This document is a compilation of all the materials contained on the UnderstandingDysgraphia.Weebly.com web site.

**Learning Objectives**

1. Identify and describe common symptoms of dysgraphia.
2. Describe how a person with dysgraphia will be affected in a learning environment and in a workplace environment.
3. Discuss potential modes of accommodations for a learner with dysgraphia.

**Learning Disability Definition**

* Learning disabilities refer to a number of disorders, which may affect the acquisition, organization, retention, understanding, or use of verbal or nonverbal information (Learning Disabilities Association of Canada, 2002).  
    
  Learning Disabilities Association of Canada (2002). *Official definition of learning disabilities*. Retrieved from <http://www.ldac-acta.ca/learn-more/ld-defined/official-definition-of-learning-disabilities>
* People with learning disabilities are of average or above average intelligence but still struggle to acquire skills that impact their performance in school, at home, in the community, and in the workplace (National Center for Learning Disabilities, n.d)  
    
  National Center for Learning Disabilities (n.d.).*What are learning disabilities?* Retrieved from<http://www.ncld.org/types-learning-disabilities/what-is-ld/what-are-learning-disabilities>
* Based on the two above definitions, people who have learning disabilities are not less intelligent than people without learning disabilities, their brains just process and stores information in a different way which makes it difficult for them to learn the same way as other people.

**Dysgraphia Definition**

* A learning disability that affects writing. It makes the act of writing difficult, which can lead to problems with spelling, poor handwriting, and putting thoughts on paper (National Centre for Learning Disabilities, n.d)  
    
  National Center for Learning Disabilities (n.d.).*What is dysgraphia?* Retrieved from <http://www.ncld.org/types-learning-disabilities/dysgraphia/what-is-dysgraphia>
* A specific learning disability in which our ability to express ourselves through written language is impaired. Dysgraphia is not the result of an intellectual impairment, nor is it dependent upon your ability to read. It has the potential to cause problems with spelling, organizing words on a page, and putting thought on paper. (Education Portal, n.d)  
    
  Education Portal (n.d.). *What is dysgraphia? - symptoms, treatment & definition*. Retrieved from <http://education-portal.com/academy/lesson/what-is-dysgraphia-symptoms-treatment-definition.html#lesson>
* Based on the above definitions, dysgraphia is a learning disability that makes it difficult to write, hampering a person’s ability to easily express themselves through writing.

**What are the Warning Signs of Dysgraphia?**

Dysgraphia is more than a bad handwriting. It can interfere with a student’s ability to express ideas and become unmotivated. (Deuel, Sheffield, & Hanbury King,2014). It is a processing disorder and develops in younger age. Such learning disability will then interfere with the automatic use of other skills for written expression and might change throughout a lifetime.

Learners with dysgraphia can be mistaken for laziness, clumsiness, or unmotivated. In fact, dysgraphia is not just the bad hand writing, it can appear with other learning disabilities, especially involving language (Steinbach, 2008).

Learners with dysgraphia often become frustrated if the situation is overlooked, however, observing the learner’s writing pattern helps identifying dysgraphia. Most of the symptoms can be carefully observed and identified.

**Observable Symptoms**

* Inconsistency of grip on writing tool (either too tight or too loose)
* Cramping of fingers while writing short entries
* Unusual wrist, arm, body, or paper orientations such as bending an arm into an “L” shape
* Excessive erasures
* Mixed upper case and lower case letters
* Inconsistent form and size or shape of letters,
* Inconsistent spacing between letters or words
* Unfinished or omitted letters or words
* Misuse of lines and margins
* Inefficient speed of copying
* Inefficient note taking
* Inattentiveness over details when writing
* Frequent need of verbal cues
* Referring heavily on vision to write
* Poor legibility in printing and cursive writing
* Handwriting abilities that may interfere with spelling and written composition
* Having a hard time translating ideas to writing, sometimes using the wrong words altogether
* May feel pain while writing
* Difficulty pre-visualizing letter formation

**Non-Observable Symptoms**

* Trouble organizing thoughts on paper
* Trouble keeping track of thoughts and writing in the same time
* Difficulty with syntax structure and grammar
* Difficulty translating speech into written form
* Difficulty translating thoughts into writing

**References**

Betta, A.D., & Cristina, R. (2006). Lexical learning and dysgraphia in group of adults with developmental dyslexia. *Cognitive Neuropsychology,* *23*(3), 376-400.

Deuel, R., Sheffield, B., & Hanbury King, D. (2014). *Dysgraphia: The handwriting learning*

*disability*. Retrieved from: <http://www.ldao.ca/introduction-to-ldsadhd/ldsadhs-in-depth/articles/about-lds/dysgraphia-the-handwriting-learning-disability/>

LDA- Learning Disabilities Association of America

<http://ldaamerica.org/types-of-learning-disabilities/dysgraphia/>

Mather, D.S. (2003). Dyslexia and dysgraphia: More than written language difficulties in

common. *Journal of Learning Disabilities. 36*(4), 307-317.

NCLD – National Center for Learning Disabilities

<http://www.ncld.org/types-learning-disabilities/dysgraphia/common-warning-signs-of-dysgraphia-in-college-students-and-adults>

Steinbach (2008). Dysgraphia: More than just bad handwriting. Retrieved from:

[*http://learningenglish.voanews.com/content/a-23-2008-02-06-voa2-83139487/129237.html*](http://learningenglish.voanews.com/content/a-23-2008-02-06-voa2-83139487/129237.html)

Synapse – Autism-help.org

<http://www.autism-help.org/index.htm>l

**Dysgraphia in the Learning Environment**

Difficulty writing legibly and efficiently can be very detrimental for academic success as it is typical for children in grade school to spend up to 50% of a school day performing writing tasks under specified time constraints (Rosenblum, Weiss, & Parush, 2004). Support in the form of accommodations upon diagnosis of dysgraphia is critical in order to effectively facilitate learning. In a classroom setting, appropriate accommodations meet the needs of the challenges experienced by the individual learner; this may include extra time to finish written in-class assignments or exams, alternative evaluation methods, the use of assistive technology/word processing including spell checkers and the ability to dictate assignments to a scribe (Learning Disabilities Association of Ontario, 2011; Hetzroni & Shrieber, 2004).

**Dysgraphia in Public Educational Institutions and Individual Education Plans**

Once an SLD such as dysgraphia has been diagnosed, public schools are obligated to provide appropriate education and a positive learning environment for the student through the development of an Individual Education Plan (IEP). The IEP document includes the following information that is updated regularly including: current levels of performance, annual goals with short-term objectives, measurable goals, a list of the specific services provided to the child (i.e. classroom modifications, staff training, transition services), and how progress will be measured. An example of a measurable annual goal for a student with dysgraphia could be to directly type his/her thoughts into a typing program /word processor at 60 characters per minute while maintaining readability. The IEP will also include when services begin, where and how often they will be provided, and the duration of time services will continue to be provided. Schools offer various types of service delivery that may present different advantages, two examples of services delivery modes are provided here.

1. A total inclusion program - Students receive academic support within a normal classroom

2. Resource Pull out program - Students are taken out of inclusive program to work on areas of weakness in a small group setting and in accordance to a specified schedule (Stein & Lounsbury, 2004)

**Dysgraphia in Post-Secondary Programs**

It is common for students living with dysgraphia or other SLD to choose not to pursue further education and dive into labor force straight after high-school. However, many students who do enter post-secondary education will be more inclined to enroll in programs that require less formal writing and reading such as arts or science. Choices made in pursuing further education are governed by the learner’s anxiety about the demands of the program and self-efficacy to succeed in a particular occupation. Students tend to avoid taking courses with assessments that require extensive amounts of writing (i.e exams requiring answers in essay format) rather than immediate answers (such as true/false, multiple choice, or fill in the blank).

This is often true regardless of knowing that services and assistive technology are available to help students meet these challenges (Johnson and Hegarty, 2003). In contrast to grade-school where an IEP is provided, dysgraphia learners must advocate for themselves and take advantage of accessibility services available at their university or college. These services typically include the ability for dysgraphic students to regularly attend lecture with support in the form of assistive technology, or adapted testing. Challenges encountered may be more specific to the program, for example students with LD have found that there is less accommodations available when lab components of a science course where they are pressured to take notes under tight time restrictions.

Overall it was found that success in the educational system is related to learner’s self-determination to overcome impairments and the stigma that comes with an LD. Similar to the workplace, some students may choose not to personally disclose their LD to their professors or peers due to fear of stigma and the feeling of being degraded. Past literature has also indicated that learners with a LD will take longer to complete their studies, such that postsecondary students with a LD took on average 4.6 years to complete their degree, in comparison to 4.1 years for non-LD individuals (Deslandes, Royer, Potvin, & Leclerc, 1999).

# References

Deslandes, R., Royer, E., Potvin, P., & Leclerc, D. (1999). Patterns of home and school partnerships for general and special education at the secondary level. *Exceptional Children, 65*(4), 496-506.

Field, S., Sarver, M. D., & Shaw, S. F. (2003). Self-determination a key to success in postsecondary education for students with learning disabilities. *Remedial and Special Education*, *24*(6), 339-349.

Hetzroni, O. E., & Shrieber, B. (2004). Word processing as an assistive technology tool for enhancing academic outcomes of students with writing disabilities in the general classroom. *Journal of Learning Disabilities, 37*(2), 143-154.

Learning Disabilities Association of Ontario. (2011). *What are LDs?* Retrieved May 6, 2014, from <http://www.ldao.ca/introduction-to-ldsadhd/introduction-to-ldsadhd/what-are-lds/>

Rosenblum, S., Weiss, P., & Parush, S. (2004). Handwriting evaluation for developmental dysgraphia: Process versus product. *Reading and Writing, 17*(5), 433-458.

Stein, M., & Lounsbury, B. (2004). A child with a learning disability: Navigating school-based services. *Pediatrics, 114*(6), 1432-1436.

**Implications for Dysgraphia in the Workplace**

People living with dysgraphia feel more anxious than average when applying to new jobs due to the fear of being discriminated and rejected for the position or being labeled in the workplace. Written components of job applications such as cover letters, resume, or excessive fill-out forms can also be burdensome and deter dysgraphics from applying. It has been found that employees with an LD generally have low employment rate and, on average, have received lower wages than employees without an LD.

Other factors associated with dysgraphia that hinder productivity/success in the workplace may include:

* Self-Esteem and Self-Confidence Issues
  + Many dysgraphics have been battling low self-esteem long before transitioning into the workplace. Feeling of incompetence often leads to low resiliency and the feeling of helplessness.
  + Heightened sensitivity to failure and criticism, can lead to loss of opportunities due to the common “I’m afraid to try, because I’m afraid to fail” mentality (Goss, 2010)
* Time Management Issues
  + Regular tasks may take longer than anticipated causing additional stress that prohibit the ability to organize time efficiently
    - Ex. Writing a simple email requires having to check and double check for errors (Goss, 2010)
* Fear of discrimination
  + Overwhelming fear of discrimination may lead to refusal to report SLD to employer and thus fail to request appropriate accommodations.

For successful employment, those with dysgraphia may decide to pursue jobs that do not require extensive amounts of formal writing (Rogan & Hartman, 1990). However, a study conducted by Shier et al. (2009) had found that those with learning disabilities are capable of advancing in their careers and can successfully receive promotions. A couple of factors/strategies implemented by individuals with dysgraphia to improve success in the workplace may include the following:

* Self-disclosure of dysgraphic symptoms to employer and personal request/identification of the best modes for accommodation in the workplace.
  + Those with dysgraphia are protected by LD legislation and are entitled to accommodations that help to *even the playing field*
* Collaboration and Delegation
  + Utilization of personal strengths to compensate for weaknesses in writing, while relying on abilities of others to effectively and efficiently finish tasks
    - Ex. A Corporate Executive uses his leadership skills to motivate subordinates and promote teamwork to finish a major written proposal without having to disclose his own deficiencies (Goss, 2010).

# References

Gerber, P. J., Price, L. A., Mulligan, R., & Shessel, I. (2004). Beyond transition:. *Journal of Learning Disabilities, 37*(4), 283–291.

Goss, D. (2010). Workplace issues of college-educated adults with learning disabilities. In M. Ficksman, & J. U. Adelizzi, *The Clinical Practice of Educational Therapy: A Teaching Model.* New York: Routledge.

Shier, M., Graham, J. R., & Jones, M. E. (2009). Barriers to employment as experienced by disabled people:a qualitative analysis in Calgary and Regina, Canada. *Disability & Society, 24*(1), 63–75.

**Accommodations to Help Learners with Dysgraphia**

Dysgraphia can manifest in the form of various challenges. Some symptoms may affect the mechanical action and output of writing due to impairment at a grapheme level, an allograph level, or a motor pattern level. Other symptoms primarily hinder one’s ability to spell and form words including letter identity error resulting in substitutions, additions, and omissions, and errors of letter position within the word (Crouch & Jakubecy, 2007; Ellis, 1988). Someone living with dysgraphia can experience any combination of these problems. Thus, the provision of appropriate accommodations must address the person’s specific areas of need in order to facilitate learning and productivity in both the school and workplace setting (Graham, Patterson, & Hodges, 1997)

**Accommodations**: provide alternatives to written expression such that the importance of writing on learning and expression in the classroom is reduced

**Accommodations Available**

Most of the accommodations below are written in the context of a student, however many of these accommodations can also be used in the workplace.

1. Apply methods to reduce the **volume** of writing tasks and the importance of the student’s **writing speed**.

* Provide more time for note taking, copying and in class tests/assignments
* Provide students with modified fill in the blank over heads/lecture notes, in either hard-copy (i.e printed sheets) or soft-copy (i.e editable word document) formats, such that the student is only required to write minimal amount of words and may be able complete notes in the same amount of class time given to their peers.
* Provide students with extra work hours to complete unfinished written work or seek for additional help in the form of “library time” or “independent studies”
* Allow the use of assistive technology to overcome difficulties in writing. The use of word processors alleviates hand-writing challenges as well as difficulties in spelling through the use of a Spell-Check feature. The following are a few examples of mobile and computer applications that can be used to aid the process of writing:
  + - **Dragon** - Speech-to-text application
    - **Evernote** - Organization tool that allow for voice-recorded notes (see media page for demonstration)
    - **SoundNote** - Recording application allows for simultaneous recording and typing
    - **Typ-O HD** - A word predictor that reduces the impact of spelling errors
* Modify assessment of knowledge by offering alternative formats of tests and assignments. For example an oral exam or a visual presentation that eliminates the need for the ability to write.
* Allow abbreviations in writing such as using ‘b/c’ for ‘because’ to help with note taking and test writing.
* Request a scribe or a designated note taker to take notes during class so that the LD learner can concentrate more on the lesson that their impairments. A scribe or secretary could be appointed to a employee who requests assistance in meetings.
  + A note taker could be a student in the same class who writes their notes on carbon paper or photocopies their handwritten notes for the student.

2. Accommodations to reduce the **complexity** of the writing tasks

* Break down written assessments into stages so that it does not seem like a huge task all at once (such as brainstorming, drafting, editing etc.).
* Encourage students to use a spellchecker or ask a peer to help proofread written work.
* Allow students to write in cursive if preferred by the learner

3. Provide alternative tools and resources to encourage legible writing

* Lined paper with larger widths to help keep writing within the lines
* Use large graph paper as a sensory guide to help align columns of numbers essential when completing math problems
* Use of visual organizers to assist in outlining and brainstorming for extended writing assignments

# References

Barton, S. M. (2003). Classroom accommodations for students with dyslexia. *Learning Disabilities Journal*, *13*(1), 10-14

Crouch, A., & Jakubecy, J. (2007). Dysgraphia: How it affects a student’s performance and and what can be done about it. *Teaching Exceptional Children Plus, 3*(3), 1-13.

Editors of Careers Portal. (n.d.). *Dysgraphia*. Retrieved from http://www.careersportal.ie/disability/az.php?ed\_sub\_cat\_id=75&parent=20#.U7L15bEzrAk

Ellis, A. W. (1988). Normal writing processes and peripheral acquired dysgraphias. *Language and Cognitive Processes, 2*, 99-127.

Graham, N. L., Patterson, K., & Hodges, J. R. (1997). Progressive dysgraphia: Co-occurrence of central and peripheral impairments. *Cognitive Neuropsychology, 14*(7), 975-1005.

Jones, S. (1998). Accommodations and modifications for students with handwriting problems and/or dysgraphia. Retrieved from  http://www.resourceroom.net/readspell/dysgraphia.asp

NCLD Editorial Team . (n.d.). *What is dysgraphia? | Writing disability*. Retrieved from http://www.ncld.org/types-learning-disabilities/dysgraphia/what-is-dysgraphia

Richards, R. G. (2008). *Dysgraphia: A student's perspective on writing*. Retrieved from http://www.readingrockets.org/article/22746

**Other Materials**

***Videos/Graphics:***

The National Center for Learning Disabilities. (2012). *What is dysgraphia*? Retrieved from <http://youtu.be/jmBg_BvDL-c>

The National Center for Learning Disabilities. (2013). *Dysgraphia: An app review*. Retrieved from <http://youtu.be/IT8-TlaDZuw>

Gordon, N.E. (2012). *Evening will come: A monthly journal of poetics*. Retrieved from <http://www.thevolta.org/ewc19-negordon-p1.html>

***Quiz:***

Understanding Dysgraphia – (visit the Weebly web site for the url)

Take the online quiz. This will demonstrate how well you are grasping the material you have read.

>> Click on the 'Forums' button, and share with us your score in the appropriate Brock Sakai Forum.

***Case Studies:***

The three case studies are available as separate downloadable documents.

1. Read the Case Study assigned to your group.
2. Each student will post responses to the questions with respect to the assigned case study, in the Brock Sakai Forum.
3. Click on the 'Forums' button to be directed to the Brock Sakai site.

Each person has been assigned to a case study:

**Case Study - Priya** (Georgina, Alcindo, Charlotte, Lauren, Richard)

**Case Study - Lina** (Michelle, Paul, Paul, Stuart, Mike)

**Case Study - Vic** (Johanna, Doreen, Nicole, Nicole)

(Is your name missing? Pick any group and please participate.)

Dysgraphia group members (Amanda, Courtney, Kawai, Jazmine, and Wendy) will reply accordingly to the postings.

***Simulations:***

1. Composition Acitivity <http://www.pbs.org/wgbh/misunderstoodminds/experiences/writingexp2b.html>
2. Graphomotor Activity <http://www.pbs.org/wgbh/misunderstoodminds/experiences/writingexp1a.html>
3. Place a pencil in your non-dominant hand (left hand if your right handed) and write out the following sentence: Hello, my name is \_\_\_\_\_ and I am learning about dysgraphia.  
   If you can, take a photo and attach the image to your own posting.
4. What is the effect of dysgraphia on math? Try solving these problems where the numbers do not line up correctly <http://pediatricneurology.com/images/messb.jpg>

>> Click on the 'Forums' button, and share with us your experiences on the various simulations, or thoughts on the challenges.