

Route 66 Literacy

Executive Summary

Route 66 Literacy is an Internet-based educational service that provides reading and writing instruction to beginning adolescent and adult readers, particularly those with significant disabilities. Route 66 Literacy's distinctive approach relies on a scientifically-based instructional technique developed by literacy experts at the University of North Carolina, Chapel Hill. Unlike existing products, Route 66 Literacy includes all of the essential elements of literacy instruction – reading comprehension, word identification, phonics, and writing – while emphasizing high-interest content that is targeted at older students and adults. Another essential and unique component of the Route 66 Literacy system is its integrated “Teacher Tutor” feature. The Teacher Tutor helps ensure that instructors – who often include parents and volunteers – have all the support they need to be as effective as possible.

The need for a comprehensive, beginning reading tool for adolescent and adult learners with development disabilities is substantial. Estimates of the number of school-age children who suffer from prevalent development disabilities such as autism and Down Syndrome range from 800,000 to 1.5 million. While research has provided ample evidence that individuals with even the most significant disabilities can learn to read and write, 70-90% lag significantly behind their peers in literacy learning. More generally, in excess of 20% of American adults read at or below a fifth grade level.

Route 66 Literacy is currently operated as a partnership between The Center for Literacy and Disability Studies (CLDS) of the University of North Carolina at Chapel Hill and Benetech, an innovative Palo Alto-based nonprofit that develops technology projects addressing major social issues in areas such as disabilities, human rights, literacy, and education. Leading researchers at the CLDS provide the service's content and instructional information while Benetech supplies the technical, managerial and marketing expertise required to transform Route 66 Literacy into a commercial Internet product. As with all of Benetech's initiatives, the goal of the Route 66 Literacy project is to both generate a significant social impact and to create a financially self-sustaining entity.

Revenue will be generated through service subscriptions paid for by individual users and instructors as well as institutional users such as schools and other organizations that serve the persons with disabilities. The service will initially be marketed to potential users through presentations at key conferences, user trials at disability centers (such as the Community Association for Rehabilitation) and through agreements with direct marketers. Over the long term, we expect marketing partnerships with other providers of educational materials to play a significant role in the promotion and distribution of Route 66 Literacy.

Route 66 Literacy represents the culmination of years of research in literacy instruction methodologies for adolescent students both with and without developmental disabilities. A key finding of this research is the effectiveness of instructional materials that contain

content that is timely and of high interest to adolescent audiences. Most current beginning reading instruction materials, however, are composed of subject matter that is often outdated and almost entirely geared towards the interests of young, beginning readers. Because the Route 66 Literacy service is delivered online, unlike competing services, materials can be updated as frequently as necessary to keep the content inline with current interests and events.

While Route 66 Literacy has been designed to meet the needs of students with developmental disabilities and will initially be marketed to this group, the instructional techniques can benefit all adolescents and adults who are beginning readers and writers. This includes individuals with other disabilities, those learning English as a second language or those without basic literacy skills. Since individuals in these groups number in the millions, the potential market for Route 66 Literacy is substantially larger than the initial target market. Over the long-term, we will introduce Route 66 Literacy to these groups, likely through strategic partnerships with existing providers, research grants authored by CLDS, and funding from other major donors and foundations.

Company Mission

Literacy empowers people to establish and maintain relationships, have greater control over the economic aspects of their lives, be effective consumers, and generally be viewed as more competent by the people they encounter on a day-to-day basis.

Route 66 Literacy is an Internet based educational subscription service that supports adolescent and adult learners who have been unsuccessful learning to read and write. Designed specifically to meet the unique learning needs of persons with significant developmental disabilities, Route 66 Literacy is the first electronic educational tool that combines best practices in beginning reading instruction with dynamic, high-interest, low-difficulty content. Route 66 Literacy will transform literacy instruction for students with significant disabilities (including those with autism, Down syndrome, and other developmental disabilities). Our goal is to make this learning tool available to as many learners with significant disabilities as possible, helping each one to experience the enrichment that accompanies successful literacy acquisition.

Route 66 Literacy is based upon a pedagogy that is highly effective with students without disabilities. This grounding in scientifically-based instructional methods will make Route 66 Literacy a tool that is applicable to adolescent and adult beginning readers from many walks of life – those learning English as a second language, adults who never learned to read, and people from other countries learning to read in their native language.

The partnership between Benetech and The Center for Literacy and Disability Studies (CLDS) of the University of North Carolina at Chapel Hill has been established to exploit existing technologies at Benetech to ready the Route 66 Literacy instructional tool for release to the general public. Benetech and the CLDS are seeking a long-term social return on the technologies and services developed through the partnership. Our mutual goal is to reach financial self-sustainability through subscription revenues so that operations, research and development, and eventually the entire project will be self-supporting within three to five years of its initial public launch.

Market Need

Route 66 Literacy will be targeted primarily at two major groups of adolescent and adult literacy learners: students with developmental disabilities and adults with low literacy.

Developmentally Disabled Students

There is a significant need for a comprehensive, beginning reading instructional tool for adolescent and adult learners, particularly those with significant developmental disabilities. According to the U.S. Department of Education, there are more than 800,000 8-22 year-old students with moderate to severe/profound disabilities and over five million with a disability of some kind.¹ Although extensive scientific research indicates that individuals with the most severe disabilities can read and write at a high level, the vast majority (70%+) trails their peers in literacy learning. This problem is quite widespread – research indicates that as many as one in every 200 children are born with autism and approximately one in every 800 is born with Down syndrome.

People with Down Syndrome

Because most people with Down syndrome (DS) have IQs that fall in the mild to moderate range of retardation, literacy learning poses a significant challenge. It is well accepted that people with DS can learn to read sight words and develop functional literacy skills such as signing their names and reading words that appear on signs. But new research indicates that people with DS can reach a higher level of literacy with proper instruction. In fact, one longitudinal study suggests that given proper instruction from early childhood, children with DS can learn to read as well as many of their non-disabled peers (Byrne, Buckley, MacDonald, & Bird, 1995; Laws, Buckley, Bird, MacDonald, & Broadly, 1995).

People with Autism

Persons with the label of autism and related disorders such as Asperger Syndrome and Pervasive Developmental Disorder - Not Otherwise Specified (called herein the autism spectrum disorders, or ASD) face unique challenges in learning to read and write. While many persons with Asperger and those with milder forms of ASD learn to read and write at very high levels, most struggle to learn to read with comprehension and write meaningfully.

Adults with Low Literacy

The problem of low literacy also extends beyond school-aged children. More than 20% of American adults read at or below a fifth grade level. These rates are much higher for non-native English speakers, who are growing as a proportion of the population. Currently, about 10% of the American population is foreign born, with the large majority coming from non-English-speaking countries. Over one million are enrolled in ESL adult education classes in the U.S.

¹ U.S. Department of Education, 24th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, 2002

Under-educated and Unsuccessful Adults

In the U.S. the number of adults with low literacy is estimated in the tens of millions. While very few adults in the US are truly illiterate, there are many with literacy skills so low they are unable to find and keep decent jobs, support their children's education, and participate actively in civic life. According to the National Adult Literacy Survey (NALS), 44 million people, or 21-23% of the U.S. adult population lacks a sufficient foundation of basic literacy skills required to function successfully in our society.

Of the adults who score at this lowest level of literacy, more than 60% had failed to complete high school, and more than 45% had physical impairments, mental conditions or vision problems that affected their ability to read print (Kaestle, et al., 2001).

Adults Learning English as a Second Language

Non-native English speakers are growing as a proportion of the U.S. population. Currently, about 10% of the American population is foreign born, with the large majority coming from non-English-speaking countries. Of the 21-23% of the U.S. adult population who performed in the lowest levels of the National Adult Literacy Survey, 25% (11 million) were immigrants who may have just been learning to speak English (Kaestle, et al., 2001). In addition, more than one million non-native English speakers are enrolled in ESL adult education classes across the US.

Adults with Disabilities

Adults with disabilities scored worse than any other group of adults who completed the NALS. While 21-23% of the entire population scored in the lowest levels on the survey, 80% of the adults who self-reported disabilities performed at the lowest levels. The average performance for particular groups of adults with disabilities produced even lower results. Approximately 92% of adults with mental retardation who completed the survey scored in the lowest levels. About 88% of the adults with learning disabilities and 83% of the adults with speech disabilities also scored at the lowest levels. Conversely, 20% of the general population score at the highest two levels of literacy as measured on the NALS, while only 6% of adults with disabilities score at those levels (Kaestle, et al., 2001).

Additional Issues

For individuals in each of the groups above, the literacy learning problem is further exacerbated by difficulties related to the manner in which literacy instruction is provided. Students with significant disabilities, ESL learners and other adult learners are often taught by instructors who have limited training regarding appropriate literacy instruction methods. For example,

- Students with the most significant disabilities learn in a number of different, unstandardized instructional settings – including special classes and schools, resource rooms, public libraries, regular classrooms and their homes – and, in each case, need but lack instructional materials that maximize literacy learning. This is especially important because special education teacher preparation

programs do not require training in literacy teaching techniques that specifically address the needs of students with significant disabilities.

- Adult learners who seek out assistance usually receive it from volunteer tutors who have limited access to training, support and appropriate instructional materials.

A second problem is a lack of materials that are appropriate for adolescent and adult beginning readers and limited resources to access the few print resources that do exist. Almost all beginning reading materials currently contain content geared towards an audience of young beginning readers. Research studies by members of the CLDS, however, indicate that adolescent and adult beginning literacy instruction is much more effective when content is tailored to the appropriate demographic.

Solution Description

Overview

Route 66 Literacy is a comprehensive set of literacy content and instructional tools and services for adolescent and adult learners delivered via the Internet. It combines a balanced set of reading, writing and word study at the first and second grade level while incorporating two fundamental features:

- High-interest content – Because adolescent and adult students with and without disabilities learn most effectively when reading materials contain content relevant to their interests, Route 66 Literacy will incorporate high-interest, age-appropriate reading materials illustrated with images from Flickr, one of the largest online photo management and sharing applications in the world.
- Teacher Tutor – The real-time Teacher Tutor helps alleviate the instructor training problem described above by providing instructors with effective directions, supports and instructional feedback on a minute-by-minute basis. This ensures that the instructor is gaining skills in reading instruction techniques while the student is learning to read.

Both of these features are unique to the Route 66 Literacy service, and both benefit significantly from Route 66 Literacy's Internet delivery mechanism. Because Route 66 Literacy – unlike most other educational software – is web-based, content can be continuously updated to reflect changes in popular culture and current events. In addition, the Teacher Tutor functionality can be upgraded any time new instructional techniques are developed by researchers at CLDS and other institutions.

The first product in the Route 66 Literacy line is designed for adolescents with developmental disabilities who read at beginning levels and the adults who teach them. It is targeted at a very beginning reading ability level, is accessible by persons with the most severe physical and communication impairments and uses content that appeals to adolescents. Research results of school-based beta-testing of a Route 66 Literacy prototype indicate that its appeal extends down to children as young as eight years old, across students who are learning English as a second language and into the adult literacy population.

The consistent task structures and an integrated Teacher Tutor within Route 66 Literacy are particularly supportive of learners with developmental disabilities. The Teacher Tutor insures that the educator, parent, tutor or peer who is supporting the learner with developmental disabilities will have real-time access to the methods and language of effective instruction and feedback that is most likely to promote success. The ability to engage in sustained, self-selected and varied repetition within Route 66 Literacy (book reading, writing or word study) is designed to support the need for more time and repetition that many learners with developmental disabilities require to learn.

Because the vast majority of Route 66 Literacy's initial target market spend at least part of their day in a public school setting and because public schools systems are the main consumer of special education technology, schools will play an important role in the distribution of Route 66 Literacy. A fundamental concern of educators when purchasing instructional technology is the ability to measure improvements in student performance that result from the new technology. In order to meet this need, a student evaluation packet is also provided with a Route 66 Literacy subscription. Schools can use the examinations and other materials in the packet to monitor Route 66 Literacy's effectiveness and create any necessary reports.

With the financial support of an early strategic funder, a commercial-ready version of Route 66 Literacy has been developed by Benetech and is prepared for testing on the Internet. Much of the additional functionality (e.g., customer support, billing, security, etc.) of this commercial version of Route 66 Literacy is based on the technology currently in use within another Benetech project, Bookshare.org. Bookshare.org is an online library service of digital books in accessible formats that are available to qualifying individuals with visual impairments or learning disabilities. Like Route 66 Literacy, Bookshare.org is a disability-focused social venture that relies on a web-based, customer subscription revenue and support model. Since beginning commercial operations in 2002, Bookshare.org has successfully acquired thousands of subscribers nationwide. Thus, many of the back-office technological components of Route 66 Literacy are founded on an already successful online service.

Route 66 Literacy's Advantages

Teaches Reading and Writing

A distinct advantage of Route 66 Literacy is that it is designed to *teach* reading and writing. Every other on-line learning tool either requires the user to already know how to read and write OR uses a variety of multimedia tools to bypass the individual's limited skills. These other on-line learning tools are geared at providing information rather than building skills.

Scientifically Proven Instructional Technique and Expert Leadership

The pedagogy that underlies Route 66 Literacy is founded on many years of scientific research performed by leading experts in the literacy field. Specific research using the Route 66 Literacy prototype has generated overwhelmingly positive results. For example, in a recent study, 40 students with developmental disabilities spent 3 months using Route 66 Literacy under the supervision of an untrained tutor. By the end of the 3

month period, all 40 students had experienced a statistically significant improvement in their literacy skills with the majority of students undergoing a substantial improvement.

In addition to its scientifically-based methods, Route 66 Literacy benefits from the leadership of Dr. Karen Erickson, co-creator of Route 66 Literacy and current director of the Center for Literacy and Disability Studies at the University of North Carolina, Chapel Hill. Dr. Erickson has over 20 years of experience as a teacher, researcher and consultant. Her position as a foremost expert in the field provides unmatched access to key users, strategic partners and other interest groups.

Teaches the Teacher

Another competitive advantage of the core technology applied by Route 66 Literacy is that while it is providing instruction to the learner, it simultaneously supports the teachers, tutors, parents and others who choose to teach them. The persons with the lowest levels of literacy targeted by Route 66 Literacy require a more literate adult sitting with them, providing carefully worded, systematic instruction and feedback. In order to take advantage of the programs for independent use that already exist, millions of learners must have someone working with them directly to help them move beyond the very beginning levels of literacy learning, yet there aren't millions of available tutors who have the skills to support them. Route 66 Literacy addresses this need by supporting the tutors on a need-to-know basis.

Across the board, the literacy learning difficulties experienced by people with and without disabilities are interrelated with the skills their teachers bring to the instructional table. The National Institutes of Health and National Center for Childhood Health and Disease have supported the vast majority of research that serves as the basis of the *Education Act* and the *No Child Left Behind* policy on the federal level. Both of these point directly to the need to support teacher preparation and in-service training as a critical component of addressing the literacy learning needs of children in schools. Beyond the school walls, the U.S. Office of Vocational and Adult Education has closely examined the work status of teachers within the adult education community and finds that they lack the preparation and ongoing support required to meet the needs of the complex learners they serve. The adults working as volunteers in community programs are in even greater need of such preparation and training supports.

Web Delivery

A critical advantage of the core technology applied by Route 66 Literacy is its web delivery. While this presents an initial risk within the school market that is unaccustomed to subscription fees for computer technologies, schools do have a long history of supporting subscriptions for products such as Weekly Reader and other print-based materials. The sales potential in and out of school communities is enormous as the federal mandates to teach all children to read by the third grade intensify.

In the adult literacy community, it is likely that the web delivery will lead to earlier adoption rates than traditional software targeted at adult learners. Because adult literacy programs currently face ongoing financial difficulties, they often cannot afford the computer hardware that is required to run multimedia-heavy traditional software products – not to mention the software licenses themselves. Route 66 Literacy will allow these

programs to purchase a subscription and take advantage of Internet-ready computers already in their communities without having to invest in additional hardware. Additionally, the subscription model spreads the cost over time, removing the high one-time cost of purchasing equipment and software. In the fall of 2000, 98% of public schools and 100% of public libraries in the U.S. reported that they had access to the Internet (Cattagni, Westat, 2001). With no special software required, an adult with low literacy skills and his/her tutor could log on to an appropriate Route 66 Literacy product using one of these publicly accessible computers and experience success.

The non-consumable nature of Route 66 Literacy also lends itself to the adult literacy market. Currently, these programs purchase consumable materials for the adults they serve. When an adult drops out or takes a break, these materials (and the expense associated with them) are lost. With Route 66 Literacy, the subscription could easily transfer to the next client on the list for the remainder of the subscription period.

The fact that Route 66 Literacy does not require packing and inventory provides another competitive advantage. This allows us to update content based upon current events (particularly important for adults) and to include references to popular characters and personalities (particularly important for children and adolescents). It also allows us to offer the product at a price point that should minimize its time to adoption in schools, and make it affordable for the low literate adults who are much more likely to be unemployed than their peers with higher literacy skills.