

**Orton-Gillingham Approach  
Special Education Teachers' Experiences  
with Dyslexia in US Students**

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## **Abstract**

The current study is focusing on the special education teachers that use the Orton-Gillingham (O-G) approach when they teach students with dyslexia. The main objective of the research was to gain knowledge of the experiences that special education teachers have, when they use the O-G approach and their perspectives of the advantages and disadvantages of this approach. When it comes to research and the O-G approach, research has been only on the student. There is lack of research on special education teachers that use the O-G approach because most research has been only on the O-G approach's impact on the students.

The informants of the current study are three special education teachers from a private school in the United States that has only students with dyslexia. The interviews were semi-structured. It is qualitative study that uses phenomenology and hermeneutics. Teachers shared their different experiences and knowledge of the O-G approach. From the thematic analysis of the data, five themes emerged that show the special education teacher's perception. The results showed the perception and the experiences that the special education teachers have for the O-G approach. They shared their definitions of what dyslexia is. They also reported the benefits and the barriers of the O-G approach, and its connection with the lexical quality hypothesis.

The above findings contribute to the current limited scientific knowledge for the effectiveness of the O-G approach. Finally yet importantly, dyslexia is individual and the outcomes to any programme or method will be different between individuals.

Keywords: dyslexia, reading, spelling, special education teachers, Orton-Gillingham approach

## **Abbreviations**

O-G – Orton-Gillingham Approach

IDA – International Dyslexia Association

BDA – British Dyslexia Association

NSD - Norwegian Social Science Data Services

## **Dedication**

I want to dedicate this to all the students with dyslexia and learning difficulties that experience problems during the reading process.

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## **Chapter 1. Introduction**

Dyslexia is a difficulty with reading, spelling, and writing that disrupts children's literacy and, consequently, intellectual growth. It is interesting that there is no consensus in the scientific community about what dyslexia is. Most researchers have been trying to solve this enigma with their hypotheses; however, each hypothesis has contributed its own truth to the mystery about dyslexia. The following chapters present an extensive overview of the current dyslexia hypotheses.

One of the main attributes of children with dyslexia is difficulty reading and comprehending text. Reading is both a complex mental process and a human cultural artefact. Reading includes many words that are in order and give meaning to the reader with their attributes. When we refer to word attributes, we refer to each word's morpho-syntax, phonology, meaning, and orthography. Knowledge from word attributes comes from the lexical quality hypothesis. Lexical quality hypothesis states that words include four attributes which work together and give meaning to the reader. If students with dyslexia have difficulty reading words quickly and accurately, then a remediation programme should focus on teaching them those word attributes.

In the last decade, many remediation programmes have promised to help children with dyslexia develop their literacy skills. The Orton-Gillingham (O-G) approach was the first remediation programme for teaching reading and writing to students with dyslexia in the US. The O-G approach's research focus has been only on students with dyslexia; there is lack of research entailing teachers. Given the fact that teaching is a dyadic process that involves both the teacher and the student, it is prudent to research how teachers perceive the O-G approach.

### **Background**

Dyslexia is an interesting area of research and a developing field with many unsolved questions and inquiries. It is very informative to see how educators perceive and experience students with dyslexia and, more than that, how they experience the use of the O-G approach with these students. The field of special needs education will benefit from gaining knowledge about how the O-G approach is perceived by the teachers that use it.

The current research project was conducted in a private school in the US. The main requirement for students to gain admission to the school is to have an official diagnosis as

dyslexic. Thus, the student population is only children with dyslexia. The school provides training sessions for special education teachers in using the O-G approach. This is the only method that the school uses for teaching students with dyslexia.

The reason that I chose to investigate the effectiveness of the O-G approach is because I have been working in this school as language training tutor, and I wanted to contribute to the scientific knowledge behind O-G. I saw it as a great opportunity make O-G better with my research contribution. The informants of the current study were three special education teachers that use the O-G approach as a programme for helping students with dyslexia develop their literacy skills. The interviews were conducted via skype calls, so the researcher did not have to travel. The special education teachers that participated in this research are referred to as Teacher 1, Teacher 2, and Teacher 3 to protect their identity.

### **Research aims and objectives**

The research aim was delimited to focus on special needs educators' perceptions. The goal is to gain knowledge how they perceive and experience the application of the O-G approach during their teaching. The research problem is what the special education teachers experience during the application of the O-G approach in their teaching. There are three research objectives and aims. The first objective is, what is the special education teacher's knowledge and experience of the O-G approach and dyslexia? The second objective is, what are the special education teacher's perceptions and experiences of the O-G approach? The third objective is, what is the special education teacher's perception and experience of the O-G approach in regard to the development of word reading?

### **The structure of the thesis**

The thesis has six chapters. Chapter 1 provides information about the research background and the research aims and objectives. Chapter 2 includes definitions for the term dyslexia and the different and current hypotheses that try to explain what dyslexia is. Chapter 3 provides information about the O-G approach and its structure. Chapter 4 illustrates the data collection procedures and analysis, participants, ethical issues, and validity and reliability of the current study. Chapter 5 provides the presentation of results with the themes and the sub-themes that emerged during the data analysis. Chapter 6 presents conclusions, discussions and recommendations for further research.



## Chapter 2. Defining Dyslexia

Reading and spelling contain words that make sentences, paragraphs, and texts. Skilled readers follow certain developmental stages for reading and spelling words. However, children with dyslexia have disturbances during their reading and spelling development. In this chapter is an extensive presentation of the different deficit hypothesis for children with dyslexia and their difficulties with reading and spelling. There is also a presentation of the developmental stages of sight word reading.

Understanding the nature, causes, treatments, and practice for reading disabilities is impossible in the absence of an agreed-upon definition that can be implemented reliably and validly. Defining dyslexia has been accordingly both easy and very challenging. It is easy because the majority of parties have reached a consensus that the definition should include inherent and specific difficulties met by those who struggle to read. It has been challenging because the field is unable to make a universally accepted definition (J. G. Elliott & Grigorenko, 2014).

One explanation of the difficulties in defining dyslexia is that the definition has been used as synonymous or different from other labels that entail literacy problems. These labels are specific reading retardation, reading difficulties, specific reading difficulties, reading disability, unexpected reading disability, and specific learning difficulties (J. G. Elliott & Grigorenko, 2014).

It is vital to realise that the value of a definition may be less severe because of its purpose (J. G. Elliott & Grigorenko, 2014). Definitions of dyslexia have served some purposes, and they can be categorised by the type of function they serve. The allocation type is used to distribute resources and develop provision. Its goal is to provide additional support and special provisions to those with criteria discrepancies. The explanation type provides a detailed explanation to teachers and professional about identification and intervention. These definitions have lists of statements and characteristics. The understanding type assists parents. Parents often want to be aware of the actual cause of the problem so they can thoroughly understand the difficulty. It is difficult for a definition to do this. The research type is correlated with the provision of a discrete and well-defined sample for researchers. IQ scores and other discrepancies may be included. The statements definition type is a definition that most organisations, such as educational authorities and parent groups, develop and use as a statement (Reid, 2016).

According to Lyon, Shaywitz, and Shaywitz (2003),

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

This is one of the several definitions of dyslexia and was developed by the International Dyslexia Association (IDA) and endorsed by the US-based National Institute of Child Health and Human Development. This definition focuses on problems with decoding that are attributed to poor phonological awareness; a secondary consequence of poor decoding impacts the text comprehension (Eden, Olulade, Evans, Krafnick, & Alkire, 2016). Another important element of this definition is the basic difficulty with accurate and fluent word recognition that dyslexics experience during the reading process.

The British Dyslexia Association (BDA) (2007) defines dyslexia:

Specific learning difficulty which mainly affects the development of literacy and language related skills. It is likely to be present at birth and to be lifelong in its effects. It is characterized by difficulties with phonological processing, rapid naming, working memory, processing speed, and the automatic development of skills that may not match up to an individual's other cognitive abilities. It tends to be resistant to conventional teaching methods, but its effects can be mitigated by appropriate specific intervention, including the application of information technology and supportive counselling.

Both of the definitions agree on the presence of poor phonological processing in dyslexia; however, the BDA's definition also entails difficulties with working memory, rapid naming, processing speed, and automatic skills development. Another area of agreement is that dyslexia exists irrespective of effective classroom instruction and conventional teaching methods. Furthermore, the BDA states that dyslexia is present at birth, and the IDA states that dyslexia is neurological in origin.

## **2.1 Theories of Dyslexia**

A variety of definitions explain dyslexia at the cognitive, behavioural, and neurological level. There are many theories for the causes of dyslexia. The gravity of the research has focused on conceptualising dyslexia as a disability. Dyslexia theories have three levels of division: the behavioural level, which includes behaviour that can be observed, such as reading; the cognitive level, which explains brain functions like memory, language, and learning; the neurological level, which focuses at the components of the brain (J. Elliott & Nicolson, 2016).

### **The phonological deficit hypothesis**

A significant number of theories have tried to explain dyslexia at the cognitive level. The most prominent theory is the phonological deficit hypothesis. Before the emergence of the recursive phonology and the evolution of linguistics, dyslexia was commonly considered a hereditary visual problem. However, the phonological theory of dyslexia became prominent and replaced this idea.

Phonologists and psycholinguistics have described and analysed the structure of phonological representations, the rules that operate on them, and the variety of representation levels and processing that are related to speech perception and production. The phonological deficit of dyslexia has specifically focused on three dimensions: phonological awareness, poor verbal short-memory, and slow lexical retrieval (Ramus & Szenkovits, 2008).

One aspect of the phonological deficit theory is that dyslexics have problems at the level of phonological representations. However, a variety of phonological processes are dependent on the quality of phonological representations. Phonological awareness, phonological short-memory, and difficulty associating symbols with sounds are processes that affect reading ability. Phonological awareness is the perception and manipulation of speech sounds such as syllables, onsets and rimes, and phonemes. One common attribute of dyslexics is that they demonstrate difficulty in counting the number of phonemes in words and deciding whether parts of words share common beginning and end sounds. Well-established phonological representations can improve their phonological awareness (Cain, 2010).

Short-memory is additionally related to how many items such as letters, words, numbers, or pictures an individual can remember. Dyslexics have often poor verbal short-memory skills. On contrast, visual short-memory skills seem unaffected. Dyslexics also show naming deficits

or word-finding difficulties. An indicator of this problem may be the failure to name an object in a naming task (Cain, 2010).

It is important to admit that poor readers demonstrate phonological problems; however, the phonological theory is only explanatory at the cognitive level. Decoding is an important aspect of reading, and the phonological hypothesis just mentions that dyslexics have difficulty in the phonological aspect of language. Despite illustrating the deficit, it does not explain why dyslexics demonstrate difficulty in decoding. On the contrary, some dyslexics demonstrate good decoding skills. The phonological deficit theory additionally forgets to mention that dyslexics have also difficulty seeing print (J. Stein, 2018).

The phonological theory does not explain why dyslexics demonstrate difficulties with decoding and converting letters into sounds. Therefore, it would be very challenging to distinguish dyslexic readers from all the other possible causes of children failing to learn to read, such as poor teaching or lack of family support. It would be impossible to distinguish developmental dyslexia from other causes simply by measuring the decoding skills. There should be an explanation why children demonstrate decoding problems during their efforts to learn to read (J. Stein, 2018).

There have additionally been reports of children having difficulty reading non-words despite presenting good phonological awareness skills. Those reports should question the causality between phonological deficit and dyslexia. Knowledge of the alphabetic code before reading instruction contributes to acquisition of phonological awareness. One study shows that children who master the alphabetic code before reading instruction do better on phonological awareness tasks than children who do not master it first (Vidyasagar & Pammer, 2010).

The phonological deficit could be a cognitive sign that leads to behavioural sign, such as poor phoneme awareness. The dysfunction of phonological processing stems from an abnormality in the dyslexic brain. The peri- and extra-sylvian areas of the left brain hemisphere are the base for phonological tasks. Post-mortem neuro-anatomical studies show that these specific areas are dysfunctional in dyslexic brains (Frith, 2002).

Therefore, the phonological deficit hypothesis states that reading difficulties are related to problems in phonological processing. These difficulties will create problems in sound segmentation and word blending, both of which are significant for the development of reading and spelling (J. Elliott & Nicolson, 2016).

## **The double-deficit hypothesis**

Another theory that entails the phonological deficit attributes but with some variation is the double-deficit theory, which includes both phonological and processing-speed deficits. Most theories for explaining dyslexia have focused on the specific disruptions in phonological processes.

Deficits in phonological processes disrupt word-recognition skills and fluent reading. Research has also given attention to naming-speed deficits, that is, deficits in rapid recognition and retrieval of visual stimuli. Therefore, the double-deficit hypothesis claims that deficits in phonological processes and deficits in naming-speed processes are separate from each other (Wolf & Bowers, 1999).

Two deficit subgroups arise. The phonological subtype has only deficits in phonological processes, and naming-speed procedures are unaffected. The other subtype is the naming-speed deficit subtype, which has no deficit in phonological awareness and decoding tasks but has deficits in naming-speed tasks, timed reading and fluency measures, and reading comprehension. Last but not least is the double-deficit subtype, which has significant problems on both phonological and naming-speed processes that affect all aspects of reading (Wolf & Bowers, 1999).

Naming speed and its relation to reading has its basis in different ideas of what is entailed in naming speed and what is entailed in reading. The common requirements for both are the eyes moving sequentially across the page, the stimulus in a state of fixation being encoded and access mental representations, and the related information for naming the stimuli being activated. The eyes should move to the next stimulus before the first stimulus is articulated. Reading also has the same structure; the eyes should move to the next line before the first line is fully articulated. Despite their similar requirement, naming speed always requires full articulation of the stimuli, whereas reading entails text comprehension and only sometimes articulation (Kirby, Georgiou, Martinussen, & Parrila, 2010).

## **Deficit hypotheses for dyslexia**

To begin with, the next hypothesis refers to visual-spatial attention. Its main argument is that dyslexics have a deficit in their visual-spatial attention. It also claims that this deficit comes from a certain difficulty in covert orienting. Covert orienting is the reading skill that prepares

the reader to switch attention to a new, specific location while still focusing on the current location. Skilled reading requires readers to attend covertly to the next word while reading the current one. Another hypothesis consistent with the visual factors of the reading process focuses on fixation accuracy and stability together with saccadic accuracy (J. Elliott & Nicolson, 2016).

The importance of these theories is that they try to provide a specific explanation as to what dyslexia is, and all of them stand confidently to solve the enigma dyslexia. From the phonological deficit theory to the double-deficit theory and so on, there are deficits that dyslexics show; however, we cannot say which theory is right or wrong, because all of them contribute an element of truth. The future of neuroscience is exciting and promising for unravelling the truth about the dyslexia. With the contribution of neuroscience, there is evidence as to how the brain works during reading, which areas present deficits for dyslexics, and where the dysfunction lays in the human brain. The positive aspect of neuroscience is that it may assist scientists to reach a conclusion about dyslexia.

One of the most dominant and promising hypotheses at the brain level, which focuses on sensory processing, is the magnocellular deficit hypothesis.

### **The Magnocellular theory**

The main opinion of the magnocellular theory for explaining reading difficulties is that people with dyslexia have dysfunction in their visual stimuli, which stems from a disruption in the magnocellular system (Livingstone, Rosen, Drislane, & Galaburda, 1991). Low-level visual deficits have been a prominent explanation for students that have trouble learning to read; oculomotor deficiencies are specifically stated to cause visual tracking problems. Deficits in motor perception and the transient system have been related to dysfunction in the magnocellular system (Vellutino & Fletcher, 2005).

Reading requires visual attention to the sequence of letters in a written word and following the changing sounds in a spoken word. The development of this ability depends on precise visual and auditory processing. Eye movements and attention changes will facilitate the correct sequencing of letters in a word and changes in sound amplitude and frequency that highlight speech sounds. Failure to obtain these abilities is an important attribute of dyslexia and underlying reading problems (J. Stein, 2018).

Visual information follows two pathways when it leaves the occipital lobe: the ventral and the dorsal pathway. The ventral pathway is correlated with object identification and recognition, while the dorsal pathway is related to spatial position. The magnocellular system is part of dorsal pathway and detects motion and low-frequency spatial information (Usha, 2014).

Therefore, magnocellular theory has attempted to integrate both visual and auditory magnocellular approaches in its effort to understand dyslexia. It is also connected with brain abnormalities in specific regions. An alternate explanation for dyslexia includes a three-level framework that combines all the theories together to explore the truth about dyslexia.

### **An alternative explanation of dyslexia**

The causal modelling framework strives to shed light on what dyslexia is, because defining and explaining dyslexia has been a challenge. The framework entails three levels of description: the cognitive, the behavioural, and the biological. These three levels interact with cultural and environmental factors, such as the provision of teaching and socio-economic aspects. It is widely accepted that difficulties in learning to read and write are common characteristics of dyslexia. They belong to the behavioural level of description, while dysfunction in the information-processing mechanism belongs to the cognitive level of explanation. Problems either at the cognitive or behavioural level are signs of an abnormality in the brain. Therefore, dyslexia can be defined as a neuro-developmental disorder with a biological origin and behavioural signs (Frith, 2002).

This causal model is a helpful way to define and explain what dyslexia is. At a biological level, there is often a genetic origin that leads to specific processing deficits at a cognitive level and, as a result of these specific processing deficits, a child shows poor reading and writing skills (Riddick, 2001). The causal model of explanation supports the idea that impairment at a biological level has an impact at the cognitive and behavioural levels.

### **Summary: Theories of dyslexia**

Slow, inaccurate word reading and spelling are main attributes of dyslexia, and most theories propose different causes of it. The dominant phonological deficit theory has received empirical support from a variety of experimental studies. This theory states that the main deficit of dyslexia is a dysfunction on how phonological information is represented in the

brain. Word-reading accuracy and speed as well as difficulties with verbal memory and word repetition may be affected by this specific deficit (Cain, 2010).

Some other theories, though they support the idea that there is a close connection between dyslexia and limited phonological skills, add another underlying cause. The double-deficit theory proposes that dyslexics might have a problem with rapid word recognition. This theory embraces both phonological and naming-speed deficits. The magnocellular theory proposes a deficit in the visual system along with auditory and motor difficulties.

The speech rhythm deficit hypothesis additionally states that the difficulties lie in perceiving the onset of amplitude envelope, while the visual-spatial attention deficit that proposes that difficulties are in covert orienting. Finally, the cerebellar deficit hypothesis includes phonological, speed, and automatization deficits at the cognitive level, and provides a connection with brain structures and procedures (J. Elliott & Nicolson, 2016).

## **2.2 The Dyslexic Groups**

Subtype theory sheds light on differences between and within groups and provides a potential attempt to examine the specific, prominent characteristics in dyslexic groups (Robertson, 2000). The complicated nature of dyslexia has driven research to recognise and describe different dyslexic subtypes that may exist (Marinac, 2008). The existence of subtype theory has been controversial, and the gravity of the controversy lies in whether differences between dyslexic subjects are qualitative or quantitative and whether these differences allow differential intervention (Robertson, 2000) and differential diagnosis (Marinac, 2008).

The classification of three dyslexic groups has been dominant within the subtype theory: dysphonetic, dyseidetic, and alexic. Deficits of those groups are related to auditory and visual modalities. Difficulties with phonemic analysis are the main attribute of the dysphonetic group, who do not approach the text with decoding skills, and their problems lie in the auditory area. On the contrary, the dyseidetic group approaches the text via phonemic analysis, while their visual form of the text is poor. The alexic group has difficulties in both modalities (Robertson, 2000).

Another classification of dyslexic groups is the linguistic type and the perceptual type. The former uses the visual input channel, whereas, the latter uses the auditory input channel. Both subtype groups use either the visual or the auditory path to read. Given the fact that reading



requires the use of both visual and auditory modalities, this specific utility of the modalities from the dyslexics subtypes is not a strength attribute (Robertson, 2000).

In addition to the groups of dyslexia, both surface and phonological dyslexia entail difficulties in the language centres within the cognitive system, while visual-perceptual dyslexia includes impairments within the visual system. To begin with, visual-perceptual dyslexia involves letter reversals, called strephosymbolia. There is evidence that a limited number of children are influenced by temporary visual problems, which can lead to reversals and visual confusion (Marinac, 2008). The main attribute of visual-perceptual dyslexia is impairment in the visual system, whereas surface and phonological dyslexia is a language-based deficit.

Surface dyslexia has a deficit in the correct use of orthography, which has a negative impact on reading irregular words. Irregular words are words that experienced readers read by sight because specific grapheme-phoneme correspondence rules do not apply. Research shows that this could be a developmental delay rather than a deficit in dyslexics. On the contrary, phonological dyslexia has its deficit in decoding unfamiliar or pseudo-words that have been created to follow a grapheme-phoneme correspondence rule (Marinac, 2008). Both phonological and surface dyslexia have their difficulty in reading words; however, the difference lies in the kind of word being read, whether it is irregular or unfamiliar.

Another difficulty that causes disruption in reading ability is impaired working memory and supervisory attention. Dyslexic's phonological loop often operates slowly in combination with impaired supervisory attention (Berninger, Lee, Abbott, & Breznitz, 2013).

### **2.3 Models of Word Recognition**

There are two influential models of word recognition: the dual-route cascaded model and the connectionist's triangle model. Both of these models have been developed to explain skilled word recognition and difficulties with word reading. The main focus of both models is on how the reader accesses the pronunciation of a letter string. There is a direct and an indirect route to do this. When the readers encounter a familiar word on a page, the direct route immediately gives access to the word's representation in their lexicon. In the indirect route, the reader accesses the unfamiliar word by processing the individual letters or letter strings, accessing their pronunciation, and putting these sounds together (Cain, 2010).

The dual route model contains two different ways that make word recognition happen, a direct lexical route and an indirect lexical route.

## **Dual process theory**

In this theory, readers follow two processes when they identify words. Using the first route, indirect access, readers encounter words and apply certain grapheme-phoneme rules so that they can read the unknown word. They divide the letter string of a word into its small components of spelling, called graphemes. After the careful identification of graphemes, readers map them into their phonemes. At last, the connection of phonemes into a string makes the phonological formation of the word. The phonology of the word gives the reader access to pick the word from the mental lexicon (Cain, 2010).

The other process is called direct access. Readers do not usually use their knowledge of grapheme-phoneme correspondence to decode the word; they identify the word immediately as a letter string and connect its visual representation with its place in the mental lexicon. When readers are familiar with words, they can read them directly as a letter string without applying certain rules to identify the word in their mental lexicon (Cain, 2010).

The two processes should parse between skilled and unskilled readers. A prominent attribute of an unskilled reader is the application of grapheme-phoneme rules in the process of identifying words. Skilled readers conversely use the grapheme-phoneme rule only when they encounter an unfamiliar word. They have direct access within familiar words (Cain, 2010).

## **A connectionist's model of reading**

The connectionist's model of reading includes phonology, orthography, semantics, and context. Orthography is letters or their visual features, while phonology is phonemes or phonetic features, and semantics is the meaning of the words. The objective of this model is to show how the brain works and represents information. There are groups of units that represent the orthography, phonology, and semantics of words. Between these groups, there are hidden units that facilitate the connection of phonology, orthography, and semantics. These hidden units help readers spell and pronounce complex words. The connectionist's model is highly interactive and highlights connections between orthography, phonology, semantics, and context (Cain, 2010).

## **2.4. Stages of Spelling Development**

Spelling demands both phonological and orthographic knowledge, and research shows that it is a single, interactive process. Knowing how spelling develops will facilitate both the

understanding of spelling mistakes and the significant role of spelling in learning to read (Birsh & Carreker, 2018). Spelling goes through subsequent stages that lead to its completion.

At the pre-communicative stage, the majority of young children that have exposure to print in their homes will naturally experiment with writing. Their knowledge is specific identification of the names and the forms of some letters rather than mastering the alphabetic principle or the idea that letters represent sounds. They additionally lack understanding of wordiness: the idea that print represents words and spaces represent boundaries between words. Furthermore, they have not mastered the skill of left-to-right progression. Their reading skills are based on recognising whole words by using known visual features (Moats, 1995).

When a child understands that the sounds of spoken words can be represented in print, then the alphabetic principle appears. At this point, their writing starts to change, and their spelling entails speech sounds; however, their sound-based spelling is an unfinished representation of the sound of words (Cassar & Treiman, 1997). The first trial of linking speech to print lies at the syllable level and writing a specific symbol for each syllable (Birsh & Carreker, 2018).

When a child becomes aware that alphabet letters represent speech, then the semiphonetic stage emerges. Their spelling attempts will often demonstrate an undifferentiated and unrefined ability for word identification, even though they are applying the alphabetic principle. At this level, the letters are usually together without awareness of word boundaries. Children also use initial and noticeable consonants of words for reading (Moats, 1995), and they may also use letter names (Birsh & Carreker, 2018).

Experiences with print and writing make the child aware of phonetic representations of the words: the phonetic stage. Here, the spelling representations are the top layer of phonetic features, not the important phonemic or morphemic word structure (Moats, 1995). Omissions of letter sequence and silent letters are a usual attribute of this stage; however, as the ability to implement orthographic knowledge develops, correct spelling emerges (Cassar & Treiman, 1997). As children develop their ability to represent speech sounds at a surface phonetic level, they are constantly exposed to print, and their reading vocabulary increases. They usually notice and mentally categorise redundant orthographic patterns in the words they are learning to read (Moats, 1995).

This theory for spelling development has been prominent within the educational community. The creation of an educational, individual plan has benefited from the specific knowledge of the stages of spelling. Given the fact that teaching fosters learning, children should have

appropriate spelling instruction that is consistent with their stage of development. Because spelling development is influential, it requires continuous, careful, and thorough examination (Cassar & Treiman, 1997).

## **2.5 Stages of Word-Reading Development**

When readers notice a word that is known by sight, the word's identity is activated in the memory very quickly. When readers know the word well enough, they can pronounce and find its meaning automatically without any effort. Furthermore, another important factor, when it comes to sight word reading is that words come to be read as single units without any word division in small parts. This is known as unitisation (Ehri, 2005).

One misconception that comes with sight word reading is that many think it refers only to high-frequency or irregularly spelled words. However, any word that is read sufficiently becomes a sight word in the memory. Another misconception has to do with the fact that sight word reading is a strategy to read words; however readers automatically read words by sight. It is not a strategy or a matter of choice (Ehri, 2005).

Some factors can actually disrupt word-level recognition. There are lexical-level and sub-lexical level factors that have an influence on word-level recognition. The frequency and acquisition age of a word are lexical-level factors. Frequency refers to how often the word occurs in language use, and age of acquisition refers to when the word has been successfully stored to the memory (Cain, 2010).

Sub-lexical factors are the regularity, consistency, and morphology of words that can disrupt word-level recognition. Regular words contain grapheme-phoneme correspondence rules, and regularity influences how quickly skilled readers can name words. Words that have irregular pronunciation take a longer time to process. Several theories relate to the development of word-reading skills as a subsequent process that includes stages or phases. Furthermore, consistency refers to whether a particular spelling pattern is typically pronounced in the same way or not. For example, the spelling pattern '-ash' is pronounced differently in 'cash' and 'wash'. Last but not least, morphological structure influences how quickly skilled readers process a word (Cain, 2010).

It is of utmost concern to mention that readers manage to obtain successful sight word reading if they overcome the lexical and the sub-lexical factors that can disrupt their efforts. That

means that they master different spelling patterns, morphological knowledge, and irregularities in the pronunciation of words. Readers have been exposed to subsequent developmental stages with a view to establish sight word reading in their memory.

The term 'stage' indicates that movement to the next stage requires fully mastery of skills from the previous stage; however, none of these theories adopt this strict approach to word-reading development. Theories show the sequence of significant processes and skills that appear, change, and develop. Theories may provide the specific internal and external causes that facilitate the movement from one phase to the next. The former has correlation with cognitive and linguistic abilities, while the latter incorporates informal teaching, reading practice, and formal instructional approaches (Ehri, 2005).

During the **pre-alphabetic phase**, children use visual or contextual cues to read words. Salient visual cues are the earliest form of sight word reading, and they are around or in part of a word. Children's use of visual cues is a convenient way for them to remember how to read words. In this early phase, children do not read the alphabet letters that are in words; rather, they recognise the salient visual cues (Ehri, 2005).

Some studies have shown that children can read words that appear in their everyday environments, such as names of brands and restaurants (e.g., McDonalds, Pepsi). Children read signs and labels in the environment without using alphabet letter knowledge. Some scholars conversely contend that pre-alphabetic children read words by using sign and label cues because environmental print is more noticeable than letters (Ehri, 2005).

The **partial-alphabetic** phase emerges when children have mastered letter knowledge and can apply it as a reminder of how to read words. However, they form connections only between some of the letters and sounds in the words, often the first and final sounds. For example, the letters 's' and 'n' are the first and final sounds to read the word spoon. The limitation to form partial connections is due to their inability to segment the pronunciation of the word into all of its phonemes. They also lack full knowledge of the alphabetic system, mostly vowels. As a direct consequence of this limitation, they have difficulty decoding unfamiliar words. They master partial spellings of word by writing only the more salient sounds and leaving out medial letters (Ehri, 2005).

When children master reading words by forming full connections between letters in spelling and phonemes in pronunciation, they are in the **full-alphabetic phase**. They have knowledge

of the major grapheme-phoneme correspondences and can segment pronunciations into phonemes that match up to the graphemes that they see. The benefit of representing sight words completely in memory is that word reading becomes much more accurate, and similarly spelled words are hardly confused. Readers can also decode unfamiliar words and invent spellings that represent all the phonemes. In this developmental phase, readers can remember the correct spelling of words better than partial-phase readers (Ehri, 2005).

One difference between the partial- and full-alphabetic phase is when children experience disturbance in the process of reading similarly spelled words. This shows the benefit that skilled readers have after forming full connections to keep sight words in their memory.

The next developmental phase emerges when readers start to rapidly retain sight words in their memory: the **consolidated phase**. The spellings of rimes, syllables, morphemes have become unitised, and this knowledge of letter chunks will be a facilitative factor when it comes to reading multisyllabic words (Ehri, 2005).

There might be a connection between spelling and word-reading development with the deficit hypotheses of dyslexia and the models of word recognition. Spelling and word-reading development start with grapheme-phoneme correspondence until readers develop sight words in their memory. In general, students with dyslexia have problems with reading words. The O-G approach focuses on improving fluency and accuracy by developing strategies and techniques to tackle their difficulty with reading words.

## **Chapter 3. The O-G Approach**

Multisensory teaching is a method of teaching students with dyslexia (Donnelly, 2000). The goal of multisensory teaching is to provide necessary instruction to stimulate multiple sensory receptors that encode information simultaneously. Knowledge can be restored in different, specific memory stores that have related to visual, verbal, kinaesthetic, and tactile experiences. There is controversy on whether multisensory instruction is more effective than traditional instruction for teaching decoding, reading comprehension, and phonological awareness. A variety of explanations have been proposed for exploring the beneficial aspect of multisensory instruction (Allen & Beckwith, 2005). The O-G approach uses multisensory teaching as a basic teaching strategy. It was developed by two pioneers.

### **3.1 The O-G Approach: History and Evolution**

The cooperation between Anna Gillingham and Bessie Stillman was a hallmark in the development of the O-G approach. Their remedial techniques were based on Dr. Samuel T. Orton's neurological explanation for language learning disabilities. Both his neuropsychiatric background and case studies of children whose learning differences and instructional needs did not combine well with the prominent sight word teaching method teachers applied in the traditional classroom were significant (Birsh & Schedler, 2011). Orton made a valuable contribution to our current understanding and treatment of dyslexia. First, he believed the appearance of reversed letters and words to students with dyslexia were due to a significant impairment in the cerebral dominance. Reading is complex by itself and requires the activation of many brain areas. Brain impairment in children with dyslexia will appear in many areas. Furthermore, he noted that the intellectual abilities of children with reading difficulties were above average (Norton & Wolf, 2012).

Gillingham was a psychologist and research fellow at the Language Research Project of the New York Neurological Institute. Stillman was a teacher, and both Gillingham and Stillman conducted research concerning remedial techniques for students experiencing difficulties in learning to read and spell. Their concerted effort in cooperation with Dr. Orton created an efficient system of teaching language-related skills to students who encountered reading and spelling difficulties. The system includes letter sounds, syllables, words, sentences, and writing in combination with a daily lesson plan and a detailed presentation of all aspects of the alphabetic-phonetic approach to reading and spelling. Instruction was explicit, systematic,

cumulative, direct, and sequential. The main difference from the sight word approach was the use of visual, auditory, and kinaesthetic modalities to systematically teach phonetic rules. The O-G approach's evolution over time is consistent with the emergence of evidence-based instructional approaches to support struggling readers (Birsh & Schedler, 2011).

### **3.2 The O-G Instruction**

The O-G approach is a systematic, sequential, multisensory, synthetic, and phonic-based approach to teaching reading. The main aspects of language such as phonology, phonological awareness, sound-symbol correspondence, syllables (Ritchev & Goeke, 2006), syllable instruction, (Donnelly, 2000), morphology, syntax, and semantics are explicitly presented. Instruction of language components is systematic and cumulative. Before students go to the next level, they should master and overlearn specific skills before they start learning the new information. Introduction to new skills is individualised to students' needs and based on continuous assessment and diagnostic information (Ritchev & Goeke, 2006).

Furthermore, the O-G approach embraces the following components: direct teaching with student-teacher interaction; simultaneous multisensory methodology; systematic, sequential, and cumulative emphasis on phonology; synthetic-analytic phonics that begin from the small part to the whole; and systematic morphology for spelling and usage (Moats, 1995). First, phonology is the study of sounds, and phonological awareness is the realisation of how sounds function in words. Sound-symbol correspondence is the ability to relate each sound with a grapheme, whereas a syllable is a part of a word with one vowel sound, and syllable instruction has a connection with specific rules about how we divide words. Morphology additionally includes the study of prefixes, roots, base words, and suffixes. Another significant language component is the syntax, which provides students with a better understanding about how the order of a word gives meaning, and how semantics give meaning to the language as a whole (Donnelly, 2000).

#### **Phonology**

According to phonology, students learn certain digraphs of the English language – ch, ck, ph, sh, tch, th, wh – and diphthongs –oa, ai, ay, ee, oe, eu (Gillingham, 1997).

English spelling patterns are predictable and logical, because there are several layers of language that have representation on the orthography. Many variables lead to predictability in



spelling. These factors are sound-symbol correspondences, syllable patterns, orthographic rules, word meaning, word derivation, and word origin (Moats, 1995).

## **Morphology**

Word meaning, word derivation, and word origin are connected to morphology. Morphology is the smallest meaningful unit of the language. ‘Morphe’ is a Greek root word that means ‘form’. Morphemes can be inflectional and derivational. Inflectional morphemes are grammatical endings that do not affect the root word but determine the possession, gender, or the number of a noun or the tense, voice, or mood of a verb. When it comes to demonstrating comparison, the root word should be an adjective (Moats, 1995).

Therefore, O-G remedial instruction teaches students with dyslexia the inflectional morphemes that are related to grammatical endings with plural. Students are exposed to different spelling patterns that will assist them acquiring the knowledge and usage of inflectional morphemes.

Those were the instructions that students were learning for inflectional morphemes. However, another type of morpheme is a derivational morpheme. Derivational morphemes change a word’s part of speech. These morphemes are prefixes and suffixes, which entail a large variety of meaningful words parts that are used in combination with others to form new words. Their origin is from the Greek and Latin languages. Even though their spellings are consistent, their meanings are very widespread. Derivational morphemes have a consistent spelling structure despite the fact that their meaning or pronunciation may be exposed to change according to the morphemes with which they are connected (Moats, 1995).

In the O-G approach, students learn that affixes are meaningful syllables placed before or after the base word. A prefix is placed before the base word. A striking example is the prefix ‘**pre-**,’ which means before. In the following words, precede, predict, and prepare, the prefix ‘pre’ gives a meaning that something happened before. Precede means to go before, predict means to say before, and prepare means to make ready before. On the contrary, a suffix is placed after the base word. In a word such as predictable, the suffix ‘**-able**’ means able to be determined beforehand. Students should take time to build words using affixes, root words, and suffixes (Gillingham & Stillman, 1997).

Furthermore, the root word ‘port’ means carry. Students can take ‘port’ as a base, then proceed to modify the word by using affixes and suffixes. Words such as porter, portable,

export, import, transport, and reporter have the base word 'port', the suffixes '-er' and '-able', and the prefixes 'ex-', 'im-', 'trans-', and 're-' (Gillingham & Stillman, 1997). So, students are exposed to a variety of root words, suffixes, and prefixes.

The O-G approach uses morphological analysis instruction. Morphological analysis instruction is an instruction that uses affixes, base words, and root words to infer the meaning of the words. It also contributes and facilitates word recognition, spelling, and vocabulary knowledge (Manyak, Baumann, & Manyak, 2018).

There are three key principles of using morphological analysis instruction. First, instruction in word parts also contributes to word reading. That means the instruction of using morphemes to read multisyllabic words has proven effective for upper-elementary students. Second, there should be variety of goals with reference to morphological analysis instruction. Potential objectives could be awareness of the morphological structure of the words, the meanings of specific affixes and roots; being able to analyse how the morphemes of words contribute to their meaning, grammatical instruction, or spelling; and applying strategies for using morphological analysis to infer word meanings. Finally, affixes and base words differ in their semantic transparency. So, in the beginning, the instruction should contain affixed words whose meaning can be easily identified (Manyak et al., 2018).

Families are used to categorise affixes. The family of **not** prefixes includes the following prefixes: dis-, un-, not-, im-, il-, in-, im-, and ir-. The family of **position** prefixes has the following prefixes: pre- (before), post- (after), mid- (middle), inter- (between), intra- (among), fore- (before), and trans- (across). Furthermore, the family of **over, under** prefixes has the prefixes over- (more than), super- (high), under- (low), and sub- (under). The family of **against** prefixes includes anti- (against), and counter- (against). The family of **bad** prefixes contains mis- and mal- (bad, wrong). Last but not least, there are prefixes that have to do with **numbers**, such as uni-, mono-, bi-, and tri-, and other useful prefixes such as re- (again), de- (take away), and co- (with, together) (Manyak et al., 2018). Learning the prefixes in categories will help students effectively remember them.

Students also learn suffixes in categories and families. Those suffixes are -full (full of), -ness (state or quality of), -ly, -y (like, full of), -less (without), and -able (worthy). Suffixes that shows persons are -er, -or, -ist, and -ee. Suffixes that show more and most of something are -more and -most (Manyak et al., 2018).

It is crucial to mention that the O-G approach specifically refers to teaching the English language. The English language, with over three hundred million speakers and a vocabulary of approximately one million words, is the first global language. The reason for this extensive vocabulary is its ability to absorb words from other languages. English is primarily related to three languages: less than one percent of English words are Germanic, over half of them are Latin, and about 11 percent are Greek (Gillingham & Stillman, 1997).

The O-G approach focuses its teaching to students with dyslexia by providing them with prefixes, suffixes, and root words. Students will not guess what they read but actually develop their ability to understand the language and be better readers.

Students are exposed to families of Greek and Latin root words. The first family is the **look-and-light** root words. In this family are the root words scope (look at), vis, vid (to see or watch), and photo (light). Another family is the **communication** roots: script, scribe (to write), dict (say), phon, phone (sound), graph (to write or draw), and aud (hear). The **build-or-break** roots family contains rupt (break), fract (break), and struct (build). The family of **movement** roots includes tract (drag), mot, mov (move), and port (carry). Last but not least, some other useful roots are bio (life), tele (far), geo (earth), therm (heat), micro (small, tiny), astr (tiny), path (feeling, suffering), and phobia (fear) (Manyak et al., 2018).

## Spelling and syllable patterns

Students learn that the addition of an -s at the end of the word will convert this word into its plural form. Furthermore, nouns that have endings in -s, -x, -z, -ch, or -sh, have the addition of -es that will convert their singular form to plural. Nouns that end in -y after a vowel form the plural by adding an -s at the end of the word; however, nouns that end in -y after a consonant form the plural by converting the -y to -i and adding an -es. For example, the singular word 'boy' will be 'boys' after the addition of -s, and the singular word 'lady' will be 'ladies' after the addition of -es (Gillingham & Stillman, 1997).

Another spelling pattern that students learn is the plural of nouns that end in -f, or -fe. Most nouns that end in -f or -fe form their plurals regularly by adding -s. For example: roof to roofs and fife to fifes. However, some of them have a different orientation: they change the -f or -fe to -ves. For example, leaf to leaves and knife to knives (Gillingham & Stillman, 1997).

Many students confuse the number of letters with the number of syllables. With instruction and practice, students will understand that a syllable is a part of word or word by itself. Once

students acquire the concept of a syllable, they can identify and apply syllable patterns (Gillingham & Stillman, 1997).

There are six types of syllable patterns in the O-G approach. **The closed syllable** ends with a consonant, and the vowel before the final consonant has a short sound (that). In the (vce) **vowel-consonant-e syllable**, the final e is silent. The silent -e at the end of the word gives the vowel before it a long sound (same, stripe). The (o) **open syllable** ends with a vowel. The vowel has a long sound (says its own name); it can be one letter if that letter is a vowel. The (d) **diphthong syllable** entails two adjacent vowels that are pronounced together, such as -ai, -ay, -ee, -ea, -oi, -oy, -oa, -au, -aw, -ew, -ue, -oo, -ie, and -ei. The (r-com) **r-combination syllable** has one vowel followed by an r (-ar, -er, -ir, -or, -ur, and -ear). The r gives the vowel a unique sound. The **consonant-le syllable** at the end of a word has no vowel sound (cradle, title). The silent e at the end of the syllable is the only vowel; only the consonant and the l are pronounced (Gillingham & Stillman, 1997).

There are also some spelling patterns in O-G remedial instruction. In **the floss pattern**, words in one syllable that end in f, l, or s after one vowel usually end in double -ff, -ll, or, -ss. For example, the **cliff** is **tall** and covered with **moss**. The **doubling-the-final-consonant pattern** in monosyllables is one syllable, one consonant at the end, and one vowel before it. Students are taught to double the final consonant before adding a suffix that begins with a vowel, but not to double it when the suffix begins with a consonant. In the **doubling-the-final-consonant pattern** for polysyllabic words with one consonant at the end and one vowel before it, the final consonant is doubled before a suffix, beginning with the vowel, if the accent is on the last syllable (Gillingham & Stillman, 1997).

Furthermore, the **silent-e pattern** has words that end in a silent e. Students learn to drop the final e when a suffix begins with a vowel, but when the suffix begins with a consonant they do not drop the final e. For example, hope, hoping, and hopeful. In the same track, in the **final-y-before-a-suffix pattern**, the final y after a vowel remains unchanged when the suffix comes at the end of the word; however, the final y changes to an i before any suffix (Gillingham & Stillman, 1997).

Another strategy that the O-G approach embraces is the structural analysis of words. When students with dyslexia encounter longer or multisyllabic words, they learn how to divide them. They are exposed to several syllable formulas that contribute to the division of words.

The first syllable division formula is *vccv*. In this formula, students learn to divide the words between the two consonants. Therefore, it could be *vc\cv*. Another syllable division formula that they learn is *vcv*, with one consonant between two vowels. The division in this formula is between the first vowel and the consonant (*v\cv*). A similar syllable division formula is *vcv*, but the division takes place between the final consonant and vowel (*vc\v*). The syllable division formula with two adjacent vowels and no consonants occurs between the two vowels (*v\v*). One of the major syllable division formulas is *vcccv*. The division happens between the first consonant and the two others (*vc\ccv*) (Cox & Hutcheson, 1988).

Accurate reading comprehension can be disturbed by visually unfamiliar words with more than one syllable, even though there is sufficient mastering in phonics and sound-symbol correspondence. An efficient, structured, logical, scientific, and reliably automatic system for dividing and pronouncing words is a prerequisite to successful academic writing. General strategies for dividing and pronouncing long, visually unfamiliar words is a very important skill that dyslexics students should develop (Cox & Hutcheson, 1988). The O-G approach is a system that will help students with dyslexia develop sight vocabulary in their memory and entails significant and prominent principles in its implementation.

### **3.3 Analysis of Basic Principles of O-G**

The significant principle of the O-G approach is to maximise the precise components of the reading process and apply the evidence-based practices and principles of reading and writing instruction. During the application of O-G, practitioners, tutors, and teachers usually control their student's progress; they do not present new information if the students have not mastered the old information (Giess, Rivers, Kennedy, & Lombardino, 2012).

To begin with, systematic teaching controls the amount of information, the number of concepts or patterns present in the stimuli, and the amount of practice with the old and new information. Systematic teaching is beneficial for people with dyslexia, because they learn better when the information that they have to learn is controlled and the amount of practice is monitored. A basic principle for a lesson plan is 80% practice with the old information and 20% with the new concept (Moats, 1995).

Direct and effective teaching are concepts that are dependent on each other. Interactions between the teacher and student also shape the outcome of teaching. Teachers should give direct, constructive feedback when students make errors. Modelling and error imitation are

effective strategies for helping students realise their specific mistakes. Children who are usually poor spellers need more practice to recall specific grapheme-phoneme correspondence, and they do not usually master the association between phonological, orthographic, and semantic relationships within words. So, each new piece of information should be presented sequentially and one at a time (Moats, 1995).

The O-G approach was special and unusual in its first years of development, because it emphasised individual student's needs with a view to introducing new concepts and new rules so students will make and blend phonograms into larger units. The use of visual, auditory, and kinaesthetic modalities were common when teachers introduced new information. The primary and fundamental reason for using three modalities for teaching new concepts was the idea that representation will have a successful establishment to the students. Finally, yet importantly, units of language were introduced systematically and sequentially from simple vowels and consonants through multiple syllable words (Ring, Avrit, & Black, 2017).

The O-G approach has its foundation in logical, independent thinking, because it teaches students to use language as they think about language. Students with dyslexia should learn that language is structured and logical. They should also be aware that there is reason behind this structure that they can use to build mastery (Sheffield, 1991).

Therefore, the O-G approach teaches students with dyslexia phonology, morphology-syntax, and orthography through spelling patterns and syllables and teaches meaning with the instruction of roots that exist in the words. The lexical quality hypothesis refers to those attributes.

### **3.4 The Lexical Quality Hypothesis**

The main component of the lexical quality hypothesis is the combination of several attributes that words incorporate to provide readers with fast and efficient word reading and reading comprehension. The degree to which those features work together determines success.

The recurring cognitive ability in reading is the identification of words. Reading comprehension depends on successful word identification. -Skills differences in reading comprehension can stem from skill differences in word reading. The rapid, low-resource retrieval of word identity can arise from effective practice and knowledge about word forms and meanings. The lexical quality hypothesis claims that readers' knowledge of a given word incorporates its forms and its meaning constituents. Readers' knowledge of word use

additionally connects the meaning of a word with its pragmatic features (C. Perfetti, 2007). Word attributes can be stored in the mental lexicon (Hamilton, Freed, & Long, 2013).

The representational features of a given word are phonology, orthography, morpho-syntax, and meaning. The degree to which these attributes connect with each other has an impact on efficient word reading. Binding is the fifth representational feature of a given word, and its responsibility is to ensure that the four constituents – phonology, orthography, morpho-syntax, and meaning – of a given word are coherent with each other (C. Perfetti, 2007).

The lexical quality hypothesis can vary between low and high. When some readers experience inconsistent activation of the representational features of a word, then the lexical quality hypothesis is considered low, whereas it is considered high when readers experience consistent activation (C. Perfetti, 2007). Low lexical quality of a word is determined by inconsistency in spelling trials and the effortful retrieval of a given word's pronunciations and meanings (Perfetti & Hart, 2001). Therefore, when readers master the representational attributes of a given word, they can read quickly and efficiently.

The retrieval of a lexical representation should be coherent and reliable. Coherency refers to the fact that the specific attributes of a given word are available simultaneously when retrieval takes place. The term 'reliable' is related to the reading experience; the more readers encounter the specific word, the stronger the connection of its representational features would be (Perfetti & Hart, 2001).

One study conducted with skilled adult readers is consistent with the lexical quality hypothesis. The study shows that deficiencies in decoding can lead disruption in the representational features of a given word and can require energy from cognitive resources such as working memory (Hamilton et al., 2013). Decoding is related to phonology. When the representational features of a given word are deficient, readers spend time combining the features. This disruption leads to low retrieval from the mental lexicon.

There is evidence that shows variation in the coordination of phonological, morphological, and orthographical skills between good, average, and poor spellers. Developing readers and writers with dyslexia rely on the interrelationships of morphology, phonology, and orthography in learning to spell and read (Berninger et al., 2013). The O-G approach attempts to tackle the difficulty with reading that dyslexic students experience. A lesson with the O-G approach includes several aspects of the representational features of words.

### 3.5 Complete Lesson of O-G

The O-G lesson includes two stages. The first stage is review and reinforcement, and the second stage is new information. During the lesson, there is a connection between old and new information. Students are first exposed to old information, then they are taught the new information (Gillingham & Stillman, 1997). One of O-G's distinctive attributes is its sequential basis. Student usually starts with repetition of old information before learning the new information. The first stage, the **drill-card review**, is a repetition step for the student.

At this level, the teacher shows the student a card with a letter. The student says the letter name, key word, and the letter's sound while writing the cursive letter on a rough surface or paper (Gillingham & Stillman, 1997). The second step of the lesson is the **word lists to be read**. At this stage, reading the words is only a conversion from print to sound. Students say the sounds of the letters in succession, so they actually blend the sounds of the letters together to make a word. Students usually give every sound of the word separately and then blend them together. Accuracy is more important than speed at this level (Gillingham & Stillman, 1997).

After the successful completion of reading word lists, the **spelling drill** emerges. The teacher usually says the specific sound of the letter, and the student says the name of the letter. Students say and write the letter on a rough surface. After finishing the stage with the sounds and letter names, students are exposed to the next level of the lesson, where they spell words. The **spelling words** stage requires the teachers to apply Simultaneous Oral Spelling (S.O.S.) and guide their students to spell specific words. When spelling has reached an end, students encounter **handwriting practice**. Here, the teacher dictates words with previously learned letters to facilitate writing fluidity, reinforce motor memory, improve legibility, and learn and practice the connectors that hold the letters together (Gillingham & Stillham, 1997).

During the **dictation** stage, students write phrases, sentences, and paragraphs. When it comes to phrases, the teacher starts saying the phrase, then the student repeats it until they can say it correctly. The student also spells each word via S.O.S. and rereads the whole phrase. The same procedure applies to sentence and paragraph instruction. Then, students are at the level of **reading** (Gillingham & Stillham, 1997). Here, they read sentences, phrases, and paragraphs that the teacher chooses according to their student's level of mastery.



In the last stage, the teachers introduce **the new concept** and information. At this stage, the students have words and sentences to read, write, and spell. The new information incorporates letters, blends, spelling patterns, and suffixes (Gillingham & Stillham, 1997). New information depends on what the student really needs to improve and learn, and it entails a connection with the previous old concepts. Therefore, the students have the possibility to master their old concepts before they learn the new skills. Connection with previous skills helps the student, because there is a sequence in their language skills.

Therefore, the O-G approach contributes to helping students with dyslexia to read effectively, however, there is lack of research on O-G's effectiveness regarding children with dyslexia.

### **3.6 O-G Approach and Research**

Before the presentation of current research on the O-G approach and its efficacy, it is important to mention the six hallmarks that define scientifically based approach and might be used as criteria for nominating the O-G approach as scientifically research based.

The 2006 IDEA regulations adopted the No Child Left Behind Act of 2001 and highlighted the six important hallmarks that give clarity to the definition of a scientifically based approach. A scientifically based approach should incorporate systematic, empirical methods and rigorous data analyses to provide adequate data. Its measurements should also provide reliable, valid data. Its evaluation should use experimental and quasi-experimental design, and those experimental designs should be presented in sufficient detail and clarity. The approach should finally have been reviewed and accepted by academic peers (Rose & Zirkel, 2007).

The importance of further research within the O-G approach is a prominently highlighted feature (Kline, 1977). Kline (1977) suggests that the O-G approach should be exposed to research so its efficacy and effectiveness for helping students with developmental dyslexia read and write will hardly experience any seeds of doubt in the foreseeable future.

In a review of O-G literature, Ritchey and Goeke (2006) found only 12 published, peer-reviewed studies that met the criteria of scientifically based research. Positive results were found on various variables such as at spelling, word reading, comprehension, and word attack. Positive results were also reported in first-grade students, students that have been identified with learning difficulties, and college students with diagnosed of learning disabilities. The findings were conversely not positive in other studies that were investigating the effectiveness of O-G approach in comparison with other reading instructions. Another variable that came to

their attention was that only two studies were investigating if there was a positive correlation between O-G instruction and vocabulary improvement, and only one study was investigating O-G's effectiveness on reading fluency. Their concern was that the majority of studies did not show positive evidence of all the essential components that the National Reading Panel reported.

In a comparison study between the O-G approach and Fast For Word (FFW) training, researchers examined the effect of both approaches on reading and spoken language skills in children with phonemic-awareness and word-identification difficulties. The FFW and O-G groups showed similar improvement in their phonemic awareness skills. However, the FFW group did not show any improvement in word identification and word attack, while the O-G group showed significant advancement in word-attack skills. Neither of the groups made improvements in word-identification skills (Hook, Macaruso, & Jones, 2001). Another comparison study examined the efficacy of the multisensory teaching approach to improve reading skills at the first-grade level. The treatment group was taught by an O-G based approach, Alphabetic Phonics, while the control group was taught by the Houghton-Mifflin Basal Reading Programme. Results of this study showed that children at the first-grade level who were taught with the multisensory approach based in O-G principles demonstrated significantly more advancement in phonological awareness, decoding, and reading comprehension than the control groups (Joshi, Dahlgren, & Boulware-Gooden, 2002).

Moreover, the efficacy of the O-G approach was examined in Singaporean, primary-school-aged children with dyslexia. The experimental group was subjected to pre- and post-test design. Results showed that students had significant improvements in word recognition and word-expression skills; however, their sentence-reading performance skill did not show any improvement (Hwee & Houghton, 2011). A replication and extension of the previous study was conducted by (Lim and Oei (2015). During this study, students were subjected to one-year intervention. The results showed that the O-G approach had a facilitative effect to remediate learning difficulties in students with dyslexia.

One of the most significant attributes of the O-G approach is its multisensory character: the incorporation and simultaneous engagement of at least two visual, auditory, and tactile sensory modalities. Even with the popularity of its multisensory attributes, research for showing its efficacy in reading intervention is limited and inconclusive.

A study was conducted to investigate whether teaching-structured literacy alone or in combination with multisensory teaching helps learning letter names and sounds, word reading, and spelling. The sample was second-grade students with typical development or dyslexia. Results showed that students with typical development had a significant improvement in learning letter names and sounds due to the visual-verbal associative learning; however, improvements in spelling and word reading were not because of the multisensory instruction. Students with dyslexia conversely showed strong variation in their improvement with spelling, word reading, and identifying letter names and sounds. Some students show significant advancement, while others did not. In conclusion, multisensory teaching will not improve their ability to read (Schlesinger & Gray, 2017).

**Students with dyslexia showed great improvement on letter name, letter sound, word reading, and spelling. No treatment exists that will make students with dyslexia read** (Berninger et al., 2013). Identifying the strengths and weaknesses of each individual child with dyslexia is beneficial to successfully creating individualised instruction. Targeted intervention will develop accuracy and automaticity in every aspect of reading for students with dyslexia (Norton & Wolf, 2012).

Furthermore, some important factors to be considered for the efficacy and success of the intervention are the instructional intensity, such as length of intervention, hours of instruction, programme integrity, teacher's ability and experience, programme focus, and students' abilities prior to the reading instruction (Shaywitz, Morris, & Shaywitz, 2008). The importance of differentiating instruction and the careful consideration of the multifactorial deficit of dyslexia is a necessary step to help students with dyslexia experience success after their exposure to reading instruction.

No research has been conducted to investigate the tutors, practitioners, or special education teachers that use the O-G approach on students with dyslexia. The majority of research has been only on the effect of O-G on the pupil. However, teaching includes both the teacher and the student, so O-G research should incorporate a focus on how the teachers experience the O-G approach during its application in their teaching. The current research focuses on the teacher that delivers the O-G approach and how they experience the O-G approach during their teaching, what kind of challenges and difficulties they encounter, and what kind of improvements they suggests for further development and implementation.



## **Chapter 4. Methodology**

This chapter includes information about how the current research development, data collection procedures, and data analysis procedures. The validity and reliability of the current study and ethical considerations are topics that drew my attention while I was conducting my research. Therefore, there is an extensive presentation of those topics in the following pages.

Research approaches are specific plans and procedures for research that convert broad ideas and assumptions to detailed description methods of data collection, analysis, and interpretation (Creswell & Creswell, 2018). Research is a process of reaching reliable solutions to problems via the planned and systematic collection, analysis, and interpretation of data (Cohen, Manion, & Morrison, 2002).

There are three approaches to research: qualitative, quantitative, and mixed methods. They have fundamental differences with each other. Qualitative research employs words and closed-ended questions and responses, whereas quantitative research uses numbers and open-ended questions and responses. However, the clearest distinction between them is in the basic philosophical assumption that the researcher brings to the study, the types of research strategies that the researcher has used in the research, and the specific methods used to implement the research strategies (Creswell & Creswell, 2018).

In the current study, the philosophical assumption of social constructivism has shaped the basic design. I used open-ended, broad questions to attract the informants' meaning of the situation, because the informants could construct meaning of the situation being studied.

Despite the fact that they have fundamental differences, both qualitative and quantitative researchers reach the goal of their studies by forming a problem or question, defining a research population, collecting and analysing data, and presenting data results (Ary, Jacobs, Irvine, & Walker, 2018).

Qualitative research is an approach that explores the meaning individuals or groups give to a social or human problem. On the other hand, quantitative research examines objective theories via testing the relationship among variables (Creswell & Creswell, 2018).

The following chapter will present the data collection and analysis procedures, interpretations, validity, reliability, and ethical issues.

### **4.1 Data Collection Procedures**

Data collection procedures contain information about informants' selection and recruitment, sampling, data collection using interviews, method of conducting the interviews, and the interview guide (Creswell & Creswell, 2018).

Data collection is a set of certain activities that are connected with each other, and their main objective is to gather information for finding answers in research questions. There are multiple phases of data collection that extend beyond the typical reference of conducting the interviews or making observations (Creswell, 2013).

The most fundamental step for starting data collection is to recruit individuals, gain access to them, establish rapport, and find the right place to conduct the interview (Creswell, 2013).

### **Selection of informants and recruitment**

The main fundamental idea that shapes qualitative research when it comes to sampling is to select participants who will purposefully fit the research question and the problem that the researcher is investigating. Selecting participants at random is hardly a wise decision (Creswell & Creswell, 2018). In a phenomenological study, informants do not need to be located in a single site, but they should have experienced the phenomenon that researcher is exploring (Creswell, 2013).

Qualitative researchers purposefully select their informants and their settings. They select purposive individuals who will provide them with insight and understanding into what they are studying (Ary et al., 2018). The informants will cover their research questions and objectives; however, this purposive selection of individuals does not represent the wider population (Cohen et al., 2002). In the present study, informants were carefully selected because they fit the role of having experience both with using the O-G approach and teaching students with dyslexia. The sample was special education teachers that have been using the O-G approach in teaching reading and writing to students with dyslexia. These informants were purposefully selected and interviewed.

The principal of a US private school gave me permission to contact the informants. An information letter was sent so they could sign their voluntary participation, and I started making arrangements with them for conducting the interviews. Even though I was working in this school as a language training tutor, I did not establish a close relationship with them.

The interviews were conducted over while the informants were at home. The focus was to interview special education teachers because they had experience with using the O-G approach and teaching students with dyslexia. They additionally had experience with teaching students with dyslexia at different ages. The researcher had an interest in learning about the O-G approach and its implementation for different age groups,.

The number of informants can provide the researcher with adequate data. In qualitative research, the number of participants varies according to the kind of study conducted. Phenomenology involves from three to 20 participants, and grounded theory contains from 20 to 30 participants (Creswell & Creswell, 2018). In the present study, the informants were three special education teachers. Even though the number seems small, it provided the researcher with adequate data and fits the sample size for a phenomenological design.

The selection of informants did not involve any stratification attributes. The researcher did not consider specific gender, income levels, of ethnicity of participants. The only stratification attribute was if they fit the criteria of actually having experience using the O-G approach and teaching students with dyslexia.

## **Qualitative interviews**

Qualitative research is an approach of understanding the meaning that individuals and groups give to social and human phenomena. Interviews are a way of collecting qualitative data and can vary, such as face-to-face, telephone interviews, focus groups, and email interviews (Creswell & Creswell, 2018). The research interview has three main purposes: first, it is a way of collecting and gathering data and information relevant to the research objectives; furthermore, it can be used to test the hypothesis or suggest new ones; and finally, it can be a research tool in combination with other methods in research undertaking (Cohen et al., 2002). In the present study, interviews were face to face via Skype calls, and the intention was to conduct semi-structured interviews that were to be videotaped and transcribed.

The visual aspects of the interview are highlighted using the videotape. Videotape also provides the researcher with the participant's facial expression and bodily posture, which gives a richer content to the data collected. Video recordings contribute to the analysis of the interpersonal interaction that takes place during the interview (Kvale, 1996). They also provide a chance for informants to share their reality directly (Creswell & Creswell, 2018).

Using interviews was an advantage, given the fact that the informants could not actually be observed using the O-G approach.

### **Tool-interview guide**

It is usual that when researchers conduct semi-structured interviews, they rely on an interview guide. An interview guide is a set of prepared questions that takes information and knowledge from the participants with a view to addressing the researcher's questions. Questions cover topics and themes that researchers have a preference to handle (Scott & Garner, 2013).

Therefore, the interview guide is a research tool for collecting and recording information when the interview takes place.

The interview guide that was used in this study is located in the Appendix. The literature and research topic had a significant impact and inspiration on the researcher's decision for choosing specific topics and questions. The interview guide's creation was a challenging, time-consuming task, since the researcher was ambivalent as to which topics and questions should be incorporated.

The researcher and the interviewees were not familiar with each other, and the setting that the interview took place was via Skype. Informants were at their homes and used their free time to volunteer for the interview. Since there was no previous contact with the interviewees, the first part of the interview handled questions about the informant's background. It was an effective way of getting to know them before questioning their experiences with the O-G approach. More specific questions followed, with a view to address the researcher's topic. In concluding, open-ended, general questions were asked about their participation in the interview. I expressed my appreciation towards the participants for allocating their free time to be part of my research.

Questions that dealt with the participants' length of experience working with students who have learning difficulties and using the O-G approach were additionally inquired. Time provides fundamental habits and significance to the experience. Questions about the participants' views on dyslexia were also inquired. The latter question is also important, because there is no consensus with regard to defining what dyslexia is. Therefore, it was interesting to explore their views about dyslexia.



## **Conducting the interviews**

A pilot interview was conducting before the start of the official interviews. A fourth informant was the interviewee in the pilot interview. There were no revisions after conducting the pilot interview.

The interviews started in August 2018 and concluded in November 2018. The interviews took place at the informants' homes with the use of Skype. The interviews were conducted with a time gap between them. The duration of each interview was approximately 40 minutes.

The informants had obtained different views and experiences in their use of the O-G approach, and they added new perspectives about its use. All of the interviewees were officially trained to use the O-G approach. Their views and perspectives were varied and provided a new framework for the development of the O-G approach. Their perspective showed persistent professionalism while using the O-G approach with their students.

The Internet provided the researcher with reduced cost for travel and data transcription, and time and cost efficacy. It additionally created a comfortable environment for the participants so they could actually have deeper reflection on the topic (Creswell, 2013). A videotape recorder included the visual aspects of the interview. Within the inclusion of facial expressions and bodily posture, a videotape also provides richer contexts for interpretation than an audiotape. Another advantage of using video recordings is the analysis of interpersonal interaction while the interview takes place (Kvale, 1996).

## **4.2 Data Analysis Procedures**

Qualitative research incorporates the preparation and organisation of data collected for analysis. Therefore, the primary intention of collecting data is its analysis. After the data collection has completed, the data is subject to shrinking (Ary et al., 2018). The process of coding contributes to the procedure of reducing data. The next step is considering the codes and finally representing the data in figures, tables, or a discussion. The processes of data collection, data analysis, and report writing work together simultaneously in a research project (Creswell, 2013). Qualitative researchers should be aware of the different and subsequent stages that data analysis contains.

Data analysis in qualitative research is a time-consuming and complex process, because the researcher is exposed to lots of different information, interview transcripts, and video data. All information needs examination and interpretation (Ary et al., 2018).

In the present study, the data have been subject to different stages and procedures. To begin with, interview notes and recordings made the data, then the data were transcribed and organized for analysis. The data were read through and rechecked, coded with themes, the themes were shaped by general descriptions with sub-themes, and the teachers experiences were finally interpreted.

## **Transcription**

The common characteristic of interviews is that their analysis does not stem from tape or video recordings. The main procedure for interview analysis is to transcribe the tape records into written texts. Despite the fact that this seems an easy task, transcription presents a variety of challenges that researchers may encounter. The transcripts are artificial constructions via conversion from an oral to a written mode of communication (Kvale, 1996).

The first step in analysing qualitative data entails familiarisation and organisation. The qualitative researcher becomes familiar with the data through reading and rereading notes and transcripts and viewing and reviewing videotapes. Transcriptions are made of all of the data. Words are transcribed directly to reduce the risk of potential bias when the researcher selects and interprets the data. Important information for qualitative researchers while they transcribe data is that they should not change words or phrases to make them grammatically correct, because there is a risk of changing the meaning of the data (Ary et al., 2018).

## **Coding the data**

Once the qualitative researcher is familiar with the data, the process of coding emerges. This the most dominant part of qualitative analysis and entails the identification of categories and themes. Coding is the development of concepts from raw data. The first level of coding is referred to as axial coding. The researchers usually read and reread the data and organise them by looking for phrases, words, and sentences that seem to appear often. These codes can have names created by the researcher. Coding items can help the researcher explore differences and similarities in the data (Ary et al., 2018).

After the initial coding, the qualitative researcher looks for categories, themes, or dimensions. When the coding of transcript is complete, themes emerge. Themes are an abstract level beyond categories (Ary et al., 2018).

In the current research, five themes with sub-themes emerged. The first two themes answer the first research objective about teacher's knowledge and experiences of the O-G approach and dyslexia. The first theme is **Teacher's educational background and knowledge**. This theme has four sub-themes: their educational background, their experience with teaching, their experience with teaching students with dyslexia, and their experience with the O-G approach. The next theme that emerged is **their definitions and views of dyslexia and the O-G approach**. This theme has three sub-themes: diagnosis of dyslexia, their definition of dyslexia, and their definition of the O-G approach.

Furthermore, the third and fourth theme answers the second research objective about teacher's perceptions of and experiences with the O-G approach. The third theme is **their perception of benefits**, and this theme has four sub-themes: adaptation to student's level, presentation of skills and concepts, diagnostic and prescriptive quality, and socio-emotional growth. The fourth theme is **their perception of barriers** and this theme has three sub-themes: teacher's insufficient training and preparation, time restrictions, and teacher's skills and attitudes.

The last and fifth theme is **their perceptions of the O-G approach and word reading**. This theme answers the last research objective about teacher's perception and experience of the O-G approach regarding student's word-reading ability. The last theme has five sub-themes: morphology, phonology, orthography, syntax, and meaning.

This was the process of generating themes, sub-themes, making codes, and organising the data.

## **Hermeneutic phenomenology**

The original meaning of hermeneutics is a study of sacred texts, such as the Bible. However, the term gradually started to refer to an understanding of human action in context. Even though there is variation in hermeneutics, two common characteristics should be taken into consideration. First is an emphasis on how important language is to understanding. Language makes possible what we can say, and, at the same time, it can limit to what we can say. Second is an emphasis on context as a frame of understanding. Human ideas and behaviour should be understood in context (Willis, 2007).

The purpose of hermeneutical interpretation is to obtain a valid and common understanding of a text's meaning. The main objective is to generate meaning and gain understanding (Kvale, 1996). The interpretive focus in hermeneutics can actually stem either from the researcher's perspective or from a focus on the interaction between the interpreter and the text (Grbich, 2013). The research interview focuses on the human world via transforming oral discourse into texts that are going to be interpreted. So, the term hermeneutics is much more closely related to interview research. The interview text that will be exposed to interpretation will create a dialogue and by presenting the subsequent process of interpreting the interview text, a dialogue or conversation with the text may be conceived (Kvale, 1996). Therefore, hermeneutic phenomenology is the study of people's perception of the world that originates from their personal, lived experiences.

Furthermore, the process of developing meaning and understanding from the text is called the hermeneutic circle (Willis, 2007). It includes going back and forth with the topic of study, the content, and our own understanding (Willis, 2007; Kvale, 1996). The back-and-forth process between the parts and the whole is a common trait of generating meaning from the text. The researcher moves from the whole to the part, and this repeats until adequate meaning from the text has been obtained. The autonomy of the text should also be considered, and it should not be affected by the theories. Theories are subordinate to the meaning of the text. It is critical that the researcher has adequate and extensive knowledge about the theme so that they can obtain and understand the text. Therefore, the hermeneutical circle is a process that reaches an end when there is a valid and sensible meaning from the text (Kvale, 1996).

### **4.3 The Validity and Reliability of the Study**

The evaluation criteria and, most importantly, the validity and reliability of the study are fundamental factors that secure the scientific aspect of research.

The concept of validity has been controversial among the scientific community, and some researchers use different terms such as trustworthiness, authenticity, or quality. Validity in research is related to the accounts or conclusions made by the method that researchers used in a particular context for a specific goal. A vital component for validity is the validity threat that shows the researcher might be wrong. These threats are alternative explanations or interpretations of the accounts that the researcher investigates. Validity is a vital component

of a research design and consists of conceptualising the threats and strategies that the researcher used (Maxwell, 2013).

Qualitative and quantitative researchers handle validity threats in different ways. They approach their research designs with different strategies, and their application in the research is at a different stage. Quantitative researchers usually design their research using the possible and anticipated threats to validity. Their tools to find potential threats are control groups, statistical control of extraneous variables, and randomised sampling among other methods. On the other hand, qualitative researchers handle validity threats after the gathering of the necessary data for their study rather than removing potential threats first (Maxwell, 2013).

Two broad types of validity threats are in relation to qualitative studies, the researchers' bias, and reactivity, which means the researcher's effect on the individuals studied. To begin with, qualitative research concentrates on understanding how a particular researcher's values and expectations may affect the conclusion and organisation of the study. The validity of qualitative conclusions is the selection of data that fit the researcher's goals and are more noticeable than other data. Both of these selections of data require the researcher's subjectivity (Maxwell, 2013).

The researcher's influence on the setting and study participants is known as reactivity. The complete removal of a researcher's influence on the study is impossible; however, the objective in a qualitative study is not to eliminate the researcher's impact but to understand and use it productively (Maxwell, 2013).

Even though the methods and procedures do not ensure validity in the qualitative study, they are indispensable components of the procedure for excluding validity threats and increasing the credibility of the researcher's conclusions. Researchers use these strategies not to verify their conclusions but to test the validity and the existence of potential threats. Intensive, long-term involvement, rich data, respondent validation, intervention, searching for discrepant evidence and negative cases, triangulation, numbers, and comparison are strategies that support qualitative researchers to explore potential validity threats (Maxwell, 2013).

In this study, the strategies that I used for threats to validity were rich data and bias that the researcher brings the study. Qualitative researchers adopt the procedure of providing detailed description of the setting, it can be strategy of validating the findings (Creswell & Creswell, 2018). Rich data, such as verbatim transcriptions from interviews, are documented in the

following chapter. I will not present the exact transcriptions, because I want to ensure the identities of the participants are not revealed. The video recordings were very clear, because there were no interferences. I was listening to the video recordings adequately to ensure the data were transcribed effectively and carefully. This ensured that the researcher did not manipulate the truth and facts gathered from the interviews.

Furthermore, the present study is objective and was approached with neutrality. I tried to remove the bias and preconceptions that I could bring in the study from my previous experience. I documented all my prejudices before conducting the interviews in an attempt to not be affected by them. The only reason that I approached this study was because of personal interest and a passion for exploring new areas of research. Subjectivity can be affected by the data presentation; however, the specific goal of the study is to be neutral and objective.

The concepts of validity and reliability have their fundamental roots in the assumption that researchers are looking for universals, so their research will be generalisable and replicable. A study should be evaluated by how well it handles possible threats to internal and external validity. Internal validity is related to the replicability of the study, which shows that if another researcher conducts the same study again, they will find the same results. If the second study produces different results from the original study, then the study is unreliable. External validity deals with the question of what population, setting, treatment, and measurement variables can the study's effect be generalised (Willis, 2007).

Generalisation in research means that research results, conclusions that are based on a study of particular individuals or settings, can be extended to other individuals or settings.

Qualitative researchers usually study small number of individuals and settings through purposeful sampling. It is very common in a qualitative study that there are not explicit claims about the generalisability of their views and opinions. When it comes to generalisability in qualitative studies, the gravity of generalisability does not come from an extension of the results to a defined population but stems from the development of a theory of the processes that have been utilised in a particular study (Maxwell, 2013).

The small number of participants in this study is not adequate for generalising to all special education teachers that use the O-G approach on their students with dyslexia. However, it was a sufficient sample for facilitating the research study. This study's conclusions will reveal the experiences that special education teachers in the US have when using the O-G approach. The external generalisability of this study will be applicable if future replications produce similar

results. The theoretical validation of the current study provides the theoretical background, research from many resources, and definition, to name but a few.

#### **4.4. Ethical Considerations**

When qualitative researchers design and plan their studies, it is prudent to develop techniques and strategies to handle possible ethical issues that may arise in their research. Ethical issues have long been related mostly to the data-collection stage, even though ethical issues emerge during several phases of the research process (Maxwell, 2013). According to Kvale (1996), seven research stages exist and embrace ethical issues. Thematising, designing, interview situation, transcription, analysis, verification, and reporting are the seven research stages of which ethical issues are an indisputable component. Ethical issues refer to confidentiality, loyally written transcriptions, and the ethical responsibility of the researcher to report knowledge that is secured and verified, among other concerns. There is an obvious consideration that ethical issues arise during several phases of the research process.

The ethical considerations of the current study were influenced by Creswell (2013). The stages that the scholar describes were performed carefully, and they are presenting below to boost the research validity.

#### **Prior to conducting the study**

A necessary step for data collection prior to conducting the study is permission. First, approval from the college or the university must be obtained; second, permission from individuals and local sites is also necessary (Creswell, 2013). Therefore, permission at an early stage of the study is an important variable to be considered. The University of Oslo approved my research via the Norwegian Social Science Data Services (NSD). I created a proposal that was administered to the NSD and gained approval from the school's administration and the participants involved in the study.

Interviews entail an ethical aspect related to interpersonal interaction and information about the human condition. Interviews have three identifiable areas of ethical issues: informed consent, confidentiality, and consequences (Check & Schutt, 2012; Cohen et al., 2002). The current study paid attention to the confidentiality of the participants, their informed consent, and the consequences of the interviews. Three identifiable areas from the ethical aspect of the interview are discussed later in this chapter.

## **Beginning the study**

Initial contact with the site and the individuals is connected with the beginning of the study (Creswell, 2013) through the administration of the informed consent (Kvale, 1996). Informed consent includes informing research subjects about the overall purpose, basic features, and possible risks and benefits of participation in the research project. It also involves voluntary participation with the possibility of withdrawal at any time (Check & Schutt, 2012; Kvale, 1996). Participants should not be deceived about the nature of the research project; instead, they should be acknowledged and appraised for their participation (Creswell, 2013).

Before conducting the interviews, participants received a letter explaining the nature of the current study, reason for the inquiry, potential risks and benefits, and issues of confidentiality. Each participant was respected as a unique person who can make prudent decisions. There was no pressure regarding their decision to be part of this research. They could withdraw from the study if they preferred. I appraised and acknowledged the participants for their voluntary effort to be active members of the research project.

Despite the fact that I conducted thorough prior research about the O-G approach, dyslexia, multisensory teaching, and structured literature, beginning the study was a challenging task. A study's provision of information should be a considerate balance between detailed information and leaving out aspects of the design that might be very important for the participants (Kvale, 1996). It was quite challenging to decide the provision of information that participants would receive. However, most researchers experience this challenge at this stage.

## **Collecting data**

During the data-collection stage, researchers should avoid deceiving participants and respect the potential power imbalance between them. They should try to establish trust with the interviewees so potential disruptions will not happen. Positive reward and reinforcement should also be taken into consideration (Creswell, 2013).

The participants were respected, and there was not disruption during the implementation of the research. Trust was built between the researcher and the participants, so anticipated disruptions from the participants did not occur. I was friendly, positive, and polite in contact with the participants. All the participants were treated in the same manner, and they did not get deceived (Creswell, 2013).



A power imbalance can be established between the researcher and the interviewee via a hierarchical relationship. I respected the potential of the power imbalance. The act of collecting data was a facilitative factor during the process of collecting data. The use of reward and positive reinforcement may contribute to the creation of reciprocity with participants and sites (Creswell, 2013). Participants were not used as tools to provide data, but received a positive reward in return.

## **Analysing data**

Many ethical issues can emerge during this stage of the research. Siding with the participants, preventing the revelation of positive results, and respecting the privacy of the participants are main ethical considerations. The way to handle these challenges positively is to report a variety of perspectives and contrary findings and to provide the participants with names that do not exist so there will not be any disclosure of their originality (Creswell, 2013).

In this present study, the privacy and anonymity of the participants was respected by referring to them as Teacher 1, Teacher 2, and Teacher 3. The school that the participants worked at is further referred to as 'a school in the US'. Confidentiality was respected, and I tried to minimise any disclosure of the originality of the participants and the school. Furthermore, contrary findings were reported, and both the positive and negative aspects of the O-G approach were presented. I was neutral and, most importantly, did not have any specific interest in the data I was analysing. The data were presented exactly the way they were received, without changes or alteration.

While coding and transcribing the data, the participants' and school's anonymity was maintained. The researcher also had knowledge from a variety of resources to retain confidentiality among the participants and the school.

## **Reporting and publishing of data**

The ethical issues that can surface in this research stage vary, and they are related to plagiarising and falsifying authorship, evidence, data, findings, and conclusions. The revelation of information that can cause damage to the participants was taken into consideration. (Creswell, 2013).

In this present study, I strived to avoid plagiarism, and the report was honest. Any information that could harm the participants was not revealed. The only identifiable information that was

revealed was the country that the participants were working in. The language was clear, appropriate, and straightforward. Data were only shared with my university supervisor and the university publications. Data and recordings were kept in a locked recorder, and I was the only person that had access to this recorder. The transcriptions were kept in my computer with a password, so only I had access to read and open those transcriptions. The notes that were created during the interview were kept at my home in a confidential spot, and they were anonymous, so that only I could read them.

If requested, complete proof of compliance with ethical issues and lack of conflict of interest will be provided. Both the university and I own the study. The university is the owner, because they will publish and keep the research in their folders, and I own the study because the research is in my name, and I conducted it. The thesis will be published on the university thesis publication site. After the completion of the project, I will destroy the data.

## **Chapter 5. Presentation of Results**

This chapter presents the results of the current research. All five themes that emerged during the data analysis are presented.

### **Theme 1: Teacher's background and experience**

The first theme provided a basic teaching profile of the participants and disclosed their previous experiences with teaching, teaching students with dyslexia, and teaching with the O-G approach. Two interview questions were designed to describe their educational experiences with teaching students with dyslexia and the O-G approach. Another interview question was specifically designed to reveal their educational backgrounds and expertise. The section below gives information about each participant's teaching experience with dyslexics and the O-G approach, as well as their educational background.

#### **Special education teachers' educational background**

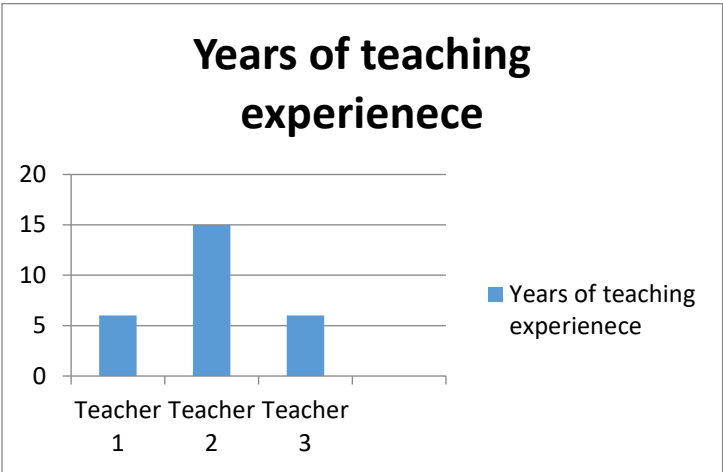
Teacher 1: *'I am a qualified English special education teacher with my master's in teaching and learning.'*

Teacher 2: *'I have an undergraduate degree in art history and studio art. I am a qualified English special education teacher and I have my master's in fine arts and ceramics.'*

Teacher 3: *'I am a special education teacher and I have a master's degree in dyslexia and reading.'*

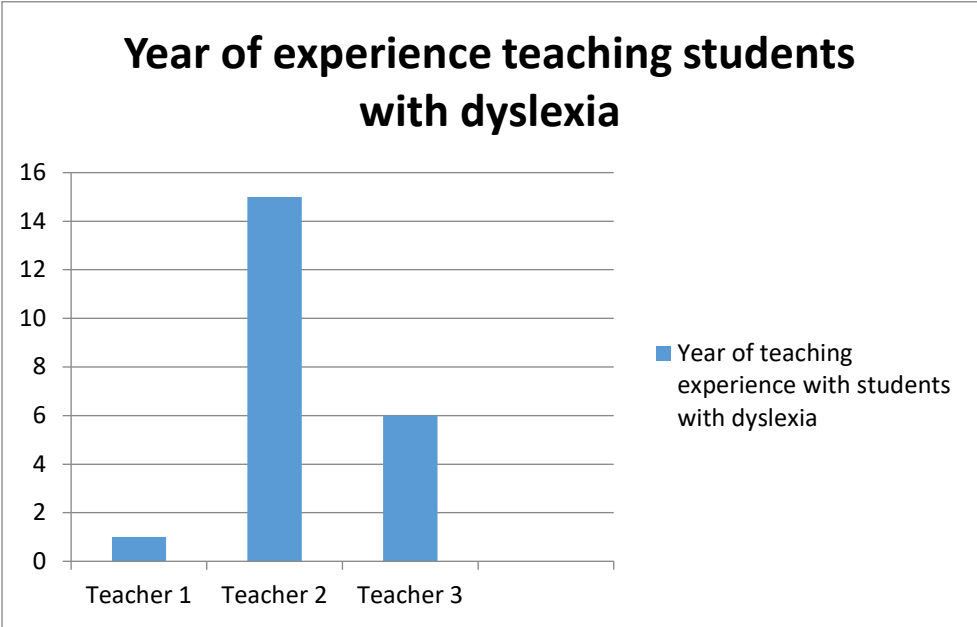
All of the participants in the current study are special education teachers with master's degrees in different areas. Teacher 3 has a master's degree in dyslexia and reading, while Teacher 1 has a master's in teaching and learning. Teacher 2 holds a master's in fine arts and ceramics. A master's degree gives deeper knowledge and understanding of the phenomena. The reason for presenting their educational background is so readers are aware and familiar with the special education teachers in this research.

**Special education teachers’ experience with teaching**



This graph shows that Teacher 2 has many years of experience in comparison with the other two participants. Teacher 1 and Teacher 3 have been teaching for six years. *‘I have been teaching for about six years. I have been teaching in high school English and Filmmaking’ (Teacher 1).* *‘I have been teaching O-G for six years’ (Teacher 3).* Teacher 1 does not have a lot of teaching experience with using the O-G approach on students with dyslexia; however they have experience with teaching English and film making in high school. Teacher 3 has six years of teaching experience in using the O-G approach on students with dyslexia. Teacher 2 has been teaching *‘since 2003, so about 15 years. I have been also working with teachers with how to assess and understand their students’ needs’.* Teacher 2 has also additional experience working with teachers in assessing and understanding the needs of their students.

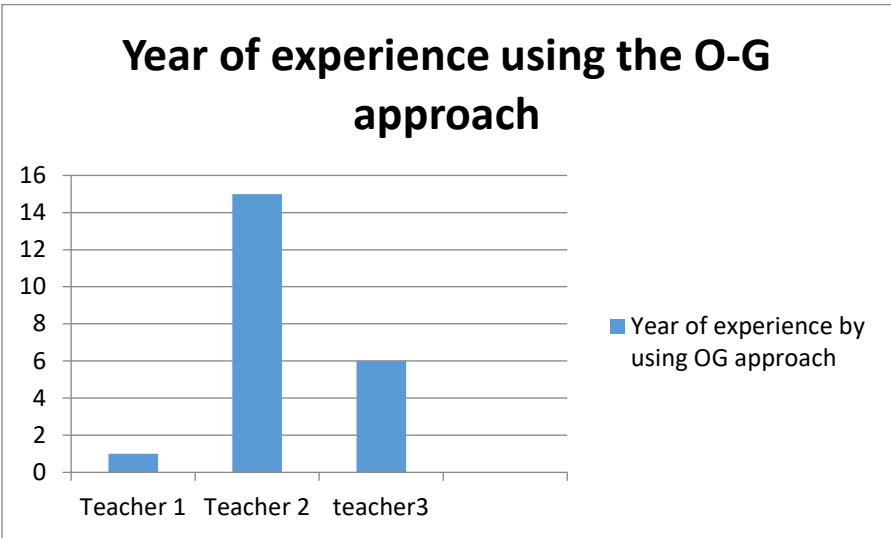
**Special education teachers’ experience teaching students with dyslexia**



The graph shows the participants' years of experience teaching students with dyslexia. There is variation in their contact and experience with dyslexic students. Teacher 2 has the most experience in comparison with the others. Teacher 1 has completed a full year of experience with teaching dyslexics students and says, *'I have been teaching students with dyslexia for about one year. It has challenge, it is a different kind of teaching to what I am used to.'* Teacher 3 has six years of contact and teaching experience with students with dyslexia: *'I have been teaching students with dyslexia for six years, when I learned about O-G approach.'* Teacher 2 seems to be the most experienced special education teacher, because they have been teaching students with dyslexia for 15 years. Teacher 2 reveals, *'I had at least 50 students with dyslexia that I worked with. All one-to-one teaching. I have been teaching students with dyslexia for about 15 years.'*

Experience is an important factor that will provide us with better understanding to their later responses according to how they have experienced the O-G approach in teaching students with dyslexia. Their involvement and exposure to students with dyslexia is very different. Teacher 1, who has the least experience teaching students with dyslexia, admits that it is a different and challenging way of teaching. Teacher 2's experience of only teaching students with dyslexia one-to-one has shaped the way they approach and teach their students. Teacher 3's six years of teaching experience with dyslexic students has given them knowledge and a deeper understanding of both students with dyslexia and the O-G approach.

**Special education teachers' experience with using the O-G Approach**



The above graph shows the number of years that each special education teacher has used the O-G approach. Teacher 1 reports, *'I have been using O-G approach for about one year.'* Teacher 2 states, *'since when I started teaching students with dyslexia 15 years ago, I learned what O-G was.'* Teacher 3 also reports that *'for about six years, I have been involved with O-G approach.'* Their teaching experiences with dyslexics and the O-G approach intersect together. They have not the same years of experience.

There is knowledge concerning the participants' educational backgrounds and teaching experience. This information leads the data analysis to the next theme that has connection with their definitions and views about the O-G approach and dyslexia.

## **Theme 2: Their definitions and views of dyslexia and the O-G approach**

The second theme of the current research had the purpose to study the special education teachers' views and definitions of dyslexia and the O-G approach. The participants reported their opinions about dyslexia and the O-G approach. Two questions were designed to answer this inquiry. There is also information about how their students were diagnosed with dyslexia.

### **Diagnosis of dyslexia**

Teacher 1 stated, *'Everybody at school is required to be diagnosed with dyslexia. They have to go through an educational, psychological evaluation that can only be done by a licensed neuropsychologist.'*

Teacher 1 mentions the fundamental requirement of being diagnosed as dyslexic for students to be admitted to the school where they work. Another important point is that children must go to a licensed neuropsychologist to get an official diagnosis.

Teacher 2 stated, *'We only take students that have been diagnosed as dyslexics. Children have been get tested by professional neuropsychologists.'*

Teacher 3 finally states, *'Students that have admission to our school must have diagnosis as dyslexics. Students get diagnosed by a neuropsychologist.'*

It is obvious to notice that in the US, students go to a professional licensed neuropsychologist to get diagnosed as dyslexic. This is a formal requirement for gaining access to this specific private school.

All of the special education teachers that participated in this research have shared same information regarding the dyslexia diagnosis and admission to this private school that they work. They all have been working with students with dyslexia; however, they do not have the same experience teaching dyslexic students. The ways that they perceive and define dyslexia was one of the research objectives, and one question was designed to answer this inquiry.

### **Special education teachers' definitions of dyslexia**

Teacher 1 defines dyslexia:

*It is something that it is a disorder, disability and it is neurological base, it is brain base, so I think it is definitely with the brain. Many different factors affect the definition or define someone as dyslexic. Dyslexics have difficulty reading and comprehending reading, and I think that has impact on the way they spell words and knowing kind of the general rules. I think also that dyslexics tend to be visual and see the world from a different perspective. That is the reason that they are visual. They are more artistic and expressive. They have senses that compensate because their reading senses are lower.*

Teacher 1's definition is at the behavioural and brain level of explanation about what dyslexia is. At the behavioural level, the problem lies in reading; at the brain level, the problem lies in brain structures that also cause cognitive difficulties (J. Elliott & Nicolson, 2016).

Furthermore, teacher 1 states that dyslexia is a disorder that has neurological base. This information overlaps with the definition from the IDA, which defines dyslexia as 'a specific learning disability that is neurobiological in origin' (Lyon et al., 2003). A variety of theories that have tried to explain what dyslexia is, such as the phonological deficit hypothesis, the double-deficit hypothesis, the speech rhythm deficit hypothesis, the visuo-spatial deficit hypothesis, and the dyslexic automatization deficit hypothesis. These theories explain dyslexia at different levels and include different factors. As Teacher 1 refers to when defining dyslexia, 'There are many different factors that impact the definition or define someone as dyslexic.' Another important piece of information that Teacher 1 shares is that dyslexics have compensatory senses, and they are more visual.

Teacher 2 defines dyslexia:

*I guess most simply I would say is one part difficulty in processing language, and it can manifest itself a lot of different forms. It can be a matter of difficulty in decoding actual words and symbols and sounds, but it can also be a difficulty in communicating using words to form sentences and thoughts to actually communicate an idea that can be spoken that can be written. I think it can also be difficulty in auditory processing. I think overall, it is a difficulty in processing language.*

Teacher 2 also refers to dyslexia at a behavioural and cognitive level; behavioural because of the problems with decoding, communicating, and writing ideas, and cognitive because of the problems with auditory and general processing language. Furthermore, Teacher 2 defines dyslexia as a difficulty in processing language that can be obvious in many different forms.

Teacher 3 defines dyslexia:

*I think the word dyslexia is an umbrella term, and underneath the umbrella, there all the different things that go or can make difficult for someone to learn to read and write. Perhaps they are having auditory issues. Perhaps they are having visual issues. Perhaps they do not comprehend what they are reading. Many different things go under the umbrella of dyslexia.*

Teacher 3 reports that dyslexia is a difficulty in learning to read and write, and that there are many different things that exist underneath the term 'dyslexia'. All of the participants stated that dyslexia can manifest in lots of different forms, which is connected with the emergence of multiple theories that try to understand and explain what dyslexia is.

Another research objective was to explore how the special education teachers define O-G. One question was designed for answering and shedding light on this research objective.

### **Special education teachers' definitions of the O-G approach**

Teacher 1 defines the O-G approach: *'It is an amazing way to teach students with dyslexia. It teaches children and adults how to learn to read and spell.'*

Teacher 2 reports, *'I have never seen any method for teaching people with dyslexia that has come more highly regarded than O-G approach. It teaches children how to decode, or break words into their syllables, and it teaches how to develop automaticity and fluency at the word level. I feel thrilled and lucky that I learned how to use this approach.'*



Teacher 3 finally states, *'I am wondering if we can implement O-G approach in other languages than English and help students with dyslexia how to read and spell in different languages. I am very happy and satisfied by using this approach to my students.'*

It is interesting to notice that all of the participants use positive adjectives and adverbs when referring to the O-G approach. Teacher 1 says, *'amazing'*; Teacher 2 says, *'thrilled'*; and Teacher 3 states, *'happy and satisfied'*. They all refer to the O-G approach as a way of teaching students with dyslexia how to read and spell. Teacher 3 wonders *'if O-G approach can be implemented in other languages than English.'*

In summary, with the completion of the first research objective about the special education teachers' knowledge and experiences with dyslexia and the O-G approach, we move to the next research question: their perceptions and experiences with the O-G approach. The first research objective has been covered with the emergence of two basic themes and their sub-themes. Therefore, after the completion of the first and second theme, there is knowledge about the special education teacher's that participated in the current research.

### **Theme 3: The perceived benefits of the O-G approach.**

The second research theme sheds light on the special education teachers' opinions and views with regard to the perceived benefits of the O-G approach. The teachers gave information and examples about the benefits of the O-G approach, and they answered the second research objective of the current study.

#### **Presentation of skills and concepts**

All participants presented a different positive side of how the O-G approach presents the new skills and concepts to students with dyslexia. Teacher 1 stated, *'I think this approach gives the possibility to the teacher to use lots of different activities when present new skills by using multisensory teaching.'* Teacher 2 further highlights, *'This approach gives the opportunity to be flexible. You have the ability to move around'*, and Teacher 3 mentions, *'I think the big advantage of O-G is the way it is structured in terms of how it builds with levels. It is very sequential and systematic.'* The teachers generally mentioned that the O-G approach is a systematic, sequential, and multisensory approach to teaching reading; it involves the simultaneous integration of visual, auditory, and kinaesthetic learning pathways, which are

often referred as the language triangle (Hwee & Houghton, 2011; Lim & Oei, 2015; Ritchey & Goeke, 2006).

### **Diagnostic and prescriptive**

All participants highlighted that the O-G approach is diagnostic and prescriptive. Teacher 1 stated, *'If there is type of things that are part of the technique is really knowing more and be able to understand what works for the student. It is very informative, diagnostic and prescriptive. You assess on a routine basis what the student personal needs are.'* Teacher 2 highlights that *'you can be diagnostic and prescriptive with O-G, so you should really look at your students and their learning needs and determine what it is that you want to teach them.'* Teacher 3 declared, *'You get to diagnose everyday where your students are, and you get a lesson that addresses their problem the very next day.'* The O-G approach is cumulative, because it requires the mastery and overlearning of the new skills before the presentation of the new components. It is individualised to the needs of each student based on ongoing diagnostic information and assessment (Hwee & Houghton, 2011; Ritchey & Goeke, 2006).

### **Socio-emotional growth**

Another reported educational benefit of the O-G approach is its impact on the socio-emotional growth of students with dyslexia. According to the special education teachers, their students' confidence and self-esteem have increased after individualised educational programmes with the O-G approach. Teacher 1 describes, *'I really think that O-G helps their confidence. The kids that we have come from a very damaged background within the public educational system. Because of that, children lack of confidence. I think also that dyslexics are very good at covering their fear, anxiety, problems with language. Here in the school, because they receive 1:1 teaching they are not afraid of being judged or being ridiculed by other people. So, O-G changes their life, they gain self-esteem and they start believing in themselves.'*

Teacher 2 highlights that *'I think it is about the whole experience with O-G. The students with have here struggle in school for years and they have difficult time being in certain types of resource classes. Listen to this. There is always this shift that happens, there is a lot of self-esteem and confidence that we see grow in the first year of these students. I personally think that confidence is very important because they would not be able to do actual physical games in their reading and writing if they were not be able to find some confidence in themselves.'*

Teacher 3 states, *'My statement will be that it changes their life. Yes, it changes their life. They start to realise that number one they are not stupid, number two they began to understand that they are not alone, number three they begin to learn to read a book, they begin to learn to spell and they realised that they have many gifts as dyslexics. It is a transformation from broken student with very poor self-esteem to a very eager student who has success for the first time in his/her life.'*

There is a general acceptance that children with special educational needs have a low self-esteem and confidence for a variety of reasons. The two dominant reasons for low self-esteem might be low academic achievement and difficulties integrating with their peer group (Humphrey & Mullins, 2002). More striking is the fact that self-esteem is dependent on the educational setting. In terms of segregated or integrated placements, segregation seems to enhance the students' self-esteem because of increased attention, trained teachers, resources and realistic comparisons (Casserly, 2013; Humphrey & Mullins, 2002).

One objective of a study conducted in a summer camp was to examine changes in children's self-concept after an intensive programme for literacy skills. It was a segregated environment, and only students with dyslexia and attention-deficit/hyperactivity disorder were admitted. Results showed that their self-concepts increased positively after attending the camp (Van Westervelt, Johnson, Westervelt, & Murrill, 1998).

The school in the current study specialises in remediation reading programmes only for students with dyslexia. All the participants have declared that *'to be admitted as a student, you must have diagnosis that you are dyslexic.'* All of the participants additionally mentioned the transformation in terms of increased self-esteem and self-confidence that they see in their students after the exposure in O-G training.

### **Adaptable to student's level**

The O-G approach provides individualised instruction based on each student's needs (Giess et al., 2012; Ritchey & Goeke, 2006). This is one of the main tenants and attributes of O-G. All of the participants mentioned the importance of creating individualised instruction that is related to the student's needs.

*'The individualized instruction is really important because a lot of the kids that deal with come from a much-damaged background within the public educational system. You need also to modify to make alterations based upon what the students' needs are. One of the tenants for*

*the approach is its personalized instruction.*' Teacher 1 reports how significant is to adapt their approach to the students' needs and to make changes in accordance.

Teacher 2 additionally mentions that the teacher has to think about the learner. The teacher has to understand how the student learns. *'You really have to think about the learner. In order to use it well, you have to understand how the student learns.'*

Teacher 3 mentions that the individualised instruction should be based on the age level of the student: *'If you get a student that is tenth grader you do not have to go back and teach level one. You must adapt it, so they can learn things that are more relevant. It is very different. The older you get the more vocabulary and writing you need. You still must teach them all of the spelling rules, but you have to add things.'*

The special education teachers finally reported the presentation of skills and concepts, the student's socio-emotional growth, its diagnostic and prescriptive aspect, and its adaptability to the student's level as the basic benefits from the O-G approach. The second research question is the teachers' perceptions of and experience with the O-G approach. Their perceptions and experience have two dimensions: the perception of benefits and the perception of barriers.

## **Theme 4: The perceived barriers of the O-G approach**

### **Teachers' insufficient training and preparation**

All of the participants mentioned the importance of skilled special education teachers that can deliver O-G effectively to students with dyslexia. They all highlighted that there is insufficient training for special education teachers for delivering the O-G approach.

Teacher 1 stated, *'You can do two-week training and be able to deliver O-G instruction to students with dyslexia. I think this is not enough'*. Furthermore, Teacher 2 mentions, *'The training of tutors is one of the biggest weaknesses of O-G approach'*, and Teacher 3 adds, *'The requirements of the tutors is a big disadvantage of O-G. Why should someone be able to be certified who has so much less experience than a person who has so many hours of training? However, they end up with the same credentials. It makes it difficult for the certification to maintain high standards. For instance, there is two-week training that gives the opportunity to teach students with dyslexia. How is this possible? They have not had time to learn themselves before teaching this approach.'*

Teachers 1 and 3 reported that two-week training is not adequate for teaching students with dyslexia. Teacher 2 also mentions the tutor requirements as a significant weakness.

The lack of satisfactory training for dyslexia is highlighted in a study that investigated the professional development needs of teachers in English as a foreign language with regard to teaching dyslexic students. The participants declared that their training was poor (Nijakowska, 2014). Another dimension of the perceived barriers that special education teachers experience with the O-G approach is teachers' skills and attitudes.

### **Skills and attitudes of teachers**

All the participants in the study went into detail about their perceived barriers of the O-G approach that are related to the tutor's attitudes and expertise. Teacher 3 reports, *'I think one weakness is the tutor. The tutor determines the effectiveness of O-G, the tutor's ability to read the student. To have rapport with the student, to judge how the students are doing, what is effective and not effective and the tutor's level of knowledge with O-G. There is a lot to know with O-G. For instance, where to begin, to know how fast to go, to know when to repeat, to carefully divide the lesson so the student will not fail. So, how successful the approach is, depends on the tutor.'*

Teacher 2 reports, *'I think you have to be skilled and present as a teacher to be able to use O-G well because otherwise you are just drilling sounds. The biggest negative you can say about O-G is the skills and attitudes of the tutors.'*

Teacher 1 declares, *'The tutor can be very fun and flexible and work with student's interest and can be very successful for any student. If you do not have the skill to develop the rapport with the student and you do not have interesting games and lessons to do, some student will rebel, they will not want the O-G lesson. I do lots of funny activities with my students.'*

Teachers 1 and 3 highlight the tutor's skill to develop contact with the student, while Teacher 2 mentions the importance of the tutor's skills and attitudes. Teacher 3 specifically explains many different dimensions of the tutor's skills and attitudes.

### **Time restrictions**

Time restrictions are one of the drawbacks that the participants mentioned. Teacher 3 reports, *'I think the O-G lesson does not allow enough time to work with vocabulary, which is very*

*important for reading and spelling.*’ Teacher 1 adds, ‘*If I do O-G lesson one day a week, then I see them again next week. And I do it again, they all forget the things that I have done before. For me this is also a problem. I think they should have every day O-G lesson. If students are not exposed to O-G everyday they forget and then you have to teach them again the same concept you taught them one week ago.*’ Finally, Teacher 2 highlights, ‘*Sometimes I do experience restrictions with the time, and I do not have enough time to complete my lesson with my students. That disturbs my teaching and of course the student’s learning.*’

Insufficient training and preparation, time restrictions, and poor skills and attitudes make up the special education teachers’ perception of barriers, while being adaptable to student’s level, presentation of skills and concepts, diagnostic, prescriptive, and socio-emotional growth make up their perception of the benefits of the O-G approach. Themes 3 and 4 answer the research question concerning the teachers’ perceptions of and experiences with the O-G approach. The last theme of the current research is the O-G approach and word reading. This last theme answers the research question about teachers’ perception of and experience with the O-G approach to word reading.

## **Theme 5: The O-G approach and word reading**

This theme is based on the lexical quality hypothesis about word reading. The lexical quality hypothesis claims that words have five representational features that work together simultaneously. Orthography, phonology, morpho-syntax, and meaning are four representational features. The fifth feature is the constituent bond, which means the degree that those four representational features are bound together (C. Perfetti, 2007). One question was designed for answering the last research objective of the current research.

Teacher 1 and Teacher 3 did not reply in the question. Teacher 1 stated, ‘*I am so sorry, I do not feel comfortable to answer this question. I am not an expert in language*’, while Teacher 3 reports, ‘*I find the terminology difficult, and I do not feel comfortable to answer. I am sorry.*’ Only Teacher 2 replied to the question and tried to give a detailed explanation of O-G and word reading. So, the next sub-themes stem from Teacher 2 perception and experience.

### **The morpho-syntax representational feature**

Teacher 2 reported for the morphological aspect of the word, ‘*Learning the origins of words helps with the pronunciation and spelling of unfamiliar words. For example, if you know*

*that the word chaos is of Greek origin, then you know that the /k/ in Greek words is spelled ch. learning the meanings of word parts helps with vocabulary and comprehension. For example, if you know that the Latin root -aud- means, 'to hear,' and the suffix -ology means 'the study of,' then a student can deduce that the word audiology means 'the study of hearing.'*

Teacher 2 highlighted that knowledge of word parts and origins will help the pronunciation and spelling of unfamiliar words, vocabulary, and comprehension.

Teacher 2 also gave a description about the syntax aspect of a word and how the syntax helps students develop their writing skills. Teacher 2 stated, *'The beginning of the writing process is being able to form a sentence with proper capitalisation and end punctuation. Then they learn parts of speech and how those words can enhance their writing (e.g., adding details using preposition phrases, adding specific, vivid imagery in their writing using adjectives and adverbs). The next step is to learn the four types of sentences (statement, question, command/request, and exclamation). -This leads to learning to generate basic paragraphs with topic sentences, supporting sentences and concluding sentences. - They add details to extend their writing into an expanded paragraph, and then work toward the essay format. This process is modelled and scaffolded until they are able to write independently.'*

### **The Phonology representational feature**

Phonology is also one of the representational features of words, and Teacher 2 reported, *'Dyslexics learn that there are 44 sounds in the English language. -When they learn that letters correspond to certain sounds, they are more successful when decoding unfamiliar words. About 85% of our language is phonetic; learned concepts teach them to make intelligent, logical choices for the other 15 percent.'*

Teacher 2 highlighted that when students learn the letter-sound correspondence, they can successfully decode unfamiliar words.

### **The orthography representational feature**

Orthography is also a representation feature of words, and Teacher 2 stated, *'What we teach for reading, we also teach for spelling. 'We teach our students certain spelling rules and generalizations while also teaching about the 'rulebreakers' they will encounter. They learn*

*that spelling and orthography is a predictable task.*’ Teacher 2 reported that the spelling rules and generalisations they teach their students help them learn that spelling and orthography is a predictable task.

### **The meaning representational feature**

The meaning representational feature is the last word feature, and Teacher 2 reported that *‘the Orton-Gillingham approach stresses language patterns that determine word order, sentence structure, and the meanings of words and phrases. -Grammar and vocabulary are explicitly and naturally taught in the context of oral language, reading, and expository writing.’*

Teacher 2 stated that students learn the meaning of word and phrases, sentence structure, and word order. This the impact of the O-G approach to meaning representation features of words.

In summary, knowledge and information about the background, knowledge, and experience of the special education teachers who participated in the current research was presented. There is also knowledge about the benefits and barriers of the O-G approach. Finally, the O-G approach and the representational features of words were detailed. There were five themes with their sub-themes, and they answered the three research objectives.



## Chapter 6. Conclusions, Discussion and Future research

The starting point of the discussion in the current research is the question: How do the special education teachers perceive and experience the O-G approach? The information in this chapter not only highlights the most important findings of the study but also facilitates a deeper analysis and comprehension of the special education teachers' perceptions of and experiences with the O-G approach. The design of the current study is based on constructivism worldview.

Constructivism researchers focus on the specific context that people live and work in, in order to understand the informants' historical and cultural setting (Creswell & Creswell, 2018). So, this study has focused on the informants' specific personal backgrounds. The first theme has relation to **Teachers' educational background and experience**. This theme shed light on the informants' historical and cultural setting.

The emergence of this theme was an answer to my first research goal about the teachers' knowledge of and experiences with dyslexia and the O-G approach. It is a presentation of their backgrounds and experience. Therefore, familiarity with them will be an advantage to understand their point of views and opinions about the O-G approach.

Teacher 1 is a qualified English special education teacher with a master's in teaching and learning. Teacher 1 has been working with dyslexic students and using the O-G approach for one year.

Teacher 2 is a qualified special education teacher with a master's in fine arts and ceramics. Teacher 2 has been working with dyslexic students and using the O-G approach for 15 years.

Teacher 3 is a special education teacher with a master's in dyslexia and reading. Teacher 3 has been working with dyslexic students and using the O-G approach for six years.

After a small presentation and summary of their educational backgrounds and experience, it is interesting to see their definitions of the O-G approach and dyslexia.

### **What are dyslexia and the O-G approach for these special education teachers?**

In summary, their opinions about defining dyslexia are both different and similar. That is the second theme that emerged and answered my first research objective about their knowledge of and experiences with dyslexia and the O-G approach. Deficits in reading comprehension,

visual and auditory processing, decoding actual words, and using words to make sentences, as well as difficulty in processing language and spelling are their expressions about what dyslexia is. Furthermore, they also highlighted that dyslexia is a term that can include different things with neurobiological base. It is a disorder within the brain.

Only Teacher 3 mentioned that students with dyslexia might have visual deficits. The visual deficit hypothesis for dyslexia started with Morgan, Hinshelwood, and Orton, who first highlighted developmental dyslexia as ‘word blindness’, because they believed that the difficulty with reading was perceptual and stemmed from a visual confusion. In the 1960s, the most widely accepted theory of dyslexia was that children failed to master phonological language skills, which had a major impact in their reading development (Stein, Talcott, & Walsh, 2000). Teachers 2 and 3 mentioned that dyslexics might have a difficulty with phonologically processing language. However, consensus on the phonological deficit theory seems to be weak. Researchers claim that dyslexics have a deficit within the phonological representations of the language (Szenkovits, Darma, Darcy, & Ramus, 2016).

The special education teachers of the current study confirm the multidimensional field of dyslexia. They stated that dyslexia entails different factors, forms, or things. The multidimensional trait of dyslexia is confirmed by the emergence of different deficit hypotheses – the phonological, the double, the magnocellular, the speech rhythm, and the visual-spatial attention deficit hypothesis (J. Elliott & Nicolson, 2016). Only Teacher 1 highlighted that dyslexia is a deficit within the brain that has neurological base. Current neuroimaging research contends that dyslexia correlates with differences in a network of regions responsible for typical reading development. Neural signatures that may develop a difficulty in future reading are present even in infancy. Therefore, identification of reading problems could be possible before a child fails to read and write (D'Mello & Gabrieli, 2018).

Teachers 1 and 3 both expressed that students with dyslexia have difficulty with reading comprehension and that is part of the IDA’s definition (Lyon et al., 2003). Furthermore, Teacher 1 stated that their difficulty with reading comprehension leads to problems with spelling, and Teacher 2 stated that dyslexia is a difficulty in decoding actual words and using them to write sentences.

Teacher 1 additionally mentioned that students have senses that compensate, because their reading senses are low. Researchers have investigated if dyslexics have compensatory strengths that accompanied by spatial talents. Individuals with both spatial talents and

possible dyslexia entail Leonardo da Vinci, Maxwell, and Edison, to name a few. However, there is no strong scientific evidence for this claim (Gilger, Allen, & Castillo, 2016).

Lack of consensus within the term dyslexia is highlighted in the special education teachers' opinions. They all expressed different views about defining dyslexia and had a small consensus rate.

All of the informants use the O-G approach when teaching students with dyslexia how to read and write. They all expressed positive adjectives for the O-G approach and highlighted that it helps their students. Their adjectives were *'thrilled'*, *'amazing'*, *'happy'*, and *'satisfied'*.

Teacher 3 made an important note and suggested the possible application of the O-G approach in other language. Therefore, children with dyslexia will learn how to read and write by using the O-G approach in different languages.

### **The perceived benefits of the O-G approach**

The special education teachers described their experiences and practices with the O-G approach, reaching the second research objective of this study.

From the data analysis, it is concluded that the perceived benefits of the O-G approach are the fact that it is diagnostic and prescriptive, adaptable to student's level, contributes to the development of the students' socio-emotional growth, and has good presentation of skills and concepts.

Participants of this study expressed a different, positive side of the O-G approach concerning the presentation of new skills and concepts. **Systematic, structure, sequential, and flexible** are four positive attributes that participants mentioned for the O-G approach. Furthermore, Teacher 1 highlighted the importance of educators having the possibility to integrate a variety of different activities when they present new skills and concepts.

This O-G profile from an educator's point of view is influential and consistent with the basic traits of the O-G approach. The findings are consistent with those of a study that concluded structured language instruction within the O-G approach promotes basic literacy skills (Schlesinger & Gray, 2017).

Informants of the current study additionally described the O-G approach as a diagnostic, prescriptive tool and pointed out its unique adaptability to the student's level. Furthermore, educators really have to think about the learner before they start teaching new skills and concepts. Important information participants shared in the current study was that tutors need to diagnose every day and evaluate if their teaching facilitates the student's learning and development.

Their views on the O-G approach have to do with the **diagnostic-prescriptive** teaching that embraces the differentiated instructional strategy attribute. According to this specific strategy, teachers use particular materials, teaching techniques, methods of content presentation, and reinforcement. A teacher's decisions over what strategy, material, and method to use depends on the student (Ysseldyke & Salvia, 1974).

Furthermore, its unique adaptability to the student's academic level correlates with the task analysis model, where the emphasis is on the child's current level of skill development and the next skill to be mastered (Ysseldyke & Salvia, 1974). Students enter the teaching situation with their strengths and weaknesses. Student's strengths and weaknesses have high correlation with their acquisition of academic skills; therefore, observing their strengths and weaknesses is important teaching decision (Ysseldyke & Salvia, 1974). Reference to student's strength and weaknesses is limited in the participant's view.

Another indispensable part of the perceived benefits of O-G instruction is its facilitative impact on student's **socio-emotional growth**. Special education teachers in the current study stated that their students' confidence is growing, and their self-esteem is increasing. With their words is a life transformation from a student with low self-esteem to a student with high self-esteem. They assume that the fundamental reason for this positive shift is the one-to-one attention and individual instruction they receive. The underlying positive effect on student's socio-emotional development shows that research is limited on the O-G approach's impact. Most research has focused on reading and writing development and O-G instruction (Hwee & Houghton, 2011; Joshi et al., 2002; Lim & Oei, 2015; Norton & Wolf, 2012; Schlesinger & Gray, 2017).

In summary, the perceived benefits of the O-G approach, according to the opinions of the three special education teachers who participated in the current study, is its adaptability to the student's level, its diagnostic and prescriptive side, its positive influence on students'

socio-emotional growth, and its flexibility for a variety of activities that embrace the demonstration of new skills and concepts.

### **The perceived barriers of the O-G approach**

It is interesting to mention that the perceived benefits of the O-G approach relate to students who receive the instruction. All the benefits stem from how the special education teachers perceive the impact that the O-G approach has on the student. On the contrary, when it comes to the perceived barriers, the gravity turns on the tutor, special education teacher, or the person who delivers the programme.

All the teachers highlighted how amazing this approach is, but its effectiveness depends on the special education teacher. They mentioned the lack of training and preparation, the teachers' skills and attitudes, and time restrictions as fundamental barriers of the O-G approach. The shift is now on the special education teacher, while the perceived benefits focused on the student.

The first trait of special education teachers is the quality of training that they received in the O-G approach. All the participants stated that training is the biggest disadvantage of the O-G approach. Two of them highlighted the two-week training that makes persons able to deliver the O-G approach. Teacher 3 clarifies that certification has difficulties with maintaining high standards and also wondered how it is possible for people who receive a two-week training to be able to teach students with dyslexia.

The second trait of special education teachers is their skills and attitudes that could determine how effective and successful O-G can be. All the participants mentioned the importance of the skills and attitudes of teachers who deliver the O-G approach. Teachers' skills and attitudes, according to Teacher 3, include establishing rapport with the students, evaluate what is effective and ineffective, and the level of knowledge of O-G (where to begin, to know how fast to go, to know when to repeat, to reduce the chance of students' failing). Teachers 1 and 3 mentioned the importance of establishing a good rapport with the students, and Teacher 1 connected rapport with fun activities and games.

According to the participants, time restrictions were a perceived barrier for the O-G approach. The term time restrictions, according to their perceptions, include lack of time during the lesson, and the lack of consistency of O-G lessons during the week. Lack of time makes the teaching of vocabulary inefficient (Teacher 3) and creates disturbance to the

completion of the lesson (Teacher 2). Inconsistency of the O-G approach during the week makes the students forget the skills and concepts that they have been taught. A direct consequence of it is that the special education teacher has to teach skills and concepts again (Teacher 1).

### **The O-G approach and word reading**

Students with dyslexia experience disturbances during the reading process. Their word reading is not accurate and fluent. The O-G approach focuses on helping students with dyslexia overcome their difficulty with reading words. Therefore, its focus is on teaching phonology, orthography, morpho-syntax, and semantics. Those four aspects of O-G are the four representational features of words, according to the lexical quality hypothesis.

Participants of the current study were asked about their perception and experience that the O-G approach has on word reading. Only Teacher 2 replied positively; Teachers 1 and 3 felt uncomfortable, and they did not want to be part of this question.

According to Teacher 2, morpho-syntax knowledge is when students learn the origins of the words, and that has a positive impact on their pronunciation, spelling of unfamiliar words, vocabulary, and comprehension.

The positive impact of morphology on decoding skills is consistent with the findings of a quantitative study that investigated the influence of morphological awareness to the reading and spelling skills of dyslexics (Arnbak & Elbro, 2000). Furthermore, the positive impact on reading comprehension is also consistent with the findings of another quantitative study that analysed the positive morphological effect on reading comprehension (Carlisle, 2000). A meta-analysis of morphological interventions showed the positive impact on morphology to spelling and vocabulary (Goodwin & Ahn, 2013). Teacher 2 also referred to the correlation between morphology, spelling, and vocabulary growth.

Another impact of morpho-syntax knowledge of words is that students with dyslexia learn the basic steps of the writing process, which starts with building sentences, paragraphs, and essay formats.

Furthermore, the perceived relation between O-G instruction and word reading at the level of phonology and orthography is that phonology improves the process of decoding when students with dyslexia encounter unfamiliar words, and that **spelling rules** and

**generalisations** related to orthography help students understand that spelling and orthography is a predictable task.

However, the positive relation between spelling rules and orthography is inconsistent with the findings of Abbott and Berninger (1999) that teaching spelling rules will improve the orthographic skills. The fact that phonology facilitates the acquisition of reading skills is compatible with the results, which showed that readers who had phonological representations performed better when learning to read (Harm & Seidenberg, 1999).

The correlation that the O-G approach has with the meaning representational feature is at the specific teaching of language patterns that determine word order, sentence structure, and the meanings of words and phrases.

Strong semantic representation in the mental lexicon is a positive predictor for better reading comprehension (De Nobre & De Salles, 2016; Poulsen & Elbro, 2013). The relationship between semantic access and reading comprehension can be explained by the verbal efficiency theory (C. A. Perfetti, 1985), which claims that quality of comprehension is dependent on word meaning retrieval.

### **Limitations and future studies**

To begin with, the limitations of the current study were the small sample size, the method of data collection, and teachers' bias (Creswell & Creswell, 2018). Despite the fact that the small sample size was adequate for implementing the current research, its generalisation ability is weak, because the results cannot be generalised to all special education teachers that teach students with dyslexia and use the O-G approach in their teaching method. An expansion of the sample would compensate for this weak generalisation ability.

Furthermore, the data collection method was also a limited factor for the current study. Interviews were the only research tool for collecting data. Observations would have strengthened the data collection method, but the sensitivity of the data removed the possibility of using observations as an alternative. The special education teachers of the current study expressed their preference for maintaining anonymity.

The experiences described in this study were also only for three special education teachers that are employed in a private school in the US. The possibility of bias in their opinions is an option, because their responses about how they experience the O-G approach are their

perspectives only. On the contrary, it is also possible that students experience the O-G approach in a completely different way in comparison to the special education teachers.

The study finally served its purpose to explore how special education teachers experience the O-G approach while teaching students with dyslexia. Possible future research studies can explore the implementation of the O-G approach in another language. The application of the O-G approach to teach a foreign language has been conducted with Spanish students (Sparks, Ganschow, Kenneweg, & Miller, 1991). Another possible area of research is the standards to which O-G practitioners are certified. What kind of criteria make O-G practitioners certified? Are these criteria enough to make them ready to teach students with dyslexia? Potential research additionally includes the experiences of special education teachers that use the O-G approach with bigger sample size and use of both interviews and observations. Furthermore, another possible area of research is the socio-emotional growth of dyslexic students who have been taught by O-G instruction. Teachers' perceptions of socio-emotional growth in their students is consistent with the study from Cassel (2013), which showed high positive growth.

Taken together, our results and conclusions of the study indicate that the O-G approach has its own barriers and benefits that need to be addressed more in the near future so students with dyslexia will take the best out of it.



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## **Appendix A – Interview questions**

### **Before the interview**

Introduction of myself and the purpose of the interview

Statement of using recorder along with written notes

Statement of confidentiality and consent

#### **1. Introduction**

Would you mind telling me little about yourself? Are you a special education teacher?

(Educational background, working experience, an overview)

How do you define dyslexia?

How long have you been working with students with dyslexia?

How did you begin and how long have you been using the Orton-Gillingham approach?

#### **2. Orton-Gillingham approach**

Tell me your experiences using this approach for individual teaching, one - one tutoring?

(Strengths and weaknesses)

Do you follow the approach precisely or do you make some changes, during the application of the approach?

Do you think that this approach is appropriate for all ages?

When using the approach, do you include other strategies, except of O-G approach?

Would you recommend Orton-Gillingham approach and why?

#### **3. Students focused**

How do you know your student(s) have dyslexia? How were they diagnosed?

How has the Orton-Gillingham approach affected the students that you have had?

(Morphology-Syntax, Phonology, Meaning, Orthography )



Did every student respond to the program?

Did you receive any feedback from the parents, concerning the progress of their children, while using the Orton-Gillingham approach?

#### **4. Concluding questions**

Is there anything would you like to add that now mentioned?

How was your experience in participating in this interview?

I will be analyzing the information you and others give me. I will be thrilled to share the scientific conclusions that I will explore, if you are interested

## **Appendix B – Informed Consent**

Declaration of consent for participants in the interview, part of the research: Orton-Gillingham approach, experiences of special education teachers in USA of students with dyslexia.

I am Anastasios Ntousas, MSc student in Oslo University in Norway in the Master in special needs education programme. The purpose of the research is to explore how special education teachers perceive Orton-Gillingham approach when they teach students with dyslexia. So, I conduct the interview with a view to gathering data on the topic from the special education teachers.

Participation in the interview is voluntarily and all of the participants will remain anonymous and their personal information confidential. The interview will last approximately 40-45 minutes and it will be recorded in order for me to transcribe and analyze the data.

All data that will be collected is going to be used for my thesis exclusively. Recordings, transcripts, and all collected data will remain in my possession both in digital and physical form. The transcriptions, as well as, the analysis of the collected data will be available to each informant upon request. The informant can withdraw any time he/she wants from the interview.

Please read carefully:

I understand the objective of this interview and I give my permission to researcher use the data gathered for his research purposes. I have received a copy of the letter of consent, signed by the researcher.

Date:

Location:

Participant's signature:

Researcher's signature

