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TabletTeach:
Opportunity Analysis for a New Educational Technology Product

In May 2013, Jack Russo, a Chicago-based entrepreneur, decided it was time to take the plunge with TabletTeach. Russo had been working as a product innovation consultant for a K–12 educational software firm for three years. During this engagement, he recommended that his client explore educational opportunities focusing on younger students (K–8), leveraging intuitive apps running on touch-based tablet computers. Russo saw the explosive growth of touch-based devices in education (especially Apple's iPads) as an opportunity. Beyond schools, the popularity of touch-based devices was growing exponentially, as well. This created both opportunity and demand: opportunity because the potential market went beyond schools; and demand because parents' and students' technology expectations were rising. His client declined the opportunity, so Russo decided to strike out on his own.

From his years studying the digital learning space, Russo developed four product concepts: point applications, which focus narrowly on a single topic, such as third-grade fractions; a learning management system for tablets; a peer-based learning app; and an after-school enrichment program. Russo knew he needed to test his concepts with real users. But which product opportunity was best? The digital disruption occurring in traditional K–12 learning created a fortunate but narrow window of opportunity. Rather than choosing a concept randomly, Russo decided to spend a few weeks defining and evaluating each product opportunity and selecting one to advance into the customer discovery process. Russo organized the information he needed and began an opportunity analysis to define TabletTeach.

Print-to-Digital Transformation: Disrupting the K–12 Content Market

The $8.7 billion textbook market was, as Steve Jobs declared, "ripe for digital destruction."[1] Despite the introduction of iPads in April 2010 and the earlier release of Amazon's first Kindle in November 2007, K–12 learning content[2] was still overwhelmingly print-based. A 2012 study by the Pew Charitable Trusts found that "[f]or all the noise nationally, movement to digital has been

[1] "Apple and Digital Publishing: A Textbook Manoeuvre," *The Economist*, January 19, 2012, http://www.economist.com/blogs/babbage/2012/01/apple-and-digital-publishing.

[2] For simplicity, this case uses "K–12 textbook market" as shorthand for "K–12 learning content market," which includes core textbooks, as well as supplemental learning material, such as workbooks.

slow on the state and district level. Digital textbooks still account for only a small fraction of overall textbook sales."[3] The Big Three publishers (Houghton Mifflin Harcourt, McGraw-Hill, and Pearson) still dominated the K–12 market and depended on print (textbooks and workbooks) for the vast majority of their revenue.

Russo believed that, though it would happen slowly because of entrenched bureaucratic purchasing systems in K–12 schools, textbooks, like newspapers before them, had to adapt to a digital world, or die. The K–12 textbook market was being attacked on multiple fronts: by technology powerhouses such as Apple, Amazon, and Google; by smaller digital content providers; by emerging free open educational resources (OER) content; by digital learning systems; and by a host of educational apps for mobile devices. This disruption was following a classic "innovator's dilemma" pattern, wherein the dominant stakeholders (here, the Big Three) had a significant disincentive to change their business (most of their revenue was still print-based), and their organizations were set up for efficiency and scale, not for innovation.[4]

Russo knew, however, that a number of factors now were converging to accelerate K–12 textbook disruption. First, an increasing number of parents were demanding that their children be better prepared for a digital world. With the pervasive use of technology in their daily work and personal lives, these parents' patience with an antiquated print-based educational system seemed to be running out.

Second, the budgets of public schools across the country had suffered from the 2007–2009 recession. A common perception of administrators was that adopting digital content would cut spending on textbooks and workbooks, with a net savings. A number of state laws specifically enabled historically protected textbook money to be used for the purchase of digital content. Texas, California, and Florida passed such laws, which was significant because together these states defined most of the K–12 content that publishers distributed nationally.

The third disruptor was that K–12 public school curricula were in flux due to the new national Common Core State Standards (CCSS) being adopted in almost all states across the country (see **Exhibit 1**). New curricula required new learning material.

Fourth, new national assessments aligned to the CCSS were scheduled for implementation in the 2014–2015 school year. These high-stakes tests increased the urgency of Common Core adoption. Schools feared that student performance on these new tests would determine the schools' evaluation and funding—and even, for some failing schools, their continued existence. Administrators perceived that digital content could adapt more quickly to the new standards than could textbooks, which typically had a five- to seven-year replacement cycle.

Finally, digital K–12 educational content was becoming increasingly available in various formats across almost all topic areas. This was both good and bad: good because a large amount of quality digital learning content now was available; bad because the quality of some digital learning content was highly uneven. Although some shining examples realized the promise of

[3] Ben Wieder, "States Move Slowly Toward Digital Textbooks," The Pew Charitable Trusts, *Stateline* (blog), April 23, 2012, http://www.pewstates.org/projects/stateline/headlines/states-move-slowly-toward-digital-textbooks-85899382069.

[4] The resistance to change in K–12 education in the United States was articulated by Clayton M. Christensen, *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (New York: McGraw-Hill, 2008). In this book, Christenssen applies his "innovator's dilemma" theory to K–12 education with insightful results.

digital learning (see **Exhibit 2**), no accepted process had yet been established to deliver digital learning; the market environment was a free-for-all.

Market Analysis

K–8 Market Characteristics

In the United States, elementary school typically was considered to comprise kindergarten through eighth grade (K–8), with prekindergarten (PreK) referring to optional schooling for children younger than five years old. This definition varied because both public schools and their private alternatives were managed locally. Russo defined K–8 as elementary school, and, where relevant, he adopted a common segmentation of this larger group into primary (K–4) and middle (5–8) grades.[5] Educational materials for the primary grades were more likely to consist of worksheets and activities rather than textbooks. Primary classrooms commonly were configured in "centers" where students' desks were arranged in groups of four to six. Middle grades traditionally marked a graduation to more formal learning with textbooks, increased homework, projects, and papers. Accordingly, middle-grade students' desks typically were configured in the more traditional grid.

PUBLIC SCHOOLS

Of the 38.7 million PreK–8 students in the United States, 90 percent attended public schools.[6] The majority of funding for public schools came mostly from property taxes, as well as from state funding. Federal revenue typically accounted for only a small amount (1 to 5 percent) of the funding, though it could be as much as 10 percent or more for schools with a large number of students from low-income families and/or students with special needs. More than twenty states, including Texas, California, Indiana, and North Carolina, had passed laws allowing textbook dollars to be used for digital learning content and learning software.[7] Prior to this, that money had been designated exclusively for print educational material. Though large, the public-school textbook market was crowded and hard to enter. Selling directly to public schools was challenging for start-up companies due to a combination of entrenched competition, centralized purchasing at the school-district level, committee-based purchasing, and aversion to risk.

PRIVATE SCHOOLS

Private schools were funded directly by parent tuition and, where applicable, by endowments. Although private schools represented about 10 percent of students,[8] they represented about 24 percent of schools in the United States.[9] According to a National Assessment of Educational

[5] Wikipedia, http://en.wikipedia.org/wiki/Education_in_the_United_States#Primary_education (accessed February 9, 2015).

[6] Calculated from 2011 data from National Center for Education Statistics, *Digest of Education Statistics*, Table 203.25 (http://nces.ed.gov/programs/digest/d13/tables/dt13_203.25.asp) and Table 205.20 (http://nces.ed.gov/programs/digest/d13/tables/dt13_205.20.asp).

[7] Kathy Baron, "For Public Schools, the Long and Bumpy Road to Going Digital," *Mindshift* (blog), August 12, 2014, http://blogs.kqed.org/mindshift/2014/08/for-public-schools-the-long-and-bumpy-road-to-going-digital.

[8] Ibid.

[9] National Center for Education Statistics, "Private and Other Nonpublic Schools and the Nation's Report Card," http://nces.ed.gov/nationsreportcard/about/nonpublicschools.aspx (accessed February 9, 2015).

Progress Study, private schools often outperformed public schools in achievement tests and provided safe, relatively advanced facilities.[10] The typical private school had a more affluent student body, on average, than the typical public school. Significantly, private-school administrators enjoyed more freedom and authority than their public-school counterparts in budget decisions, including with regard to learning material and technology purchases. However, the private K–8 market was also more fragmented than its public counterpart. This is because private-school sales were more likely to be made to individual schools rather than to a centralized public-school district. The two biggest subsegments of the private-school market were Catholic schools, representing 37 percent of the private-school student population, and conservative Christian schools, at 14 percent.[11] Russo did not see evidence of centralized purchasing in these subsegments.

HOMESCHOOLING

The homeschool market was both interesting and challenging. The market was growing rapidly, and a disruptive digital learning solution seemed to fit well with the homeschool niche. In his book *Disrupting Class*, Clayton Christensen argued that "[d]isruption and student-centric technology must first solve important problems outside the traditional classroom before they transform learning in schools."[12]

However, it would be difficult for Russo to enter the homeschool market because of its small size, fragmentation, and poorly defined sales channels. Mindy Lively, owner and publisher of the Home Educators Resource Directory, reported that about 791,000 children in the United States were homeschooled in 1999. By 2003, that estimated number lay somewhere between 900,000 and 2,000,000.[13] She went on to explain this significant variance by noting it was impossible to know precise homeschool numbers because many states did not track homeschooled children.[14] Another concern for Russo was whether a homeschool solution ever would be able to transition to an early mainstream market, with blended-learning classrooms.

Russo discovered, by talking with a dozen homeschool parents and industry experts, that demographics and psychographics for the homeschool market ranged from highly paid university professors who believed they could provide their children with a better education than could traditional schools; to middle-class, single-income parents who homeschooled their children based on religious beliefs. Between these two unique personas existed a significant number of disparate homeschool personas, varying in both psychographics and demographics. The one common thread: homeschool parents were all fiercely independent.

Both the online and the homeschooling education markets were growing significantly, at the expense of full-time, bricks-and-mortar classrooms.

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[10] David Witter, "Private Schools in the US," IBISWorld Industry Report 61111b, January 2015, http://www.ibisworld.com/industry/default.aspx?indid=1941.

[11] Calculated from National Center for Education Statistics, Table 205.20.

[12] Christensen, *Disrupting Class*, p. 12.

[13] Mindy Lively, "Education Channel Alert: The Homeschool Market," *Selling to Schools*, http://www.sellingtoschools.com/articles/education-marketing-school-channel-homeschool-market (accessed February 9, 2015).

[14] Ibid.

Product Categories

A traditional market undergoing genuine disruption was difficult to evaluate because one or more fundamental conventions that defined it were—or soon would be—no longer valid, and its new conventions were not yet defined. For example, it was unlikely that print textbooks would remain the center of gravity for educational content as K–12 learning shifted away from a print-only model. Within five years, Russo predicted, K–12 education would cover a spectrum from the purely digital (innovators and early adopters), to blended digital and print (early, then late, majority), with a small percentage of print-only hold-outs (laggards).[15]

In digital learning, the educational content and its method of delivery were becoming increasingly, though not always, integrated. Examples of less-integrated content included use of static or video content, such as a stand-alone lesson plan downloaded from the web, as a direct replacement for textbook or workbook material in a traditional classroom. In contrast, with educational apps, content and the learning process could be presented as a learning game played on a digital device. For the purpose of his competitive analysis, Russo grouped the K–12 educational content market into five categories:

- *Existing and new digital content providers,* such as Discovery, Knovation Learning, Khan Academy, and PBS, among literally hundreds of others
- *Digital giants,* such as Apple, Amazon, and Google
- *Emerging free OER content*
- *Digital learning systems,* including learning management systems such as Blackboard and Canvas, white boards such as Smart Board, and new learning systems such as Knovation Learning's icurio and Gooru
- *N*ew *K–12 educational apps* for mobile devices, including cell phones, iPods, iPads, Android Tablets, and Windows Surface Tablets

Depending on the specific solution, tablet-based learning could fall into any of these categories, which would help Russo define the competitive set for the different product concepts.

Potential Product Concepts for TabletTeach

Five underlying beliefs held consistent across the product opportunities Russo envisioned:

- Traditional textbooks were going away, whereas blended learning, integrating print and digital, was emerging in innovative and early-adopter schools and likely would be mainstream within five years.
- Digital learning would necessitate more collaborative, peer-based learning and teaching methods wherein an instructor's role would be more as a "guide on the side" than a "sage on the stage."

[15] The five adoption groups, from innovators to laggards, recall the tech adoption curve made popular in Geoffrey A. Moore, *Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers* (New York: HarperBusiness, 1999), ch. 1, p. 13.

- Tablets were an intuitive way for elementary school (K–8) children to learn, particularly in primary grades (PreK–4), whereas laptop computers were thought too difficult to use.
- The new CCSS were forcing the adoption of new curricula, accelerating the adoption of new digital learning material and methods.
- Accordingly, the K–12 education system in general—and the $9 billion K–12 publishing industry in particular—was going through a major disruption and creating opportunities for educational technology startups.

With these factors in mind, Russo came up with the following four product concepts:

Create Point Apps Aligned with Common Core State Standards

With many states aligning their curriculum to Common Core, print textbooks were catching up to and supporting CCSS, but apps were not up to speed yet. This concept meant creating a series of focused iOS and/or Android apps for PreK–8 material that aligned with CCSS. In particular, Russo would identify and exploit high-opportunity app store "holes," such as the lack of apps addressing Common Core math skills. With tablets (especially iPads) proliferating throughout grades K–12 and apps poised to replace print worksheets, the need for good CCSS-aligned apps would only grow. Schools' textbook dollars would likely be increasingly diverted to apps. In all likelihood, parents would pay for good apps outside of school, to prepare for new 2014–2015 CCSS-aligned national tests.

Learning 2.0 (or Tablet LMS)

This product concept would involve building a student-centric, tablet-enabled learning management system (LMS). As a category, learning management systems "range[d] from managing training and educational records to software for distributing online or blended/hybrid college courses over the Internet with features for online collaboration."[16] In practice, most LMSs focused mostly on administration (attendance and grade books) and file management (assignment distribution and collection), rather than as educational tools with content and collaboration features.

The focus of this concept would be to create an entirely new, digital learning process that would enable rich teacher-student collaboration, as well as student-to-student learning. Russo saw the large LMS market as ripe for disruption because existing LMS solutions were not being used in classrooms.[17] Both students and educators would find a tablet LMS effective and intuitive to use. It most likely would also provide improved communication mechanisms with parents. Because using tablets was intuitive for K–5 students, Russo believed there was an opportunity to develop a learning environment that would be easy to use, even for the youngest elementary students. The challenge here would be defining a simpler, tablet-enabled LMS—a big problem to solve.

[16] Wikipedia, http://en.wikipedia.org/wiki/Learning_management_system (accessed February 9, 2015).

[17] "Report on Education Community Attitudes Toward SIS/LMS Solutions," Gartner Consulting, 2011, http://www.turningdataintoaction.org/sites/default/files/reports/education_community_attitudes_toward_sis_lms_solutions.pdf.

Peer-Based Learning Software

This concept anticipated building software that fostered peer-based learning, in which groups of two to five students would work together to solve goal-based learning challenges, called "quests," that would align to the Common Core. The belief here was that a peer-based learning solution would help students build important teamwork skills beginning at an early age. Team members would be academically and socially compatible, so each team could learn at its own pace. The TabletTeach software likely would include functionality such as quest creation, team management (for example, team formation and peer feedback), and access to student- and teacher-rated apps to help each team solve a quest. The TabletTeach software likely would need to align apps to the CCSS and be able to serve them up to student teams as needed—for example, to help them solve a quest. A significant challenge would be to define peer-based learning and then to discern how software would enable or improve such pedagogy.

After-School Enrichment Services Solution

This concept envisioned the creation of a company focused on teaching K–8 students the CCSS by using tablets as the primary learning tool, possibly in a peer-based learning environment. This approach would take the peer-based learning software concepts and put them into practice as a paid service. Russo's long-term goal was not to get into the services business, but he suspected an untapped market existed for after-school enrichment, wherein parents would pay to have their children learn technology—and teamwork—skills while getting supplemental Common Core practice. TabletTeach would need to create a fun and engaging enrichment offering because it would be competing with other well-established programs, such as Mad Science, among others. This approach would help TabletTeach learn more about the problem and refine an enrichment offering that could then be implemented as a software solution. If successful, the services offering could be a self-funding way to define the software and to build a beta customer base. Generating beta users would be invaluable during the iterative product development process. But Russo had no experience building a services company.

Each concept had its strengths and its weaknesses. Russo had to define the evaluation criteria, which would include such factors as time-to-market, alignment with market needs, and executability.

Prioritizing the Product Concepts

Russo gave himself one week to pull together a cohesive opportunity assessment. His schedule was intentionally aggressive, to force him to focus on the most important items based on available information and not to strategize endlessly. The opportunity assessment needed to answer some fundamental questions: Was it an important unsolved problem? If so, for whom was it a problem? Could TabletTeach solve this problem better than any other company? Why? Could TabletTeach expect to make money by solving the problem? How?

To Russo an important unsolved problem had three desirable characteristics: a substantial problem for a significantly large set of users; a problem with no good solution available today; a problem that, if solved well, could generate demand-pull from target customers.

To help uncover these important unsolved needs, he used a simplified jobs to be done (JTBD) analysis to understand the fundamental "jobs" that each persona (user type) needed to "get done."[18] The jobs users might want to accomplish could be emotional (feelings about themselves or others' perception of them); functional (tasks to do); or ancillary (things that needed to be done before, during, or after the main job).[19] With limited time and money, Russo's JTBD analysis necessarily would be simplified, initially using friends, family and K–8 educational connections in his network who volunteered to represent the target personas. Russo knew software products often failed in the classroom because they were created for school district administrators as the primary customers. Rather than selling into schools or school districts, he planned to start by creating an offering that would be valuable "on the ground"—to the students who needed to learn, to their parents, and to their teachers. For his JTBD analysis, therefore, Russo focused on these three underserved groups, observing users perform these jobs in their natural environments. While doing so, Russo also asked non-leading clarification questions such as, "Why do you do it that way?" and "How well is that working for you?" He aggregated his notes and created a simple jobs map[20] for the student, teacher, and parent personas. Each jobs map captured the primary tasks a persona needed to complete with respect to learning, teaching, and parenting (see **Exhibit 4**).

Using his notes and the map, Russo captured important jobs for each persona. He then organized these jobs into a spreadsheet. Russo used this spreadsheet to create a survey to determine the importance and satisfaction for each job. He reviewed the survey with a few of the target group volunteers and sent it out to the persona representatives with whom he had spoken with before, as well as to a larger group of students, teachers, and parents. After getting back the survey results, he came up with a list of the jobs that had the highest "opportunity index,"[21] that is, jobs to which users attached high importance but about which they felt low satisfaction with available options (see **Exhibit 5**).

Decision Time

Looking at the information he had organized, Russo arrived at some conclusions. The TabletTeach solution needed to be student-centric. Successful digital learning products, Russo believed, had to address two critical issues with traditional, or print-centric, learning methods: student engagement and differentiated learning, which accounted for each student's different pace and style of learning. Thus, TabletTeach should be fun and adaptable, while covering the necessary Common Core material. Traditional LMSs were a good example of a product designed primarily for the buyers, without enough attention given to the users. TabletTeach initially would be sold directly to parents who wanted to provide their children with technology or career-readiness skills (such as teamwork, communication, and independent/creative thinking), and to prepare their children for the 2014–2015 CCSS-aligned national tests. Russo saw evidence that early-adopter teachers, as well as parents, were buying the type of engaging, differentiated

[18] Anthony W. Ulwick and Lance A. Bettencourt, "Giving Customers a Fair Hearing," *MIT Sloan Management Review*, Spring 2008.

[19] Ibid.

[20] A jobs map is similar to a process map, with the significant difference that a jobs map focuses on the jobs a user needs to accomplish independent of any particular process, or solution, for accomplishing that job. See Lance Bettencourt and Anthony W. Ulwick, "The Customer-Centered Innovation Map," *Harvard Business Review*, May 2008, for an explanation of the unabridged approach to jobs mapping.

[21] The calculation for the opportunity index is taken from Anthony W. Ulwick, "Turn Customer Input Into Innovation," *Harvard Business Review*, January 2002.

learning solution he had envisioned. On average, teachers spent about $513 of their own money each year on their students[22]—which equals $1.8 billion for the 3.5 million teachers in the United States.[23]

Russo wanted to use a grassroots approach to demonstrate the value of the TabletTeach solution. TabletTeach would be used for supplemental learning, so early-adopter teachers, working with parents, could use it perhaps as part of an enrichment program. TabletTeach needed to be easy to implement for rapid adoption by parents and students, perhaps with teachers' help, in preparation for the 2014–2015 tests. It should foster teamwork and collaborative, peer-based learning. It needed to be easy for students to use, requiring almost no learning curve and minimal operational intervention by teachers. TabletTeach should be teacher-friendly; it should empower teachers by providing a fun, effective, and differentiated tool for students to learn to use.

Russo reviewed his four potential product concepts and his key decision criteria for each:

- What was the business opportunity? Why would it make money? How would Russo's company win?
- Who was the target customer? Would this customer be the primary user?
- What was the primary problem that TabletTeach would solve for the buyer? For the user?
- What was the solution concept?
- What assumptions, or hypotheses, needed to be validated?

Russo would capture the results of his analysis using a simple template already familiar to him (see **Exhibit 6**.) He expected that the analysis would help him determine which product concept to pursue for TabletTeach.

[22] Nicole Leinbach-Reyhle, "Teachers Spend Their Own Money on Back to School Supplies," *Forbes*, August 19, 2014, http://www.forbes.com/sites/nicoleleinbachreyhle/2014/08/19/teachers-spend-own-money-school-supplies.

[23] Calculated from 2011 data from National Center for Education Statistics, *Digest of Education Statistics*, Table 208.20, http://nces.ed.gov/programs/digest/d13/tables/dt13_208.20.asp.

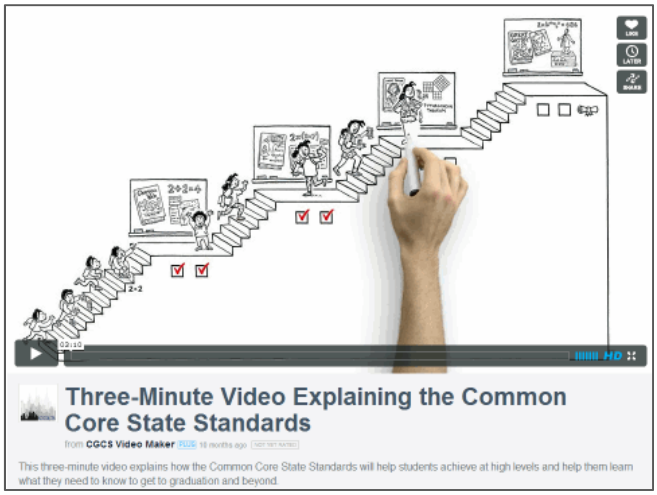
Exhibit 1: Background on New Common Core State Standards

In 2009 the National Governors Association announced an initiative to:

> *. . . provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers. With American students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy.*[24]

At the time of the case, forty-five of the fifty states had adopted the Common Core State Standards (CCSS), with the 2009 federal "Race to the Top" grants accelerating adoption. See the following video for an overview of the Common Core:

https://vimeo.com/51933492



Starting in the 2014–2015 school year, states were expected to move to CCSS-aligned standardized testing. As explained in the video above, the purpose was to create a level playing field for evaluating students' performance—and, by implication, that of schools, teachers, and administrators.

[24] Pearson, "Understanding the Common Core State Standards Initiative," http://commoncore.pearsoned.com/index.cfm?locator=PS11Ue (accessed January 30, 2015).

Exhibit 2: Digital Learning Best Practices and Observations from Mooresville Graded School District

In 2013, Jack Russo visited North Carolina's Mooresville Graded School District, which at the time was the best school district in the country,[25] according to *Scholastic Administrator* magazine. The occasion was an open house during which visitors were bused to different schools and could enter and observe every classroom, and, where appropriate, even talk with students and teachers. The experience became an inflection point for Russo, allowing him to see first-hand "digital learning done right."

Mooresville was not an affluent school district, nor was it located in a technology hub. Mooresville was an example of the potential gains that could be realized when the old way of teaching children was discarded entirely and a new method was developed from the ground up. What made Mooresville special was not only that all of its students, from grades 1 through 12, had their own 11-inch MacBook Air, nor even that they used no print textbooks; what was special was that the district had integrated digital learning into the fabric of its educational system and had developed an entirely new way of educating students. The district's results proved it could work.

Russo's conclusions from his visit to Mooresville:

OBSERVATIONS

- Mooresville had no print textbooks; everything was digital: learning material, assignments, homework, and in-class work.
- Teachers in Mooresville encouraged students to explore and learn new technologies—freely admitting, as one there did, "It's impossible to keep up with all the technology changes; my students often learn something before I do."
- In most of the Mooresville classrooms, Russo observed teachers guiding a small group of students, while the rest of their classmates worked on their own. Inevitably, students would help one another learn—with very positive results. In a few classrooms, teachers explicitly adopted peer-based learning methods to encourage learning and improved teamwork skills.
- The Mooresville schools taught "digital citizenship" at each grade, that is, how to use technology safely and responsibly—especially regarding Internet risks and social networking etiquette. This was an implementation detail that Russo had not considered.
- Parents were heavily involved and were supportive throughout the process
- Transitioning from a traditional learning model to a digital model was a five-year change management process, even for a relatively small 5,000-student district.

[25] Elizabeth Farrell, "10 Lessons from the Best District in the Country," *Scholastic Administrator*, Spring 2013, http://www.nxtbook.com/nxtbooks/scholastic/administrator_2013spring/#/50.

Exhibit 2 *(continued)*

INSIGHTS

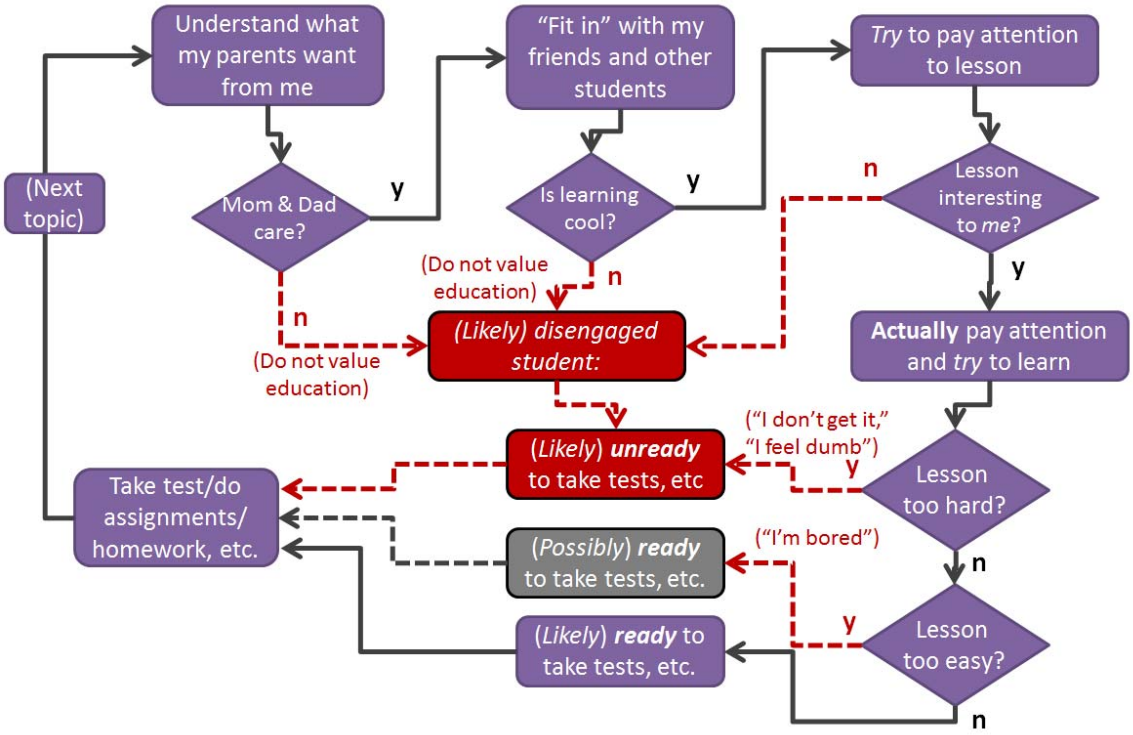
(These insights became foundational to Russo as his concept of "TabletTeach" emerged.)

- *Tablets over computers for primary-grade students.* Mooresville made the decision to standardize computers as the most important hardware for all students, from grades 1 through 12. In observing younger students (grades PreK–3, especially) in general, it seemed to Russo that computers were not very effective because of the "cognitive dissonance" between the data input (mouse/keyboard) and the results observed on the screen. Tablets, on the other hand, were intuitive for primary students (PreK–3) to use.
- *Focus first on learning, not on learning how to use computer.* Russo's belief was that primary-grade students should focus on learning with tablets, rather than on taking the additional time to learn how to use computers, because it was easy enough to pick up computers in fourth or fifth grade. Russo confirmed this informally with four or five technology specialists. Computers made sense where greater content creation, such as of reports and creative-writing projects, became a more important part of the curriculum.
- *Change management a major issue in any print-to-digital transformation.* The five-year change management process that the relatively small Mooresville district experienced was an eye-opener for Russo. He foresaw significant challenges ahead as large school districts, such as Chicago, Los Angeles, or Miami Dade transitioned toward digital learning. It likely would take years to implement an effective digital (or even a blended) solution in most school districts—and that the print-to-digital disruption would last years. During this time, Russo foresaw a window of opportunity to fill the gap with a supplemental learning product, perhaps sold directly to parents and/or offered to enable an after-school enrichment program.
- *Peer-based learning worked well in a progressive, "guide-on-the-side" digital-learning environment.* Based on his observations, Russo saw an opportunity to develop a peer-based, collaborative learning solution that empowered students to explore and learn together by teaching each other. In his follow-up research, Russo discovered that significant academic research showed the benefits of peer- and team-based learning.[26]
- *Parent involvement enabled with proper digital rollout and communication.* Observing the importance of parent involvement in the success of Mooresville solidified Russo's belief that parents were an underused resource in K–12 education. Russo would consider ways to tap into parents' desire to help. Moreover, he would consider selling directly to parents, at least as a market-entry point.

[26] Charles Crook, "Children as Computer Users: The Case of Collaborative Learning," *Computers & Education* 30 (April/May 1998): 237–47.

Exhibit 3: Example Jobs Maps for Students, Parents, and Teachers

A SIMPLIFIED JOBS MAP FOR K–8 STUDENTS



A SIMPLIFIED JOBS MAP FOR K–8 PARENTS

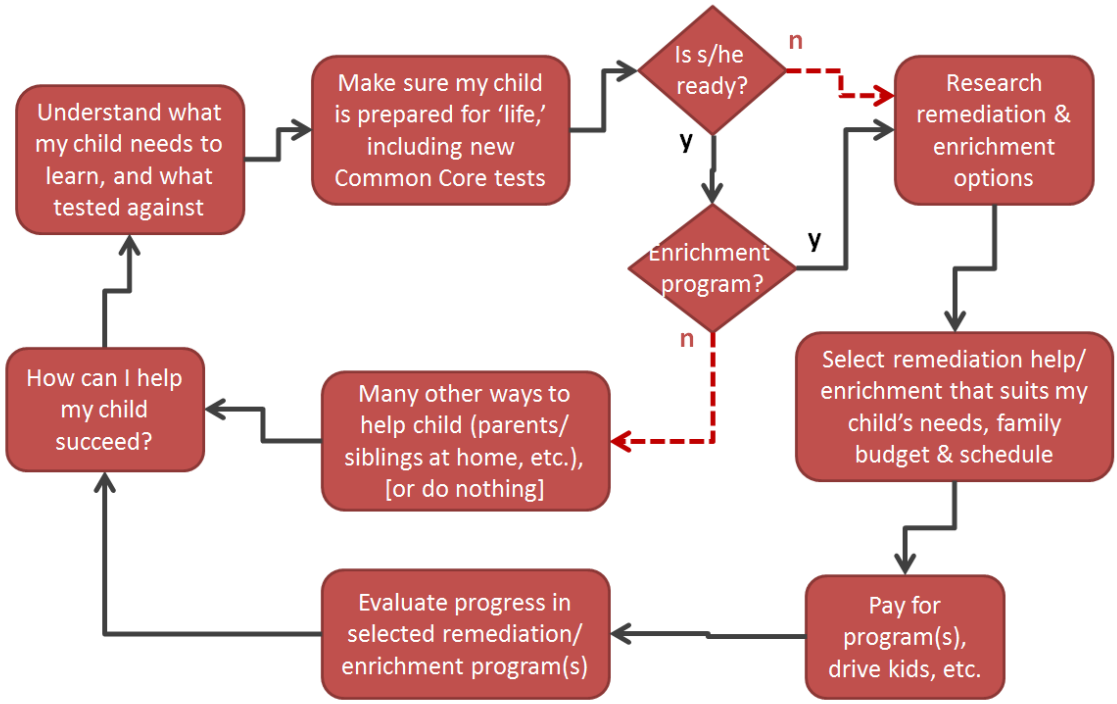


Exhibit 3 *(continued)*

A SIMPLIFIED JOBS MAP FOR K–8 TEACHERS

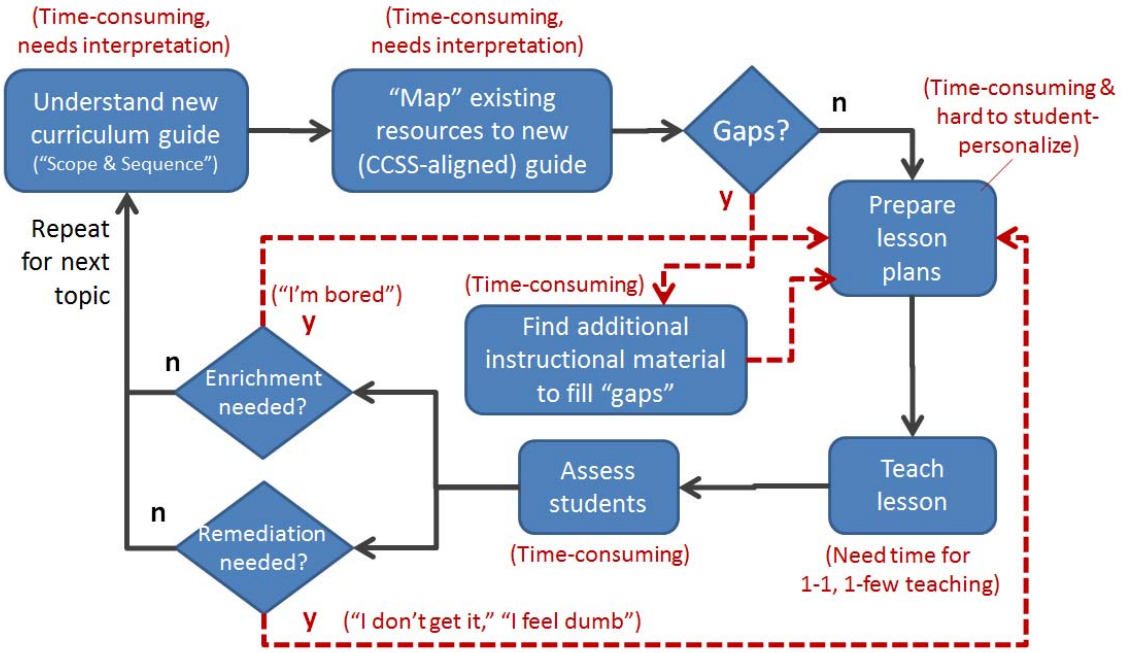


Exhibit 4: High-Opportunity Jobs to be Done for K–8 Learning, by Persona

HIGH-OPPORTUNITY JOBS TO BE DONE FOR K–8 STUDENTS

Persona	Job to be Done by Persona	Importance[a] (1–10)	Satisfaction[b] (1–10)	Opportunity[c]	Rank
Student	I want to have fun while I learn.	9	2	16	**1**
Student	I want to help my friends when they don't understand.	8.5	2	15	**2**
Student	I want to feel like I belong to a group of students.	9	3	15	**2**
Student	I want to learn with a small group of students I trust.	8.5	2	15	**2**
Student	I want to get help from students I trust when I don't understand.	8	2	14	**5**
Student	I want to learn stuff that is interesting to me	8	2	14	**5**
Student	I want to be able to work at my own pace.	7.5	1.8	13.2	**7**
Student	I want to feel relaxed while I learn.	7.5	2	13	**8**
Student	I want to do well in school so my parents will be proud of me.	9	5	13	**8**
Student	I want to be taught stuff that is not too easy . . . if it's too easy I am bored.	8	4	12	**10**
Student	I want to be taught stuff that is not too hard . . . otherwise I feel dumb or get confused (I'm too embarrassed to ask questions in a big group.)	7	2.5	11.5	**11**
Student	I want to be able to get help from the teacher when I don't understand.	8	4.5	11.5	**11**
Student	I want to learn as much as I can.	7	4	10	**13**
Student	I want to be friends with all the students in my class.	6	2	10	**13**
Student	I would want to get good grades, even if no one but me saw them.	6	3.5	8.5	**15**

[a] Importance of that job to the persona, based on survey of students in grades 1–5 across the United States, n=378.

[b] Satisfaction with existing solution(s) for the persona, based on survey of students in grades 1–5 across the United States, n=378.

[c] Opportunity = (Importance) + MAX(Importance – Satisfaction,0).

Exhibit 4 *(continued)*

HIGH-OPPORTUNITY JOBS TO BE DONE FOR K–8 PARENTS

Persona	Job to be Done by Persona	Importance[a] (1–10)	Satisfaction[b] (1–10)	Opportunity[c]	Rank
Parent	I want to feel confident that my child is fully prepared to take the new national tests that are aligned to the new Common Core State Standards when they roll out in the 2014–2015 school year.**	9	2	16	**1**
Parent	I want my child's curiosity to be encouraged in learning at school.	8	1	15	**2**
Parent	I want to know where my child needs help and where s/he is doing well.	8.5	2	15	**2**
Parent	I want my child to learn teamwork at school	8.5	2.5	14.5	**4**
Parent	I want my child to be confident using technology as part of learning.	8	1.5	14.5	**4**
Parent	I do not want my child to be rushed through material that s/he does not understand.	8	1.9	14.1	**6**
Parent	I want my child to feel comfortable at, and enjoy, school.	8	2	14	**7**
Parent	I want my child to be able to learn on her/his own.	8	3	13	**8**
Parent	I do not want my child to be bored working on material that s/he has already mastered.	7.5	2	13	**8**
Parent	I want my child to pay attention and be engaged when at school.	8	3	13	**8**
Parent	I want my child to be confident socially.	8	3.6	12.4	**11**
Parent	I want my child to understand the basics: reading, writing, and arithmetic.	7	3	11	**12**
Parent	I want my child to get straight A's in school	7	4	10	**13**
Parent	I want my child to be the best student in the class and recognized as such.	3	3	3	**14**
Parent	I want my child to sit and learn facts in the "traditional" mode.	2	2	2	**15**

[a] Importance of that job to the persona, based on survey of students in grades 1–5 across the United States, n=378.

[b] Satisfaction with existing solution(s) for the persona, based on survey of students in grades 1–5 across the United States, n=378.

[c] Opportunity = (Importance) + MAX(Importance – Satisfaction,0).

Exhibit 4 *(continued)*

HIGH-OPPORTUNITY JOBS TO BE DONE FOR K–8 TEACHERS

Persona	Job to be Done by Persona	Importance[a] (1–10)	Satisfaction[b] (1–10)	Opportunity[c]	Rank
Teacher	I want more time in my day; I am being asked to do too much.	10	1	19	**1**
Teacher	I want to have time to give students the 1:1 (or 1:few) attention they deserve.	9	1	17	**2**
Teacher	I want to make sure that my students are each learning at the right pace for him/her.	9	2	16	**3**
Teacher	I want to be able to know how each student is performing vs. the new CCSS, so I can provide targeted help for each student.	9	2	16	**3**
Teacher	I want an easy way to create engaging and effective lesson material for the new CCSS.	9	2.5	15.5	**5**
Teacher	I want to be able to provide differentiated learning to my students.	9	3	15	**6**
Teacher	I want to be able to know when a student is not "getting" a particular topic so that student can get extra help.	8.5	2	15	**6**
Teacher	I want to be able to give students multiple ways of learning a topic because different methods work for different children.	8	1	15	**6**
Teacher	I want to be able to quickly find quality educational resources that are CCSS-aligned. ["Quality" defined by teacher-created/-curated, student-reviewed and/or teacher-reviewed.]	8.5	3	14	**9**
Teacher	I do not want to *have* to learn new software to do my job.	9	5	13	**10**
Teacher	I want my students to spend more time learning (including formative assessments by me, their teacher) and spend less time in formal testing.	7.5	2.5	12.5	**11**
Teacher	I do not want my job performance rating to suffer because of the new CCSS tests. [Teachers' performance rating currently is not based upon student performance.]	8	4	12	**12**
Teacher	I want my students to feel comfortable asking questions, exploring and making mistakes.	8	4	12	**12**
Teacher	I want to help parents be more effectively involved in their child's education (by letting them know what material to use, where their child needs remediation or advanced enrichment).	7.5	4	11	**14**
Teacher	I want my students to be more engaged by fostering their natural curiosity while still preparing for new CCSS.	7	3	11	**14**

[a] Importance of that job to the persona, based on survey of students in grades 1–5 across the United States, n=378.

[b] Satisfaction with existing solution(s) for the persona, based on survey of students in grades 1–5 across the United States, n=378.

[c] Opportunity = (Importance) + MAX(Importance – Satisfaction,0).

Note: This is a subset of a 50-question survey, which was based on significant ethnographic research.

Source: Anthony W. Ulwick, "Turn Customer Input Into Innovation," *Harvard Business Review*, January 2002.

Exhibit 5: Opportunity Hypothesis Template

Russo viewed opportunity analysis (also known as business case development or market analysis) as an important part of the "fuzzy front end" of the process. Done well, it would define a good starting point for the "customer development"[27] process and the accompanying requirements and prototype development processes.

The opportunity hypothesis would not be more than two pages (or two slides).

OPPORTUNITY HYPOTHESIS

One-line statement describing the critical problem that needed to be solved; stating whose problem it was and why it mattered; and detailing the potential revenue opportunity.

CUSTOMER PROBLEM

Three-to-five-sentence paragraph summarizing the problem solved and explaining why it was a critical problem for the target customers.

PROPOSED SOLUTION CONCEPT

Very high-level product concept to be explored in the customer discovery process and in the product development process. Customer discovery and product development would happen at the same time.

HYPOTHESES

The core hypotheses, or assumptions, underlying the idea. These hypotheses would be pressure-tested in customer discovery and product development. Ideally, one or more metrics would be associated with each hypothesis and clearly defined success criteria would be established for each metric. If any of these proved to be false, the entire opportunity should be evaluated critically. For example:

- H1: Common Core State Standards were going to accelerate adoption of new curriculum content—specifically, new digital content. Metrics included speed and penetration of Common Core adoption of associated content, from both a volume and a dollar perspective.
- H2: Tablets were the best way for PreK–5 students to learn and were equally effective for grades 6 through 8. Metrics include student engagement and learning, via A/B testing (tablet vs. alternatives).
- H3 . . .
- H4 . . .

[27] Customer development is a term coined by Steve Blank from Stanford. For a detailed explanation, see Steve Blank, *Four Steps to Epiphany* (Pescadero, CA: K&S Ranch Press, 2013), the first chapters of which are available for free online at http://www.stanford.edu/group/e145/cgi-bin/winter/drupal/upload/handouts/Four_Steps.pdf.