activity for our company. The simplified method calculates the expected term as the mid-point between the vesting date and the contractual expiration date of the award. For the ESPP, we use an expected term of 0.5 years to match the offering period.
- Volatility. We estimate the price volatility factor based on the historical volatilities of our comparable companies as we do not have a sufficient trading history for our common stock. To determine our comparable companies, we consider public enterprise cloud-based application providers and select those that are similar to us in size, stage of life cycle, and financial leverage. We intend to continue to apply this process using the same or similar public companies until a sufficient amount of historical information regarding the volatility of our own common stock share price becomes available, or unless circumstances change such that the identified companies are no longer similar to us, in which case, more suitable companies whose share prices are publicly available would be utilized in the calculation. For the ESPP, we use the trading history of our own common stock to determine expected volatility.
- Expected Dividend Yield. We have not paid and do not expect to pay dividends for the foreseeable future.

Foreign Currency

The functional currency of our foreign subsidiaries is the U.S. dollar. Monetary assets and liabilities denominated in a foreign currency are revalued into U.S. dollars at the exchange rates in effect at the balance sheet dates. Income and expense accounts are revalued on the date of the transaction using the exchange rate in effect on the transaction date. Non-monetary assets, liabilities, and equity transactions are converted at historical exchange rates in effect at the time of the transaction. Foreign currency transaction gains and losses are recorded in other income (expense), net. During 2018, a net foreign currency transaction loss of $794,000 was recorded on the consolidated statements of operations. During 2017, a net foreign currency transaction gain of $466,000 was recorded on the consolidated statements of operations. During 2016, a net foreign currency transaction loss of $392,000 was recorded on the consolidated statements of operations.

Research and Development

With the exception of capitalized software development costs, research and development costs are expensed as incurred.

Risks and Uncertainties

We are subject to all of the risks inherent in an early stage business. These risks include, but are not limited to, a limited operating history, new and rapidly evolving markets, dependence on the development of new services, unfavorable economic and market conditions, changes in level of demand for our services, and the timing of new application introductions. If we fail to anticipate or to respond adequately to technological developments in our industry, changes in customer or supplier requirements, or changes in regulatory requirements or industry standards, or any significant delays in the development or introduction of services, our business could be harmed.

Income Taxes

Deferred tax assets and liabilities are accounted for using the asset and liability method and represent the future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates that are expected to be in effect when these temporary differences are expected to reverse. A valuation allowance is provided when it is more likely than not that some portion of the deferred tax assets will not be realized. At December 31, 2018 and 2017, the majority of our deferred tax assets were offset by a valuation allowance. We recognize interest and penalties as a component of income tax expense.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

Recent Accounting Pronouncements

Adopted accounting pronouncements

In October 2016, the Financial Accounting Standards Board ("FASB") issued ASU 2016-16, "Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory". This standard requires an entity to recognize the income tax consequences of an intra-entity transfer of an asset other than inventory when the transfer occurs, rather than when the asset has been sold to an outside party. The new standard must be adopted using a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings in the period of adoption. This standard is effective for annual reporting periods beginning after December 15, 2017. We adopted the new standard as of January 1, 2018 and it did not have a material impact on our consolidated financial statements and related disclosures.

In May 2014, the FASB issued ASU No. 2014-09, Revenue from Contracts with Customers ("Topic 606"). Topic 606 supersedes the revenue recognition requirements in Accounting Standards Codification ("ASC") Topic 605, Revenue Recognition ("Topic 605"), and requires the recognition of revenue as promised goods or services are transferred to customers in an amount that reflects the consideration which the entity expects to be entitled to in exchange for those goods or services. Topic 606 also includes Subtopic 340-40, Other Assets and Deferred Costs - Contracts with Customers, which requires the deferral of incremental costs of obtaining a contract with a customer. Collectively, we refer to Topic 606 and Subtopic 340-40 as the "new standard".

We adopted the new standard as of January 1, 2018, utilizing the full retrospective method of transition. As a result, we recognized the cumulative effect of initially applying the new standard as an adjustment to the opening balance of equity on January 1, 2016. We have changed our accounting policy for revenue recognition as detailed above. The details of the significant changes and quantitative impact of the changes are disclosed below.

We applied Topic 606 retrospectively using the following practical expedients in paragraph ASC 606-10-65-1(f). We do not disclose the amount of consideration allocated to the remaining performance obligations or an explanation of when we expect to recognize that amount as revenue for all reporting periods presented before the date of the initial application – i.e. January 1, 2018. Further, we do not retrospectively restate contracts modified before the beginning of the earliest reporting period presented but reflect the aggregate effect of all modifications that occur before the beginning of the earliest period presented.

The primary impact of adopting the new standard related to the deferral of incremental commission costs to obtain customer contracts and the removal of the contingent revenue limitation. We previously expensed sales commission costs as incurred. Under the new standard, we capitalize and amortize these costs over a period of benefit that we have determined to be generally four years. We were also previously limiting the amount of revenue recognized for delivered elements to the amount that was not contingent on the future delivery of products or services, or subject to our future performance. Under the new standard, there is no requirement to limit the allocated transaction price to non-contingent amounts, therefore, we record unbilled revenue when transferred services are more than amounts billable to customers.

Impacts on Financial Statements

The following tables summarize the impacts of Topic 606 adoption on our consolidated financial statements on the previously reported periods. Select consolidated balance sheet line items, which reflect the adoption of Topic 606, are as follows (in thousands):

	December 31, 2017		
	As previously reported	Adjustments	As adjusted
Assets			
Accounts receivable—net of allowance	$30,797	$ 3,515	$34,312
Deferred commissions	—	7,086	7,086
Deferred commissions, net of current portion	—	11,160	11,160
Other assets	1,045	(548)	497
Liabilities			
Deferred revenue	99,086	687	99,773
Deferred revenue, net of current portion	3,950	(2,061)	1,889

Select audited consolidated statement of operations line items, which reflect the adoption of Topic 606, are as follows (in thousands):

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

	Year ended December 31, 2017		
	As previously reported	Adjustments	As adjusted
Revenue:			
Subscription and support	$139,925	$ 4,183	$144,108
Professional services and other	18,881	(2,014)	16,867
Total revenue	158,806	2,169	160,975
Cost of revenue:			
Professional services and other	12,026	185	12,211
Gross profit	112,429	1,984	114,413
Operating expenses:			
Sales and marketing	83,716	(4,990)	78,726
Loss before income tax benefit (expense)	(50,213)	6,974	(43,239)
Income tax expense	391	(236)	155
Net loss	(49,822)	6,738	(43,084)
Net loss per common share, basic and diluted	(1.69)	0.22	(1.47)

	Year ended December 31, 2016		
	As previously reported	Adjustments	As adjusted
Revenue:			
Subscription and support	$97,115	$ 3,155	$100,270
Professional services and other	13,765	(1,418)	12,347
Total revenue	110,880	1,737	112,617
Cost of revenue:			
Professional services and other	8,497	253	8,750
Gross profit	78,131	1,484	79,615
Operating expenses:			
Sales and marketing	69,991	(4,084)	65,907
Other income (expense):			
Other income (expense), net	(353)	10	(343)
Loss before income tax benefit (expense)	(53,401)	5,516	(47,885)
Income tax expense	(167)	(150)	(317)
Net loss	(53,568)	5,366	(48,202)
Net loss per common share, basic and diluted	(1.92)	0.19	(1.73)

Select audited consolidated statement of cash flows line items, which reflect the adoption of Topic 606, are as follows (in thousands):

	Year ended December 31, 2017		
	As previously reported	Adjustments	As Adjusted
Cash flows from operating activities:			
Net loss	$(49,822)	$ 6,738	$(43,084)
Accounts receivable, net	(12,830)	(2,052)	(14,882)
Prepaid expenses and other assets	(9,599)	423	(9,176)
Deferred commissions	—	(4,990)	(4,990)
Deferred revenue	26,882	(119)	26,763
Net cash used in operating activities	(21,129)	—	(21,129)

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

	Year ended December 31, 2016		
	As previously reported	Adjustments	As Adjusted
Cash flows from operating activities:			
Net loss	$(53,568)	$ 5,366	$(48,202)
Accounts receivable, net	(8,837)	104	(8,733)
Prepaid expenses and other assets	(818)	402	(416)
Deferred commissions	—	(4,084)	(4,084)
Deferred revenue	23,566	(1,788)	21,778
Net cash used in operating activities	(21,608)	—	(21,608)

Issued accounting pronouncements

In February 2016, the FASB issued ASU No. 2016-02, Leases, requiring lessees to recognize a right-of-use, or ROU, asset and a lease liability on the balance sheet for all leases with the exception of short-term leases. For lessees, leases will continue to be classified as either operating or finance leases in the financial statements. Lessor accounting is similar to the current model but updated to align with certain changes to the lessee model. Lessors will continue to classify leases as operating, direct financing or sales-type leases. The new standard must be adopted using a modified retrospective transition and requires application of the new guidance at the beginning of the earliest comparative period presented. The updated standard is effective for us beginning in the first quarter of 2019. The Company anticipates this standard will have a significant impact on the Company's consolidated balance sheets. However, the Company does not expect the adoption to have a significant impact on the consolidated statements of operations and comprehensive loss. Based upon the analysis completed to date, the Company currently expects the most significant impact will be the recognition of ROU assets and lease liabilities for the ongoing leases.

2. Property and Equipment

Property and equipment consisted of the following (in thousands):

	December 31,	
	2018	2017
Computer and office equipment	$6,204	$5,726
Purchased software	1,071	1,071
Capitalized software development costs	22,181	14,755
Furniture and fixtures	4,688	3,924
Leasehold improvements and other	15,632	13,379
	49,776	38,855
Less accumulated depreciation and amortization	(22,388)	(14,929)
Total	$27,388	$23,926

Accumulated amortization for capitalized software development costs was $9,035,000 and $4,570,000 at December 31, 2018 and 2017, respectively. Amortization expense for capitalized software development costs for the years ended December 31, 2018, 2017 and 2016 was $4,563,000, $2,486,000 and $1,368,000, respectively, and is recorded within subscription and support cost of revenue on the consolidated statements of operations.

3. Acquisition

In November 2017, we acquired Practice XYZ, Inc. ("Practice"), for the purpose of enhancing our learning management system and human capital management offerings. We have included the operating results of the business combination in our consolidated financial statements since the date of the acquisition. The acquisition did not have a material effect on the revenue or earnings on the consolidated statement of operations for the reporting periods presented. The pro forma results as if the acquisition had taken place on the first day of 2017 were not materially different from the amounts reflected in the accompanying consolidated financial statements.

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The following table summarizes the estimated fair values of the consideration transferred, assets acquired and liabilities assumed as of the date of acquisition (in thousands):

Consideration	
Cash paid	$102
Common stock	17,715
Practice option conversion	736
Contingent liability	1,164
Fair value of total consideration	$19,717
Identifiable assets acquired	
Cash	$100
Accounts receivable	98
Unbilled accounts receivable	418
Other current assets	108
Fixed assets: computers	26
Intangible assets: developed technology	5,320
Intangible assets: trade name	320
Intangible assets: customer lists	2,910
Total assets acquired	$9,300
Liabilities assumed	
Accounts payable	$49
Accrued liabilities	58
Deferred revenue	263
Deferred tax liability, net	578
Total liabilities assumed	$948
Goodwill	11,365
Total purchase consideration	$19,717

The excess of purchase consideration over the fair value of net tangible and identifiable intangible assets acquired was recorded as goodwill. The goodwill generated from this transaction is attributable to the expected synergies to be achieved upon consummation of the business combination and the assembled workforce value. The fair values assigned to tangible and identifiable intangible assets acquired and liabilities assumed are based on management’s estimates and assumptions. A portion of the goodwill, in the amount of $776,000, is deductible for U.S. income tax purposes and will amortized over its remaining useful life of 150 months.

Developed technology represents the estimated fair value of the acquired existing technology and is being amortized over its estimated remaining useful life of four years. Customer lists represents estimated fair value of the acquired customer base and is amortized over the estimated remaining useful life of three years. The trade name acquired is amortized over the estimated remaining useful life of three years.

The net deferred tax liability from this acquisition provided a source of additional income to support the realizability of our pre-existing deferred tax assets and as a result, we released a portion of our valuation allowance. This resulted in an income tax benefit of $578,000 and an increase to goodwill of the same amount.

We will pay additional consideration, the contingent liability, up to $10,000,000 in cash upon the successful achievement of specified booking targets through December 31, 2019. Of the $10,000,000 of possible consideration, $7,000,000 is subject to a 50% bookings target floor and payout is based upon the pro rata achievement of specified booking targets. The remaining $3,000,000 of contingent liability consideration is payable based upon 150% attainment of specified booking targets. As of December 31, 2018, we have accrued $20,000 in estimated potential future contingent liability payable to Practice. The fair value of the contingent liability was determined using significant unobservable inputs with a Monte Carlo simulation model. No contingent liability will be paid if specified booking targets are not achieved.

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4. Goodwill and Intangible Assets

Goodwill was $12,354,000 as of December 31, 2018 and 2017.

Intangible assets consisted of the following (in thousands):

	Weighted-Average Remaining Useful Life	December 31, 2018	2017
Domain names	15 Months	$1,268	$1,268
Trademarks	56 Months	120	120
Software	12 Months	620	620
Capitalized learning content	34 Months	400	400
Trade names	23 Months	320	320
Developed technology	35 Months	5,320	5,320
Customer relationships	23 Months	2,910	2,910
Accumulated amortization		(4,696)	(1,910)
Total		$6,262	$9,048

Amortization expense for intangible assets was $2,786,000, $572,000 and $405,000 for the years ended December 31, 2018, 2017, and 2016, respectively. Amortization expense for capitalized learning content and developed technology is recorded within cost of revenue on the consolidated statements of operations.

Based on the recorded intangible assets at December 31, 2018, estimated amortization expense is expected to be as follows (in thousands):

Years Ending December 31,	Amortization Expense
2019	$ 2,626
2020	2,386
2021	1,250
Total	$ 6,262

5. Marketable Securities

Our investment policy is consistent with the definition of available-for-sale securities. We do not buy and hold securities principally for the purpose of selling them in the near future nor do we intend to hold securities to maturity. Rather, our policy is focused on the preservation of capital, liquidity and return. From time to time, we may sell certain securities but the objectives are generally not to generate profits on short-term differences in price.

The following table summarizes, by major security type, our assets that are measured at fair value on a recurring basis (in thousands).

	December 31, 2018			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Corporate debt securities	$31,977	$ 3	$ (7)	$ 31,973
Government treasury bills	26,661	—	(5)	26,656
	$58,638	$ 3	$ (12)	$ 58,629

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	December 31, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Corporate debt securities	$5,698	$ —	$ (1)	$ 5,697
	$5,698	$ —	$ (1)	$ 5,697

There were no gross realized gains or losses from the sale or maturity of marketable securities during 2018, 2017 and 2016, respectively.

During the years ended December 31, 2018, 2017 and 2016, we recognized gross interest income on securities of $727,000, $179,000 and $281,000, respectively. Interest income was inclusive of accretion income of $742,000, $67,000 and $28,000 during 2018, 2017 and 2016, respectively, and offset by amortization expense of $46,000, $28,000 and $70,000 during 2018, 2017 and 2016, respectively, and was reported net within interest income on the consolidated statements of operations

The estimated fair value of investments by contractual maturity is as follows (in thousands):

	December 31,	
	2018	2017
Due within one year	$58,629	$5,697
Total	$58,629	$5,697

6. Credit Facility

In November 2012, we entered into a loan and security agreement with a financial institution, or the credit facility, allowing us to incur revolver borrowings of up to $7.0 million, or such lesser amount equal to a percentage of our monthly contracted recurring revenue. Interest on borrowings accrued at a rate equal to the prime rate plus 1.25% to 3.75%, with the exact interest rate determined by reference to a specified operating metric. Accrued interest is payable monthly on the first day of each month with all outstanding borrowings payable on the maturity date. In addition to an upfront facility fee, we are obligated to pay the lender a fee, payable quarterly in arrears, in an amount equal to 0.25% of the average unused portion of the available borrowings.

The credit facility contains customary conditions to borrowing, events of default and covenants, including covenants that restrict our ability to dispose of assets, change our business, merge with or acquire other entities, incur indebtedness, incur encumbrances, make distributions to holders of our capital stock, make investments or engage in transactions with our affiliates. The agreement also includes a financial covenant requiring the achievement of minimum bookings on a trailing three-month basis, tested monthly. During the continuance of an event of default, SVB may accelerate amounts outstanding, terminate the credit facility, and foreclose on the collateral. Amounts borrowed under the credit facility are secured by a first priority security interest in substantially all of our assets other than intellectual property and more than 65% of the capital stock of any of our foreign subsidiaries.

In June 2017, we entered into a second amended and restated loan and security agreement for a period of 12 months. The aggregate revolver borrowings were $15.0 million (subject to increase to $35.0 million, based on the borrowings base calculation) through its maturity date in June 2018.

In June 2018, we entered into a second amendment to the second amended and restated loan and security agreement for a period of 12 months. The aggregate revolver borrowings are $5.0 million (subject to increase to $35.0 million, based on the borrowing base calculation) so long as we are in compliance with all terms and conditions under the credit facility. Including a minimum adjusted quick ratio that is measured each quarter. During the continuance of an event of default, the lender may accelerate amounts outstanding, terminate the credit facility, and foreclose on the collateral.

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7. Geographic Data and Revenue

We have one operating segment, which is our cloud-based learning, assessment, development and engagement systems. Revenue by geographic region, based on the physical location of the customer, is (in thousands):

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
United States	$169,643	$137,563	$102,017
Foreign	39,901	23,412	10,600
Total revenue	$209,544	$160,975	$112,617
Percentage of revenue generated outside of the United States	19 %	15 %	9 %

*See Note 1 for a summary of adjustments

Deferred Revenue and Performance Obligations

During the year ended December 31, 2018, 45% to 55% of revenue recognized was included in our deferred revenue balance at the beginning of the period.

Transaction Price Allocated to the Remaining Performance Obligations

As of December 31, 2018, approximately $466 million of revenue is expected to be recognized from remaining performance obligations. We expect to recognize revenue on approximately 69% of these remaining performance obligations over the next 24 months, with the balance recognized thereafter.

8. Deferred Commissions

Deferred commissions primarily consist of sales commissions that are capitalized as incremental contract origination costs and were $19,630,000 and $18,246,000 as of December 31, 2018 and 2017, respectively. For the years ended December 31, 2018, 2017 and 2016, amortization expense for deferred commissions was $10,088,000, $7,231,000 and $5,173,000, respectively, and there was no impairment of deferred commissions during these periods.

9. Stockholders’ Equity

Common Stock

We had 200,000,000 shares of $0.0001 par value common stock authorized as of December 31, 2018 and 2017. There were 35,385,810 and 30,860,241 common shares issued at December 31, 2018 and 2017, respectively. There were no shares of common stock held in treasury at December 31, 2018 and 2017. Each share of common stock has the right to one vote on all matters submitted to a vote of stockholders. The holders of common stock are also entitled to receive dividends whenever funds are legally available and if declared by the board of directors, subject to prior rights of holders of all classes of stock outstanding having priority rights as to dividends. No dividends have been declared or paid on the common stock through December 31, 2018.

Common Stock Warrants

In November 2012, we issued a warrant to purchase 70,000 shares of common stock in connection with the credit facility. The warrant was fully exercisable with a ten-year term and an exercise price of $0.99 per share. This warrant was classified as stockholders' equity on the consolidated balance sheets.

In April 2014, we issued the lender a second warrant to purchase up to 33,332 shares of common stock in connection with an amendment of our credit facility at an exercise price of $4.47 per share, of which 16,666 were exercisable without contingency. The fair value of the warrant on the date of grant was $58,000 and was recorded as deferred financing costs and recognized as interest expense over the term of the credit facility.

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On February 2, 2016, warrants for 86,666 shares were exercised. At the lender's request, we withheld 8,260 shares to cover the warrant exercise costs and issued 78,406 shares. In connection with the exercise of the warrant, the warrant liability was marked to market as of the settlement date and a portion of the warrant liability equal to $244,000 was reversed and recorded as additional paid-in capital.

In March 2018, the remaining outstanding warrants to purchase shares of common stock were cancelled due to the Company renegotiating the terms of the restated loan and security agreement with the credit facility. There was an insignificant gain related to the extinguishment of the common stock warrant liability which was recognized in other income (expense) on the consolidated statements of operations.

The following table summarizes information about common stock warrants outstanding as of December 31, 2018 and 2017 (in thousands, except per share amounts):

		Number of Shares Underlying Common Stock Warrants as of December 31,		
Warrants to Purchase	Years of Expiration	2018	2017	Exercise Price
Common stock	2024	—	17	$ 4.47

Preferred Stock

Our amended and restated certificate of incorporation authorizes shares of undesignated preferred stock. As of December 31, 2018 and 2017, we had 10,000,000 shares of $0.0001 par value preferred stock authorized, of which no shares were issued or outstanding at December 31, 2018 and 2017.

10. Stock-Based Compensation

The 2010 Equity Incentive Plan (the "2010 Plan") was terminated in connection with our IPO, and accordingly no shares are available for issuance under the 2010 Plan. However, any outstanding options granted under the 2010 Plan will remain outstanding, subject to the terms of the 2010 Plan and stock options agreements, until such outstanding options are exercised or until they terminate or expire by their terms. The 2010 Plan provided for the grant of incentive stock options, nonqualified options, stock appreciation rights, and shares of restricted stock to our employees, officers, directors and outside consultants. As of December 31, 2018, 876,773 options to purchase common stock remained outstanding under the 2010 Plan.

In August 2015, our board of directors adopted the 2015 Equity Inventive Plan (the "2015 Plan") and our stockholders approved the 2015 Plan in October 2015. The 2015 Plan became effective in connection with the IPO and provides for the grant of incentive stock options, nonqualified options, restricted stock units, stock appreciation rights, and shares of restricted stock. As of December 31, 2018, there were 5,899,425 shares of common stock authorized under the 2015 Plan. The 2015 Plan also provides that the number of shares reserved and available for issuance under the plan automatically increases each January 1, beginning on January 1, 2016 and continuing through and including January

1, 2025, by 4.5% of the total number of shares of our capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by our board of directors. This number is subject to adjustment in the event of a stock split, stock dividend or other change in our capital structure. As of December 31, 2018, 1,690,446 RSUs remained outstanding under the 2015 Plan and 2,478,979 shares remaining for future grants. As of December 31, 2018, there were options to purchase 424,846 shares of common stock outstanding under the 2015 Plan.

The board of directors determines the terms of each grant. Generally, options have a vesting period ranging from one to four years. Stock options have a ten-year contractual life. Certain stock options have provisions to accelerate vesting upon the occurrence of certain events such as a change in control. Certain stock options provide for early exercise of unvested shares. All options were granted with an exercise price equal to or greater than the estimated fair value of our common stock at the date of grant. The fair value of the common stock that underlies the stock options has historically been determined by the board of directors based, in part, upon periodic valuation studies obtained from a third-party valuation firm. After the IPO, the fair value is determined by the market closing price of our common stock as reported on the New York Stock Exchange on the date of grant.

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In August 2015, our board of directors adopted the 2015 Employee Stock Purchase Plan (the "ESPP"). Our stockholders approved the ESPP in October 2015, which became effective on the date of the IPO. A total of 333,333 shares of our common stock were initially reserved for issuance under the ESPP. The number of shares reserved for issuance will increase automatically each year, beginning January 1, 2016 through and including January 1, 2025 by the lesser of 1% of the total number of shares of our common stock outstanding on December 31 of the preceding calendar year; 333,333 shares of common stock; or such lesser number as determined by our board of directors. As of December 31, 2018, there were 1,199,872 shares authorized under the ESPP. The plan allows eligible employees to purchase shares of our common stock at a discount through payroll deductions of up to 15% of their eligible compensation, subject to any plan limitations. Our board of directors approves the ESPP offerings. Each offering need not be identical, but may not exceed 27 months and may specify one or more shorter purchase periods within the offering.

On each purchase date, eligible employees will purchase our stock at a price per share equal to 85% of the lesser of (1) the fair market value of our stock on the offering date or (2) the fair market value of our stock on the purchase date. During the year ended December 31, 2018, we issued 203,434 shares under the ESPP, with a weighted-average purchase price per share of $30.41. Total cash proceeds from the purchase of shares under the 2015 ESPP in 2018 was $6,186,342. As of December 31, 2018, 457,799 shares are reserved for future issuance under the ESPP.

The following table summarizes the assumptions relating to our stock options and ESPP purchase rights used in a Black Scholes option pricing model:

	Year Ended December 31,		
	2018	2017	2016
Employee Stock Options			
Dividend yield	None	None	None
Volatility	46.02%—46.57%	62.95%—63.10%	65.87%
Risk-free interest rate	2.50%—2.84%	2.12%—2.30%	1.4%
Expected life (years)	6.1	6.1—6.2	6.1
Fair value of common stock	$16.39—$20.57	$12.93—$13.37	$13.79
Employee Stock Purchase Plan			
Dividend yield	None	None	None
Volatility	33.94%—45.46%	25.08%—29.89%	46.95%—59.71%
Risk-free interest rate	2.1%—2.38%	1.07%—1.45%	0.35%—0.60%
Expected life (years)	0.5	0.5	0.5
Fair value of common stock	$38.14—$42.65	$27.00—$33.90	$18.43—$20.05

The following two tables show stock-based compensation expense by award type and where the stock-based compensation expense was recorded in our consolidated statements of operations (in thousands):

	Year Ended December 31,		
	2018	2017	2016

Options	$2,867	$3,806	$4,102
Restricted stock units	17,560	9,969	4,561
Employee stock purchase plan	2,320	1,895	2,011
Total stock-based compensation	$22,747	$15,670	$10,674

	Year Ended December 31,		
	2018	2017	2016
Subscription and support cost of revenue	$1,235	$762	$488
Professional services and other cost of revenue	975	596	474
Sales and marketing	6,022	4,331	3,030
Research and development	8,338	6,023	3,862
General and administrative	6,177	3,958	2,820
Total stock-based compensation	$22,747	$15,670	$10,674

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The following table summarizes the stock option activity for the year ended December 31, 2018 (in thousands, except per share amounts):

	Shares Underlying Options	Weighted-Average Exercise Price	Weighted-Average Remaining Life (in years)	Aggregate Intrinsic Value
Outstanding at January 1, 2018	2,010	$ 9.09	6.5	$ 48,266
Granted	243	34.72		
Exercised	(845)	7.44		
Forfeited or cancelled	(105)	19.63		
Outstanding at December 31, 2018	1,303	14.09	6.5	30,552
Vested and expected to vest—December 31, 2018	1,303	14.09	6.5	30,552
Exercisable at December 31, 2018	970	9.25	5.9	27,418

The follow table summarizes the activity of our unvested stock options for the year ended December 31, 2018 (in thousands, except per share amounts):

	Shares Underlying Options	Weighted-Average Grant Date Fair Value Per Share
Unvested at January 1, 2018	482	$ 5.60
Granted	243	34.72
Vested	(362)	12.87
Forfeited	(97)	20.47
Unvested at December 31, 2018	266	16.89

The weighted-average grant-date fair value of each option granted during 2018, 2017 and 2016 was $34.72, $21.83 and $8.29, respectively. The total intrinsic value of options exercised was $27,546,000, $25,947,000, and $12,214,000 during 2018, 2017 and 2016, respectively. The total fair value of options vested during 2018, 2017 and 2016 was $2,779,000, $4,254,000, $4,877,000, respectively.

As of December 31, 2018 and 2017, we had $4,276,000 and $4,342,000, respectively, of unrecognized stock-based compensation costs related to non-vested options that are expected to be recognized over a weighted-average period of 2.7 years and 2.1 years, respectively.

As of December 31, 2018 and 2017, we had $1,188,000 and $977,000 of unrecognized stock-based compensation expense related to our ESPP that is expected to be recognized over the remaining term of the current offering period through May 31, 2019.

RSUs vest upon achievement of a service condition and, in some cases, a performance condition. As soon as practicable following each vesting date, we will issue to the holder of the RSUs the number of shares of common stock equal to the aggregate number of RSUs that have vested. The service condition is a time-based condition met over a vesting period, as determined by our board of directors, which generally ranges from one to four years. The total stock-based compensation expense expected to be recorded over the remaining life of outstanding RSUs is approximately $50,610,000 at December 31, 2018. That cost is expected to be recognized over a weighted-average period of 2.8 years as of December 31, 2018. As of December 31, 2018, there are 3,408,000 RSUs expected to vest with an aggregate intrinsic value of $55,697,000. The total fair value of RSUs vested was approximately $24,979,000 and $13,848,000 during 2018 and 2017, respectively.

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The activity for RSUs for the year ended December 31, 2018 is as follows (in thousands, except per share amounts):

	RSUs Outstanding	
	Shares	Weighted-Average Grant Date Fair Value Per Share
Unvested and outstanding at January 1, 2018	1,515	$ 22.88
Granted	1,177	40.32
Vested	(609)	24.90
Cancelled	(393)	28.99
Unvested and outstanding at December 31, 2018	1,690	32.87

11. Income Taxes

Loss before provision for income taxes was as follows:

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
	(in thousands)		
United States	$(38,205)	$(35,176)	$(37,591)
Foreign	(4,921)	(8,063)	(10,294)
Total	$(43,126)	$(43,239)	$(47,885)

The components of the provision (benefit) for income taxes were as follows:

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
	(in thousands)		
Current:			
Federal	$—	$ —	$ —

State	35	27	49
Foreign	192	215	183
Total	227	242	232
Deferred:			
Federal	6	(632)	24
State	2	(6)	3
Foreign	104	241	58
Total	112	(397)	85
Provision (benefit) for income taxes	$339	$ (155)	$ 317

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The following reconciles the differences between income taxes computed at the federal statutory rate of 21% and the provision for income taxes:

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
	(in thousands)		
Expected income tax benefit at the federal statutory rate	$(9,056)	$(14,700)	$(16,275)
State tax net of federal benefit	(4,001)	(3,909)	(1,573)
Stock-based compensation	(4,426)	(10,202)	1,101
Stock warrant liability	(26)	32	(21)
Difference in foreign tax rates	(589)	1,152	1,408
Research and development credits	(2,236)	(1,636)	(552)
Change in valuation allowance	20,656	6,124	16,018
Change in tax rate	—	22,721	—
Other	17	263	211
Income tax provision (benefit)	$339	$(155)	$317

Deferred Tax Assets and Liabilities

Deferred income taxes reflect the net effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of our deferred tax assets and liabilities were as follows:

	Year Ended December 31,		
	2018	2017 *As Adjusted	2016 *As Adjusted
	(in thousands)		
Deferred tax assets:			
Net operating loss carryforwards	$78,356	$61,954	$53,851
Research and development credits	7,075	4,211	2,027
Accruals and reserves	2,644	1,558	2,760
Depreciation	847	453	419
Stock-based compensation	2,377	1,986	2,310
Total deferred tax assets	91,299	70,162	61,367
Deferred tax liabilities:			
Depreciation and amortization	(1,697)	(2,351)	(111)
Deferred commissions	(5,159)	(4,738)	(4,756)

Capitalized costs	(3,568)	(2,743)	(1,774)
Total deferred tax liabilities	(10,424)	(9,832)	(6,641)
Valuation allowance	(81,421)	(60,765)	(54,979)
Net deferred tax assets	$(546)	$(435)	$(253)

At December 31, 2018, we had $78,356,000 in tax-effected federal, state and foreign net operating loss carryforwards that, if unused, begin expiring in 2019. Additionally, at December 31, 2018, we had $11,508,000 in income tax credits, consisting primarily of federal and state research and development tax credits. These tax credits, if unused, begin expiring in 2023.

We review all available evidence to evaluate our recovery of deferred tax assets, including our recent history of accumulated losses in all tax jurisdictions over the most recent three years as well as our ability to generate income in future periods. We have provided a valuation allowance against our U.S. net deferred tax assets as it is more likely than not that these assets will not be realized given the nature of the assets and the likelihood of future utilization.

The valuation allowance increased by $20,656,000 and $6,124,000 in 2018 and 2017, respectively, due to the increase in the deferred tax assets primarily due to the increase in the net operating loss carryforwards.

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U.S. income taxes on the undistributed earnings of our non-U.S. subsidiaries have not been provided for as we currently plan to indefinitely reinvest these amounts and have the ability to do so. Cumulative undistributed foreign earnings were not material at December 31, 2018 and December 31, 2017.

We have federal net operating loss carryforwards of $262,702,000 and $207,853,000 at December 31, 2018 and 2017, respectively, which expire at various dates through 2038.

We have federal research and development credit carryforwards of $8,500,000 at December 31, 2018 that expire at various dates through 2038. We also have state research and investment credit carryforwards of $3,000,000 that expire at various dates through 2032.

The Tax Cuts and Jobs Act was enacted on December 22, 2017 and the Company has evaluated its impact. The Act reduces the U.S. federal corporate tax rate from 35% to 21%, causing companies to revalue their deferred tax assets and deferred tax liabilities. It also requires companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred and creates new taxes on certain foreign sourced earnings.

The Company recorded a revaluation of our deferred tax assets and liabilities as of December 31, 2017, at the new federal rate of 21%, based upon balances in existence at the date of enactment. The provisional amount recorded related to the remeasurement of our deferred tax balance was $24,762,000 with an equal offset to valuation allowance. We have now concluded our evaluation of the tax effects of the Tax Cuts and Jobs Act and determined that no change to the provisional amount previously recorded is necessary.

The one-time transition tax is based on our total post-1986 earnings and profits (E&P) that we previously deferred from US income taxes. We have not booked an amount for the one-time transition tax liability because the Company is currently in an overall foreign loss position for E&P purposes. No additional income taxes have been provided for any remaining undistributed foreign earnings not subject to the transition tax, or any additional outside basis difference inherent in these entities, as these amounts continue to be indefinitely reinvested in foreign operations. Determining the amount of unrecognized deferred tax liability related to any remaining undistributed foreign earnings not subject to the transition tax and additional outside basis difference in these entities is not practicable.

Uncertain Tax Positions

We account for uncertainty in income taxes using a two-step process. We first determine whether it is more likely than not that a tax position will be sustained upon examination by the tax authority, including resolutions of any related appeals or litigation processes, based on technical merit. If a tax position meets the more-likely-than-not recognition threshold it is then measured to determine the amount of benefit to recognize in the financial statements. The tax position is measured as the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement.

The following summarizes activity related to unrecognized tax benefits:

	Year Ended December 31,		
	2018	2017	2016

		*As Adjusted	*As Adjusted
	(in thousands)		
Unrecognized benefit—beginning of the year	$2,267	$ 1,091	$ 739
Gross increases (decreases)—prior period positions	—	—	—
Gross increases (decreases)—current period positions	1,760	1,176	352
Unrecognized benefit—end of period	$4,027	$ 2,267	$ 1,091

All of the unrecognized tax benefits decrease deferred tax assets with a corresponding decrease to the valuation allowance. None of the unrecognized tax benefits would affect our effective tax rate if recognized in the future.

We have elected to recognize interest and penalties related to uncertain tax positions as a component of income tax expense. No interest or penalties have been recorded through December 31, 2018.

We do not expect any significant change in our unrecognized tax benefits within the next 12 months.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

We file tax returns in the United States, the United Kingdom, Australia, the Netherlands, Hong Kong, Sweden, Hungary, Mexico, Brazil and various state jurisdictions. All of our tax years remain open to examination by major taxing jurisdictions to which we are subject, as carryforward attributes generated in past years may still be adjusted upon examination by the Internal Revenue Service or state and foreign tax authorities if they have or will be used in future periods.

12. Fair Value of Financial Instruments

The fair value of a financial instrument is the amount that could be received upon the sale of an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Financial assets are marked to bid prices and financial liabilities are marked to offer prices. Fair value measurements do not include transaction costs. The fair value hierarchy prioritizes the quality and reliability of the information used to determine fair values. Categorization within the fair value hierarchy is based on the lowest level of input that is significant to the fair value measurement. The fair value hierarchy is defined into the following three categories:

Level 1: Quoted market prices in active markets for identical assets or liabilities.

Level 2: Observable market based inputs or unobservable inputs that are corroborated by market data.

Level 3: Unobservable inputs that are not corroborated by market data.

There were no transfers between Level 1 and Level 2 of the fair value measurement hierarchy during 2018 and 2017. Assets and liabilities measured at fair value on a recurring basis as of December 31, 2018, were as follows (in thousands):

	December 31, 2018			
	Level 1	Level 2	Level 3	Total
Assets:				
Money market funds	$32,458	$—	$ —	$32,458
Corporate debt securities	—	31,973	—	31,973
U.S. Treasury bills	26,657	—	—	26,657
Total assets	$59,115	$31,973	$ —	$91,088
Liabilities:				
Contingent liability	—	—	20	20
Total liabilities	$—	$—	$ 20	$20

Assets and liabilities measured at fair value on a recurring basis as of December 31, 2017, were as follows (in thousands):

	December 31, 2017			
	Level 1	Level 2	Level 3	Total
Assets:				
Money market funds	$14,046	$—	$—	$14,046
Corporate debt securities	—	5,697	—	5,697
Total assets	$14,046	$5,697	$—	$19,743
Liabilities:				
Common stock warrant liability	$—	$—	$122	$122
Contingent liability	—	—	1,164	1,164
Total liabilities	$—	$—	$1,286	$1,286

The carrying amount of our cash, receivables, and payables approximates fair value because of the short-term nature of these items.

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

The following table sets forth a summary of the change in fair value adjustments for liabilities that are required to be marked-to-market. The common stock warrants were cancelled in March 2018, and the gain related to the extinguishment of the common stock warrant liability was recognized in other income (expense) on the consolidated statements of operations. The change in fair value of the contingent liability was recognized in general and administrative expense on the consolidated statements of operations. The following balance is measured at fair value on a recurring basis using significant unobservable inputs (Level 3) (in thousands):

	Fair value Measurements Using Significant Unobservable Inputs (Level 3)
Balance at January 1, 2017	$ 25
Loss related to change in fair value warrant liability	97
Initial estimate of fair value of contingent liability	1,164
Balance at December 31, 2017	$ 1,286
Extinguishment of common stock warrants	(122)
Change in fair value of contingent liability	(1,144)
Balance at December 31, 2018	$ 20

We have classified our liability for contingent consideration relating to our acquisition of Practice XYZ, Inc., which we closed in November 2017, within Level 3 of the fair value hierarchy because the fair value is determined using the Monte Carlo simulation model and significant unobservable inputs including, forecasted net bookings attainment.

Fair value is a market-based measurement that should be determined based on the assumptions that market participants would use in pricing an asset or liability. The hierarchy level assigned to each security in our marketable securities portfolio and cash equivalents is based on our assessment of the transparency and reliability of the inputs used in the valuation of such instrument at the measurement date. The fair value of cash equivalents included in the Level 1 category is based on quoted prices that are readily and regularly available in an active market. The fair value of the marketable securities included in the Level 2 category is based on observable inputs, such as quoted prices for similar assets at the measurement date; quoted prices in markets that are not active; or other inputs that are observable, either directly or indirectly. These values were obtained from an independent pricing service and were evaluated using pricing models that vary by asset class and may incorporate available trade, bid and other market information and price quotes from well-established independent pricing vendors and broker-dealers. See Note 5—Marketable Securities for further information regarding the fair value of our investments.

13. Commitments and Contingencies

Litigation

We are involved in legal proceedings, including challenges to trademarks, from time to time arising in the normal course of business. Management believes that the outcome of these proceedings will not have a material impact on our financial position, results of operations, or liquidity.

Lease Commitments

We lease office space under non-cancelable operating leases that contain rent escalation clauses and renewal options. We recognize rent expense on a straight-line basis over the lease period and have accrued for rent expense incurred but not paid. We are also committed to pay a portion of the actual operating expenses under certain of these lease agreements.

The Company entered into a new lease in Seattle, Washington during the year ended December 31, 2018. The lease commences in January 2019 for a term of ten years ending in 2028, with one option to renew for an additional five-year period. The base annual rent payment is $700,000 and is subject to an annual rent escalation of 2%.

At December 31, 2018, future minimum lease payments under non-cancellable operating leases were as follows (in thousands):

Year Ended December 31:	Operating Leases
2019	$ 8,469
2020	8,534
2021	8,552
2022	8,935
2023	8,438
Thereafter	23,613
Total	$ 66,541

Rent expense under operating leases for 2018, 2017 and 2016 was $7,423,000, $5,593,000 and $4,680,000, respectively.

As of December 31, 2018, we had a total of $2,370,000 in letters of credit outstanding in favor of certain landlords for office space. These letters of credit renew annually and expire at various dates through November 2027.

14. Employee Benefit Plan

We sponsor a qualified 401(k) defined contribution plan (the “401(k) Plan”), available to all qualified employees. The 401(k) Plan allows employees to contribute gross salary though payroll deductions up to the legally mandated limit based on their jurisdiction. The 401(k) Plan provides for matching contributions equal to 50% of each participant’s elective contributions, not to exceed $1,000 per participant annually. Participants vest in matching contributions over a four-year period after a one-year cliff vest. The cost recognized for our contributions to the 401(k) Plan for the year ended December 31, 2018, 2017 and 2016 was $931,000, $808,000 and $619,000, respectively.

15. Related-Party Transactions

We incurred $0, $0 and $20,000 for consulting services provided by a member of our board of directors during 2018, 2017 and 2016, respectively. We owed nothing for such services at December 31, 2018 and 2017.

16. Selected Quarterly Financial Data (unaudited)

The following tables set forth selected unaudited quarterly consolidated statements of operations data for each of the eight quarters in 2018 and 2017 (in thousands except per share data):

	Three Months Ended							
	Dec. 31,	Sept. 30,	June 30,		Dec. 31,	Sept. 30,	June 30,	

	2018	2018	2018	March 31, 2018	2017 *As Adjusted	2017 *As Adjusted	2017 *As Adjusted	March 31, 2017 *As Adjusted
	(unaudited) (in thousands)							
Total revenues	$56,251	$55,239	$50,063	$47,991	$44,755	$43,203	$38,545	$34,472
Gross profit	39,129	39,101	35,465	34,006	31,451	30,680	27,490	24,792
Loss from operations	(8,259)	(11,956)	(12,425)	(12,133)	(10,411)	(11,628)	(10,160)	(11,603)
Net loss	(7,587)	(11,472)	(12,538)	(11,868)	(9,744)	(11,471)	(10,268)	(11,601)
Net loss attributable to common stockholders	(7,587)	(11,472)	(12,538)	(11,868)	(9,744)	(11,471)	(10,268)	(11,601)
Net loss per common share attributable to common stockholders, basic and diluted	(0.22)	(0.33)	(0.36)	(0.37)	(0.32)	(0.39)	(0.35)	(0.40)

INSTRUCTURE, INC.

Notes to Consolidated Financial Statements

17. Subsequent Events

In January 2019, the number of shares authorized for the 2015 Equity Incentive Plan and 2015 Employee Stock Purchase Plan increased by 1,592,361 and 333,333, respectively, in connection with the annual automatic increases provided by those plans.

In January 2019, key executives received multi-year RSU grants with a total value of $27,564,000. The grants vest quarterly over four years.

In February 2019, the Company signed an agreement to acquire Portfolium, Inc., a student success platform, for the purposes of enhancing our learning management system and human capital management offerings.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Evaluation of disclosure controls and procedures. Our management, with the participation of our Chief Executive Officer and Chief Financial Officer have evaluated our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) as of the end of the period covered by this report.

Based on management's evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures are designed to, and are effective to, provide assurance at a reasonable level that the information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures.

Management's Annual Report on Internal Control over Financial Reporting. Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) of the Securities Exchange Act of 1934, as amended). Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in Internal Control—Integrated Framework (2013 framework). All control systems are subject to inherent limitations. Our management has concluded that, as of December 31, 2018, our internal control over financial reporting is effective based on these criteria. The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in its report, which is included on under Item 8 of this Annual Report on Form 10-K.

Changes in internal control over financial reporting. There were no changes in our internal control over financial reporting during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent limitation on the effectiveness of internal control. The effectiveness of any system of internal control over financial reporting, including ours, is subject to inherent limitations, including the exercise of judgment in designing, implementing, operating, and evaluating the controls and procedures, and the inability to eliminate misconduct completely. Accordingly, any system of internal control over financial reporting, including ours, no matter how well designed and operated, can only provide reasonable, not absolute assurances. In addition, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. We intend to continue to monitor and upgrade our internal controls as necessary or appropriate for our business, but cannot assure you that such improvements will be sufficient to provide us with effective internal control over financial reporting.

Item 9B. Other Information.

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

(1) The information required by this Item concerning our executive officers and our directors and nominees for director may be found under the sections entitled “Proposal No. 1—Election of Directors,” “Information Regarding the Board of Directors and Corporate Governance,” and “Executive Officers” appearing in the 2019 Proxy Statement. Such information is incorporated herein by reference.
(2) The information required by this Item concerning our code of ethics may be found under the section entitled “Information Regarding the Board of Directors and Corporate Governance” appearing in the 2019 Proxy Statement. Such information is incorporated herein by reference.
(3) The information required by this Item concerning compliance with Section 16(a) of the Securities Exchange Act of 1934, amended may be found in the section entitled “Section 16(a) Beneficial Ownership Reporting Compliance” appearing in the 2019 Proxy Statement. Such information is incorporated herein by reference.

Item 11. Executive Compensation.

The information required by this Item may be found under the sections entitled “Director Compensation,” “Executive Compensation,” “Executive Compensation—Compensation Discussion and Analysis” and “Equity Compensation Plan Information” appearing in the 2019 Proxy Statement. Such information is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

(1) The information required by this Item with respect to security ownership of certain beneficial owners and management may be found under the section entitled “Security Ownership of Certain Beneficial Owners and Management” appearing in the 2019 Proxy Statement. Such information is incorporated herein by reference.
(2) The information required by this Item with respect to securities authorized for issuance under our equity compensation plans may be found under the sections entitled “Equity Compensation Plan Information” appearing in the 2019 Proxy Statement. Such information is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

(1) The information required by this Item concerning related party transactions may be found under the section entitled “Transactions with Related Persons” appearing in the 2019 Proxy Statement. Such information is incorporated herein by reference.
(2) The information required by this Item concerning director independence may be found under the sections entitled “Information Regarding the Board of Directors and Corporate Governance—Independence of the Board of Directors” and “Information Regarding the Board of Directors and Corporate Governance—Information Regarding Committees of the Board of Directors” appearing in the 2019 Proxy Statement. Such information is incorporated herein by

reference.

Item 14. Principal Accounting Fees and Services.

The information required by this Item may be found under the section entitled "Proposal No. 3—Ratification of Selection of Independent Registered Public Accounting Firm" appearing in the 2018 Proxy Statement. Such information is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

(a)(1) Financial Statements—The financial statements filed as part of this Annual Report on Form 10-K are listed on the Index to Consolidated Financial Statements in Item 8.
(a)(2) Financial Statement Schedules— All schedules are omitted because they are not applicable or the required information is shown in the financial statements or the notes thereto.
(a)(3) Exhibits—The exhibits required by Item 601 of Regulation S-K are listed in paragraph (b) below.
(b) Exhibits.

		Incorporated by Reference				
Exhibit Number	Description	Schedule Form	File Number	Exhibit	Filing Date	Filed Herewith
2.1†±	Agreement and Plan of Merger, by and among the Registrant and Praxis Merger Sub I, Inc., Praxis Merger Sub II, LLC, Practice XYZ, Inc. and Entangled Ventures, LLC, dated November 22, 2017.	10-K	001-37629	2.1	February 15, 2018	
3.1	Amended and Restated Certificate of Incorporation.	8-K	001-37629	3.1	November 18, 2015	
3.2	Amended and Restated Bylaws.	S-1	333-207349	3.4	October 9, 2015	
4.1	Form of Common Stock Certificate.	S-1	333-207349	4.1	November 2, 2015	
10.1	Form of Indemnity Agreement by and between the Registrant and its directors and officers.	S-1	333-207349	10.2	October 9, 2015	
10.2+	2010 Equity Incentive Plan and Forms of Incentive Stock Option Agreement and Nonqualified Stock Option Agreement.	S-1	333-207349	10.3	November 2, 2015	
10.3+	2015 Equity Incentive Plan.	S-1	333-207349	10.4	November 2, 2015	
10.4+	Form of Stock Option Agreement, Notice of Exercise and Stock Option Grant Notice under the 2015 Equity Incentive Plan.	10-Q	001-37629	10.1	May 6, 2016	
10.5+	Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Award Agreement	S-1	333-207349	10.6	October 9, 2015	

	under the 2015 Equity Incentive Plan.				
10.6+	2015 Employee Stock Purchase Plan.	S-1	333-207349	10.7	November 2, 2015
10.7+	Form of Executive Agreement by and between the Registrant and its officers.	S-1	333-207349	10.8	October 9, 2015
10.8+	Non-Employee Director Compensation Policy.	S-1	333-207349	10.9	October 23, 2015
10.9	Lease Agreement by and between the Registrant and Old Mill Building IV, LLC, dated October 2, 2012.	S-1	333-207349	10.10	October 9, 2015
10.10	First Amendment to Lease Agreement by and between the Registrant and Old Mill Building IV, LLC, dated October 30, 2014.	S-1	333-207349	10.11	October 9, 2015
10.11	Lease Assumption Agreement by and between the Registrant and Old Mill Building IV, LLC, dated August 11, 2015.	S-1	333-207349	10.12	November 2, 2015
10.12	Second Amended and Restated Loan and Security Agreement by and between the Registrant and Silicon Valley Bank, dated June 22, 2017.	10-Q	001-37629	10.1	August 2, 2017

		Incorporated by Reference				
Exhibit Number	Description	Schedule Form	File Number	Exhibit	Filing Date	Filed Herewith
10.13	Warrant to Purchase Common Stock issued to Silicon Valley Bank, dated April 1, 2014.	S-1	333-207349	10.14	October 9, 2015	
10.14	Lease Agreement by and between the Registrant and Valley Grove LLC, dated November 10, 2016.	8-K	001-37629	10.1	November 15, 2016	
10.15	Offer Letter by and between Registrant and Dan Goldsmith, dated May 4, 2018.	10-Q	001-37629	10.1	August 1, 2018	
10.16	First Amendment to the Second Amended and Restated Loan and Security Agreement by and between Registrant and Silicon Valley Bank, dated March 30, 2018.	10-Q	001-37629	10.2	August 1, 2018	
10.17	Second Amendment to the Second Amended and Restated Loan and Security Agreement by and between Registrant and Silicon Valley Bank, dated June 28, 2018.	10-Q	001-37629	10.3	August 1, 2018	
23.1	Consent of Independent Registered Public Accounting Firm.					X
31.1	Certification of Periodic Report by Principal Executive Officer under Section 302 of the Sarbanes-Oxley Act of 2002.					X
31.2	Certification of Periodic Report by Principal Financial Officer under Section 302 of the Sarbanes-Oxley Act of 2002.					X
32.1*	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350 as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
101.INS	XBRL Instance Document					X
101.SCH	XBRL Taxonomy Extension Schema Document					X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document					X

101.LAB	XBRL Taxonomy Extension Label Linkbase Document	X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	X

+ Indicates management contract or compensatory plan.
* Document has been furnished, is not deemed filed and is not to be incorporated by reference into any of the Company's filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, irrespective of any general incorporation language contained in any such filing.
¶ The schedules and certain exhibits to the Agreement and Plan of Merger have been omitted pursuant to Item 601(b)(2) of Regulation S-K. Instructure hereby agrees to furnish supplementally a copy of any omitted schedule or exhibit to the Commission upon request.
± Confidential treatment has been obtained for certain provisions omitted from this Exhibit pursuant to Rule 406 promulgated under the Securities Act. The omitted information has been filed separately with the Securities and Exchange Commission.

Item 16. Form 10-K Summary

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

	Instructure, Inc.
Date: February 20, 2019	By: /s/ Daniel Goldsmith Daniel Goldsmith Chief Executive Officer

POWER OF ATTORNEY

Know All Persons By These Presents, that each person whose signature appears below constitutes and appoints Daniel Goldsmith, Steven B. Kaminsky and Matthew A. Kaminer, or each of them, as his true and lawful attorneys-in-fact and agents, each with the full power of substitution, for him and in his name, place or stead, in any and all capacities, to sign any amendments to this report and to file the same, with exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that either of said attorneys-in-fact, or substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1934, this Annual Report on Form 10-K has been signed by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Daniel Goldsmith	Chief Executive Officer and Director	February 20, 2019
Daniel Goldsmith	(Principal Executive Officer)	
/s/ Steven B. Kaminsky	Chief Financial Officer	February 20, 2019
Steven B. Kaminsky	(Principal Financial and Accounting Officer)	
/s/ Joshua L. Coates Joshua L. Coates	Director	February 20, 2019
/s/ Steven A. Collins	Director	February 20, 2019
Steven A. Collins		
/s/ William M. Conroy	Director	February 20, 2019
William M. Conroy		
/s/ Ellen Levy	Director	February 20, 2019

Ellen Levy		
/s/ Kevin Thompson	Director	February 20, 2019
Kevin Thompson		
/s/ Lloyd G. Waterhouse	Director	February 20, 2019
Lloyd G. Waterhouse		

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