Children with Specific Learning Disabilities (SLD) account for the highest percentage among those with disabilities in schools. In India, a lack of both awareness and trained Special Needs educators leads to students often not getting the necessary support. In my project, I look at assistive technology for children with SLD, and seek answers to these questions: Is all technology assistive? Can cost-effective Assistive Technology (AT) and Universal Design in Learning (UDL) provide better solutions for learning in inclusive classrooms across the world?
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INTRODUCTION

Across the world students with Specific Learning Disabilities (SLD) account for the highest percentage among those with disabilities in school. Most times, in countries like India, where the number of disabled are large, their problems are complex and resources are scarce. In addition, ignorance, lack of awareness, knowledge and trained Special Needs educators leads to students often not getting the necessary support. This contributes to widening gaps in learning and achievement among students and eventually to school drop outs.

A similar situation existed in the United States in the late 1960s and early 1970s. Special education changed with the passage of the 1975 Individuals with Disabilities Education Act (IDEA) and its 1997 amendments. The landmark legislation moved children with special needs from segregated classrooms into regular classrooms. The federal mandate (USA) in IDEA in 1997 and its subsequent reauthorization, led to consideration of assistive technology when planning the IEP of every student. This has been described as an event that marked the dawn of a new era of assistive technology for individuals with mild disabilities (Edyburn, 2005a, and 2006b).

The project is an inquiry into the process of identification of learning disabilities in children (Response to Intervention), the IEP or 504 plan, integrating AT in the IEP plan, choosing the right AT for a child using the SETT model and finally using the Universal Design in Learning in inclusive classrooms, enabling children to learn at their own pace while simultaneously learning together.

AIM

To assimilate and structure cost effective AT to create a truly inclusive education programme to promote school completion for children with LD in India.

OBJECTIVES

- To examine definitions, incidence, Acts and Laws pertaining to disability in general and learning disability in detail.
- To study the development that led to the existing model of inclusion using AT in USA (IDEA & the IEP process)
- To prepare a database of cost effective AT Apps for various learning disabilities
- To understand the SETT (Skill +Environment +task= Tool) model for choosing the right AT tool for individual children.
- To appreciate the Universal Design in learning (UDL) framework to enable ‘learning for All Children.’
GOALS

iPads, tablets, smartphones and free apps allow for differentiated, student centric learning and have helped remove the stigma associated with disability and AT devices. This has led to the successful implementation of the universal design for learning. As the education system in India embraces ICT in its curriculum, the UDL and cost effective AT can provide effective learning solutions for children with specific learning disabilities to complete schooling with confidence and dignity.

DEFINITION of DISABILITY

The International Classification of Functioning, Disability and Health (ICF) defines disability as an umbrella term for impairments, activity limitations and participation restrictions. Disability is the interaction between individuals with a health condition (e.g. cerebral palsy, Down syndrome and depression) and personal and environmental factors (e.g. negative attitudes, inaccessible transportation and public buildings, and limited social supports).

DISABILITY KEY FACTS

- Over a billion people live with some form of disability.
- Disability disproportionately affects vulnerable populations.
- People with disabilities often do not receive needed health care.
- Children with disabilities are less likely to attend school than non-disabled children.
- People with disabilities are more likely to be unemployed than non-disabled people.
- People with disabilities are vulnerable to poverty.
- Rehabilitation helps to maximize functioning and support independence.
- People with disabilities can live and participate in the community.
- Disabling barriers can be overcome.
- The Convention on the Rights of Persons with Disabilities (CRPD) promotes, protects and ensures the human rights for all people with disability

(Information extrapolated from WHO site Fact sheet No.352 Reviewed September 2013)
CONSTRUCTION OF DISABILITY

Figure 1: what is Disability?

In India, disability is still viewed as a “tragedy” with a “better dead than disabled” approach; this perspective suggests that it is not possible for people with a disability to be happy or enjoy a good quality of life. Cultural beliefs about disability play an important role in determining the way in which the family perceives disability and the kind of measures it takes for prevention, treatment, and rehabilitation. (Sen, 1988). Research in India has consistently found substantial social marginalization of people with disabilities. (UP and TN village survey, 2005.) Historically, disabilities have been considered punishments for sins committed in a previous life by individuals or their family members (Schlossar, 2004). In some cases, families regard their children as “cursed” and a burden that they must deal with, which at times leads to the neglect and rejection of the child; the child might even be hidden as the family fears they might be rejected by the community (Girimaji, et al. 2001). I have found a similar trend in some of the educated families of students in my school.

The Constitution of India has introduced various programmes and schemes for the empowerment of persons with disabilities. These policy initiatives included an amendment to the Indian Constitution to include education as a fundamental right for all children from the ages of 6 to 14 years, including children with a disability, and the Rehabilitation Council Act in 1992, to regulate the quality of training of rehabilitation professionals. Further, the National Trust Act of 1999 was designed to protect the interests of persons with cerebral palsy, autism, mental disability and multiple disabilities. The most significant of these reforms was the Persons with Disabilities Act (PWDA) of 1995 which advanced the equal rights and opportunities of all individuals with disabilities.
MODELS OF DISABILITY

Figure 2 Social Model of Disability

http://www.miusa.org/ncde/tipsheets/disabilitymodels

Figure 3 : Medical Model of Disability
Figure 4: Info graphics on Disability in the USA and India [www.disabled-world.com, www.hindustantimes.com]
SPECIFIC LEARNING DISABILITY

INTRODUCTION

DEFINITION

(i) General. The term means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

(ii) Disorders not included. The term does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage. (As per Federal Definition (meaning given in federal law at 34 C.F.R. §§300.7 and 300.541),

Table 1 Number of students with disability

<table>
<thead>
<tr>
<th>Disability</th>
<th>Number of children</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Learning Disability</td>
<td>2,887,217</td>
<td>50%</td>
</tr>
<tr>
<td>Mental Retardation</td>
<td>612,978</td>
<td>10.6%</td>
</tr>
<tr>
<td>Emotional disturbance</td>
<td>473,663</td>
<td>8.2%</td>
</tr>
<tr>
<td>Total High Incidence (Hidden/ Mild) Disabilities</td>
<td>3.9 million</td>
<td>68.8%</td>
</tr>
</tbody>
</table>
The issue of high incidence disabilities represents a profound challenge to rethink assistive technology service delivery systems that were designed to provide assistive technology devices and services to low incidence populations (Edyburn, 2003a, 2000).

**SLD SCENARIO IN THE USA**

An estimated one in five children has specific learning disability in the USA (Twenty-Ninth Annual Report to Congress, U.S. Department of Education, 2010). In 1969, the United States of America government passed "The Children with Specific Learning Disabilities Act" which for the first time acknowledged that SLD was a disability, and ensured that these children are entitled to "publicly funded" remedial education services and facility to avail the benefit of provisions in their school curriculum. In 1977, this law was strengthened and these children were empowered with a "legal right to continue education in regular mainstream schools". This was done to protect them from discrimination in education.

**SLD SCENARIO IN INDIA**

In India statistical data confirm that 5-10% children have SLD( 3 crores) but the numbers could be much higher as many children with SLD studying in non-English (vernacular) medium.
schools, and especially in rural areas, are going undetected for non-availability of standardized psychological and educational tests. There is also a severe shortage of trained special educators and counselors.

Currently, The PWD Act recognizes visual impairment, hearing impairment, loco motor disability, mental retardation, leprosy-cured and mental illness to be disabilities. The government of India since 2001 has launched the Sarva Shiksha Abhiyan ('Education for All' Movement) which is a comprehensive and integrated flagship program to attain universal elementary education in the country in a mission mode. Launched in partnership with the state governments, the program aims to provide useful and relevant education to all children, including children with disabilities.

National Boards like CBSE and CISCE have been providing some accommodations since 1999. Once SLD is recognized as a disability by the government of India, children with SLD would be able to benefit significantly. In schools like DPS Bangalore North students, students are referred to organizations like Spastic Society of India for IEP assessments. The Central Board of Secondary Education then grants the accommodations based on the report by the Spastic Society, the doctor, the school counselor and class teacher. Accommodations granted are extra time, exemption from a second language or Math, provision for a scribe.

An interesting research was conducted to measure “parental attitude towards children with LD” in India (Chandramuki, Indiramma, Venkata Krishna Shastry, Mysore Narasimha Vranda.). The results clearly showed differences in parental perceptions based on the gender of these children. The reason could be that parents’ academic expectations, for male and female children are rooted in a male-dominated cultural context in the country, where men are expected to have higher qualifications and better jobs. The findings of the current study are in concurrence with many other studies. Over-protection (Peroza & Peroza, 1982) and rejection (Minuchin et al, 1978; Nabuzoka & Smith, 1993) are the common parental attitudes towards children with learning disability.

However, with growing awareness more parents are becoming involved in self-help or support groups for parents with their children. These groups help parents look at the problem in a scientific manner and offer solutions. Parents with positive perceptions can help the other parents in the early stages of adjustment develop positive but realistic expectations. (Gupta, Singhal, “Positive perceptions in parents of children with Disabilities”, Asia Pacific Disability Rehabilitation Journal). At DPS Bangalore North too, we find children of parents who have a positive attitude and are engaged in their wards learning, tend to adjust and learn better.
INCLUSION

The IDEA includes two fundamental requirements: that the child will receive a **free appropriate public education (FAPE)** in the **least restrictive environment (LRE)**.

The least restrictive environment (LRE) requirement is often referred to as "mainstreaming." or Inclusion. Although support for inclusion of children with disabilities in general education has gained momentum, research has lagged behind.

Figure 6: Benefits of Inclusion in a classroom

“Research and anecdotal data have shown that typical learners have demonstrated a greater acceptance and valuing of individual differences, enhanced self-esteem, a genuine capacity for friendship, and the acquisition of new skills”. (Long-Term Effects of Inclusion, from the ERIC Clearing House on Disabilities and Gifted Education).

**TYPES OF LEARNING DISABILITIES**

<table>
<thead>
<tr>
<th>Dyslexia</th>
<th>Difficulty reading</th>
<th>Problems reading, writing, spelling, speaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syndrome</td>
<td>Difficulty with...</td>
<td>Problems doing math problems, understanding time, using money</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Dyscalculia</td>
<td>Math</td>
<td></td>
</tr>
<tr>
<td>Dysgraphia</td>
<td>Writing</td>
<td>Problems with handwriting, spelling, organizing ideas</td>
</tr>
<tr>
<td>Dyspraxia (Sensory Integration Disorder)</td>
<td>Fine motor skills</td>
<td>Problems with hand–eye coordination, balance, manual dexterity</td>
</tr>
<tr>
<td>Dysphasia/Aphasia</td>
<td>Language</td>
<td>Problems understanding spoken language, poor reading comprehension</td>
</tr>
<tr>
<td>Auditory Processing Disorder</td>
<td>Hearing differences between sounds</td>
<td>Problems with reading, comprehension, language</td>
</tr>
<tr>
<td>Visual Processing Disorder</td>
<td>Interpreting visual information</td>
<td>Problems with reading, math, maps, charts, symbols, pictures</td>
</tr>
</tbody>
</table>

Attention-Deficit/Hyperactivity Disorder and other disorders are not uncommon among people with LD, although they are not considered LD. If LD remains undetected it could lead poor school performance, class detention, and dropping out of school. This often leads to these children losing their self-esteem, becoming withdrawn or exhibiting aggressive behavior, anxiety, depression and at times even anti-social behavior. There is no “cure” for learning disabilities. They are life-long. However, children with LD can be high achievers and can be taught ways to get around the learning disability. With the right help, children with LD can and do learn successfully. As SLDs are not visible they often go undetected. They also vary from child to child.

Meese (2001) summarizes the characteristics often associated with mild disabilities as follows: cognitive characteristics (intellectual ability, attention deficits, memory and thinking skills); academic Characteristics (reading, language arts, mathematics) and social-emotional characteristics (pp. 27-35). Students with mild disabilities are typically included in the general education classroom with some support services provided.

Given the impact of mild disabilities on cognitive functioning, it is essential that educators recognize the impact of a disability on academic performance in order to plan appropriate interventions. Schools routinely evaluate academic performance. Every classroom has extensive systems in place to identify failure, adequate performance, and exceptional performance. If a student has repeatedly failed, how much failure data do we need before we have enough
evidence that the student can’t perform the task? When do we intervene? (Edyburn, 2006a)

Figure 7: Response to Intervention (RTI). blogs.edweek.org

Diagnosing a learning disability isn’t always easy. It is a process. Parents or teachers might notice that inspite of obtaining the necessary support (informally), the child continues to have problem in reading /writing, /spelling/speaking /math calculation. Parents/ teachers can then refer for evaluation for special services. After seeking parental consent, the student is evaluated by a district personnel team, which is followed by an IEP meeting in the school.

Figure 8: Venn diagram representing eligibility for a 504 plan and an IEP. www.aspergerssociety.org
WHICH ROUTE? IDEA or 504?

IDEA/504 FLOW CHART

Student Need

CONSIDERATION OF IDEA

Disability adversely affects educational performance

Yes

IDEA Eligibility

Education reasonably calculated to confer benefit

Specially designed instruction

Related services

Individual Education Program (IEP)

FREE APPROPRIATE PUBLIC EDUCATION

CONSIDERATION OF 504

Handicap substantially limits one or more major life activities

Not Eligible

504 Protected

Commensurate opportunity for education comparable to that provided to non-handicapped

Reasonable accommodations

Physical

Instructor

Regular or specialized education

Related aids & services

Accommodation Plan

Council of Administrators of Special Education, Inc. (CASE) - Student Access, A Resource Guide for Educators, Section 504 of the Rehabilitation Act of 1973

See Special Education Handbook 2003, Appendix I, Classroom Accommodations, IDEA/504 Flow Chart


Figure 9: 504 or IEP, edmedkids.arizona.edu
INTEGRATING TECHNOLOGY

Research has proved that the benefits of technology for SLD students are dramatic. For many, this technology offers students greater autonomy, since they can use assistive technology to replace dependence on others (Day and Edwards). Technology offers students greater autonomy and enables "individuals with learning disabilities to compensate for reading, organization, memory, or math deficits" (Day and Edwards). How long do we allow students to fail at a given task before we determine they need assistive technology in order to perform the task as expected? Poor academic performance should be a trigger for assistive technology consideration. (Edyburn)

Assistive technology theorists (Cook & Hussey, 2002; King 1999) suggest we have a critical decision to make: remediate or compensate. Edyburn (2002) has suggested that one means of addressing the Remediation vs. Compensation problem is to consider the R vs. C decision to be a complimentary equation rather than either/or decision. That is, IEP teams should ask the R vs. C question as part of the assistive technology consideration process and seek to determine (1) what percentage of time and effort should be devoted to instruction/remediation and (2) what percentage of time and effort should be devoted to compensation.

Figure 10: Remediation Vs Compensation, alexisfilippini.com. Reading with your ears.
WHAT IS ASSISTIVE TECHNOLOGY?

Complexes, high-tech tools as well as common, more low-tech devices are all examples of assistive technology. The purpose of these teaching and learning tools and assistive technology devices is to help people work around specific deficits rather than fixing them. They are intended to help people with learning disabilities of all ages to reach their full potential, giving them greater freedom and independence along the way.

Tools for people with learning disabilities can be as simple as highlighters, color coding files or drawers, books on tape, tape recorders, calculators or a different paper color or background color on a computer screen. Complex or high-tech, assistive technology devices include:

- computers with print-recognition software that "read" text aloud,
- speech recognition systems that turn oral language into written text,
- talking calculators that assist people with math difficulties, and
- software that predicts and edits words for people who are prone to spelling difficulties.

DEFINITION OF ASSISTIVE TECHNOLOGY DEVICE

(A) In general.--The term `assistive technology device' means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability.

(B) Exception.--The term does not include a medical device that is surgically implanted, or the replacement of such device.
Figure 12: Uses of Assistive Technology devices

ASSISTIVE TECHNOLOGY SERVICES

is defined in IDEA, as

“Any service that directly assists a child with a disability in the selection, acquisition, and use of an assistive technology device”.

A large number of AT tools are available in the market for students with specific learning disability. iPad and other android tablets have made it convenient for professional and end users to make apps that are freely and easily available to all. The HCIL at the University of Maryland is actively engaged in working with young children through their KIDSTEAM program in designing technology for the 21st century.

The ICATER centre at the University of Iowa offers free webinars on the latest Assistive Technology apps on a weekly and monthly basis. A number of similar programs are available as open source freeware that can be accessed by teachers, special educators and parents across the globe. Organizations like PACER also conduct live stream workshops and conferences.
The number of apps available often makes it difficult to choose the ‘right fit’ for ones child.

Every state in the USA has its own Assistive Technology Network Centre (For e.g. MATN-Maryland Assistive Technology Centre), which provides consultations services to parents, offers devices for trials and conducts in-service programs for teachers on the available Assistive Technology. Many of these conferences are conducted as webinars and live stream sessions to enhance greater participation.

WHICH TECHNOLOGY SUITS MY KID?

- Some of the questions that all stakeholders need to ask when one chooses a AT are
- What specific needs would you like to be addressed by this tool?
- What are the student’s strengths?
- How interested (and motivated) is the student in using assistive technology?
- Where will the tools be used? (home, school, social settings)
- Is the teacher trained to use the tool?
- Will this tool be needed for use in more than one place?
- How easy is this application to learn and to operate?
- Is there a possibility of trying the tool before buying it?
- How reliable is it?
- How well does it work in combination with other technologies?
- What kind of technical support does the manufacturer offer?
- What local support will you need to make sure things are working well?

SETT FRAMEWORK

![The SETT Framework](image)

Figure 12: The SETT framework
UNIVERSAL DESIGN FOR LEARNING

(UDL) is a set of principles that provides teachers with a structure to develop instruction to meet the diverse needs of all learners. A research-based framework, UDL suggests that each student learns in a unique manner so a one-size-fits-all approach is not appropriate. (http://schools.nyc.gov/Academics/CommonCoreLibrary/ProfessionalLearning/UDL/)

**Figure 13: Components of the UDL**

**Figure 14: Flexibility is the key aspect**
UDL focuses on the ability of teachers to meet the diverse learning needs of all students, even those with impairments that affect their mobility, vision, hearing, and learning. Technology and UDL enable students to respond to and interact with curricula and achieve learning standards.

**UNIVERSAL DESIGN FOR LEARNING**

- embeds accessible features into curriculum
- provides multiple (alternative) and flexible instructional methodologies
- corresponds to the concepts of differentiated instruction (DI)
- meets the diverse learning needs of all students.
- ensure that all students can access, participate in, and progress in the curriculum.

*Figure 15: UDL and Inclusion*
COST EFFECTIVE ASSISTIVE TECHNOLOGY: APPS

**WRITING**

<table>
<thead>
<tr>
<th>App</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dragon Go!</strong></td>
<td>From the makers of Dragon Dictation, Dragon Go! simplifies the process of communicating with a device through voice recognition.</td>
</tr>
<tr>
<td></td>
<td>An award-winning app, Evernote helps you stay organized through, among other features, voice-recorded notes.</td>
</tr>
<tr>
<td><strong>Evernote</strong></td>
<td>Pages is a word processor for Apple mobile devices. It syncs with iCloud, comes with a choice of 16 templates, and allows for color, font and texture customization.</td>
</tr>
<tr>
<td></td>
<td>This high-quality recording app is helpful for teens, college students, and adults when taking notes at meetings, lectures or interviews. It allows for simultaneous recording and typing or handwritten notes.</td>
</tr>
<tr>
<td><strong>Pages</strong></td>
<td>Create customized abbreviation shortcuts with TextExpander to help write faster without worrying about spelling errors.</td>
</tr>
<tr>
<td><strong>SoundNote</strong></td>
<td>Typ-O HD does more than just predict words. This intuitive technology understands how you misspell words and can work through even the most challenging typos.</td>
</tr>
<tr>
<td></td>
<td>Brevity remembers the frequency of the words you use, so that you can abbreviate them and compose text in record time.</td>
</tr>
<tr>
<td><strong>TextExpander</strong></td>
<td>WritePad allows you to compose a document with your own handwriting—using shorthand that works best for you.</td>
</tr>
<tr>
<td><strong>Typ-O HD</strong></td>
<td>Is the backpack getting too heavy? Students can upload digital notes they’ve taken in class directly to their iPhone or iPad with the Pencast Player. Livescribe technology and notebook is required for this app to work.</td>
</tr>
<tr>
<td><strong>Brevity</strong></td>
<td>Get details on how to make the most of this respected dictionary’s mobile app here: How to Make the Most of the Merriam-Webster Dictionary App.</td>
</tr>
<tr>
<td><strong>WritePad</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Pencast Player</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Merriam-Webster Dictionary</strong></td>
<td></td>
</tr>
</tbody>
</table>
Dexteria offers therapeutic hand exercises (not games) that improve fine motor skills and handwriting readiness in children.

Grammar Dragon
Save friends from the castle of the “grammar dragon” by correctly answering grammar questions in this kinesthetic learning game.

iWriteWords
Young children can play with language in the colorful world of the handwriting app iWriteWords.

PrepositionBuilder
This app introduces prepositions to elementary school-aged children. It helps students learn the correct usage of prepositions and how they can change the meaning of a sentence.

Sentence Builder
Sentence Builder helps elementary school-aged children learn how to build sentences with proper grammar.

StoryBuilder
StoryBuilder helps to accomplish three key educational goals, including improving higher level abstractions. Audio clips are used extensively throughout the app.

Simplex Spelling Phonics 1
This award-winning app provides an entire year of spelling curriculum, including phonics lessons and lists divided by spelling patterns.

Spell Check
Conveniently, this basic spell-check app doesn’t require WiFi to function for you or your child.

TapTyping
If typing on a mobile device is difficult, TapTyping can help through, among other features, its unique heat map that shows where the majority of errors are occurring.

Book Creator
Create eye-popping, professional iBooks with the help of Book Creator.

Pictello
Create talking photo albums and books with Pictello’s easy-to-use, visual story-building features.

StoryKit
StoryKit offers a number of interactive tools to create a personalized, electronic storybook.

Storyrobe
This app is great for self-expression. Use photos and videos to create your own story, and then import it into iPhoto.
Toontastic
Create your own cartoons? Simply press “record,” move the characters onscreen, and tell the story. It helps students learn to write by breaking the writing process into manageable pieces.

## READING

<table>
<thead>
<tr>
<th>Icon</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="icon.png" alt="Learning Ally" /></td>
<td>Learning Ally</td>
<td>Instantly access DAISY-formatted audiobooks with Learning Ally (formerly Reading for the Blind &amp; Dyslexic). Learning Ally membership is required.</td>
</tr>
<tr>
<td><img src="icon.png" alt="Read2Go" /></td>
<td>Read2Go</td>
<td>Bookshare subscribers can enjoy full control over font (size and color), along with text-to-speech technology, with this DAISY-formatted e-reader.</td>
</tr>
<tr>
<td><img src="icon.png" alt="iBooks" /></td>
<td>iBooks</td>
<td>Easily adjust brightness and choose from seven different fonts, three page colors, and three distinct layouts when you download your favorite books using iBooks.</td>
</tr>
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<td><img src="icon.png" alt="Kindle" /></td>
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<td>Adjust the letter size for books on any device with Kindle's free reading app.</td>
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<tr>
<td><img src="icon.png" alt="OverDrive Media Console" /></td>
<td>OverDrive Media Console</td>
<td>This app provides access to audiobooks and e-books from public, school, or college libraries (registration with a local library required) in various digital formats, allowing users with LD to customize the reading experience in ways that work best for them.</td>
</tr>
<tr>
<td><img src="icon.png" alt="Audiobooks from Audible" /></td>
<td>Audiobooks from Audible</td>
<td>Listen to books on the go with this text-to-speech app that allows for digital literacy in various formats.</td>
</tr>
<tr>
<td><img src="icon.png" alt="iTunes U" /></td>
<td>iTunes U</td>
<td>Free audio- and video-friendly courses are available at iTunes U, along with a sizeable catalog of free digital education content. Teachers, be sure to search “Lit2Go” for high-quality audio versions of the classics.</td>
</tr>
<tr>
<td><img src="icon.png" alt="Aesop's Wheel of Fables" /></td>
<td>Aesop's Wheel of Fables</td>
<td>A great app for children ages 4 through 8, Aesop's Wheel of Fables teaches the moral lessons of 20 fables through the quick spin of a wheel. If grandparents live out of town, they can pre-record the fables in their</td>
</tr>
<tr>
<td>App</td>
<td>Description</td>
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<tr>
<td>HowsJay Pronunciation Dictionary</td>
<td>This unique pronunciation app uses a real human voice to sound out over 150,000 words. HowsJay is renowned for its accuracy when pronouncing words, including many scientific, mathematical and medical terms.</td>
<td></td>
</tr>
<tr>
<td>ZoomReader</td>
<td>Use ZoomReader to read grocery-store labels, menus, signs, and more while on the go. A device with a five-megapixel camera is needed for best use.</td>
<td></td>
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<tr>
<td>ClaroSpeak US</td>
<td>ClaroSpeak, a text-to-speech reader, offers five distinct, high-quality voices that can read any accessible text. It also offers a range of color and font settings, including an option for OpenDyslexic font.</td>
<td></td>
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<tr>
<td>Speak it!</td>
<td>Easily set font size and, when listening, pause and resume playback with text-to-speech app Speak it! It can even be used while you’re on the phone.</td>
<td></td>
</tr>
<tr>
<td>Web Reader</td>
<td>This text-to-speech app has the option for male or female high-quality voices.</td>
<td></td>
</tr>
<tr>
<td>TuneWiki Lyrics</td>
<td>This Android- and iPhone-friendly app allows users to listen to their music while watching scrolling lyrics. It's a great way to improve reading and fluency skills.</td>
<td></td>
</tr>
<tr>
<td>SoundHound</td>
<td>Students can quickly identify songs, read the lyrics (and improve reading and fluency skills, while they're at it) and learn about the artist on SoundHound.</td>
<td></td>
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RELEVANCE AND APPLICATION

- The FDAT has provided me with a number of insights on addressing disabilities in schools.
- My inquiry on Assistive Technology has provided me with innumerable resources on free and cost effective apps for students with learning disabilities on different platforms (Microsoft accessibility features, iPad apps, android apps, Google chrome apps, other free downloadable programs, CDs etc).
- The understanding of the ADA and the IDEA and the structured intervention planning leading to the 504 plan or the IEP has provided me with considerable knowledge that I can take back to my school and the CBSE.
- The accommodations and modifications provided for students with special needs during classroom activities and during examinations, the use of AT and the UDL is something that I eagerly look forward to introduce in my school and share with the CBSE.
- I shall also try to form parent support groups like those in the USA, which work closely with policy makers (SECAC) and educators. I found that this leads to students getting the best benefits and also provides scope for constant improvement. Through Dr. Sarah Wayland, I also plan to have a couple of my special educators train to be Relationship Development Intervention consultants, a family based program that will enable children with special needs in making meaningful relationships with their parents, peers and other adults.
- In my sincere attempt to make DPS Bangalore North a more inclusive school, I plan to first prepare and empower my teachers and students in Braille and sign language. We plan to introduce Braille and sign language as club activities initially and then as a third language option.
- My Chairperson Dr. Sharada Nayak, who is also a member of DPS Society, has shown keen interest in special needs training in Early Childhood education. I hope through some of the contacts that I have made in the last four months this will be possible.
- As a cultural ambassador through the Fulbright program, I plan to connect students and teachers from my school in India with schools in the USA, Argentina, Finland, Morocco, and Singapore. While technology can connect us initially, I also hope to build long lasting relationships between these countries through student and teacher exchange programs. I will share with schools in the DPS family and in the larger CBSE clusters my experiences in the FDAT programme, my stay in the USA and the learning activities I experienced.
- I look forward to teachers in India participating in Special Needs and Assistive Technology webinars conducted by PACER, ICATER Iowa and other organizations that I have visited. I shall also conduct workshops for teachers and special needs educators on
the technology available, IEP process, the SETT process and the Universal design for learning.

- Organizations like Don Johnston and IAATE, who are involved with the manufacture and sales of Assistive Technologies, have shown interest in getting connected with organizations like Spastic Society and ASHA foundation.
- Most of all I take back to India, the acceptance of diversity that the Americans have and their belief in the individual. I shall forever cherish the warmth and affection of my friends in the USA who made me a part of their lives and homes.
CONCLUSION

Disability concerns are everyone’s concerns. People with disability desire to be as much a part of society, be productive and contribute to society as others. As teachers and educators we desire to enable every child to achieve his/her highest potential.

Research and experience have also shown that students learn best in spaces which are rich in diversity. Inclusion of children with special needs creates this environment in the classroom. As students learn lessons in curricular subjects, they also learn valuable life lessons on dependence, interdependence and independence.

Technology will be an integral component of 21st century learning. As we begin to use more technology in our lives we, understand that “All Technology is Assistive”. While for some it might make the task easier for others it might be the way to get the task done. The Universal Design for Learning allows designers of curricula and teaching pedagogy to design technology, that allows students to learn at their own pace and together.

Schools around the world are embracing ICT and integrating it into their curriculum. As technology becomes affordable and in some cases free, it’s impact on learning is going to be phenomenal.
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ACRONYMS

- ADA - Americans with disability Act
- AIM - Accessible Instructional Material
- AT - Assistive Technology
- ATC - Assistive Technology Centre
- ATP - Assistive Technology Program
- ATS - Assistive Technology Service
- CBSE - Central Board of Secondary Education
- FAPE - Free Appropriate Public Education
- HCIL - Human Computer Interface Lab
- ICATER - Iowa Centre for Assistive Technology Education and Research
- ICSE - Indian Council of Secondary Education
- IDEA - Individuals with Disability Education Act
- IEP - Individualized education Plan
- LRE - Least Restrictive Environment
- MATN - Maryland Assistive Technology Centre
- MSDE - Maryland State Department of Education
- NTA - National Trust Act
- OT - Occupational Therapist
- PACER - Parent Advocacy Coalition for Educational Rights Centre, Minneapolis
- PT - Physio-Therapist
- PWD - Persons with Disability
- QIAT - Quality Indicators for Assistive Technology Services
- RTI - Response to Intervention
- SECAC - Special Education Community Advisory Committee
- SETT - Student, Environments, tasks and tool
- SLD - Specific Learning Disability
- SLP - Speech Language Pathologist
- UDL - Universal Design in Learning