



**This research was funded by the generous contribution of:  
LD Resources Foundation Inc.**

**Mission:** LD Resources Foundation is committed to overcoming barriers and providing access to knowledge for adults with learning disabilities.

**Toolkit for College**

**Special Training for Students with LD Transitioning to College**

**LD Resources Foundation, Inc. is a non profit organized under section 501(c)(3) of the Internal Revenue Code.**

## Acknowledgments

LDRF thanks the school for its vision and enthusiasm in leading the change toward AT and student empowerment. The organization also thanks (in alphabetical order): David Eisikovits, Terry Hudson, William Janowitz, Ira Kevelson, Jason Luchs, Isabella Reichel, Joanne Simon, Abby Smith, Mark Surabian, Zahavit Paz , Patricia Walsh, Alfred Wheeler, and Tess Yanisch. Many Assistive Technology companies worked with LDRF to make this possible by providing discounted products for the students. Thanks also goes out to all those at the school, students and staff, who made the program possible with their willingness to participate and provide valuable feedback.

Author notes: by Zahavit Paz

My hope is that this document provides researchers, schools, and foundations with a detailed model that other high schools can duplicate and implement.

LD Resources Foundation created detailed strategies for teaching transitional skills for students with learning disabilities (LD) and ADHD who are transitioning from high school to postsecondary education. For the past thirteen years, LD Resources Foundation has researched this transition to determine what qualities help LD students succeed in higher education. The foundation has trained LD students on assistive technology and awarded grants to college students with LD. The researchers at the foundation have a special interest in increasing the college retention rate for students with LD and ADHD. This would, in turn, improve their vocational outcomes, as failure to succeed in school can result in long-term problems, including underemployment and low income.

Over a period of many years, the foundation developed practical activities and techniques to build students' self-esteem, self-advocacy skills, and use of assistive technology. Many of these techniques are described in the program model herein described. The Toolkit for College program helps to give students with LD and ADHD a basic foundation of skills and knowledge they will need during their college years. While LD Resources Foundation planned this model and these strategies for students with LD and ADHD, the model can be modified and used with students suffering other disabilities in any situation requiring the teaching of transitional skills

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## **Abstract**

In order to reduce the high dropout rate of LD students upon their transition to post-secondary education, the LD Resources Foundation designed a comprehensive program to provide special training for 12<sup>th</sup> grade students with IEPs for learning disabilities, a program that has since been refined and implemented in earlier grades and could be replicated in any school. Thirty-six students in a New York public school participated in the pilot described here. The students' anti-stigma, emotional intelligence, self-advocacy skills, and ability to use cutting-edge assistive technology were addressed. Surveys were conducted before and after the program to assess its effectiveness. Analysis of the results led to the recommendations that (a) teachers be trained to teach AT and self-advocacy to LD students, and (b) preparation for the college setting at this age is helpful, but (c) increases in students' self-advocacy abilities, confidence, and familiarity with AT might be even greater if the program began earlier.

More research is required on the improvements that come when the program is begun before the 12th grade.

## **Introduction**

Making the transition from high school to college poses many challenges for all students. For students with learning disabilities (LD) and/or Attention Deficit Disorder (ADD), managing this change can make them feel more anxious and overwhelmed than their non-disabled counterparts. The move from a secure, regulated-by-IEP environment in secondary education into an environment that requires greater independence in self-advocacy and decision-making becomes overwhelming for many LD students, contributing, in many cases, to their decisions to leave higher education. LD students have a higher dropout rate than non-disabled students, with only 41% completing any kind of postsecondary education within eight years of leaving high school, while 52% of the general population of students have completed a certificate, diploma, or license in that time (Newman et al, 2011).

This three-year research project was developed by LD Resources Foundation, Inc with the aim of providing Assistive Technology (AT) devices to students with LD planning to attend postsecondary school after graduation and train these students in their use (training activities

described below). The pilot project recruited thirty-six students with LD listed on their Individualized Education Plans (IEP) enrolled in three classes only for students with LD listed on their IEPs at a New York City school. Of the thirty-six 12th-grade students who participated, 60% were male; 70% were white, 20% were African or African-American, and 10% were Latino. Twenty-two of the thirty-six students participated in two surveys, one at the beginning and one at the end of the school year. The same subsample of students responded to both surveys. Of these, 60% were male; 68% were white, 23% were African or African-American, 4.5% (one student) identified as Latino, and one student did not give a racial or ethnic identification.

The students were trained in the use of anti-stigma, self-advocacy skills, and innovative assistive technology. Surveys were conducted before and after the program to assess its effectiveness. In the final analysis, this program of preparation for the college environment was effective, and the program designers argue that it would have even greater benefits if it began before the final year of high school.

## Literature Review

Since the implementation of Section 504 of the Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act of 1990 (Title II), more students with learning disabilities (LD) are attending postsecondary institutions (United States Government Accountability Office, 2009). There is a demand for transitional course work for high school students with LD to prepare them for the less accommodating, more self-directed world of college. Making the transition from high school to college poses many challenges for all students, but for students with LD and/or Attention Deficit Disorder (ADD), managing this change can make them more anxious and overwhelmed than their non-disabled counterparts.

Students with disabilities represented nearly 11% of all postsecondary students in 2008, according to a federal survey (United States Government Accountability Office, 2009). In 2008, students with disabilities were similar to their peers without disabilities with regard to age, race, and the schools they attended (United States Government Accountability Office, 2009). The overall population of disabled students in postsecondary education has grown since 2000 and the distribution of disability types has changed, with a wider range of disabilities reported in 2008 than in 2000 (United States Government Accountability Office, 2009). This report notes that 9% of students had LD or dyslexia and 19% had ADD. Statistics show that 50% of LD students have both disabilities (Hallowell & Ratey, 2011; Vogel & Reder, 1998; Wolf, 2001). By extrapolating from this information and the GAO data, we can make a conservative estimate that a total of 28% of all students with disabilities in postsecondary schools have LD and/or ADD, making them the largest disabled group in postsecondary education.

However, the graduation rate of students with LD and/or ADD continues to be much lower than that for non-disabled students. Only 29% of students with LD or ADD enrolled in a four-year program graduate even after six years, while the general student population has a 42% graduation rate after only four years (Hambelt, 2014). Moreover, as noted above, only 41% of students with LD completed any kind of postsecondary education program (defined as a certificate, diploma, or license--any two-year, four-year, or vocational training program) within eight years of leaving high school, in contrast to 52% of the general population of students (Newman et al, 2011).

Enrollment of students with LD and/or ADD in two-year programs is more than double the rate for non-disabled students (50% compared to 21%), enrollment in technical or vocational programs (36% compared to 20%), and the four-year program enrollment is half that of the general population (21% compared to 40%) (Newman et al, 2011). The disproportionately high enrollment in community colleges may be due to these institutions' superior accessibility and open enrollment (no standardized testing requirement for admissions) policies.

### **Emotional intelligence and anti-stigma**

May and Stone (2010) noted that students with LD are viewed as having deficient social/interpersonal skills and low abilities. The same authors found that the range of students with LD in colleges is from 1% to 9%. Given appropriate accommodation in college, students with LD who had remediation during their earlier (K-12) years of education are expected to be successful in college (May & Stone, 2010). However, negative stigma toward people with disabilities may result in intense shame, hopelessness, helplessness, low self-esteem, and limitations of opportunities, so this "remediation" must include fostering resilience to this stigma. Many stigmatized individuals turn these stereotypes against themselves in a process called self-stigma, resulting in low self-esteem and failure to pursue their goals (Rusch, Angermeyer, & Corrigan, 2005).

Emotional intelligence, which Salovey & Mayer first (1990) defined as *the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions*, is a powerful weapon against allowing self-stigma to take root or to affect one's actions. As Lam and Kirby (2002) noted, emotional intelligence allows people to identify their emotions, reducing the influence of fear and anxiety on their behavior and promoting confidence, flexibility, persistence, willingness to take risks, and optimism (Goleman, 1996). Educators can foster emotional intelligence growth in LD students in high school (Elias, 2001) order to help them with their transition to college; college students with LD who were more comfortable with their disabilities and had higher self-esteem performed better (Getzel & Thoma, 2008). Janiga and Costenbader (2002) provided suggestions on how educators could better prepare students with LD for higher education, including developing their independence, coaching them on self-advocacy skills, increasing their understanding of their disability and particular needs, and providing a realistic description of the college environment--all of which could be anxiety-provoking for the student, underscoring the need for increased emotional intelligence and its concomitant coping skills.

### **Assistive Technology (AT) in Postsecondary Schools**

Assistive technology includes e-books, speech-to-text and text-to-speech programs, and digital organizational tools. Not all AT programs or devices are meant specifically for LD students only;



in fact, they are mainstream products that are particularly beneficial for the LD population. This may increase their appeal by decreasing the stigma attached to them. Google Calendar, for instance, may be considered a form of AT, as are online citation programs, digital flashcards, e-books--even programs like Dropbox and Evernote, which synchronize digital organization across devices, can aid in remembering, organization, and multi-media note-taking for students with LD. As another example, audiobooks, which began as an alternative to Braille for the blind to read novels, are now mainstream entertainment--but also aid students with dyslexia. These tools, in short, are used by the general population but are particularly helpful to students with learning disabilities, and they are tools that students can and must take the initiative on using. However, students must first be taught how to use these tools (Banerjee, 2010), and students with LD are sometimes resistant to doing so (Parker & Banerjee, 2007). Teaching students how and when to use these tools while they are still in secondary school seems the best approach for preparing them for the transition to college, but teachers are rarely aware of the existence or applications of AT themselves (Forgrave, 2002).

Students entering postsecondary institutions with a specific learning disability are moving into a world where accommodations for their disabilities are not guaranteed in the same way they were in high school. Postsecondary institutions are required to accommodate students' needs, but not to the same extent or with the same degree of guidance as secondary or primary schools, making the transition particularly jarring for students with disabilities. Colleges are required to implement Universal Design, which Rose and colleagues (2006) defined as designing products, buildings, and environments so they can be used readily by the widest possible range of users. ("Products" can here refer to teaching strategies and permission to use AT in the classroom.) However, not all institutions have implemented Universal Design fully (or at all), and even in those that do, the burden is on students to understand what their college requires of them in order to qualify for additional accommodations.

### **Teachers' Lack of Training**

Teachers are often unaware of the technological resources available to their students (Edyburn, 2004; Forgrave, 2002). In fact, teachers in general often feel underprepared to teach students with disabilities (MetLife, 2011, cited in Blanton, Pugach, & Florian, 2011). As such, they can hardly be expected to inform the students of these resources and train them in their use. Any attempt to foster the use of AT among college-bound students with LD must also address the knowledge of their teachers, librarians, and school technology professionals (IT departments, etc.). Bryant and colleagues (1998, cited in Forgrave, 2002) suggested that basic knowledge of AT be incorporated into teacher training programs nationwide, but if this process has begun, it does not address the problem of current teachers and other school staff who were trained before this change and remain unprepared to teach AT.

## **This Intervention**

LDRF, Inc., a foundation committed to overcoming barriers and providing access to knowledge for adults with learning disabilities, became aware of the problem of disproportionate drop-out among LD students who had difficulty with the transition to high school. The foundation decided that to make the transition smoothly, students with LD not only need AT, but also need to know how to advocate for themselves when they are in college. This pilot project was based on a series of organized learning activities previously developed by the foundation (contact LDRF for details). These activities and the technological resources that LDRF provided and promoted were intended to smoothe students' period of transition to higher education, with the ultimate goal of improving the students' educational achievement, vocational outcomes, and quality of life.

## **Planning**

### **Making Contact: Evaluating the School and Designing the Program**

LD Resources Foundation contacted a school in NYC. Three special education classes (thirty-six children total) were used as participants; students all had LD listed on their IEPs.

There was no involvement in classrooms as yet. LDRF staffers made connections with school personnel, developing materials designed to help build students' skills. This was an excellent time to start this program, as it was also the first year of a one-to-one laptop program in the high school--all students would have computers on which they could use the relevant programs.

At the time, teachers did not encourage the use of assistive technology in their classes, as you can see in the results from the 2011 survey of teachers. Although the high school used audio books, teachers, librarians, and the principal were unaware of the existence of Bookshare; nor did they use Read, Write and Gold (text-to-speech program) or Dragon (speech-to-text program) to any great degree.

To be fully implemented and therefore fully effective, the program needed to be accepted by the staff members who would work directly with students. LDRF staff contacted school officials, teachers, students, and parents to promote the program, and a series of meetings between LDRF staff and school employees took place the summer before the program was implemented.

**First meeting-** the founder of LDRF met with with the Director of Implementation of Assistive Technology at the school to discuss the form and goals of this program, as well as AT tools and programs already available for high school students with LD.

**Second meeting** - the founder of LDRF met with the Office of the Principal (the principal and assistant principals), the school's Director of AT, the director of the school IT department, and the dean of 12th grade. Dr. Reichel, a psychologist who supervised the program, was also present. Topics of discussion included the planned program, its goals, and its purpose: to ease the college transition for students with LD and reduce the dropout rate.

**Third meeting** - LDRF organized a meeting between LDRF's founder, AT specialist, and Dr. Reichel and the school's Director of AT, Principal and assistant principals, dean of the high school, school social worker, and school psychologist. In addition to the prior topics, anti-stigma was also discussed.

**Fourth meeting** –The high school principal, assistant principal, and dean were present, as were school's social worker, the teacher who was assigned to this program (and their assistant), the school librarians, and the dean of 12th grade. LDRF's AT specialist, special education specialist, and speech-language pathologist attended and discussed emotional intelligence and anti-stigma. Questionnaire content, parental consent, and teacher concerns about the challenges of employing AT in their classrooms were also discussed. LDRF presented the questionnaires to students and staff and set up dates for survey administration. To underscore the need for training, LDRF staff pointed out that the school had access to Bookshare and other assistive technologies, but the librarians, principals, and teachers had not been aware of this. Finally, plans were laid for a “graduation” ceremony when students completed the program.

Shortly after this meeting, school officials met with parents and obtained consent for their children's participation. The requirement for students' assent was waived by the IRB of Touro College.

### **Weekly Meetings**

A week before the semester started, there was a meeting between the psychologist overseeing the study, LDRF volunteers, LDRF's AT specialist, and the school staff who would be involved in this program, including the teacher in whose science class most of the courses would be implemented, the dean of 12th grade, and the school's AT director. Weekly meetings between these same people took place during the first semester to discuss the progress of the program. Teachers' and other school staff members' feedback and comments helped LDRF develop new

ideas for the program as time went on, improving its effectiveness and relevance to the students. Individual changes to the program necessary to suit particular students' needs were discussed. The panel discussion and graduation celebration (see below) were also planned in these meetings.

### **Questionnaires**

Students were administered a short survey (written by Dr. Isabella Reichel) at the beginning of the program and again at the end. The same questions were used in both waves of data collection. The questionnaire explored the perceptions of high school students with LD about their forthcoming transition from high school to college. The following areas were examined:

- a) Confidence in succeeding in college;
- b) The challenges students anticipated upon entering college;
- c) The students' perceptions of their strength in overcoming these challenges;
- d) The students' self-rated preparedness to use technology
- e) The type of technology they plan to use

### **Basic Pilot Program Model**

LDRF designed activities to familiarize students with available assistive technologies and to empower the students to combat stigma and self-advocate. These activities were implemented with input from the school officials. Toolkit to College was incorporated into a required science class, which a teacher taught and designed homework assignments for; LDRF staff taught for ten to twenty minutes in a normal class. One exception was a "History of Technology" presentation (described below).

#### **AT (Assistive Technology)**

LDRF provided students with an introduction to a variety of assistive technologies. A presentation of the history and development of technology was provided via short movies to combat the stigma attached to assistive technology. This presentation dealt with the beginnings of AT--technologies to assist people without any kind of disability. Examples include military intelligence, the Enigma machine, Bell Labs, the work of Ray Kurzweil, optical character recognition (OCR), text-to-speech synthesis, and speech recognition technology--the origin of AT in *non*-disability-focused fields--and emphasized the ability of technology to enhance human abilities in general. The intention of these presentations was to empower students and remove the stigma students had previously felt (by teacher report and LDRF staff observations) about using

AT. Following these presentations, students' use of AT increased substantially and they were willing to explore new tools.

1) Awareness of and training in how to use programs and devices. Students and teachers were trained in using text-to-speech and speech-to-text programs, including Texthelp, Dragon NaturallySpeaking, and AudioNote. Students, teachers, and the school librarian were taught to use "talking book" libraries like Bookshare (how to search for textbooks and regular books, download them, and read them on a reader like Texthelp, a computer, or another device).

2) Knowledge and confidence in using programs and devices in context. Working with the school, LDRF developed a variety of activities focused on using assistive technology within the regular school environment, which increased students' awareness of how AT could be used and the benefits of doing so. Both students and teachers demonstrated increased willingness to use AT.

a. There were class assignments in a science class in which students were required to advocate for themselves, convincing the teacher to allow them the use of some assistive technology and justifying their use of it in class. Part of the grade for the assignment was based on the student using their chosen piece of assistive technology to complete the task. In other words, if the student did not explain to the teacher what tool they required to complete the task, they would be marked down. There was also a collaborative component--students met in groups to discuss which tools they found useful.

b. Post-assignment interviews and small-group discussions were conducted (by teachers) with students about the technologies and apps they used, which they found useful (or not) and why.

c. Survey data showed that, by the end of the program, there was an increased awareness of the importance of assistive technology in accomplishing basic tasks.

d. LDRF made weekly observations of classes and collected data, mainly through student surveys and student interviews (a handful of teachers also filled out a teacher version of the questionnaire). This illuminated the process of students' discovery and resolution of their own shortcomings with the help of AT. For example, students who struggled taking notes because they had slow writing speeds or difficulty paying attention discovered that, when they recorded the information, they had difficulty organizing it and decoding it later. Their comprehension and study skills improved when they were taught how to use technology such as audio notes.

3) Classes (part of science class) on AT with student participation. The class was held daily, with LDRF staff present and involved twice weekly. The class incorporated presentations, videos, and discussions with students afterward, and there were weekly open discussions in class in which students discussed particular obstacles to using AT and new apps, programs, devices, podcasts, or other tools they had discovered to be helpful. Students were encouraged to bring new apps they had found useful to the meeting and present them to the class.

### **Self-Advocacy**

The Toolkit for College program taught students the necessity of self-advocacy and, importantly, *how* to self-advocate.

1) Expectations for college adjustment. After the classes described above, students had the option to attend LDRF-run open sessions. These sessions, normally attended by about one-third of the participants (10-12), involved brainstorming about challenges students expected to face in college. These discussions led to increased understanding of the academic demands they would face in college studies and resulted in higher attendance and less lateness in the Toolkit to College-linked science class and the open sessions themselves as students realized it would strengthen their skills in areas they felt they needed to improve. Students were encouraged to attend open sessions at the high school's office of AT to get accustomed to taking ownership of the technology--knowing how to update programs, knowing a device's serial number, and so on. These students also made more use of AT.

2) Understanding how student-driven the postsecondary system is. There was a class discussion of the difference between IEPs in high school and accommodation at postsecondary institutions. ADA Section 504 does not require colleges to give students programs designed to meet their individual needs, unlike an IEP--a radical difference that many of the students had not fully comprehended.

3) Understanding how and why to seek out outside resources. Students were encouraged to learn how to apply to libraries for the Bookshare program and were required to apply for the LDRF award program.

4) Understanding own disabilities and how to request accommodation. Students were encouraged to be familiar with their IEP document so they could explain what accommodations they required and why those would meet their needs. Students practiced the skills required to request and explain their needs for accommodations in postsecondary education--how to advocate effectively in the college system. They were taught their rights in postsecondary education and which resources such institutions are required to grant them by law.

5) Practice applying for accommodations and awards. Students applied to the LDRF award program. Nearly all applications were incomplete. The founder of LDRF discussed this situation with the school; LDRF officials then spoke to the students in class about their shortcomings and what needed to be fixed. Students corrected their applications and re-applied with greater success. These discussions clearly improved students' application skills and abilities to meet deadlines, as well as their understanding that they would be held accountable for filling out applications themselves in the postsecondary environment.

### **Organizational Skills**

1) Using AT to develop organizational skills. Students were taught how to use online calendars and reminder apps to assist them in their college environment. College requires high organizational skills, a challenge that students could meet more smoothly with the assistance of these planners and reminders. Specifically, the program focused on Google products, including Google Docs, Google Drive, and Google Calendar with its "reminder" function. Discussions on this topic were held on a weekly basis in the Toolkit for College-linked science class. In these classes, students listed resources that they found useful and learned technical terminology ("app," "speech-to-text," etc.) and the requirements of each tool (getting an app on a phone or a computer; which programs are available only for Mac or only for PC; other compatibility issues).

2) Developing familiarity with explaining tools and why they are important accommodations. Students held weekly discussions with teachers or guidance counselors in order to rehearse technical discussions. Often, these discussions involved roleplaying, in which the student would explain why they required a tool or accommodation to a teacher or counselor pretending to be a college professor. This also build students' confidence in their self-advocacy skills, combating stigma, and understanding their own needs. Students without self-acceptance or who do not understand their limitations will resist getting accommodations. Students who were prepared in high school and understand the process of applying and requesting accommodations at their school's office of disability will receive accommodations. This will increase their chances of success and graduation rate.

### **Panel Discussion**

Participants in the weekly planners' meetings (school and LDRF personnel) laid plans for a panel discussion event for 11th and 12th graders. The panel discussion was attended by students, teachers, staff, librarians, principals, and deans. A panel discussion survey was collected from staff on the usefulness of the issues discussed by topic and their recommendations. Below is a list of the discussants and their topics.

- Advocacy – a lawyer in discrimination disability law lectured on higher education, accessibility law, and accommodation
- Director of office of disability – gave insight as to what accommodations offered at universities and what students should expect upon the transition to college, underscoring the importance of understanding their needs and of applying for accommodations early (not the week before finals). The director also stressed the importance of documentation to get these accommodations--often, postsecondary institutions do not accept juvenile (as opposed to adult) versions of disability tests and/or require tests to have been taken in the last three years.
- School's AT director and an LDRF staffer--both spoke about the various AT tools students should consider using.
- LDRF staffer--"survival guide to college" presentation for students with LD (developed by LDRF) that incorporated many elements of the other speakers' topics.
- Dr. Reichel, emotional-intelligence researcher--gave a talk about stigma and emotional intelligence.

### **Graduation Celebration**

LDRF and high school staff planned and held a graduation event awarding a Toolkit to College certificate/diploma to students who participated in the program. This event was intended to reward and empower students and recognize their efforts.

### **Discussion and General Recommendations for Program Expansion**

After one year, the pilot program's effectiveness was evaluated by measuring impacts on students and faculty in the school via surveys. The program produced the desired outcomes and the school



decided to incorporate the program into their curriculum. Today, they have begun implementing the program beginning in eighth grade, and students are encouraged to bring their own computers to the open sessions. Below is a list of general recommendations LDRF has made for the expansion of the Toolkit for College program within a school. See Appendix A for an outline of how the school in which the pilot was conducted has expanded the program.

To expand the program, LD Resources Foundation recommends the following:

- Other schools should adopt the Toolkit for College program, with LDRF consulting, adapting the program for each school's individual needs, and overseeing the effectiveness of the implementation in all schools. A consulting fee will be charged for the model and the input.
- The school should hire an instructor whose primary goal is to train teachers and students to use assistive technology on a regular basis. If possible, find a teacher who is already working at the school and familiar with the students and staff.
- S/he should work with the results of a survey of assistive technology use (by teachers and students) to guide his/her work with teachers and students.
- The program should be implemented at multiple grade levels, ideally beginning before high school.
- LDRF will collect follow-up surveys from teachers, staff, and students. Repeated administration of this survey should continue as the program becomes fully integrated at the school to track changes in outcomes or additional benefits from the program.
- LDRF recommends additional activities and will train teachers on the materials and techniques used in the program to ensure the program's continued success.

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### **APPENDIX A: Program Expansion Model in One School**

**Second Year of Implementation** - The year after the pilot program, results of surveys were further analyzed, with the school responsible for coding the surveys and LDRF handling statistical analyses. Follow-up interviews were conducted with some students (who were in college at that time).

At the school, teachers and students were provided with direct training in the available assistive technology programs, and all library, technology support and technology integration staff were trained and available to assist teachers and students to use these resources.

**Third Year of Implementation** - In the third year of the program, a one-to-one iPad program was piloted in the 7th grade. This enabled the school to begin direct teaching and use of many of

the assistive technology skills (text-to-speech and speech-to-text) that are built into the iPad at a much earlier age.

The Office of Assistive Technology moved from their previous, out-of-the-way location in a small office to an open section in the library. This move enabled students and teachers to have easier, less stigmatized, and more frequent access to the Office of Assistive Technology. Moreover, the school made a decision to expand the AT Department, creating a new full-time position of Head Teacher of Technology Integration to train high school teachers and students in the use of technology, both assistive and otherwise. This person regularly attends classes to monitor the program integration into the curriculum. A teacher from the school who was comfortable with AT was hired to fill the post; this person knew the students and could communicate well with the other teachers.

Having additional personnel, combined with the one-to-one laptop program in the high school, has enabled the school to significantly expand the teaching of AT into all the high school grades. This person teaches students directly, provides training for teachers and staff, and facilitates the use of Bookshare beyond the high school by helping students switch from being registered by the school to being registered on their own so they can download and request texts after graduation.

Beyond this, the school made other staffing changes. A librarian who was more open to AT was hired. New college guidance counsellors were hired who helped students build their skills at filling out applications themselves. The changes in teachers' comfort and familiarity with AT before and after they received training were measured in a survey that was distributed by the Office of AT. Another new post, the Director of Technology Integration, was created; this person attends classes regularly to monitor the program and makes evaluations of its progress. The Director of Technology Integration measures the program's effect through face-to-face interviews with teachers and direct observation in classrooms, as well as the aforementioned teacher surveys.

**Third Year of Implementation** - Preparation for transition (integrated AT, self-advocacy, and anti-stigma training) now begins in the eighth grade. In this year, the one-to-one iPad program expanded to the 8th grade as well, and in the fifth year it will expand to the 6th grade so that all middle school students have a device. In the fifth year, the students who used an iPad in 7th and 8th grade will move to the high school, so we will be able to gather data on whether this group has different attitudes towards assistive technology than the students who only had devices for one or two years (the students in the pilot program described above). The school was particularly interested in the effects of this program on student acceptance and use of AT.

The assistive technology office at library was more frequently visited by students and teachers. With the increase in use of text-to-speech programs, the library was more frequently used, and the Office of Assistive Technology created activities at the library for students and teachers.

From LDRF's first contact with the school (observation and evaluation the year before implementation) to the current year (third year of program implementation), the use of assistive technologies by the teachers increased dramatically, as shown by internal anonymous teacher surveys. The surveys were designed to measure the amount of use of many different aspects to technology integration in teaching, but the increase in the use of assistive technology were particularly striking.

**Plans for Fourth Year of Implementation** - "Technology science classes," including AT, social media, and other uses of digital tools, will be introduced in all grades from fourth grade up. These courses will have integrated self-advocacy and anti-stigma components.

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**APPENDIX B: Logic models****Simplified****Detailed**