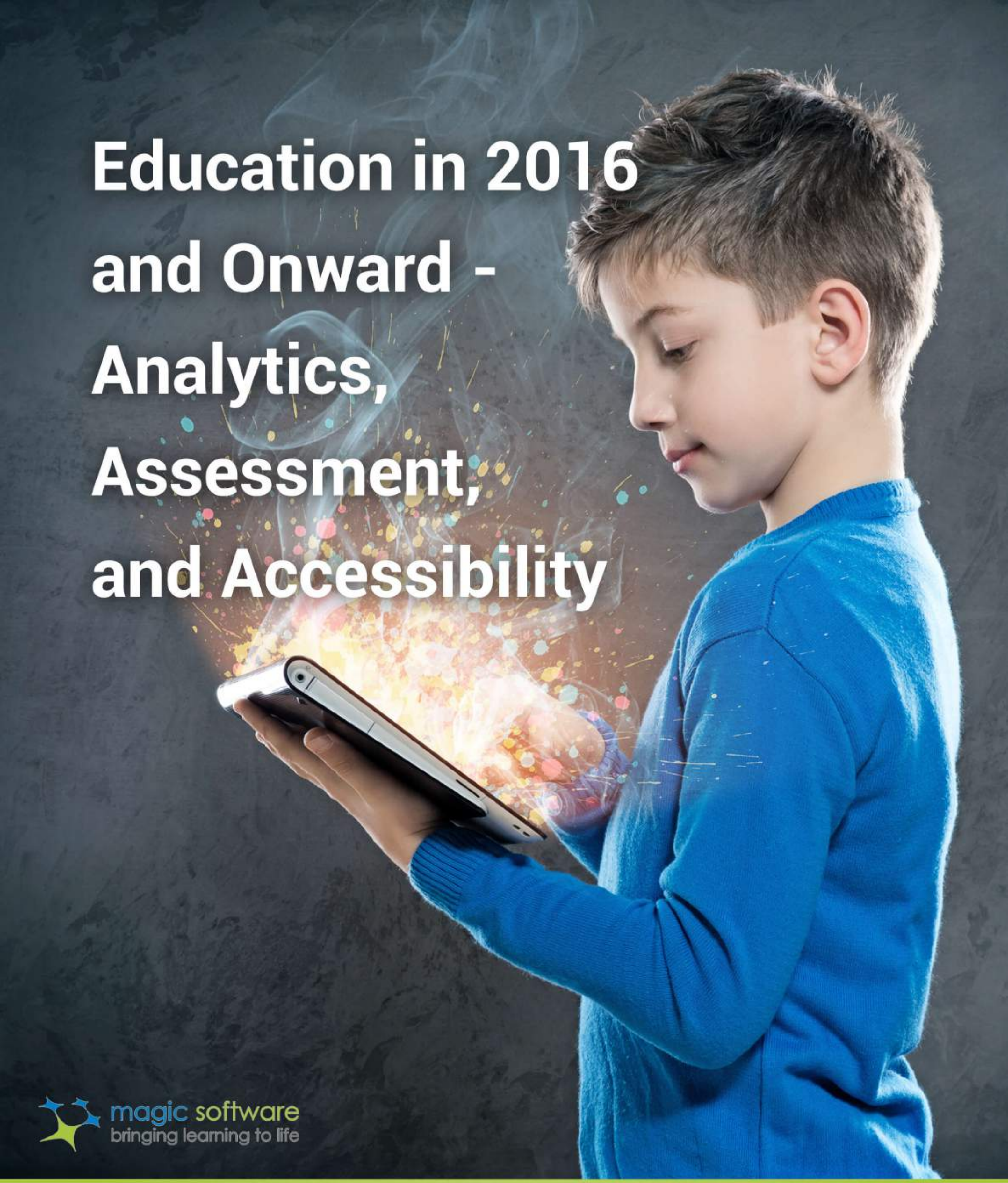
Education in 2016 and Onward - Analytics, Assessment, and Accessibility



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The education market in the United States has made its long awaited transition. Digital first delivery, interoperability and analysis of content consumptions are factors that have to be considered if the titles are to appeal to those in charge of purchasing them. Publishers must respond promptly and effectively to keep from being left behind. Having seen 25 years worth of changes in the industry, we at Magic Software have put together our thoughts on what a digital strategy should look like. Publishers must incorporate analytics, assessment and accessibility into their content in a meaningful way and deliver it across all channels, devices and operating systems. This transition remains a daunting task and we hope to share our experience and insights to ensure that your decision making is that much easier.

As per the latest EMR report, the most frequently cited product medium for delivering supplemental products was online or digital based delivery (82.6%), followed by print[1]. Traditional content continues to have a large part to play, but does so in tandem with digital. Publishers are looking to increase investment in their technology capabilities to address this shift, and deliver their titles through all online and mobile channels. Yet, increased efforts are needed to ensure that publishers take advantage of these changes and tap into the potential for content improvement and re-imagination.

The Market Today

The K-12 education landscape continues to evolve rapidly as key stakeholders begin to embrace technology and its effective implementation. Factors driving market changes include the following:

- The United States National Education Technology Plan (NETP) has stated its intent to ensure all students have access to mobile devices in classrooms, and high speed internet access[2].
- New, affordable devices such as Chromebooks are gaining traction in K-12 schools, requiring publishers to deliver content in multiple formats.
- High growth can be seen in online courseware with revenues moving up by 320%[3] in 2015 alone.
- Digitally delivered assessments are proving to be more intuitive, effective at gauging results, and adaptable, making them the focus of a rapidly expanding industry segment.
- Public and private organizations are collaborating on a variety of initiatives aimed at improving the discoverability and interoperability of digital learning resources and applications. This is being done through a focus on establishing technical standards and norms of content development that are currently lacking.
- A digital divide is growing between learners who are using technology in active, creative ways to support their learning and those who predominantly use technology for passive content consumption.[4]

[1] EMR - Complete K-12 Report: 2015
[2] U.S. Department of Education, Office of Educational Technology, Future Ready Learning: Reimagining the Role of Technology in Education, Washington, D.C., 2016 - Page 17, 64
[3] Richards, J. & Stebbins, L. (2014). 2014 U.S. Education Technology Industry Market: PreK-12. Washington, D.C.: Software & Information Industry Association
[4] U.S. Department of Education, Office of Educational Technology, Future Ready Learning: Reimagining the Role of Technology in Education, Washington, D.C., 2016

For educators and content creators, ensuring that digital content adds value to the learning process remains a challenge. **The modular nature of digital resources continues to alter the definition of what is "core" and what is supplemental in nature as learning content designed for one purpose can now more easily be used for the other.** This content is available in a very wide variety of formats, from digital courses to Open Educational Resource (OER) content, games, simulations and more.

The general trend in content development points towards a blended learning environment that uses digital content, assessments, and analytics to enhance learning efficacy. What, then, is the most effective way forward in a market that seems to have increased its demands on content producers?

Education in 2016 and Onward - Changes in the Market

The direction that publishers are moving in depends on how classrooms look in the very near future. A quick look at the data behind device usage, connectivity and requirements set by the state make it clear that students will have increased access to high speed internet and cheap devices that are built with the learner in mind. The US currently has a device to student ratio of 3.6:1, as per The Complete K-12 Report: Market Facts & Segment Analyses 2015 Report. The NETP 2016 has set a target of five years to reach a 1:1 student to device ratio[5]. President Obama's ConnectED initiative aims to ensure that 99 percent of students in the country have Internet access at a minimum of 100 megabits per second per 1,000 students, with a target speed of one gigabit per second by 2018.

"Chromebooks have shot to almost market leader levels in the last year. Q3 of 2015 saw Chromebooks reach over 50% of all sales amongst K12 devices. This number stood at 1.63 million units of the total market, a number that is only headed up.[5]"

According to results from The National Survey on Mobile Technology for Education, 59.6% of respondents reported that mobile technology had been adopted in 25% or more schools in their districts[6]. An additional 15% reported that their districts were very likely to adopt mobile technology in the next 1-2 years. A survey done by Pearson found that most students want to use mobile devices in the classroom more often than they do now. Additionally, In 2015, 78% of elementary school students report that they regularly use a tablet, up from 66% a year ago[7].

In the past few years, large scale adoption of cheaper devices has occurred in K-12 schools, changing the way content providers approach development and delivery of instructional materials. **Chromebooks have shot to almost market leader levels in the last year itself. Q3 of 2015 saw Chromebooks reach over 50% of all sales for the first time amongst K12 devices, a number that is only headed up[8].** This increase in Chromebook adoption is taking place due to 1) the need for districts to implement online assessments (the devices are entirely cloud based and online

[5] U.S. Department of Education, Office of Educational Technology, Future Ready Learning: Reimagining the Role of Technology in Education, Washington, D.C., 2016 - Page 63

[6] IESD & STEM, 2013

[7] Pearson Student Mobile Device Survey: Grades 4 through 12 June 2015

[8] Futuresource Consulting -http://www.futuresource-consulting.com/2015-12-K-12-Google-Chromebooks-2983.html

functionality is a key feature of the products) and 2) the low price point and easy to use ecosystem of the devices. By offering the devices at $200-300, Chromebook makers have cornered the entry level of the K12 market very effectively and will drive school districts closer to the 1:1 student to device ratio target.

For users outside of the United States, android tablets remain dominant[9]. As Chromebooks require connectivity to run, they may not be feasible in locations without access to high speed internet. Thus a variety of devices are now in the hands of learners across the globe. Publishers have to develop content that can integrate with this long list of hardware, while ensuring that they don't lose out on the efficacy of the content. With the growing importance of digital assessment and learning analytics, it becomes challenging for publishers to produce content that conforms to the complex requirements of a technology centric learner base.

Industry leaders such as Pearson, McGraw Hill, and HMH are all developing their own platforms to host and deliver content, including intuitive marketplaces for sharing learning materials. Their focus on digital assets has been made clear over the last few years and is even stronger in 2016. The targets set for increased connectivity and device adoption make it clear that educational content will have to mature. Leading publishing houses have acknowledged this reality and have begun to act on it using their abundant resources, a luxury that smaller firms do not have.

Challenges Facing Publishers

Given the background of a market that has embraced a digital first focus, how do mid-sized and regional publishers, start-ups and other organizations producing K-12 digital learning materials compete in a complex, digital marketplace against their larger, well-funded competitors?

Working with a number of K-12 organizations transitioning to digital product development, Magic has identified a number of pain points around creating, managing, and selling digital, and specifically, mobile learning products. Our partners typically ask themselves these questions:

"Solving just one of the many pain points isn't enough. Publishers must look to meet all the challenges of this complex market to ensure that they not only survive in the new environment, but add value to it."

- Digital content development is not one of our core competencies. We know how to develop instructional resources but how do we translate those skills into developing digital learning materials for PC or mobile devices?
- How do we get our content to work seamlessly on all devices, browsers and operating systems?
- Can we keep up with the ceaseless release of new software, hardware and standards without having to update all our content every few weeks? Which devices should we support and focus our development efforts toward?
- Without a strong internal digital technology team, how can we expect to compete with the heavyweights in the industry?
- Can we afford to build complex mobile/cross platform delivery systems?

[9] "Gartner Smart Phone Marketshare -Retrieved 2016-05-26. http://www.gartner.com/newsroom/id/3323017

- How do we handle licensing and digital rights management?
- How do we support mobile devices but also support the current, much larger installation of PCs now found in K-12 schools? What about laptops and Chromebooks?
- Schools require reports on student progress; can we afford to build this type of learning management system with analytics and engaging digital assessments?

If any of these questions sound familiar, it's time to develop a coherent mobile / digital publishing strategy that addresses them. Solving just one of these pain points isn't enough. Publishers must look to meet <u>all</u> the challenges of this complex market to ensure that they not only survive in the new environment, but thrive in it.

Challenges Facing Publishers - Choosing Platforms

An easy way to bring your titles online would be to avail of the marketplaces provided by aggregators such as Amazon, Apple, Overdrive and similar firms. Unfortunately, this route prevents publishers from addressing the growing list of demands being placed on them. The lack of learning outcome data, assessment features, collaboration tools, and teacher-student interaction means that only the distribution aspect of your business has been made easier.

The effectiveness of the content and measurement regarding the learning outcomes is lost as these channels have not been optimised for educational use. Given brand recognition, user base and historical popularity of their content, large publishers dominate these content shelves through the sheer volume of their production process. Having to share a marketplace with such competitors will diminish your share of the market.

Simply delivering titles through an aggregator's bookshelf does not provide the data and user experience required to enhance learning efficacy. PreK12 publishers must look to custom, education first platforms to remain successful.

Developing an End-to-End Digital Strategy

An effective mobile publishing model starts with product development but must also include distribution, marketing and sales decisions. The infrastructure must be able to adapt to a plethora of devices, be easy to update and modify. Streamlining production, delivery and hosting in one central platform could help alleviate problems. Updates, uniformity of content, accessibility on all devices, unified access for learners and control for publishers are easier to handle when brought under one roof.

Magic Software has provided this very solution to over 15 publishers globally, giving content creators a platform they can use to create digital first content and distribute across channels. Over time we have included exhaustive assessment features, analytics dashboards and functionality across all operating systems and devices. The platform has taken shape based on the requirements that our partners have share with us and the direction they see the their sales strategy headed towards.

Most publishers were reimagining their old print content and investing heavily on converting it to digital. This strategy stems from the fact that their print content is hugely popular and well received in the market. These firms were hoping the success of their print content would translate directly to digital channels. The problem with this cross channel conversion is that it is like trying to apply the rules of baseball to basketball. Digital assets have a fundamentally unique method of delivery and consumption. They require a dedicated approach and thus a conversion oriented strategy is not the most efficient model. We provided such firms with a platform that lets them build digital content, enhance it with simulations, games, videos or other features, distribute it and then analyse its performance. They were able to leave their focus on print conversion behind and move to a digital first mindset through their product strategy.

"Similar to the process you use when developing your print materials, define the problem you are trying to solve (i.e., the teaching, learning or administrative challenge) and keep that in mind as you build your mobile learning product requirements."

There are, however, a few key features that a publisher must carry from the traditional print to the new digital content world:

a) The brand name
b) Learning pedagogy
c) Focus on learning outcomes

In evaluating their mobile learning options, many K-12 organizations start with concerns over which technologies they should use, which devices they should support, and whether to "build or buy" the distribution system. In order to address a lack of internal technical expertise and reduce business risk, many organizations consider outsourcing or licensing their mobile distribution systems. Your business goals should drive your technology choices and not the other way around. Begin by understanding your target audience (K-12 students, teachers, administrators, etc.) and their current technology infrastructure. Similar to the process you use when developing your print materials, define the problem you are trying to solve and keep that in mind as you build your mobile learning product requirements.

A mobile K12 publishing strategy involves more than just content development. In the last year the Testing and Assessment segment earned over $2.5B[10], showcasing its importance in the industry. No longer can publisher's be content with focusing solely on the content itself. Content analysis and student assessment must, in turn, feed back into the development process and inform the company of where learners are struggling.

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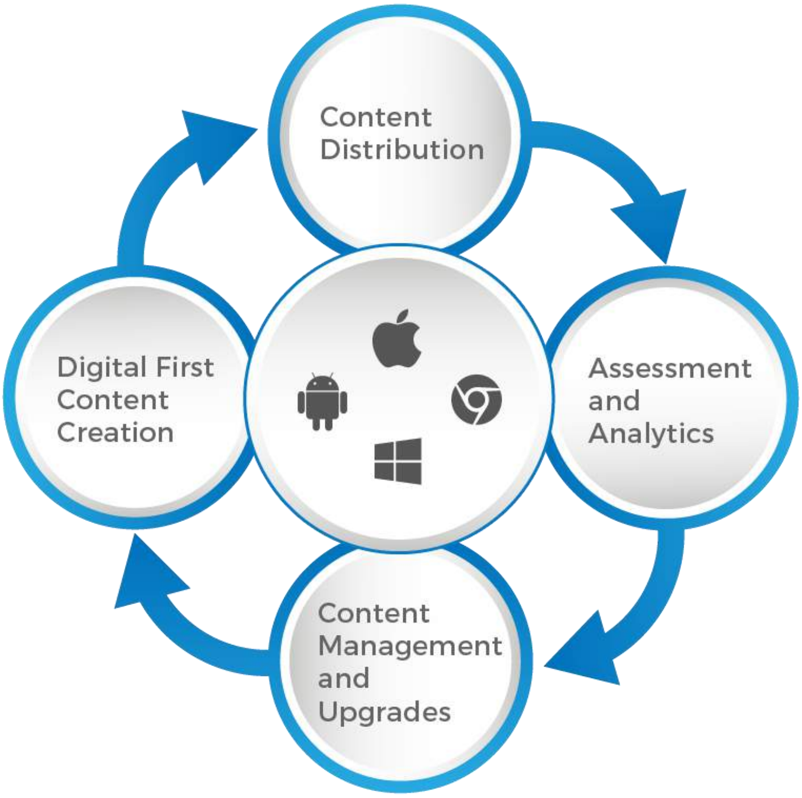
[10] Richards, J. & Stebbins, L. (2014). 2014 U.S. Education Technology Industry Market: PreK-12. Washington, D.C.: Software & Information Industry Association



The current state of education technology and publishing will push publishers to develop content that is intuitive enough to handle delivery through a wide variety of formats and platforms. Some will even go on to build or buy their own distribution system and take control of the entire process. An end to end strategy is thus necessary to navigate the evolving landscape of K12 education. **Distribution, analytics, assessments and accessibility across devices are all factors that must be incorporated in any publishing strategy.** In an age defined by high speed consumption of content, global connectivity, and copious amounts of data one cannot build content once and use it for 7 or 10 years. Make sure your digital strategy involves analyzing usage and learning outcome data and constantly improving the content based on feedback. Be it through purchase, development, or licensing of a platform, publishers need an environment where production, distribution, and analysis of content can be managed and modified as needed. The question is no longer “is a reimagination of the publishing process is required?” The question now becomes “When do we start?”

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