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The Impact of External and Internal Factors on EFL Learners'

Handwriting Legibility

The Case of First Year Pupils at Saad Ibn Ouakas Middle School (Ain el
Khadra / M'sila)

Dissertation Submitted to the Department of English in Partial fulfillment of
the Requirements for the Degree of Master in Linguistics

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Declaration

We, hereby solemnly declare that the work we are going to present in this thesis entitled: The Impact of External and Internal Factors on EFL learners' handwriting legibility is ours own to the limits of our knowledge, has not been submitted before to any other institution or university or degree and all sources that we have used and quoted from have been indicated by means of complete references. This work is to be carried out and completed at Mohamed Boudiaf University of M'sila, Algeria.

Signature :

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Date : 30 June 2022

Dedication

I dedicate this work

To My parents for their unconditional love and their support.

To the rest of my family who didn't let me give up

To my friends who always push me forward

To the teachers who help this work see the light

To all the people who believe in me

*I would also like to dedicate this humble work to Bensehil family for their support,
generosity and help*

*Dedications are extended to all mates at university and for all those who know and support
me .*

Thank you

Hakima

Dedication

This work is dedicated to:

To my beloved parents, my mother Dahma and my father Miloud

the source of my power, they have always been my life, I would like to thank them for the efforts and their encouragement they have offered me all the time .

To my beloved sisters :Fouzia ,Samira,Karima ,Amel and Qhlem

To the soul of my beloved sister Saliha

To my dear brothers:Saleh ,Krimo , Bako ,Abdennour,Badro and Abdo

To the person who stood by my side all the time, my husband Abdellatif

I dedicate this dissertation to my adorable sons : Zeid and Anes

To my precious family: Aunts and Uncles

To all my cousins

To my relatives

To all my friends without exception

Thanks again to those who helped, encouraged, and motivated me during the preparation of this work.

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Abstract

Algerian middle school learners struggle with handwriting difficulties ,they are striving to overcome this problem, which has a great impact, especially on their academic achievement . This study aims to investigate the effect of external and internal factors on learners' handwriting legibility in their written production. We hypothesized that If the teachers are aware of their pupils' handwriting difficulties and the factors that impact them they will be able to take action and adapt strategies within the school environment to reduce these problems also understanding the effect of these factors gives teachers a clear insight about handwriting problems and enables them to make the suitable intervention .In order to prove our thesis, a descriptive study was conducted in addition , a qualitative one in order to collect and analyze the data. Thus, to test our thesis, we chose two data collection tools. A questionnaire was designed and delivered online to thirteen middle school English teachers who were randomly selected from different averages, in order to explore their attitudes about their pupils' line and also to take answers for this research. Additionally , A case study was conducted for twenty seven pupils at Saad Ibn Ouakas First Year Middle School in the municipality of Ain el khadra in the state of M'sila, Algeria, in order to verify the various factors affecting the learners' streak during their four normal sessions (lessons) and two exam sessions of 3rd trimester . Based on the results obtained from the two data collection tools used, it can be concluded that the lack of pupils ' handwriting legibility is due to the impact of both external and internal factors . Furthermore, some recommendations based on the research findings, were proposed at the end of this study in order to enhance learners Handwriting performance .

Key words : handwriting , external & internal factors , middle school pupils , handwriting difficulties

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List of Abbreviations and Acronyms

EFL: English as a Foreign Language.

L2: second language

DT: the dynamic tripod

DQ: the dynamic quadrupod

LT: the lateral tripod

LQ: the lateral quadrupod

VMI: Visual-motor integration

HD: Handwriting disorders

ETCH : Evaluation Tool of Children's Handwriting

OT: occupational therapy

HLS: Handwriting Legibility Scale

SaHLT: Spelling and Handwriting Legibility Test

ADHD : Attention deficit hyperactivity disorder

p: page.

&: and

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الملخص

Résumé

General introduction

Handwriting is a crucial skill that opens a world of possibilities for any learner and especially a foreign language learner .It is a relevant and essential skill. As Sassoon R. (1990) asserts that “People present themselves to the world through their handwriting and are inevitably judged by it. From our earliest school days, success and failure are often measured in terms of neat handwriting”. For this reason students need to enhance their handwriting because handwriting is The most important mechanical tool that learners bring to the classroom ; Moreover, The production of functional handwriting depends on the complex interplay of a number of abilities including skillful fine motor coordination and precise force regulation as well as cognitive, perceptual, and language skills (Van Galen, 1991). Understandably, learning to write can be challenging for learners ,Thus It is affected by many factors , For learners who are studying English in a non-English speaking community, handwriting performance in English is considered as the major obstacle in developing learning languages. In addition, teaching the handwriting skill to EFL middle school pupils is a very difficult task since teachers have a hard time to get pupils moving their pencils. Therefore , Motivating learners to write is the first step towards enhancing their handwriting skill level thus, teachers would better know how to control various factors that affect learners’ handwriting legibility and quality .

In fact , Several researchers have addressed the study of handwriting difficulties ,in recent years, considerable progress has been made in understanding the process of handwriting and how to teach it (Graham & Weintraub, 1996). Thus, legible handwriting remains an important critical skill that deserves greater attention from educators and decision makers .

Introduction

Handwriting is one of the most significant means of communication and a necessary life skill used by humans even with modern society's dependency on computers, faxes, and telephones to communicate. Handwriting is considered as a fundamental tool in middle schools curriculum .It is a necessary skill for learning and applying knowledge hence some learners fail to develop efficient handwriting .Moreover, handwriting is an important skill , which enables the expression, recording, and transmission of ideas of students throughout their educational careers (Dennis & Swinth, 2001; Hamstra-Bletz & Blote, 1993; Tseng & Cermak, 1993).

Despite the widespread use of computers, legible handwriting remains an important life skill that deserves greater attention from educators and health practitioners . A child's ability to write legibly, as well as quickly and efficiently, enables him or her to achieve both functional written communication and academic advancement (Amundson & Weil, 1996; Phelps, Stempel & Speck, 1985; Tseng & Cermak, 1993; Tseng & Hsueh, 1997). Thus, The development of handwriting ability is not only important in building learners' self-esteem, but is considered an essential ingredient for success in school.

Nevertheless, the increasing interest for the ability to write legibly is still a skill needed by all learners ,Because of the consequential of being able to communicate ideas in legible handwriting , It is necessary that handwriting performance be evaluated using a valid , standardized tool combined with informal classroom observation , teacher consultation and formal handwriting instruction .Moreover, handwriting being a neuromuscular task is affected by many factors that can be internal or external factors. The internal factors are the one within the individual; including dysgraphia , finger function...etc . While The external factors are within the environmental one ;including, writing instrument, pen grasp , form ,

space ... etc. The researchers has tended to focus on the major factors that impact handwriting legibility as it still the most immediate form of graphic communication. Therefore, further investigation needed in order to enable teachers to guide the learners with poor handwriting It clarified the case that schools need to formulate worthy programs of teaching and learning strategies to address pupils' ability to record information by hand in legible method Furthermore, researchers also have studied various factors of handwriting and designed instruments to measure legibility. This study aims to emphasis on the importance of handwriting as a skill also aims to identify the major external and internal factors that may impact middle school pupils legible handwriting in addition ,this study tends to focus on how teachers teaching and assessing this skill among those learners struggling handwriting difficulties .

This study purpose is spotlights on the suitable strategies to treat handwriting and how can teachers improve it . This paper consists of two main parts : a theoretical part and a practical one .The theoretical part includes one chapter. section one covers an overview of handwriting and section two presents the factors that affect it , in addition to another points focusing on teaching and assessing handwriting skill , chapter two focus on analyses and interprets the data gathered from the classroom observation and teachers' questionnaire. The paper concludes with recommendations to teachers , syllabus designer and pupils on how and why handwriting needs to be the focus of schools' lesson.

1- Statement of the Problem

Despite the common use of methods and programs that helps to improve handwriting legibility , pupils' still facing difficulties to ameliorate their performance due to the lack of

the effectiveness of the interventions used in improving handwriting , its functions remains unclear.

2- Research Questions

Our hypothesis question in this study will be as the following

- Are there any effective assessment and teaching tools used by teachers to measure the learners handwriting legibility and how can they improve it ?.
- which type of factors that may impact middle school pupils handwriting legibility and quality ?.
- To what extent can middle school pupils overcome their major handwriting difficulties?
- Is there any standardized methods in the current syllabus focus on teaching handwriting in middle schools ?.
- If learners suffer from those various factors , teachers in turn, will be negatively affected in their teaching and assessing methods.

3- Objectives of the study

Our primary objectives in this Study are

- To provide better investigation on the major factors that impacts handwriting legibility on EFL middle school learners.
- To increase your knowledge of hand skill development , understanding students' hand functioning
- To broaden your knowledge and sharpen your observation skills in recognizing problems in hand skills development

-
- To Learn how to modify the classroom environment and develop remediation activities to improve hand skills.
 - To Increase awareness of occupational therapy as a resource service.

4- Significant of the study

Handwriting skills plays a significant role in the process of second language learning also in all stages of an individual's life . This study contributes to our understanding of the skills important to handwriting success and provides occupational therapists with information for working with students experiencing difficulties in this area. thus , the considerable interest on the major factors that impact learners handwriting legibility for the researcher becomes important because it helps to develop the learners level hand skills and knowledge development providing the basis for all manipulative activities and hand tool use .

5- Aims of the study

The aim of this study was to investigate the effect of different factors that may impact handwriting skills in classroom case study middle school ,within the use of some strategies support the development of handwriting in a mixed age class also to gain insight into what benefits result for the handwriting legibility performance of the EFL learners and those within difficulties in learning this skill Also , to reduce those major Handwriting difficulties that can have implications for pupil's successful participation in school activities, potentially leading to problems in academic performance and lowered self-esteem .

6- Research hypotheses

From the above questions and objectives, we can assume the following hypotheses:

-
- An effective methods should be considered in the current syllabus to enhance and develop the acquisition of handwriting skills in all teaching levels .
 - Teacher would better to chose an effective programs to teach and assess handwriting in order to manipulate the major difficulties that impact handwriting legibility
 - Teachers are not an able to predict most of the factors that impacting their pupils , therefore greater effort needs to be provide which tends to reduce and develop handwriting problems functions within help of occupational therapists and the use of technology tools .
 - Pupils need to be more aware of the importance of handwriting in their academic achievement building self-esteem also its an essential ingredient for success in school.

7- Tools of Research

In order to test our hypothesis and reach the objective of our study, we have decided to use questionnaires for the teachers and the other tool Classroom Observation for the pupils during their writing production . Both of them are designed to show whether or not the handwriting skill is impacted by external and internal factors as well as to improves the students' handwriting legibility in our middle schools .

8- Sample and Population of the study

The case study of this research is pupils of first year classes in Saad Ibn Ouakas middle school Ain el Khadra , M'sila. Additionally, the study is about the impact of external and internal factors on EFL learners' handwriting legibility . Thus, the present study includes both middle school teachers from different middle schools . Twenty Seven (27 pupils) First Year are selected to participate in this study because they have experiencing new second foreign language for the first time and thus they can provide us with reliable data and insights about the topic under consideration. In addition to a questionnaire presented online to groups

of English language teachers (13 teacher) from different middle schools of Algeria ,for the same purpose .

9- Structure of the Study

The dissertation is divided into two chapters. The first one is the theoretical part which contains two sections. The first section discusses an overview of handwriting skills definitions , importance and automaticity also pen control, its components and how it can be used legibly and its impact on writing and reading . The second section provides a better understanding of the major external and internal factors and difficulties that EFL learners may face to improve legibly handwriting and how the teacher should deal with such problems Also, it discusses on the methods of teaching and assessing handwriting skill. The second chapter is devoted to the investigation of the participants' perceptions on the factors that affect pupils handwriting performance , in addition to classroom observation , and to the analysis of the obtained results. Besides to some suggestions and recommendation provided to pupils , teachers and syllabus designer in order to enhance handwriting in middle schools .

Chapter One :

The Impact of External & Internal factors on EFL learners' Handwriting Legibility

Section One : Handwriting

Introduction

Handwriting helps pupils' cognitive development and overall achievement. Good handwriting (i.e., legible handwriting, whether printed or cursive) is an important life skill that all pupils should acquire. Handwriting skills assessment has received little attention. In education, The ability to write quickly and legibly is vital because most assessments of academic competency are still dependent on written timed examinations, and poor handwriting can lead to a student underachieving academically. This chapter highlights the main components of handwriting, its definitions, importance and its impact on writing and reading.

1.1.Handwriting

Failure to master handwriting at school can have negative consequences on the pupil's academic progress and self-esteem (Feder & Majnemer, 2007). Mather, Wendling and Roberts (2009) also assert that "handwriting is a fine-motor skill that enables students to record their thoughts. Rapid, legible and comfortable handwriting facilitates writing production" (2009, p. 8). To express it differently, handwriting is a writing sub skill ,it is very important in composing. Students with handwriting difficulties frequently experience educational and emotional setbacks (Rosenblum et al, 2003).

1.2.Handwriting definitions

Handwriting is a highly valued skill in many cultures throughout the world. Despite advances in technology, adults still use handwriting to record facts and ideas, communicate with others, and express themselves creatively (McMahon, 2008). Despite the various definitions of handwriting;yet, they all promote the same meaning. According to oxford dictionary ,it is "writing that is done with a pen or a pencil"; that is to say, handwriting is the physical formation of letters done by a writing tool. According to Berninger and Amtmann (2003, p.346), "handwriting is more than just a motor act...handwriting is 'language by hand'". In other words, in addition to speaking, handwriting is the physical representation of ideas , attitudes and beliefs. Sassoon (2006, p.11) asserts that " handwriting is not just a simple matter of letters neat or untidy. It is a physical act that involves not only the hand but the whole body. It interacts with

other cognitive tasks and above all is affected by and in turn reflects the writer's emotions and attitude". As a result, Sassoon does not simply see handwriting as a tool for constructing letters; rather, she sees it as a skill that involves numerous cognitive processes and reflects some features of the writer's psychological makeup.)

1.3 .The importance of handwriting

Despite the rapid expansion and development of communication technology in the digital age, handwriting continues to be a vital and indispensable mode of communication in everyday life and it is an important part of classroom learning.. Handwriting is one of the most direct forms of communication (Feder & Majnemer, 2007). Tasks related to it occupy the major of pupils' time at school. Handwriting is a crucial skill that students should acquire in elementary school.It is the most common way for a teacher to communicate with his or her students (Hammerschmidt & Sudsawad, 2004).

Although the technological advancement, handwriting remains a valuable skill to have throughout one's life. Because handwriting and academic accomplishment are linked, educators and therapists should emphasize the relevance of handwriting education and competency . Graham (2010;p.11) states that "Early handwriting instruction improves students' writing. Not just legibility, but its quantity and quality". Handwriting practice improves its legibility .Further he asserted that educators and pediatric occupational therapy practitioners must continue to explore and better understand this vital topic as long as students are obliged to write in school.

Furthermore, Feder (2007) asserts that " Failure to attain handwriting competency during the school age years often has far-reaching negative effects on both academic success and self-esteem" ;he indicates that poor handwriting has a negative effects on learners' success and self status.

In education , handwriting has a crucial impact on learners achievements, Tseng and Chow (2000)state that Handwriting difficulties might have a significant impact on their academic performance . As a result, educators and pediatric occupational therapy practitioners must continue to investigate and understand more about this important topic.

1.4 . The characteristics of poor handwriting

According to Hamstra(1993),” Handwriting is an important means of communication. A person who is not able to produce an acceptable script is seriously hindered in his or her communicative capability" ,that is to say handwriting is a means of communication . Speed is a core indicator of poor handwriting ; Parush(2010,p.45) stated that :

Our findings showed that the children with writing difficulties wrote less clearly and did not manage to write as many words in a given amount of time as the children without writing difficulties. This in turn may explain the fact that children with writing difficulties displayed poorer performance on class tests, copying from the board, and preparing reports.

He highlights the importance of letter formation, spacing, legibility and speed to achieve a good handwriting. They are the main components of handwriting. The lack of one of these factors might explain why children with writing problems performed worse on class assessments, copying from the board, and submitting reports. Handwriting is considered as a significant element in identifying children who are at risk of developing more serious writing problems. Parush(2010,p.45) asserted that:

This suggests that the factors differentiating between these two groups of students may be a universal phenomenon; in various languages, poor letter formation, spatial organization, overall legibility, and slow writing seem to be important factors for identifying children at risk for developing more serious writing deficits Therefore, these factors should be taken into consideration when evaluating this population.

As a result, these variables should be taken into account when assessing learners. Poor handwriting products, such as inaccuracy and illegibility, good handwriting but extremely slow writing speed, spelling the same word differently in different pieces of work, punctuation and grammar issues, upper and lower case letter confusion, and writing a lot but losing the thread are all common writing issues (Peer, 2001).

1.5. What handwriting problems may indicate

Children develop at different rates and in different ways. Early handwriting difficulties could be the result of a minor delay in graphic or motor maturation. Many intelligent children are fluent at a young age, musically or mathematically oriented, but weak in the skills required to develop fluent handwriting. Handwriting does not indicate intelligence, the earliest developers frequently have the most difficulty in moving letters. Sassoon (2003, p.85) argues that :

Children do not all develop at the same speed and in the same way. Early handwriting problems may indicate nothing more than a slight delay in graphic or motor development. Many highly intelligent children may be articulate at an early age, musical or mathematically minded, but awkward and not as adept as their peers in the skills needed to acquire a flowing handwriting. Handwriting is no indication of intelligence, in fact the earliest developers often have most problems with the movement of letters.

1.6. Graphomotor and fine motor skills

Fine motor and Graphomotor skills play an important role in handwriting. McMoris (2014) differentiates between them and states:

Fine motor skills are rarely, if ever, found in sport and are skills which require the use of few limbs and are undertaken in limited space e.g. writing, typing and sewing. On the other hand, most sports skills require the use of several limbs, often the whole body, and tend to take place in a comparatively large amount of space (p. 5).

Fine motor skills and graphomotor skills articulate a specific part of the body. They help to accomplish handwriting tasks.

1.6.1. Fine motor skills

Fine motor abilities are the little muscles in the hands and fingers that help with tasks like picking up objects and clutching a pencil. Fine motor abilities are used by children. Cutting and pasting, manipulatives in maths, and clapping their hands to learn syllables are all abilities they learned in school (Cameron et al., 2012).

Children with poor fine motor skills, particularly design copying skills, are more likely to fall behind in other subjects (Cameron et al., 2012). Specific interventions may be useful to enable students enhance fine motor skills in the early years of schooling, which may lead to academic proficiency later on.

Writing with pencils and markers, completing puzzles, shaping clay, stringing beads, cutting with scissors, connecting little plastic interlocking cubes, and tracing in the lines to construct mazes are some instances of these interventions (Berninger & Wolf, 2012).

1.6.2. Graphomotor skills

Postural control during handwriting skills is a good example of gross motor skills (Tayseer, 2015).

Because the trunk's stability allows the writer to modify their posture to execute tasks that demand fine motor abilities, such as handwriting, body posture influences the effectiveness of handwriting creation (Parush et al., 1998).

Cheng et al; (2013) study confirmed that lower body stabilization was critical in providing support to the body during writing for children with cerebral palsy.

Graphomotor skills are evaluated by assessing several writing skills such as writing speed, fluidity of movement, letter configurations, spacing between letters, and writing pressure (Prinz, 2015).

Handwriting legibility and writing speed, in particular, are important indicators of graphomotor skill acquisition [Klein et al., 2011; Kim et al., 2015].

1.7. Handwriting styles

The main handwriting styles are the print and cursive styles or a combination of both. The choice of writing style is very important. However, mixed styles are frequently penalized in handwriting examinations; yet, research demonstrates that both adults and children adopt mixed styles (Graham, Weintraub & Berninger, 1998b).

Despite this, handwriting experts emphasize the significance of training in both print and cursive to lay the foundation for good handwriting. It is pupils' core skill for communicating effectively and efficiently. In a study by Graham, Berninger, Weintraub, and Schafer (1998), they found that pupils in grades 4-9 in the United States produce more quickly when they use a combination of manuscript and cursive or just manuscript.

Although, technological advancements, every primary school child must learn how to write in cursive (connected and generally slanted letters) or manuscript (individual unlinked or ball and stick letters) (Sassoon, 1990).

1.7.1. Printing style

It is characterised by individual symbols, which are lined to form words. Manuscript writing or printing is described by the "ball and stick" creation of letters, which needs position of the writing tool through pen lifts for 33 percent to 66 percent of letters (Graham, 1993), depending on the type of manuscript utilized. Sassoon(2006, p.49) states that "Print script need not be derided. It is useful for labelling maps and diagrams, but it becomes tiring on the wrist when written at speed. It can also appear immature. Fast writing is still necessary in order to get enough down in an examination and very fast scribble usually is adequate for notes that only the writer needs to read." In other words, print script does not have to be neglected. When writing at speed, it is useful for labeling maps and diagrams, but it gets exhausting on the wrist. It can also appear across as immature. Fast writing is still required to get enough information down in an examination, and suitable for notes taking.

1.7.2. Cursive writing

Cursive, according to many experts, is a simpler medium than print since the letters are more connected. This lowers the amount of distraction caused by spacing. Cursive script also

includes fewer reversible letters and needs a consistent movement and flow, which can help pupils who have trouble with fine motor skills.

1.8. The dimensions of handwriting

Researchers such as (Benbow, 1995; Graham, Berninger, Weintraub, & Schafer, 1998; Ziviani & Elkins, 1984), assert that handwriting competence should be measured in terms of both speed and legibility and that these two factors are the most important aspects of handwriting performance. Moreover, legibility and speed, which are regarded the most significant components for handwriting performance, are used to describe handwriting competence (Parush, Lifshitz, Yochman, & Weintraub, 2010)

1.8.1. Speed

Another crucial factor in handwriting performance is speed. It is defined as The average number of letters written per a minute or the amount of text produced in a certain amount of time is standard way to assess handwriting (Graham et al., 1998a). A rapid writing is needed for the completion of class tasks, For activities like writing examination answers and transcribing telephone conversations, writing must be done in an acceptable amount of time (Graham, Berninger, Weintraub, & Schafer, 1998a). Speed can affect academic performance, the academic responsibilities of note taking and the completion of assignments and tests within a set time frame might be affected by speed (Graham et al., 1998; Summers & Catarro, 2003). Moreover, speed correlates with age, according to Feder and Majnemer (2007), Handwriting speed increases with age.

1.8.2. Legibility

Despite the fact that computers are already used in most elementary school classrooms, legible handwriting remains an important and necessary life skill. Feder (2003, 66.) asserts that " Although computers are now available in most elementary school classrooms, legible handwriting continues to be an important and necessary life skill needed for many tasks including writing messages, taking notes, completing examinations, and filling out application forms". Despite the technological advancement is still worthy.

Legibility is frequently used by readers to assess their own or others' handwriting. Legibility refers to the characteristics of written text that contribute to readability (Rosenblum, Weiss & Parush, 2004). Moreover, the legibility of children's handwriting is frequently evaluated by examining elements of written text. The readability of children's writing is influenced by factors such as letter formation, size, alignment, and spacing (Graham, Struck, Santoro, & Berninger, 2006; Ziviani & Elkins, 1984). It is a fundamental element in achieving academic success. In school-aged children, legible handwriting is a key determinant in academic performance (Graham, 1992).

1.8.3. The relationship between handwriting style, speed, and legibility

Since the cursive style permits easy hand movement between letters without having to take the pen off the paper in each letter, it is considered faster than the print style. As a result, the cursive style is suitable to achieve high speed. However, there was no comparison of the legibility of texts written in different styles. In the study by Graham et al. (1998b), the use of a hybrid style had no effect on legibility.

In education, children's ability to produce legible writing at a convenient speed is an important task. Handwriting proficiency, including legibility and speed, is necessary to complete academic tasks at school. Slow handwriting speed has a negative impact on academic success because it prohibits children from meeting the time limitations imposed by homework (Tseng & Chow, 2000).

Furthermore, illegible handwriting (products) weakens communication abilities, limiting students' capacity to convey their knowledge and to express themselves in writing. Another study found that changing a child's handwriting speed has a negative impact on legibility (Weintraub & Graham, 1998).

Although speed and legibility subcomponents may contribute to handwriting legibility, it depends more on the nature of the writing task. Parush (2010), asserts that "speed did contribute to the prediction of legibility in two free-handwriting tasks that the students performed. The existing evidence suggests that, although writing speed and various handwriting subcomponents may contribute to handwriting legibility, the interaction between these factors may vary according to the nature of

the writing task". To conclude, Handwriting instruction is vital for developing legibility and fluency in cursive and print (Graham, Weintraub, & Berninger, 1998).

1.9. Handwriting automaticity

First of all, children must understand that handwriting follows specific rules and conventions. They must then learn these norms with practice. Hamstra- belts (1993,p.689) asserts that :

Handwriting is a psycho-motor skill that is developed by instruction. At first, the children have to become aware of the fact that handwriting is subjected to certain conventions. They then have to learn these conventions, for example, (a) the particular forms that are used; (b) the way these forms are produced (e.g., the direction and trajectory of the writing movement); and (c) the configuration of the script forms on the writing surface. All of these conventions are culturally determined. With practice, children learn to produce a script that is in accordance with the conventions of their culture.

This indicates that handwriting is based on a set of conventions and children acquire it through the practice of letter formation.

Handwriting must be automatic in order for the mind to think about other things . The focus should be on writing rather than the hand movement. Moreover, Sassoon(2006,p.23) asserts that "Handwriting needs to be automatic to leave your mind free to think about other things. You want to concentrate on what you are writing, not what your hand is doing. To get to this level you need proper training ". In other words, training and practice leads to automaticity. In addition, Handwriting automaticity frees up students 'cognitive resources and allows them to write more advanced and complicated compositions (Sheffield Baker, Gersten, & Graham, 2003; Berninger & Fuller, 1992).

During writing the pupil needs to find out how to spell a word, this might cause losing the previously created thoughts and plans. The ability to quickly retrieve letter forms from memory and produce them without conscious effort frees up attentional resources to develop content, generate text, and transcribe in written composition. Graham (1997 ,p.1) asserts that :

Having to switch attention during composing to mechanical demands, such as figuring out how to spell a word, may lead the writer to forget already developed ideas and plans. Simultaneously allocating attention to mechanical concerns while trying to plan the next unit of text may further interfere with the planning process, affecting the complexity and coherence of content integration. If attention is occupied with mechanical concerns, the writer may also have less opportunity to make expressions more precisely fit intentions at the point of translation.

Graham (1997 ,p.11) adds’’ Ability to access letter forms rapidly in memory and to produce them automatically without conscious effort frees up attentional resources to plan content, generate text, and transcribe in written composition’’

1.10. Writing posture

Correct sitting posture affects handwriting .When pupils sit upright for doing tasks they use their muscles. Stability is necessary for suitable mobility of hands.Sassoon (2006 ,p.8) asserts that " The term writing posture is defined not only as how pupils sit but includes pen hold, paper position and other issues that concern how, rather than what, a pupil writes".Moreover, all the body parts are involved in handwriting.The correct sitting posture is described by Budgell and Ruttle (2003) as :

The ideal posture for handwriting is for the child to be seated with their feet flat on the floor and their bottom at the seat so their lower back is supported by the back of the chair. From this position, they should be able to achieve good balance and maintain the core stability upon which all of the other muscles rely (p.7).

Figure 1.1 shows the correct sitting posture that pupils should adapt to prevent difficulties and enhance their handwriting.

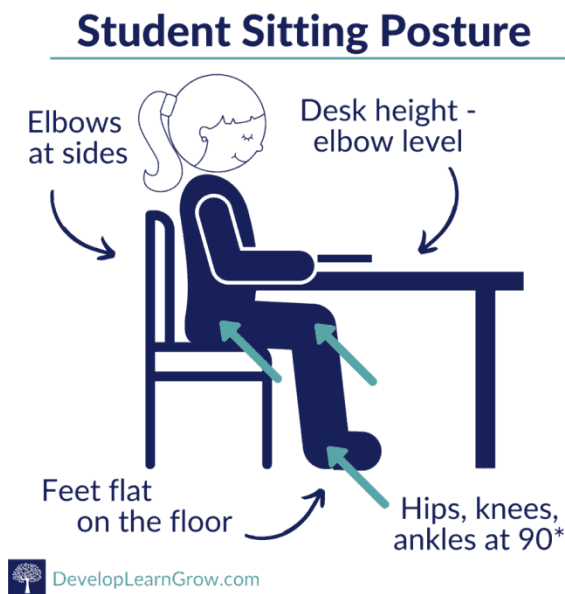


Figure 1.1: Correct Sitting Posture. Adopted from <https://developlearngrow.com/correct-sitting-posture-for-your-student/>

1.11. Pen Control

Aspects of pen control include pen pressure, pen grip, and pen position. SASSOON 2003

1.11.1. Mature pen holds (grasps)

When children first hold pencils, they use immature grasps. They gradually transit into mature grasp patterns which include: The (dynamic) tripod grasp, The lateral tripod grasp, the (dynamic) quadropod grasp and the lateral quadropod grasp. Figure 1 illustrates them.

The location and movement of the fingers, as well as how the grip performs in terms of speed and legibility, reflect the grasp's maturity (Benbow, 2006; Dennis & Swinth, 2001; Koziatek & Powell, 2003).

To begin with The (dynamic) tripod grasp which is the most frequent pencil grip (Wynn-Parry, 1966), it incorporates the thumb, index, and middle fingers acting like a tripod. This grip enables for modest, coordinated motions of the fingers involved. Secondly, Children employed a

different grasp style called the (dynamic) quadrupod grasp, according to Benbow (1987), the thumb and three fingers were used in this grip, which was comparable to the tripod grip. Thirdly, The lateral tripod grasp, it is discovered by Schneck and Henderson (1990) to be the second most common grasp pattern in children over the age of 5, is another dynamic grasp form.

Finally, Dennis and Swinth (2001) discovered a fourth grasp style, the lateral quadrupod grasp, as being adequate for writing as well. However, students with handwriting difficulties had less mature grips than their classmates, according to Schneck (1991).

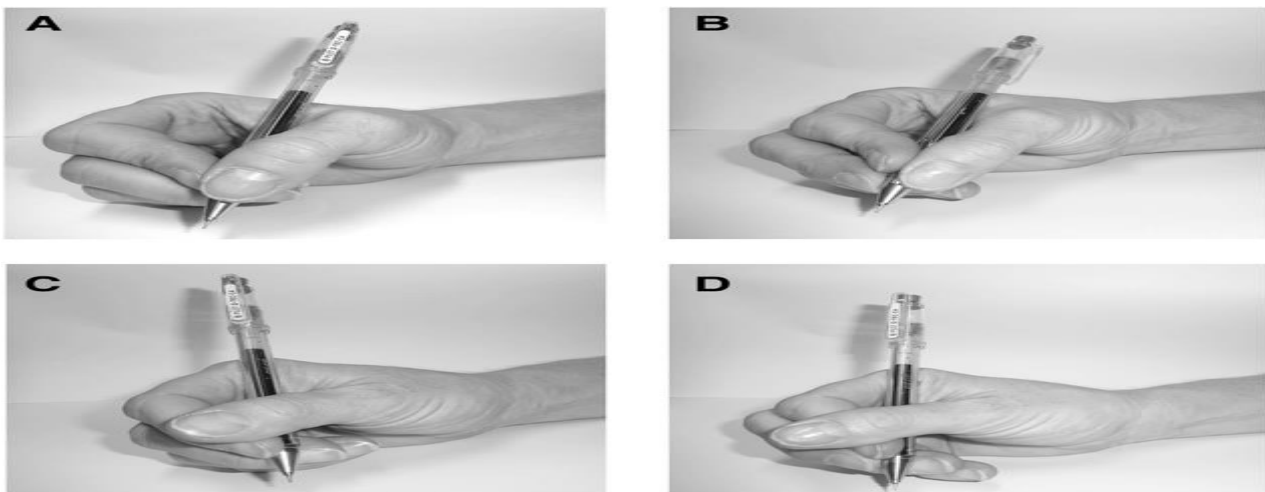


Figure 1 .2 :Four grasp patterns: (A) Dynamic tripod, (B) dynamic quadrupod, (C) lateral tripod, and (D) lateral quadrupod. Adopted from (Schwellnus et al, 2013)

1.11.1.1. Lateral quadrupod

Resting forearm on table with finger and wrist movement. Fingers are loosely flexed into the palm. With the index finger against the shaft, the thumb is crossed ulnarly. (Schwellnus and colleagues, 2013)

1.11.1.2. Quadrupod dynamic

Forearm lying on table with finger and wrist movement. On the shaft of the pencil, four fingers are positioned in opposition. Tseng, 1998; Schwellnus et al., 2013)

1.11.1.3. Lateral tripod

For horizontal and vertical strokes, rest forearm on table with localized finger and wrist movement. With the fourth and fifth fingers flexed into the palm, hold the pencil with the wrist slightly extended. Thumb adducted and index finger inserted laterally Index finger on top of shaft holds pencil on radial side of third digit. Tseng (1998)

1.11.1.4 . Tripod with movement

Sassoon(2006, P.26) states that ” The tripod grip is the most common manner of holding a pen. Your thumb and first finger are gently placed on either side of the pen, with your middle finger placed underneath. As you write, everything will be free to move around “.

For horizontal and vertical strokes, rest forearm on table with localized finger and wrist movement. With the fourth and fifth fingers flexed into the palm, hold the pencil with the wrist slightly extended. Thumb in full opposition and index finger on top of shaft hold pencil on radial side of third digit. (Schneck & Henderson, 1990; Schweltnus et al., , 19982013; Tseng) . A 2008 survey of teachers found that four out of five teachers taught students to hold a pencil in a dynamic tripod grip (Graham et al.,2008)

1.11.2 . Pen pressure

Writing pressure is another aspect to consider when evaluating handwriting, in addition to legibility and speed. When writing letters, the pressure applied to the pen traditionally represents the tension in the elbow, arm muscles, and hand [Bara & Gentaz, 2011].

1.12 .The impact of handwriting on other skills

Handwriting has an impact on other skills.According to Summit ,(2012) : "handwriting influences reading, writing and critical thinking "(p.2).

1.12.1. Handwriting and writing

Writing is a necessary skill that allows students to convey their knowledge and ideas while also participating in a variety of academic activities (Berninger, 1994). In addition,handwriting abilities are frequently thought to have a substantial impact on a child's overall writing ability (Graham, Harris, & Fink, 2000).

According to Schneck and Amundson (2010), “the functional skill of handwriting supports the academic task of writing and allows students to convey written information legibly and efficiently while accomplishing written school assignments in a timely manner” (p. 555).

The academic task of writing is supported by the functional skill of handwriting, which allows students to convey written information legibly and efficiently while completing written school assignments on time.

The Automaticity of handwriting affects composing. The less automated the transcription process is, the more difficult it is for the writer to focus on the text generation procedures (Graham et al., 2000). Moreover, handwriting problems can cause challenges in academics when a lot of writing is necessary, it reduces student's efforts (Hedderly, 1992).

This is especially true when it comes to dictation and public exams. Typical students are usually able to pass the examinations in the time allotted, which reflects their true ability. Students with handwriting difficulties, such as those with physical impairments (PD) or dyslexia, are sometimes penalized in exams due to poor handwriting skills. Because these students are unable to complete the examination and exhibit their topic knowledge on paper within the time allotted, the examination result may not accurately reflect their true ability (Bishop & Esgate, 2001).

1.12.2. Handwriting and reading

Reading is seen as a difficult activity. It enables us to grow and broaden our knowledge. Furthermore, it is one of the most important abilities that permits language learners to improve their language skills. As a result, it has a significant impact on the development of other language skills and it is affected by other sub-skills as handwriting

Early literacy skills are skills that are involved in the development of reading skills and can be measured before the reading skill develops (Whitehurst & Lonigan, 1998). These early literacy skills consistently predict reading growth in the early grades, according to research studies and syntheses (National Early Literacy Panel, 2008).

Early literacy skills include: Letter knowledge (i.e., being able to recognize and name letters), letter-sound correspondences, phonemic awareness, print concepts (i.e., knowledge of

reading conventions, text directionality, and book structure), and early handwriting (writing letters and first words) are all examples of early literacy skills (Molfese et al., 2011; Whitehurst & Lonigan, 1998). As a result, shifting from letter and word level skills to reading for meaning might be a difficult and a hard process .

Writing by hand is significant because studies show that the act of writing has an impact on children's reading acquisition, recalling, motor abilities, composition skills, and academic success (Graham, Harris, & Fink, 2000) . Handwriting instruction focuses on the same visual distinction between letters that is essential for successful reading. According to Gerszberg (2003), handwriting training means enhancing reading skills by focusing on the same visual difference between letters that is required for successful reading. Moreover, Direct handwriting instruction should also be provided, according to research, to increase handwriting proficiency and word reading (Graham, Harris, & Fink, 2000; Jones & Christensen, 1999).

Conclusion

In this chapter, we have presented a theoretical background about handwriting. Firstly, we introduced some definitions about handwriting . Then, we dealt with the importance and the main characteristics of poor handwriting. After that, we spotlight on handwriting styles and measures and highlighted the correlation between them . We tackled the role of automaticity in enhancing handwriting. Finally, We presented the different mature grasps of handwriting and we shedlight the impact of handwriting on writing and reading. We stressed that handwriting plays a vital role in enhancing pupils' academic success .

Section Two : The impact of External & Internal factors on Handwriting Legibility

Section Two : External and Internal factors that impact handwriting

2. The impact of External and Internal factors on handwriting legibility

Introduction

Handwriting is affected by different factors as being a neuromuscular task. There are several factors determining the difficulty of handwriting for learners . Hence these factors can be categorized into external and internal one ; including instructional procedures , materials used during writing and abilities found within the pupils . Berninger et al. (1997) agree that the kinesthetic process of writing letters has been found to be favorable for the development of composition skills even in this era of technological advancement . However ,a myriad of studies found that the handwriting proficiency is associated with writing quality, as well as researchers have studied various factors that impact pupils handwriting and designed instruments to measure legibility which aims to enhance learners' early writing skills and minimize those obstacles. In other hand, Graham et al. (2000), found that learners receiving handwriting intervention including instruction in handwriting legibility showed both immediate and an improvements in written composition. Further handwriting difficulties can have implications for a learner's successful in school , obviously leading to problems in academic performance and lowered self-esteem and personal relationships . It stressed that ,when the handwriting skill is affected by those major factors , there is a need for the individual to be assisted or guided in order to write or do their writing properly. as well as handwriting is significantly correlated with academic achievement of learners .

In this chapter the present study will focus on the major external and internal factors that may affect pupil's handwriting quality and legibility . In addition , this study briefly shed light on Teaching and Assessing handwriting skill that must be observed and constructed as the child engages in writing skill .

Section Two : The impact of External & Internal factors on Handwriting Legibility

2.1. External factors (extrinsic) within the impact of environment

External difficulties within letter formation, spacing, size, slant, may affect handwriting legibility. The shape of the writing utensil, thickness of the paper and whether it is lined, size of the desk, body position and other ergonomic factors, and instructions provided for the writing assignment are considered to be extrinsic factors, also others including the following :

2.1.1. Legibility measures impact handwriting

Legible handwriting is defined by Ziviani and Wallen,; Accardo et al., (2006: 2013) , as writing that is ‘readable’, which means that handwriting should meet the expectations of being legible . Rosenblum , Weiss & Parush (2004) view that the features of written text that contribute to ‘readability’ is refers to Legibility , It is often the characteristic by which readers judge their own or others’ handwriting .

However, legibility of pupil’s handwriting is commonly evaluated by analyzing components of written text. Components such as letter formation, size, alignment and spacing contribute significantly to the legibility writing, these components are measured in assessments such as the Evaluation Tool of Children’s Handwriting (ETCH).

Most research (Fischer, 1964; Graig, 1966; Quant, 1946; Rondinella, 1963) shows that legibility is more difficult to measure but is seen to depend upon a number of underlying components, including letter formation, slant, size, alignment, and spacing This specified the effects of these factors on teachers' overall perceptions of legibility ,while Ziviani and Elkins (1984) view that evaluation by an experienced teacher remains the most comprehensive and effective measure of overall legibility.

More instance, Graham, Weintraub, and Berninger (2001) reinforced the importance of measuring letter legibility ,They found that letter legibility made a significant contribution to the prediction of learners text legibility, Therefore, it seems that it is difficult to compare legibility data from different evaluations since most authors describe different ways of measuring it although authors agree that letter formation is a valid criterion relating to overall legibility.

Section Two : The impact of External & Internal factors on Handwriting Legibility

To sum up with Hamstra-Bletz and Blote (1990) assume that no data are available on the age-related performance of learners regarding legibility criteria features. therefore, Legibility measurements in handwriting consider as variable element particularly within the writing of middle school pupils as they still beginners to master legible handwriting while acquiring a second foreign language for the first time thus teachers do their best effort to maintain legible handwriting for their learners in order to achieve academic success and self-esteem in the future.

2.1.1.1. Size scale impacting handwriting

Size, is measured in comparison with the Palmer Method, widely used in our public schools today. This model is called "medium" in size. Hence, any writing which approximates this "ideal medium" is labeled Medium for the classification. Large writing is twice this size and small writing twice as small. However, size considered as an essential key of handwriting measurement as Rosenblum, Weiss & Parush, (2004) explain that "legibility of pupil's handwriting is commonly evaluated by analyzing components of written text this Components such as letter formation, Size, alignment and spacing contribute significantly to the legibility writing".

For instance, Most school copies advise a fair medium in size, something not too strict for the eyes of the child and not too extended for the small hand. As a matter of fact it seems to be innate with most writers to be moderate in this respect, and by far the larger number of writings are medium in size, This extension of size proportions sometimes starts in the first writing lesson and becomes a life habit. Researcher suggest that in order to meet up with this complication it was necessary to add three more size degrees; large with extended size ratios; medium with extended size ratios; small with the same Here All Sizes must be represented in order to differentiate from any of the more normal size standards which may happen to fluctuate a little, more or less. If All Sizes are not shown an incorrect decision has been made. This all size group has now grown to be second in number and importance (after Medium) and bids fair to give us vital information not suspected up to this time.(The size scale now reads as it shows in table 1) :

Section Two : The impact of External & Internal factors on Handwriting Legibility

a. Large	c. Small
b. Medium (standard school copy size)	d. Large with extended size ratios
e. Medium with extended long letters	g. All Sizes Each of these divisions has taken on a character of its own.
f. f Small with extended size proportions	

Table 2.1: Table shows the most scale size dependent in handwriting

Hence, each section can be subjected to millimeter measurements, plus the introduction of greater refinements of scaling when the need is felt. For the time being they serve adequately. However, In some cases, pupils cannot even differentiate between letter sizes, so they end up writing them in the same size. This difficulty could be explained to the pupils as another lesson on the realities of writing. as far as the relative size of individual letter in a word or text can cause problems .

2.1.1.2. Slant scale impacting handwriting

According to researches such (Fischer, 1964; Graig, 1966; Quant, 1946; Rondinella, 1963) agree that slant also considered as a significant component to measure pupils handwriting legibility in order to improve their level .emphasizing that legibility is more difficult to measure but is seen to depend upon a number of underlying components, including letter formation, slant, size, alignment, and spacing This specified the effects of these factors on teachers' overall perceptions of legibility . however, The scale for slant is very simple.

However, slant is a matter of measuring variations from the vertical , Some writings slant backward so slightly that as a feature it is hardly obvious. Others are backhand in so pronounced

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and prominent a mode that this particular factor dominates the whole picture. Others show both an extreme backward and forward swing. There must be a ways to handle these trends, for they may lead on to others that confirm and back them up .

In addition , the slant is a direct result of writing with an ordinary pen hold and hand position. Thus, researches assumes that, handwriting **slant is related** to learners affection, initiative, with the ability for reflection and the ability to apply logics as well as the slant is a direct result of writing with an ordinary pen hold and hand position.

According to Sassoon's experiment of " backhand slant ,which is an interesting to try for oneself; take a pencil in either hand and make a pattern of diagonal strokes. For the right-hander, the strokes will probably slope forward. With the left hand, the diagonal usually slopes backwards. To be sure of a forward-slanting line many young left-handers have to reverse their hand position", that means twisting their wrist to write from above the line of writing. Many left-handers manage to standby the slant of their letters in later life without inverting, but young children may not be able to do this manipulation of their fingers when they are just learning to write .

Thus, It is tempting to draw conclusions from the above , that slant being a key element to measure pupils handwriting legibility it may affect their legible handwriting also it may impact much more the left-handers pupils and it must asses and considered as a significant difficulty that may affect pupils handwriting performance to find suitable strategies for them at an early age.

2.1.1.3. letter Form scale impacting handwriting

Form considered as an unconscious expression , Few people can describe these important aspect of their own penmanship and cannot explain why they are induce to create as they do. As far as Form emerges as naturally in handwriting. The form scale took some ten years to evolve and could not be described in a short article without illustrations.

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However , researches indicates the form as an essential element in handwriting legibility scale that used to measure pupils handwriting , as Graham and Berninger (2001) agree on the importance of measuring letter formation legibility ,They found that letter legibility made a significant contribution to the prediction of text legibility.

Moreover , those pupils used to handling handwriting will be able to construct a simple scale for form, based on the curve, or circle, the straight line or angle, the zig-zag, the wave, the up-and-over arcade or the thread. These lines are the deepest aspect of pupil's writing ,which being as an ownership characteristic to the writer that can not be modified. Even the imitator finds it nearly impossible to eliminate from his habitual writing these characteristics of movement, in order to be left free to adapt his pen to the accuracy of some other writer. As well as here in pressure and form are the "life lines" which proceed from complex inner dispositions not yet identified in their true connection with the central nervous system.

More instance , capital letters confusion is a dominant problem, since children are either unable to form capital letters correctly or do not know exactly when to use them, or in other situations they use a large version of lower case letters. According to Harmer (2003) explanation concerning the form of letters he assert that “Area of difficulties can include producing the shape of English letters not only in upper case but also in their lower case equivalents” (p.44).

However, the majority of letters have different shapes, so if those letters are turned, they will not be confused with other letter. It might be far better for an unusual form of a letter – for instance ‘f’ – to become a point of discussion than for the teacher to be trying unsuccessfully to mimic a model that is unfamiliar .

To sum up here , Form considered as one of the most important scale measure of legible handwriting therefore it should be observed by teachers to reinforce their learners handwriting letter formation especially those acquiring new foreign language for the first time in order to give them better base of learning legible letter handwriting formation .

2.1.2. Pressure impact handwriting

Pressure also considered as an unconscious behavior can be arranged along a continuum extending from the lightest stroke which is carried out consistently to the most extreme dark

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stroke which is made with a pressure so strong as to pierce the paper now and then. Hence, pressure and form are the two most difficult measures to estimate particularly in handwriting legibility .

However, pressures trip more than any other measure. In order to classify handwriting can introduce as many degrees to the scale from light to dark. As well as pressure arises out of the pupils innately .

Moreover , Some studies observed larger variations in pen pressure in children with Attention deficit hyperactivity disorder ADHD compared to neuro- typical children. As well as it affects the readability of handwriting products . hence , studies indicates that children with ADHD spend more time when writing or make slower strokes than their typically developing peers .

According to Kao, Shek & Lee (1983) clarified that pressure measured in grams was found to be higher when letters were written free-hand compared to symbols that were traced. Furthermore, increased task complexity involving cursive letters was associated with higher pen pressure . Dooijes (1983) , assume that pressure during handwriting is extended in two directions: downwards through the pen tip onto the paper, and laterally onto the barrel of the pen by the fingers as well as pressure increases when text is written quickly or using larger text.

Researches explain that there is a lack studies involving the use of clinical observation methods for assessing children pressure and pen pressure were located .

Thus , better to explore methods of assessment would be beneficial in reforming setting by watching such children carefully, helps to select whichever process is successful , then Finding a way to explain handwriting to pupils can sometimes lead to the solving of other problems . Therefore ,therapists and professionals should be aware of the fundamental difference between learners disorders and make good use of handwriting assessment as a reference so as to provide ADHD individuals effective therapies and trainings .

2.1.3. Speed impact handwriting

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Speed and legibility are key characteristics in handwriting performance and factors with which most teachers are concerned .

According to Benbow and others (1995) view that the two most essential elements in handwriting performance are legibility and speed In handwriting hence , Speed is part of motor learning can impact pupils legibility which has a greater influence than any other measure on the other factors in writing .

Graham, Berninger et al (1998a) , clarify that writing needs to be completed in a logical time frame to be functional particularly for tasks such as writing examination answers hence, handwriting speed in particular is highly significant and speed commonly measured as the average number of letters written per minute or the amount of text produced within a specific time . it seems that learners may forget the ideas and plans held in memory before they succeed in delivering them to paper if handwriting is very slow.

However. The speed scale is primarily divided into five gradations, again with subdivisions for variations and refinements. A rapid writing, for instance, reaches down to the least stroke, modifies it, bends it to conform to the momentum and direction. The same five factors in any formula will be modified as they appear written in these different tempos. Each speed, in very fact, makes a new formula. The speed scale is dominantly important and is simply:

-Exceptionally rapid - rapid -. temperate - slow .-drawn - jerky.

According to Ayres and Groff (1912;1961) believes that speed has been shown to increase with age . while others believing that girls are faster than boys . also Peverly, Garner, & Vekaria, (2014) found that handwriting automaticity correlated with learner's performance level distinct in composition thus handwriting speed is essential for note-taking of essential information .

According to many researchers (Connelly et al., 2005; Connelly, Dockrell, Walter, & Critten, 2012; Graham, Berninger, Abbott, Abbott, & Whitaker, 1997; Limpo, Alves, & Connelly, 2017; Puranik & Al Otaiba, 2012).clarified that handwriting speed seems to affect not only the amount of text produced, but also its quality. Also , Graham and Weintraub (1996) suggested that pupils may forget the ideas and plans held in memory before they transferring them to written product if their handwriting is very slow .

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In addition , Feder and Majnemer (2007) emphasis that legibility and speed considered as an important elements characterized in handwriting hence, Legibility depends upon accepted measures of letter formation , size, placement, and spacing , as (Graham & Weintraub, 1996; Stefansson & Karlsdottir, 2003) view that it is to understand how handwriting speed increases with age of pupils in different school levels and the factors contribute to its development .

Therefore, by better understanding the different ergonomic factors that influence handwriting legibility . teacher should identify and classify the factors that may impact their learners' handwriting performance so professionals and therapists will be able to design more efficient intervention programs.

2.1.4. Handwriting style impact legibility

Handwriting style refers to whether the text has been written in printed (manuscript) text, cursive text or a mixture of the two and how it may effect legibility .

According to Graham, Weintraub & Berninger (1998b) studies view's that Legibility was not impacted by the use of a mixed style in handwriting assessments and it show that mixed styles are commonly used by adults and learners . Although few studies have investigated handwriting styles, results suggest that handwriting assessments should probably not, as a general rule, compare handwriting against a cursive standard.

Although few studies have investigated handwriting styles, Graham et .al (1998b), results suggest that handwriting assessments should probably not, as a general rule, compare handwriting against a cursive standard as well as the handwriting styles is required and used by learners of different ages.

In addition, Harmer (2007:12) argue that “teacher cannot ask their learners to change their handwriting style ,while they can encourage neatness and legibility , especially when taking pen and paper during exams , it is crucial things specially for those having handwriting difficulties” . as the case of middle school pupils those engaged with English language for the first time are the most needed to be guided and observed in order to enhance their handwriting style .

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Thus, research involving larger samples is needed to investigate the relationships between handwriting style, legibility and speed. Hence, Normative data are required for error correction in order to compare learners with handwriting deficits. It seems that handwriting difficulties is a matter affected by style too. therefore, teachers should enhance and encourage their learners in early ages of learning handwriting skills to write clearly and legibly .

2.1.5. Left –hander and right-hander choice affecting handwriting

An important factor in any study of handwriting skill , which discusses differences between left handed and right-handed subjects is a measure of the operational definition of a subject's degree of handedness whether this differences impact pupils handwriting legibility . Most studies on the handwriting of left-handed and right-handed use a listing of activities in which the subject indicates which hand they primarily use for a given activity.

According to Coren (1992) had discussed various means of assessing handedness, and came to the conclusion that the important items to include in a questionnaire are those items that participants will indicate correctly which hand they actually use for a given activity ,also hand posture of both left-handed and right-handed individuals needs to be assessed to see if this is a contributing factor to the legibility of their handwriting .

However , Beyond the research questions about the legibility of left-handed writers that society must make an effort to improve the handwriting instruction of left-handed learners. Thus , most researchers and teachers have suggested that society stop disregarding left-handed handwriting and focus on teaching left-handed learners how to write more legibly. Furthermore, Left-handers need consideration Teachers can not assume that teaching left-handers using the same methods used for right-handers will be effective . Like pupils with other individual characteristics, as left-handed writers need trained and specific method .

According to (Harrison, 1981; Plattor & McQueen, 1986; Salend, 1984) argue “left-handed model with good penmanship teach them” . For instance Left-handers will all be writing in the shadow of their own hand if the room is organized for right-handers for instance the children cannot place the paper to their left side if there is not enough space at the table, or if they are

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sitting on their right-handed neighbor's right side. As well as , older pupils manage to adapt so it may not be obvious unless the writer is observed in action. (see figure 2.3)

Once such problems are diagnosed it may be a long time before learners are able to modify the movement of their letters early observations and remediation are necessary . All these aspects need to be into a schools policy that spreads awareness of left hander's needs , and ensures that they are met. As far as It may be necessary to analyze each separate action that takes place, and take consideration to the handedness choice , then the sequence can be explained to learners in order to help them to overcome their problems .



Figure 2.3 : Shown that left-handers need to place their paper to their left side so they can see what they have written .(adapted from Sassoon, R book Handwriting the way to teach it ,p.18)

2.1.6. Pencil Grasp impact handwriting

The impact of pencil grasp on handwriting has been a topic of investigation since the 1940's. According to Sassoon, Nimmo-Smith & Wing (1986) Pen grip refers to how the pen is held, or the finger placement on the barrel of the writing implement . Also a term used to describe the position of the fingers involved in grasping a pencil.

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However, Pencil grasps are commonly classified according to the position of the thumb, the number of fingers on the barrel of the pencil, and finger joint positions as the following (see figure 2.4) :

- Dynamic grasps , the thumb is positioned in opposition to the fingers; the thumb and fingers are placed on opposite sides of the pencil.
- In lateral grasps, the thumb crosses over the pencil, stabilizing it against the other fingers. However, the pad of the thumb tends to contact the lateral border of the index finger instead of the shaft of the pencil.
- In tripod grasp Three fingers contact the barrel and Four in a quad-rupod .

Historically, according to Elliott and Connolly (1984) the dynamic tripod (DT) pencil grip has been promoted as the optimal grasp pattern because it allows for the fine dexterous movements of the fingers to create letters. Schneck and Henderson (1990) suggest that Therapists and teachers commonly advice that learners , especially those with handwriting difficulties use the DT pencil grasp.

Furthermore, researchers (Dennis & Swinth, 2001; Koziatek & Powell, 2003; Schwellnus et al., 2012) suggested that within The spread of each of these grasp patterns in learners is comparable to that of the DT grasp pencil grasp to be mature grasps that are functional in terms of speed or legibility for handwriting

However, Elliott and Connolly (1984) argue that , in mature pencil grasps, the intrinsic muscles of the hand are responsible for the movement of the pencil within the hand . In contrast, with immature pencil grasp patterns, the pencil is held with the fingers, but the movement is controlled by the extrinsic muscles .It was confirmed in previous research of Falk, Tam, Schwellnus, & Chau (2010) which found that when grip force has a low amount of variability, handwriting quality is decreased .

Therefore researchers (Amundson, 2005; Benbow, 2006; Myers, 2006) emphasis on the role of “Occupational therapists which need to address handwriting function in a variety of ways, describe a variety of biomechanically based strategies for enhancing handwriting skill , These strategies include methods for facilitating a mature grasp on a pencil as well as appropriate

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positioning of the body, chair, desk, and paper, in order to meet the common demands in classroom work” .

To sum up here , few studies have investigating the correlation between pen grip types and handwriting legibility as well as these relationship make it difficult to draw conclusions in addition major implication for therapists of existing pen grip research is that trying to change a learner’s pen grip may not be necessary to improve legibility . Further Pupils should be taught the correct and functional way to hold a pen because it is thought that "incorrect pencil hold is a life-long habit”.

Thus, the pupil’s ability to hold the pencil that may reflect on their handwriting proficiency it is an essential factor that may impact learners handwriting which needs the most to be regarded in order to provide pupils at middle school with correctly use of pen grasp within the right useful materials that helps to organize their writing.

2.1.7.The impact of Materials such : pencils and pens, paper size and lines

In fact ,The materials that are to be used for handwriting throughout the school need to be planned as carefully as all the other items in the policy. In the past, decisions on such matters as pencil size, shape or point have often been taken without discussion within the school and certainly without consulting the preferences of the pupils despite the difficulties they struggle within the wrong use of such materials .

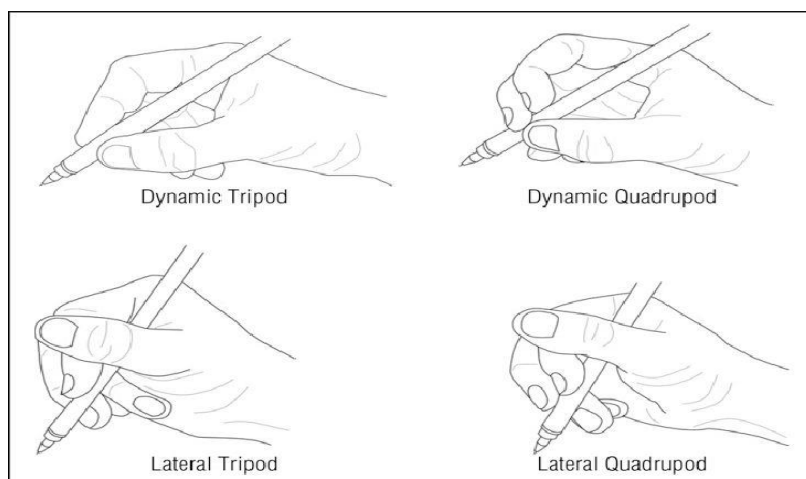
However, a simple survey usually shows that there are strongly held preferences from an early age, and that many pupils dislike the fat pencils that have been supplied to in schools for many years . Hence by giving free choice, pupils soon demonstrate what best suits their hands and their handwriting. It is not always the same for every learner , and there are many different shaped pencils on the market such as : fat ones, thin ones, hexagonal or triangular ones. Then there is the pencil point to consider too such as : soft, medium or hard thus, when it comes to pens there will be other decisions.

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In addition, Left-handers will need special consideration. They profit from using pencils with leads that are not so hard as to dig into the paper, and from fibre-tipped pens that do not spot . As in so many other matters, what suits one child may not suit another. Which means that large sheets of paper may be useful for free pre-writing pattern work or large directional exercises, but for the early skill lessons it is surely desirable to use small sheets of paper. Thus, a smaller size ensures that the child will never have to stretch too far to write then pupils will benefit. When emphasis is being put on an appropriate paper position a small sheet is an obvious advantage, particularly where table space is limited so half-sized exercise books that are then wider than long seem to work well.

In addition , lines are often a series issue that needs to be observed hence , There may be some tasks that are best written on unlined paper and others where lines are a positive advantage . As Harmer (2003) suggested that the teacher can establish the border necessary for making those shapes ,also learners can be asked to write in the air to give the confidence or trace letters on lined paper that can be useful for them . also suggested that several sizes should be provided for the learners benefit , Otherwise the choice of only one size per class means prescribing the size of writing within any particular group as soon as double lines are used.

Thus, teachers should be more flexible and pupils guided attitude to so many matters concerning handwriting materials and that teachers should not be afraid to experiment they always strive to be encouraging their learners especially for those suffering poor handwriting .



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Figure 2.4 .The Four mature grasp patterns: Dynamic tripod, dynamic quadrupod, lateral tripod, and lateral quadrupod (adapted from <https://www.pinterest.com>)

2.1.8. Social cultural and Personality Factors

According to Brown (2000:180-189) explain These factors which consist of social and environmental such as attitudes, second culture acquisition, social distance, and culture in the classroom.

- Firstly, attitudes like all aspects of the development of cognition and affect in human beings. These attitudes form a part of one's perception of self, of others, and of culture in which one is living.
- Secondly, second culture acquisition means that culture is a deeply stable part of the very line of our being, but language is the means for communication among members of a culture. hence, Culture is the most visible available expression of that culture.
- Thirdly, Social Distance means the concept of social distance emerged as an affective construct to give explanatory power to the place of culture learning in second language learning.
- Lastly, Geert Hofstede in Brown (2000: 190) view that “culture in the classroom means who used different conceptual categories to study the cultural norms of different countries such as individualism, power distance, uncertainty avoidance, and masculinity or femininity “.

2.1.8.1. Learners Personality impact their handwriting

Handwriting may being an individual feature for each person and a person's nature, behavior, and certain psychological aspects can be inferred based on it. According to Brown (2000: 143-167) explain that “Personality factors are those within the learners themselves that consist of physiological aspect such the affective domain, motivation, the neurobiology of affect, and measuring affective factors “ as the following :

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- First, the affective domain is the emotional side of human behavior such as self-esteem, inhibition, anxiety, empathy.
- Second, motivation is probably the most frequently used catch-all term for explaining the success or failure of particularly any complex task such as handwriting performance , and intrinsic and extrinsic motivation.
- Third, according to Schumann in Brown (2000: 166) the neurobiology of affect includes neuroanatomy, neurochemistry, and neurophysiology .It informs several areas of interest for language acquisition studies, for example affect, memory, and learning.
- The last, the measurement of affective factors has for many decades demonstrate a confusing problem. However, identification of such a personality trait can be performed based on an individual's handwriting features. As well as , Handwriting may be unique for each person and a person's nature, behavior, and certain psychological aspects can be conclude based on it.

According to Herrick (1960) a person's handwriting may change from one day to the next or even within the same written product . It is introduced as the field of graphology, which analyze personality based on handwriting.

Fore More instance ,according to many researchers (Feder & Majnemer, 2007; Graham et al., 1997; Vinci-Booher et al., 2016) views that the influence of handwriting on personal well-being, learning, and academic success.

Researchers concluded by emphasizing the importance of the writer's self-awareness as to the character of his handwriting as a basis for quality and legibility improvement. Thus , Individuals tend to develop their own personal writing styles within their social cultural fact.

2.1.9. Teachers Style and Strategy affecting handwriting

Dewey (1929) state that “ It is empirically noted that one teacher has an effect on pupils that is qualitatively termed inspiring, awakening, and that the personality of another teacher is relatively deadening, dulling. Now here is a problem set for inquiry, whether the sciences which have to be drawn upon are sufficiently advanced to provide material for its solution or not”.

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Which means that teachers style and methods of delivering information play an important role it may impact learners ability of leaning different subject such a handwriting skills As a result informed and confident teachers should be able to teach the basic movement of letters quite quickly and in such a way that many of the problems that hold learners back later on should never occur hence what is learned about handwriting in the early days at school will impact learners for many years to come .

However, teachers may impact their learners handwriting , such as a Teachers who may have come from a school with quite different views on handwriting may also need guidance. If they have not been trained how to detect and deal with movement problems they should be made aware of the importance of this part of the school policy, whatever the age of the pupils that they are to teach. Manner differences may not be such a problem.

It might be quite useful for older pupils to write in another style of writing, provided it moves correctly. while It is distinctly difficult for pupils to become consistent in a new handwriting model as well as this difficulty could be explained to the pupils as another lesson on the realities of writing .

Further , researchers (Baylor and Ritchie 2002; Graham et al. 2008) discovered that the motor knowledge acquired from handwriting during the training stage significantly contributes to the accuracy of recognition in which supports the argument of Hulme (1979) that “ the physical act of handwriting or tracing provides an additional part of memory that assists performance that is not found in typing” .

Also , Baylor and Ritchie (2002) view that the teacher training and continuing education for best practices .however, teacher attitudes towards the subject matter are reflected in their teaching practices In order to expand opportunities into the classroom, they need to first see relevant use and then have extended experience with new ideas and skills as well as , teachers’ competence improve learners performance , taking on board Woods’s (1996) argument that teachers’ beliefs and attitudes are complex linked with classroom practice show that teachers’ attitudes and comfort level impact their teaching practices , in other way enhancing teachers’ be knowledge of comfort level with teaching handwriting ,supports success of their pupils as they pursue to attain legibility in written communication.

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Thus, researchers asserts that some factors which influence the pupils in learning are detected through doing observation and interview. Such as the materials, media, classroom activities, classroom management, teaching approach, and teachers strategy are the proper key to discover factors that can lead the improvement the students' achievement in learning language including in learning handwriting.

To sum up here , most of all the External (extrinsic) factors that had been mentioned above seems to be dependent variables as far as The handwriting is too complicated to be spelled out in easy factors. It may seem to be some hidden elements that do not meet the eye. In these cases the second half of the process of classification must come to the rescue. Therefore the teachers , School psychologists and occupational therapists are responsible to predict other internal factors which concerned within the learner's actual performance that may help to enhance learners handwriting in order to enhance and overcome their difficulties .

2.2. Internal (intrinsic) factors within the individuals

In fact , several factors control the success of mastering legible handwriting as reported by many researchers Graham, Berninger, Abbott, Abbott, and Whittaker (1997) that individual differences in handwriting were predictive of individual differences in compositional legibility and quality . the next current discussion , aims to identify some of various intrinsic factors , stemming from the learner's actual performance abilities include the following :

2.2.1. Orthographic coding impact handwriting

According to Berninger et al., (2006) defined Orthographic coding is the term used to explain how learners store and later recover letter forms from memory . It is the ability to develop right representation of the letters of the alphabet and rapidly and accurately encode and reproduce them from memory. Thus fail to develop this ability may affect the development of handwriting legibility.

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However, Berninger, Yates, et al., (1992) view that despite the contribution of orthographic processes to the prediction of individual differences in handwriting legibility has not been examined earlier but the speed coding of orthographic information , and rapid of sequential finger movements have been shown to be good predictors of beginning handwriting and composition skills .

According to Abbott and Berninger (1993) found that orthographic coding skills accounted for a significant attribution of the distinction in the handwriting fluency of learners in grades 1 through 6. As a result , the orthographic skills investigated in the present study included orthographic coding as well as alphabet recall and reproduction. However, Difficulties with orthographic-motor integration may explain the poor combination between them in written form. such as , if a pupil wanted to write his name, he would have to know the letters in his name, be able to recall the letter forms from memory, and then begin to write them down.

In addition , Berninger and Graham (1998) stress that orthographic and memory processes contribute more to handwriting than do motor skills as well as writing is ‘language by hand’. Also, Berninger (2006) view that handwriting is an integration of letter forms (orthographic codes), letter names (phonological codes) and written shapes (grapho-motor codes) by early schooling therefore , pupils who have difficulty realizing visual information and processing it may have difficulty with orthographic coding.

Further research , Berninger & Amtmann, (2003) and her colleagues found that an approach that combines orthographic training with motor training was most effective in increasing the learners’ handwriting skills.

Also , Edwards (2003) suggest that Once learners are able to distinguish between letter forms, they should be encouraged to name each letter as they write it; this strategy may assist with storage and later restore, which means that fine motor skills and eye–hand coordination, orthographic-motor integration depends on the learner’s capability to code orthographic information.

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Therefore, handwriting process and letter formation depends a lot to orthographic coding and motor fine integration which plays a significant role to the development of pupils legibility handwriting .

2.2.2.Finger functions impact handwriting

According to Ellis and van Galen (1982; 1991) Finger function play an essential role in current models of skilled handwriting. Once a written is retrieved from memory and parameters for the performance of the motor program set, neuromuscular instructions are translated into motor movements including the use of the fingers to manipulate a pen or pencil to form the target letter.

In addition, according to the previous studies (orthographic coding) of Berninger and Rutberg (1992) agree that finger function were the most predictive measures in the tasks which employed in the current study involved the accurate placement or identification of fingers based on kinaesthetic references .

Further , Benbow (1995) clarify that If a desk is too high, pupil's arm is positioned too far from the body for good control of their fingers which means that The classroom desk needs to be approximately one inch above a child's bent elbow thus, finger function play major role throughout children handwriting performance as well as it can impact their writing legibility. The classroom desk needs to be approximately one inch above a child's bent elbow Also , thus, finger function play major role throughout children handwriting performance as well as it can impact their writing legibility.

Although the contribution of finger functioning to the prediction of individual differences in handwriting legibility has not been previously examined with learners from the general school population but it play major role throughout pupils handwriting performance as well as it can impact their writing legibility.

2.2.3.Visual –Motor integration impact and handwriting

According the most current studies of (Cornhill & Case-Smith, 1996; Hagborg & Aiello-Coultier, 1994; et al) indicate that visual motor-integration skills are significantly related to the

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quality of learner's handwriting as well as Visual motor integration and fine motor control are two other factors that have been historically established with handwriting difficulties .

However , Denton, Cope, & Moser, (2006) assumes that the interference which focuses on these two factors alone may not produce positive outcomes for learners with handwriting difficulty as well as Interventions directing toward rising these skills, which often combine worksheets, eye–hand coordination games, and exercises for hand intensity and proficiency , have been found to be less functional than other methods of remediation. In which van Galen (1991) assumes that visual-motor integration plays a less prominent role in most models of skilled handwriting, Perhaps as Smyth and Silvers (1987) argue that visual feedback is not always used when producing letters in which pupils practice at a slower speed than adults and dependence on visual feedback may be greater.

According to (Tseng & Murray, 1994; Volman, van Schendel, & Jongmans, 2006) emphasis that visual-motor integration (VMI) skills proved to be associated with legibility as well as VMI improved is be related to academic performance in reading and writing so far research included this variable to control for its impact on text quality and legibility .

According to Benbow (1995) handwriting requires visual control for guidance of the pencil . Several recent studies by Lazlo ,Broderick and Rutberg (1991;1998) and explain that instruction involving motor or visual-motor processes can have a positive influence on handwriting performance, associating a causal link between these processes and handwriting development.

The results conclude that visual-motor integration may be more important as handwriting skills are being acquired throughout this sensitive operation also the absence of visual feedback in learners results their lower performance . thus further research is needed to reproduce and extend these findings, including a more detailed analysis of what aspects of handwriting performance are influenced by specific aspects of motor and visual-motor training programs in order to enhance pupils handwriting.

2.2.4. Memory impact handwriting

Research agree that there is evidence that writing movements are engaged in letter memorization . For instance, repeated writing by hand is an aid that is commonly used in school to help

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learners memorize. In the same vein, reported that learners often write with their finger in the air to identify and mentally retrieve the meaning of complex characters.

According to Craik and Lockhart (1972) framework suggest that better memory results from efficient taking handwritten notes because of increased semantic processing that emphasizes summarization, highlighting and organization, not the addition of motor information. It has also been reported by Naka and Naoi, (1995) that learning by handwriting facilitates subjects' memorization of graphic forms which means mean that we write for a number of different purposes, and in a variety of situations. One of the main objectives of writing is for memorial that is, we write in order to remember something (e.g., shopping lists; note taking during reading or lectures; exams ..) , thus by Considering this role of writing, the impact of handwriting on memory is significant one in order to enhance verbal memory for material written by the subjects themselves.

In addition , Smoker et al. (2009) study showed that memory on the recall task access significance in priority of the handwritten words, and the effect of writing styles was significant in the recognition task. a well practical applications of this factor would be the recommendation to encourage pupils to take notes by traditional pen-and paper to enhance their memory and restore for notes Further in which performance on the recognition task is worthy better for the handwriting condition .

On the basis of these results , Smoker et al. (2009) conclude that the findings support the assumption that due to supplemental kinesthetic information provided by handwriting, subjects tend to remember words better when they have written them by hand than when they have written them by keyboard.

Thus, researches suggest that Through combining of pen/paper and modern technologies which impact the strengths of improving pupils writing performance especially those struggling handwriting difficulties in order to achieve their different purposes .

2.2.5. Handwriting disorders (HD)

Handwriting disorders are considered as one of the major public health problems among school-aged learners worldwide according to researches with a prevalence rate of handwriting

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disorders in school-aged pupils . learners with learning difficulties have very little self-confidence, and this lack of confidence will be reflected in their legible handwriting ,

However These disorders significantly conflicted with the learners academic performance and are often associated with their learning difficulties , for example in spelling and written composition , During writing, the eyes guide the hand to write the letters, to arrange them in the writing space and to return (back) to the writing line. Visual control allows to move guided by the kinesthetic aspects of the gesture, to controlled and directed sequences of process , obviously these disorders lead to many difficulties concerned with handwriting performance .

For more instance several authors, occupational therapists and school psychologist try to explain and diagnosis major of Handwriting disorder including this factors as the following :

2.2.5.1. Dysgraphia affect handwriting

According to Marr and Cermak, (2001) view that those learners who do not succeed in developing proficient handwriting are defined by some authors as “poor handwriters” and by others as “dysgraphic”.

Hamstra-Bletz and Blote (1993) defined dysgraphia by as a disturbance or difficulty in the production of written language that is related to the mechanics of writing.

It has also been referred by Brown (1981) as a specific learning disability in which a learners has handwriting difficulties without a diagnosis of a neurological or intellectual disability.

In addition Feder and Majnemer, (2007) explain dysgraphia as handwriting difficulties it means that The problem of dysgraphia is clearly shown in the performance of handwriting among learners who are of at least average intelligence and who have not been selected as having any obvious neurological problems, Teachers have estimated that handwriting difficulties are among different school levels of learners female and male

According to many researches Cratty, Johnson, Waber & Bernstein (1995; 1994) argue that Dysgraphia or poor handwriting is a common complaint among pupils and adults with learning disabilities, appearing with or without other academic difficulties as well as in learners diagnosed with Developmental Coordination by (DSM4, American Psychiatric Association (APA), 1994)

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Further more group of authors Graham, Scardamailia, Bereiter & Goleman, (1990;1982) believed that Dysgraphia is a neurological disorder that reduce the writing process ,Which can include difficulties with the physical aspects of writing (e.g. awkward pencil grip or bad handwriting), spelling, or putting thoughts on paper . while Other authors Jones & Christensen, Berninger & Graham (1999:1998) have proposed that the act of handwriting among learners with difficulties can be conflict with the simultaneous performance of composition. It show that when letter production is not fully automatic, the act of handwriting makes increased demands on memory and intentional resources, which in turn oblige the higher level cognitive processes required for composition

Moreover , most authors such (Graham, Weintraub, & Berninger, 1998; Overvelde & Hulstijn, 2011; Smits-Engelsman et al., 2001) clarify that Dysgraphia is characterized by difficulty in the production of legible writing, in maintaining the quantity and speed of writing demanded in class in which they assume to assume the existence of two types of dysgraphia: spatial dysgraphia based on visual difficulties and motor dysgraphia for which kinaesthetic aspects must also be considered as well as dysgraphia can be related to language problems, motor learning and/or motor execution, visual-motor problems, coordination problems, or cognitive impairments (e.g., attention deficit).

Many researches reported that The number of typically developing pupils who struggle with handwriting varies , More research is needed target at the development of techniques incorporating the use of computerized data in order to associate a comprehensive and systematic evaluation system for learners struggling with dysgraphic handwriting of all ages based on a combination process of examining both handwriting process and product .

In consequence, dysgraphia can be observed in the context of various disorders such as dyslexia, developmental coordination disorders, or attention deficit disorders with or without hyperactivity (ADHD) thus it can effect learners handwriting performance and other activities which must be diagnosis in early ages . (see figure 2.5).

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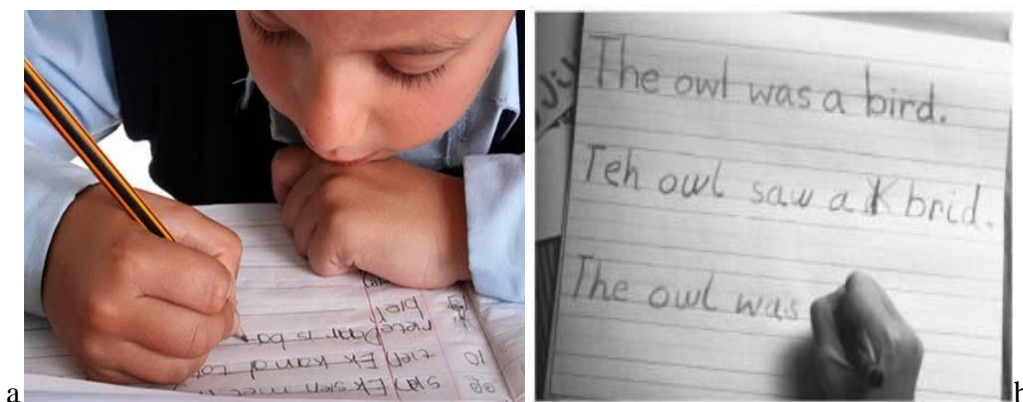


Figure 2. 5 : Handwriting samples of a paragraph copying of a typical proficient and a typical dysgraphic handwriting (adapted from <https://www.pinterest.com/pin/508062401713118806/>)

2.2.5.2. Dyslexia affect handwriting

According to Wimmer and Mayringer, 2002; et al .,Suárez-Coalla et al., 2016) explain that the impact of spelling deficits on the process of handwriting in learners with dyslexia. Hence It is well-documented that pupils with dyslexia have constant difficulties with accurate spelling that constrain handwriting production .

Lambert et al.(2011) explored that lexical frequency and phonology-to-orthography regularity impact the time-course of handwriting during a copying task.

In addition , to Afonso et al., (2019) Identify a study conducted in Spanish, that learners with dyslexia showed larger influence of coherence and lexical frequency in written than typical readers, but a reduced effect of word frequency on writing durations in spelling to-dictation than in copying. This pattern of results may be reflecting a reduced ability to be a part in parallel processing when spelling words to dictation in younger pupils compared to older one and in learners with dyslexia than in their peers without dyslexia. (see figure 2.6)

According to recent research as (Kandel et al., 2017; Afonso et al., 2019) view that spelling problems experienced by individuals with dyslexia seem to impact the rang to which linguistic processes affect word writing in which spelling to dictation is a more cognitively demanding task than copying in at least two aspects :

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- Firstly, during dictation writers must generate the spelling of the target words, while in copying the orthographic form is provided in the input. This may be a critical point for learners with spelling difficulties which explain the reduced for parallel processing observed in spelling .
- Secondly dictation require preserving the linguistic message in memory, while in a copying task this is commonly available during the production of the response.

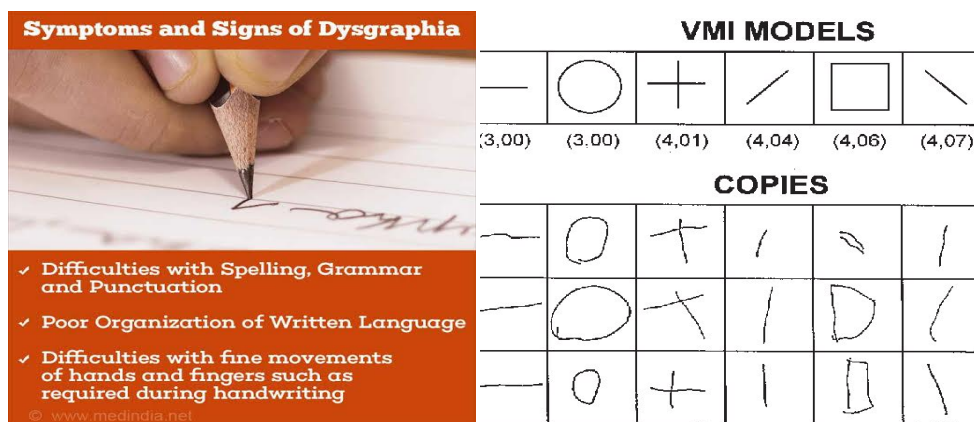


Figure2.6 : Spelling and Coping difficulties in children with dyslexia (adapted from <https://www.pinterest.com/pin/508062401713118806/>)

2.2.6. Gender impact handwriting

According to Schwellnus et al., (2012) suggesting that learner's gender engage significantly to the prediction of handwriting case.

however , (Blote & Hamstra-Bietz, 1991; Tamopol & de Feldman, 1987; Zivani & Elkins, 1984) believe that on measures of handwriting legibility and quality the writing of girls tends to be better than the writing of boys , it was expected that gender would make a significant support to the prediction of good or poor handwriting status.

Interestingly, a gender impact has been observed in handwriting acquisition, with girls presenting slightly higher quality and speed scores versus their male peers as well as gender differences in

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transcription skills could at least partly explain the text quality differences. therefore, the gender affect is an additional factor that has to be considered when predicting text quality.

Additionally, Berninger and Fuller (1992) investigated first, second and third graders and found that girls produced more words and clauses in narrative and expository composition than boys.

According to Knudson, Lee (1995; 2013) regarding the fact that girls have more positive attitudes than boys towards writing , such motivational factors have explained additional variance in text quality in some studies as Berninger and Fuller (1992) investigates found that produced more words and clauses in narrative and expository composition than boys in which the text quality of boys seems to be constantly lower than that of girls

Furthermore, Monroe & Sherman (1966) argue that the other gender differences found were in Handwriting on the Copying subtest of the Monroe-Sherman Test boys excelling in verbal fluency for oral language and girls excelling in orthographic fluency for written language .

To Sum up ,The evidence reviewed above suggests that a significant proportion of learners experience handwriting difficulties are likely to impact upon their ability to compose correctly written language researches expected that each of the following factors orthographic coding , finger function, dysgraphia and gender ...ect, would make a significant and unique contribution to the prediction of pupils' status as either a good or poor handwriting as well as for better enhancement through better diagnosis each of the previous internal factors which involved within the learner's abilities and functions .

Conclusion

The research reviewed above suggests that it is time to reconsider factors that may effect Handwriting, and in particular the external and internal which may impact middle school pupils' grade 6 those engaged with new foreign language . The evidence reviewed above suggests that a significant proportion of children experience handwriting difficulties Thus, School psychologists should be particularly sensitive to identifying learners in the such grades who may have difficulty with producing legible written language. Their problems may stem immediately from

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many factors even the one that we have not discussed in this study ,as well difficulties in acquiring handwriting skills may lead pupils to avoid writing and develop a mind set .Baker et al. (2003) stated that

“together with reading problems, writing problems lead to the greatest number of referrals to and placements in special and remedial education programs” (p. 110).

Research further needs to undertaken into the predictors of The extent to which each individual or environment factor contributes to handwriting deficit which remains unclear as researchers investigating the relationships between handwriting and the aforementioned factors have produced inconsistent results that cant be match with all school aged

Therefore, early identification of learners with potential handwriting difficulties is very important. Examining of handwriting problems may facilitate early intervention in typically developing handwriting performance and academic success of learners will be improved and they will be able to adapt to the new curriculum within extremity support in handwriting activities for them .

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2.3. Teaching handwriting

Introduction

Handwriting plays a key role in the academic life of learners despite the development of technologies, handwriting is most often used in everyday activities as well as handwriting results from the neuromuscular coordination of the human body it still an important part of their education process. Thus, it is needed to ensure students develop quality and legible handwriting.

Additionally, whatever the underlying cause, handwriting difficulties may lead to hesitance to write, underachievement .However, the teaching of handwriting in classroom is concerned with the questions and issues that teachers face during the process of teaching ; such as when joined writing should be taught, whether writers should be taught print script or cursive letters in the early stages, whether a particular model should be followed, the kind of writing instrument to use Consequently. studies found that a certain level of handwriting proficiency enables learners to make skillful use of handwriting as a tool to successfully carry out these complex school activities. Our question here :

2.3.1. Teaching Handwriting

Handwriting learning considered as one of the most difficult learning processes, which often presents significant challenges for many pupils .Hence, The most things educators can do to ensure that learners with poor handwriting develop good writing skills, besides teaching them spelling and basic writing processes, is to provide them with formal handwriting instruction, the most eventual goal of handwriting being to produce a legible trace on a sheet of paper. As a matter of fact, teachers inform their pupils about the correctness of their handwriting by giving them useful feedback about the final product as far as the quality of handwriting is judged by its visual trace .

Berninger and Fuller (1992) found that a lack of formal handwriting instruction may be especially problematic for children who have underdeveloped foundational skills and produce letter forms illegibly. Which clarified that teachers are obliged to give their learners the correctness basic for learning handwriting instruction .In other hand, Benbow (1995) suggested that the evaluation of the legibility of the written trace , is based on the diagnosis of poor

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handwriting. Hence pupils with illegible handwriting are often referred to occupational therapy (OT). Most researchers Talero- Gutierrez, Van Meerbeke, & Reyes, (2012) assumes that , learning requires a variety of skills such as: information processing, working memory retrieval, and visual motor integration .

While , Rogers and Case-Smith (2002) show that , legible written communication is essential for students to share knowledge with handwriting teaching it is widely recognized that kinaesthetic feedback is essential; because handwriting is a motor skill it does not and should not depend exclusively on visual feedback. It is means that , some of the movement training for handwriting should be carried out with the eyes shut to help children internalize the movement of letters. As a matter , if pupils lack proficiency in written communication , their composition skills will suffer, which can affect their self-esteem and grades.

However ,many researches (Berninger et al., 1997; Graham et al., 2000; Jones & Christensen, 1999) mentioned that the quality of handwriting has a noticeable effect on the writing and academic performance of school aged learners. As well as finding that reinforces the importance of identifying handwriting difficulties in order to reach Proficient handwriting that pupils need to acquire to meet the common demands in classroom work at middle school as early as possible

Moreover , researchers in the field have been developed many methods for the teaching and the evaluating of handwriting difficulties. depending on the causes, pupils may benefit from additional instruction with a supplemental handwriting program that will meet their unique needs. there are Several supplemental handwriting programs are available such as; Callirobics, Handwriting Without, Big Strokes for Little Folks, Sensible Pencil, and Other Groups. (Table 2) provides a brief description of the programs and Web addresses where readers can find more information about each program.

It suggested by researchers that the dynamic systems approach takes into account a multitude of factors that are believed to work together to influence an individual's performance (Kamm, Thelen, & Jensen, 1990). Under this framework, a student's skill with handwriting is thought to be a result of the interaction of various internal and external factors. Hence factors related to the task and the environment, such as those listed in the previous discussion above, should be evaluated , accommodations , and modifications needs to be put in place in order to support the development of handwriting skills also to overcome most pupils difficulties .

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Further, handwriting is a crucial skill that pupils must acquire during their school career as well as Plattor and McQueen (1986) suggesting that, in order to improving handwriting instruction in schools teachers needs to share their experiences and work together. thus, most researchers confirm that, Handwriting commonly supports engagement in a variety of occupations, including completing academic work, filling out applications, taking notes, writing lists, writing a message to another, or filling out a check (Feder & Majnemer, 2007; Santangelo & Graham, 2016).

Recent researches (Girard, Simonnet, & Anquetil, 2017; Patchan & Puranik, 2016) encourage educators to Giving the increasing presence of digital tools in the classroom, learning to write involves not only the practice of handwriting with pen on paper, but also the use of a variety of tools such ; real or virtual keyboard, pen or finger ...etc. as well as these new technologies can be used to deliver more individualized instructions and immediate feedback.

Therefore, learners needs to become into contact with the new teaching tools progressively, in order for they to become a part of the learning environment as smoothly as possible to achieve their academic purpose.

To sum up, researchers assume that, there are many unanswered questions regarding the effectiveness of the many different instructional practices and training programs currently used to teach handwriting especially for learners within handwriting difficulties needs more efficient and occupational treatment to over well their problems.

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Program	Description	Web address
Callirobics	This program, which is set to music, uses simple writing patterns that include straight and curved lines.	www.callirobics.com
Handwriting Without Tears	This program, which uses multisensory instruction strategies, provides strategies for consistent letter formation	www.hwtears.com
Big Strokes for Little Folks	This program offers worksheets for children to practice consistent	www.concentric.net/~paul1/bigstrokes.shtml letter formation
Sensible Pencil	In this program, students write 11 different strokes and combine them to make letters and numbers.	www.atclearning.com/sensiblepencil.asp
Loops and Other Groups	This program emphasizes the kinesthetic approach to teaching handwriting. Letters are grouped by common movement patterns.	www.otideas.com

Table 2.2 : Supplemental Handwriting Programs (adapted from Strategies to Support Academic Achievement Susan M. Cahill [Where-does-handwriting-fit-in.pdf](#)).

2.3.2. Handwriting Assessment

According to researches (Graham, 1992; Graham & Weintraub, 1996) argues that handwriting assessment can be considered as one of the most useful measures to investigate learners with difficulties during mastering handwriting skills as well as handwriting performance is related to academic achievement, especially composition and schools learners. It can further affect how long it takes pupils to complete written compositions, their facility at taking notes during lectures, and how frequently they write.

However, Rosenblum et al. (2003) agree that Assessments of Handwriting legibility are often globally scored, with a 'grade' awarded for whole texts developed a scale The Spelling and Handwriting Legibility Test (SaHLT) which attempt to overcome these limitations in order to measure spelling and handwriting based on the same test. The handwriting component assessed

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four separable dimensions, recognized also by other scholars to contribute to legibility: -letter formation, -letter spacing, -word spacing, and - line alignment.

Scholars highlight the main constructs assumed to be measured by each of the four dimensions. All four are related to motor skills, according Longcamp et al.(2008) agree that letter formation and word spacing are also likely related to spelling skills. in which Letter formation has been reported by Caravolas et al. (2012) to be related to letter knowledge an important spelling-related skill.

According to Graham (1986) insist that school psychologists must be awareness with the issues and procedures that are related to handwriting assessment. Therefore, they play an important role in the overall management of handwriting difficulties of school learners , whether as consultants to teachers as to how to assess handwriting, as planners and evaluators of programs that include goals for improving handwriting performance.

2.3.2.1. Handwriting Evolution

Weil and Amundson, (1996) ,explain that Informal methods of evaluating handwriting are also important in the overall assessment process. This includes direct observation of the learners in their natural setting ie. the classroom as well as interviews with the teacher and parent. Hence, This method of evaluation can provide valuable information critical to the pupil's handwriting performance and includes observation of their attention, behavior, seating also to the ability to perform different handwriting tasks

Further, researchers recommend that learners be taught to evaluate their own handwriting even at the initial stages of writing acquisition. Hence, They agree that, self-assessment would encourage pupils to improve their handwriting and to become aware of changes. According to Stowitschek et al.(1987) Studies indicate that students can be effective evaluators of their own academic product in order to assess their own handwriting, defined objective criteria and scales are needed.

In this case researchers asked learners to evaluate their handwriting according to five defined criteria: slant, size, space, shape, and general look. Although it was globally legible according to

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the handwriting evaluation score many of the learners were not satisfied with different aspects of their handwriting (e.g., slant, general appearance) .

According to Campbell (1989), believed that the use of formal or standardized evaluations are critical in the assessment process as they provide objective measures and quantitative scores. In addition, the use of quantitative tools are useful in answering research questions and advancing the field It is important that teachers be aware of the characteristics of the handwriting instrument they have selected, particularly the strengths and limitations in terms of reliability and validity .

In sum up, during the past years a wide variety of handwriting evaluation scales have been developed in an attempt to find an optimally reliable and practical method of assessing handwriting as Ziviani and Elkins (1984) view that evaluation by an experienced teacher remains the most comprehensive and efficient measure of overall legibility.

most researchers (Bezzi, 1962; Freeman, 1959; Heric & Erlebacher, 1963. et al) maintain that the examination of the early literature on handwriting evaluation development demonstrates a legibly trend in which global-subjective scales also paved the way for the development of specific-objective scales ,by allowing the pupils to self-evaluate, hence, the teacher or therapist can assess the accuracy of the pupil's knowledge of results and provide supplemental information to extend learning. According to Ziviani and Elkins (1984), Evaluation by an experienced teacher remains the most comprehensive and efficient measure of overall legibility.

2.3.2.1.1. The use of feedback and practice in handwriting assessment

The assessment of handwriting skills is characterized by many functions , methods and tools that used in order to improve handwriting legibility such as :

a- Feedback

According to News Media Research feedback needs to offer a chance for learners to judge their performance and evaluate it in relation to their changed work/learning strategies. Thus ,Feedback considered as an important component to promote motor learning in the educational domain. It

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raises learners' awareness toward their mistakes and sheds light on areas that improve competence then performance.

Most researches (Poole, 1991; Baker, 1999; Zwicker & Harris, 2009), clarify that Feedback can be intrinsic or extrinsic. As well as Intrinsic feedback primarily stems from the sensory system and provides information before, during, and after the movement such as; struggling writers may grip the pencil tightly and press firmly when writing; as a result, they receive intrinsic feedback which is interpreted as a sore hand when writing. While , Extrinsic feedback comes from external sources, such as information from a teacher or therapist to improve motor skill acquisition.

Therefore , It is better to provide specific feedback which can be written or oral to the pupils on what the needs to do the next time considered as key to enhancing motor learning the pupils becomes more aware to improve their writing production legibly .As Sullivan, Katak, & Burtner (2008), mentioned that children may benefit from feedback 100% of the time when first learning a skill .

b- Practice

According to Hoy, Egan & Feder (2011), Practice is one of the most important factors in improving handwriting , Asher (2006), defines practice as a key component of motor learning However, pupils with handwriting difficulties require blocked and constant practice to master letter formation without the pressure of worrying about content and grammar .

According to Lee, Swanson, & Hall (1991), believes that random practice tends to produce superior results in motor learning . As far as blocked practice is felt to be most beneficial in the early stages of learning, whereas random practice is felt to be most effective for students in the later stages (associative stage) of refining an already learned skill (Baker, 1999).

Poole and Baker (1991 ; 1999) view that the use of random and variable practice conditions yields better retention and can facilitate generalization and transfer of motor skills to the naturalistic (classroom) environment. Therefore, random order of practice of individual letters was incorporated into the letter review worksheets. This encourages the student to recall letter

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formation patterns out of the typical sequence practiced and strengthens the motor pattern associated with each specific letter. The student should also be encouraged to focus on good legibility (form, closure, quality, alignment, height and size of letters as well as spacing).

Moreover, Denton et al.(2006) explain that Practice During Functional Tasks Concepts from motor learning combined with traditional handwriting curricula and practice during functional tasks have been found to increase skills in pupils with poor handwriting. As well as pupils who are provided with formal handwriting instruction and supplemental writing activities may increase their proficiency. For example, teachers might consider offering pupils the opportunity to write extra activities besides completing class assignments .

Hoy et al.,(2011) examine handwriting interventions In a systematic review utilized by occupational therapists, it was suggested that handwriting interventions should be practiced at least twice a week for a total of 20 sessions in order to be effective They found that children who had greater than 10 hours of handwriting made greater gains in legibility than those who had less than 8 hours which effects their handwriting instruction, pupils may approach the task of handwriting more conscientiously if :

- Pupils know they are writing for real audiences and not just for practice.
- Pupils prefer to write with and on various media .
- Instruction and practice with handwriting may support pupils academic achievement.
- Pupils may learn to spell words more accurately through the process of handwriting

2.3.1.1.2. School-Based Occupational Therapy

According to Case-Smith (2005) emphasis that Occupational therapists may work within the school to improve the occupational performance of pupils who struggle with academic participation for a different reasons, including handwriting. However, Barnes and Turner ; Reid et al. (2001; 2006),argue that to enhancing a student's skill level in written communication teachers have to recognized OT's contribution.

Moreover, Donica (2015) confirm that occupational therapists have a significant skill set to facilitate the development of handwriting and have been called to be involved in handwriting

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syllabus in the academic setting . School-based occupational therapists may provide handwriting intervention in various capacities including consultation, with teachers and pupils . In addition, Amundson and Weil (1996), believed that therapists (OTs) are able to determine in what area of handwriting a student is having difficulty: near or far point copying, dictation, environmental factors, or motor, sensory, psychosocial or cognitive factors .

According to most researchers (Hanft and Place 1996; Reid et al. 2006; Wehrmann et al. 2005) argue that the consultative model was introduced to school-based OT practice which promotes both formal and informal sharing of ideas and strategies with the teachers supporting the pupils's purpose While, Teachers using OT strategies in the classroom can enhance student success also to provide instructional strategies to help their pupils develop legible handwriting throughout increasing their comfort level for instruction as well as this consultative service is limited to working with individual teachers and can be limited by lack of time for collaboration within a classroom schedule or the inability of the OT to attend team meetings.

Although educators may be well informed of handwriting instruction methods, it may be necessary for teachers to be trained in certain interventions used by occupational therapists especially when handwriting instruction is embedded in the classroom. More instance ,Case-Smith and her colleagues (2012) had two occupational therapists train all members of the co-teaching teams that delivered the intervention in their study . researches suggested some of the following implications for occupational therapy practice:

- Occupational therapy practitioners needs continue to advice for their involvement in general education problem-solving teams at the school level, which may include providing recommendations for handwriting syllabus .
- Occupational therapy practitioner consultation and intervention with teachers can be successful in employing handwriting curricula.

2.3.2.1.1.3. Investigating the Handwriting Process of Children with Difficulties

According to many researchers (Van Galen, 1991; Van Galen & Morasso, 1998; Shomaker & Van Galen, 1996), handwriting is a multilevel process consisting of numerous, coordinated actions of the cognitive and motor system of which the final, static outcome, cursive script, is the result In general.

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The development of computerized technology over the last twenty years has made it possible for researchers to examine handwriting in a whole new light, enabling the quantitative measurement of the handwriting process instead of relying only on the assessment of the written product alone.

Longstaff and Heath (1997) view that this key in directing is appropriate since handwriting is a highly dynamic process also, the production of legible handwriting requires movement patterns that can be reproduced with little variability in time and space.

Conclusion

The research above discussed general points concerned with the external and internal factors that may impact learners handwriting legibility also have discussed handwriting teaching and assessment as well as pupils with handwriting difficulties are at risk for participation deficits across a range of occupations. It is also important to determine why some learners have problems acquiring this skill. Unfortunately, less is known about the causes of handwriting difficulties than the process of handwriting itself thus the handwriting difficulties or as they are known as factors cannot be avoided at all by any kind of remedies, yet it can be improved with the efforts of both teachers and parents.

Moreover, professionals are often asked to work with learners who experience difficulty mastering handwriting skills. Occupational therapists may utilize a variety of interventions when working with children with handwriting difficulties, including teachers training , practice and feedback ,moreover the various combination of interventions and instruction used in each school level may contribute to improved performance.

Hence , learners in the school are most eager to accept the challenge to learn various functions , also parents and school community, who may support them to develop the necessary skills that help to enhance proficiency in their handwriting , also learners should be enhanced to be more aware of the importance to write legible and to have a personal handwritten and a good orthography.

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In the near future researches want to implement a forum area, intended to promote more interaction between teachers and learners difficulties. Believing this will be possible, because, as described above, the teacher will have to provide a background contextualizing image and the path that pupil must pursue to achieve the final goal. Based on this path the system will automatically generate the coordinates for mastering legible handwriting quality as far as L2 acquisition may involve other learning mechanisms such as cross- language transfer (Pasquarella, Chen, Gottardo, & Geva, 2015). This study also supports collaborative efforts between teachers and occupational therapy practitioners in teaching handwriting skills and gives occupational therapy practitioners more evidence on which to base recommendations in school problem-based teams and curriculum committees in the future.

Further research should include more involvement of occupational therapy practitioners, not only with individual learners but also at the classroom and system level. To establish more evidence regarding best practices in handwriting instruction , research should also develop tool to measure handwriting legibility for middle school levels in order to achieve academic level .

To this end, teachers need to consider the enforcement of effective, whole school handwriting policies. These would be aided by a specific framework with a standard set of criteria which recognizes the importance of handwriting skills and how to minimize most of the factors that impact learners' with poor and good handwriting as well as a handwriting policy should be a core priority for all grades schools.

Chapter Two : Research Methods and Data Analysis

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الملخص

Résumé

3- Investigation the impact of External & Internal factors on EFL learners' handwriting legibility

Introduction

This chapter will be devoted to the practical part of this research which investigates the handwriting skills and the impact of external and internal factors on EFL learners' handwriting legibility , the first practical is questionnaire for middle school teachers and second one is classroom Observation to the 1st year Middle School Pupils during their handwriting performance in order to collect and analyze data .

3.1.Research Objectives

The objective of this research is to shed the light on the impact of external and internal factors on legible handwriting of middle school learners , thus an exploratory case study was made using two research instruments to collect data to make a conclusive result. The first one is teachers' questionnaire, in which tries to investigate the English teacher' attitudes toward the factors that impact the learners handwriting legibility , also it investigates their methods and strategies of teaching and assessing handwriting skill , the second one is classroom observation with 27 pupils at Saad Ibn Ouakas Middle School , in which the researcher tries to know whether or not this factors external or internal one plays a role in reducing the writing competence of the learners .

3.1.1. Research assumption

We assume that legible handwriting is a significant tool that is needed to be master by middle school learners hence it is impacted by several external and internal factors .

3.1.2. Research approach of this study

This research work is based on qualitative research tools that serve the objective of our study Thus; we made use of the questionnaire, the classroom observation, as the main research techniques to achieve our objective which is data elicitation from (13) English teachers , and 27 pupils EFL learners .

3.1.3. Data Gathering tools

For the purpose of reaching our objectives , we used one questionnaire for the teachers' includes twenty one questions divided into Four section about handwriting skills and the factors that impact legible handwriting process . The second tool is classroom observation for the pupils at middle school which is divided into two parts . The first part concerns with determining their performance in handwriting , whereas the second part concerns with observing their handwriting difficulties .

3.1.4. Population and Sample of the study

27 pupils have been selected to be observed during the classroom activities , from population of 272 pupils of 1st year Middle School Saad Ibn Ouakas Middle School- Ain el Khadra, M'sila . The reason behind Choosing 1st year pupils is that they have been studying and experiencing English as a foreign language for the first time they still exhibit many difficulties in handwriting , especially during handwritten activities and letter they can provide us with reliable Observation for the most handwriting difficulties facing and the reasons behind it , thus to enhance their legible handwritten level .

In addition, to thirteen (13) teachers teaching English Language from different middle schools around the country completed another practical online questionnaire about the same issues. Our goal is to demonstrate those various factors that can impact learners during their classroom learning to discover ways to improve instruction in this area.

3.2.1 . Classroom observation

The observation checklist was designed to observe the pupils in their natural learning environment .The main aim of this data collection tool is to identify and explore the different ergonomic factors that affect pupils' handwriting during copying which could not be answered through the questionnaire. Observing pupils during copying and writing tasks can provide us

with the various factors that may influence their handwriting. The observation is done as the pupils write. Some questions to consider are: are pupils using a mature grasp? Is the position of the grasps appropriate? Are the pupils placing the appropriate amount of force on the writing tool or on the paper? Is the writing too light or too dark? Is there consistency in the amount of pressure exerted? How are they positioning their paper? And are they able to form letters correctly? .

3.2.1.1. Aims of the classroom observation

The main aim of the observation is to establish the observable factors associated with poor handwriting and to identify the components of illegible handwriting.

3.2.1.2. The Procedures of classroom observation

The classroom observation took place on March 13th/14th and May 24th/25th, 2022 in Saad Ibn Ouakas middle school- Ain el Khadra, M'sila. We attended four normal sessions (lessons) and two exam sessions of 3rd trimester. The first was a French exam which started at 08:00 a.m., and took 2 hours. The second exam was an English language exam which started at 08:00 a.m. and took a duration of 1 hour and 30 minutes. Moreover, the group being observed consists of 27 pupils. Furthermore; the observation is a structured observation through the use of an already prepared checklist

3.2.1.3. Description of the checklist

To identify the problems of pupils handwriting an observation checklist was developed to diagnose these problems. It consists of five main sections: posture, tools, pressure, pen hold and general features related to spacing, copying and letter formation.

The posture section includes three main items: the position on chair, chair height and desk height. The second section contains: paper position and the stabilization of the non-dominant hand. The third section, pressure, includes two items: pressure on paper and pressure on the

writing tool. The fifth section , general features, includes three items: letter size , spacing and copying .

The checklist is designed in a form of a table (see Appendix two, p.) on which the observer record his comments and what he notices.

3.2.1.2.1.Posture

This section was designed in order to observe if the pupils sit properly and what are the different positions they exercise during writing. In addition to chair and desk height.

3.2.1.2.2. Tools

This section aims to check the position of paper and the effective stabilization of paper with the non dominant hand

3.2.1.2.3.Pressure

This section aims to notify the pressure of the writing tool on the paper and the excessive pressure on pencil.

3.2.1.2.4.Pen hold

This section was designed to observe the placement of fingers from the tip of the pen. Moreover, to check how pupils grasp their pens.

3.2.1.2.5. General features

This section is used to check if spaces between words are appropriate and if they are formed in a correct size on the line

3.2.1.3. Analysis of classroom observation

3.2.1.3.1. Section one : posture

3.2.1.3.1.1. Position on chair

As seen, the chair caused some problems for both short and tall students. short students' chairs were too high, causing their feet to not be totally level on the floor and, in some cases, dangling; as a result, maintaining postural stability while writing will be extremely difficult, and this will undoubtedly influence pupils' body posture. As a result, students who adopt this posture will not feel at ease when writing because considerably more effort will be necessary on their part.

While short students have chairs that are too high for them, tall students have chairs that are too low for their long legs.

3.2.1.3.1.2. Chair height

It was also noticed that the relative height of the seat and desk affects students' posture since the table's height may not conform with the seat's and vice versa. This variance causes students to sit in incorrect positions, which influences their handwriting.

3.2.1.3.1.3. Desk height

We observed that short pupils who sit in high desks hunched their shoulders. Tall pupils who sit in low desks lean on their non-dominant hand instead of stabilizing the paper

3.2.1.3.2. Section two: tools

3.2.1.3.2.1. Paper angled appropriately

Most students place their papers correctly in regard to handedness they positioned their paper to the side rather than in front of them ; however, some students arrange their sheets

directly in front of them, causing their elbow to push up against their body, making handwriting difficult, and exhausting.

3.2.1.3.2.2. Non- dominant hand stabilize the paper

When it comes to the non writing hand, some students have been noticed placing it on their lap and bending their back to the point where their head is extremely close to the answer page. Some students have been observed placing their heads on the desk and beginning to write.

3.2.1.3.3. Section three: pressure

3.2.1.3.3.1.Pressure on paper

We observed that some pupils exercise too much pressure on the paper which causes dark letters, paper rip and the impression of the writing appears on the next page. Other pupils who hold the pen far from the tip write in too light letters and it causes unreadable writing.

3.2.1.3.3. 2.Pressure on pen

We spotted some pupils who put too much pressure on their pens. We found that depending on how much pressure is applied to the pen, pupils form either too small or too large letters.

3.2.1.3.4. Section four: pen hold

3.2.1.3.4.1. Pencil grip

It was observed that pupils' fingers are either too close to the tip or the top of the pen, which could cause major problems when writing, particularly in terms of letter shape and speed of handwriting

3.2.1.3.4.2 .Grasp

The majority of pupils write using the tripod pencil grip, which consists of the thumb, index, and middle fingers and it is considered to be the best pencil grip. However ; some pupils use the quadripod grasp

3.2.1.3.5. Section five : general features

3.2.1.3.5.1. letter size

It was also noted that the letters were not written in the proper line spacing and did not continue on the line. It is also worth noting that the pupils struggled with the size of upper and lower case letters. They do not respect Consistency in size (including capitals vs. lower case) , all of the letters were made in an illegible size by the pupils.

3.2.1.3.5.2.Spacing

The pupils used inappropriate spacing between each word (and, in some cases, between each letter) the spacing is inconvenient to letter's size

3.2.1.3.5.3. Copying

Students wrote each letter separately, referring to the original text, and then copying the letters they remembered in their thoughts onto their answer papers or copy- books increasing the pen lift. As a result, several features of handwriting, such as speed, spacing, and letter size, will be affected.

3.2.1.4. Discussion of the findings of the classroom observation

When the classroom observation Checklist was analysed , it became evident that speed and legibility alone could not be used to screen the handwriting problems. Other elements that

distinguish poor handwriting have been observed, and these should be viewed as indicators of problems that require additional investigation. The ergonomic factors that must be considered when assessing handwriting performance include sitting posture, chair and desk height, paper positioning, pencil grip, pressure, furniture, spacing and letter formation.

When writing, sitting in a correct posture enhances stability and gives a solid basis for written output, as well as increasing attention and focus. It is critical to ensure that the pupil is at ease when sitting at his or her desk or table. When students' posture is unsteady, they must expend extra energy to maintain their stability and balance. This can have an impact on their ability to function and execute fine motor skills as well as schoolwork.

Correct positioning helps to obtain proper pencil grips. When writing, it is critical that all students sit appropriately. Sitting correctly and appropriately provides the student with a solid posture from which to develop their handwriting. Good shoulder control requires a well-supported trunk. It can be difficult for children who have difficulty moving to sit comfortably or with stability. It is much more critical for these children to correct their posture in order to improve their handwriting.

If the chair is too high pupils' feet are not on a stable surface and they must focus more on keeping their own posture rather than on their task. If it is too low, their knees will be too low, making them uncomfortable for lengthy periods of time. If the table is too high, it leads the pupils to sit with hunched shoulders and the hand function is restricted. In addition, the student's head is frequently held uncomfortably near to the desk. If the table is too low, the pupils lean forward excessively and they support their head with their non-dominant hand rather than stabilizing the paper. Sassoon believes that furniture plays an important role to establish comfortable sitting, he stated that (2003, p. 30)

” This involves varying the size of both chairs and tables; it is not just a matter of large chairs for small children or smaller chairs for large children in order to sit comfortably at a table. (This solution would leave the smallest children with their legs dangling in mid air whilst the largest pupils would find that the lower part of their legs were cramped.) Tables of different heights may be needed. A rough guide to a comfortable table height is that writers should be able to rest their arms on the table without raising their shoulders or rounding their backs”.

When a pupils' chair isn't the ideal height for him or her, his or her feet aren't supported, however when the chair is the perfect height, the student may easily establish the proper writing posture as stated by Sassoon(2003, p.30)

Children cannot sit comfortably and use their hands and bodies effectively if chairs or tables are either too high or too low. They may begin to adapt their bodies accordingly and once an awkward body posture becomes habitual it may not improve even when appropriate furniture is eventually provided. Some pupils may be so affected that their discomfort turns to pain. Hands, arms or necks can hurt so much that some children may almost stop writing

However, finding the correct surface height and positioning every student optimally can be a challenge.

How the pupils are positioning their page on the writing surface and the height of the chair and desk in the school setting are important factors that affect handwriting quality. According to Sassoon(2003, p.33):

If children are not taught where to place their paper when they first start to learn to write, they may, for whatever reason, get used to placing it somewhere unsuitable. The body then adjusts itself to the accustomed paper position, often contorting itself in the process. It should be the other way round: the paper should be placed to suit the writer .

Placing the non writing hand on the lap or the head on the desk prevents students from seeing the entire answer sheet while handwriting; this, in turn, prevents accurate eye-hand coordination; as a result, students' handwriting will be affected because eye-hand coordination is crucial in letter formation, spacing, and font size. When writing, the non-writing hand should always be used to stabilize the paper. This supports the body and allows the writing arm to move freely while developing writing skills.

The paper should be positioned according to the child's writing hand. This allows the child to view his work as well as the board from a great distance as Sassoon stated (2003, p.32)

It may be easy enough to explain that most children, in order to sit comfortably to write, and at the same time to see what they are doing, should have their paper over to the side of the hand that they write with. That means that right handers need their paper over to the right side, and more importantly, left-handers need their paper over to their left side. Children can then slant their paper if they wish. There can be no absolute rule because it is not always the hand that has to be considered

Mixing small and large letters, incomplete letters, writing the written material in multiple directions, and irregular letter forms and sizes are just a few of the issues that can occur. This writing problem directly affects the legibility

To sum up, the information acquired from the observation was assessed using a qualitative analysis; each item on the checklist was analyzed separately; and finally, a discussion of the tool's findings was conducted.

3.2. Description of the teachers' questionnaire

The teachers questionnaire is used as a data collecting tools designed to investigate teachers' and pupils' attitudes and performance towards handwriting skills and the affects of the external and internal factors on EFL learners thus to manipulate and develop 1st year middle school 6grade learners' legible handwriting performance

3.2.2.2 Aims of the teachers' questionnaire

This questionnaire aims at investigating the teachers' opinion and experiences above handwriting skills in addition to investigating the major difficulties that their pupils struggle in order to enhance their handwriting legibility and quality.

3.2.2.3 The distribution of the teachers' questionnaire

The teacher questionnaire contains Twenty One (21) questions divided into Four sections the first one is devoted to background information; the second one deals with introduction to handwriting and the third one deals with the importance of teaching handwriting the fourth one is addresses to Teachers' Attitudes towards the Positive and the Negative Effects of Pupils' Handwriting the questionnaire is devoted to finding out teachers' point of view concerning the external and internal factors that may impact pupils handwriting and about the process of teaching and assessing legible handwriting in addition to how they apply feedbacks and methods in classes in order to access learners difficulties . The teacher questionnaire was administered to EFL teachers groups. The questionnaire was sent online due to some health conditions (pandemic).

3.2.2.4 Data collection and analysis of the teachers' questionnaire

Section One: General Information

Item 1. Would you specify your degree?

Table 3.1: Teachers' Qualification

Options	Respondents	Percentage
a. License	6	46%
b. Master	7	54%
c. Magister	0	0%
d. Doctorate	0	0%
Total	13	100%

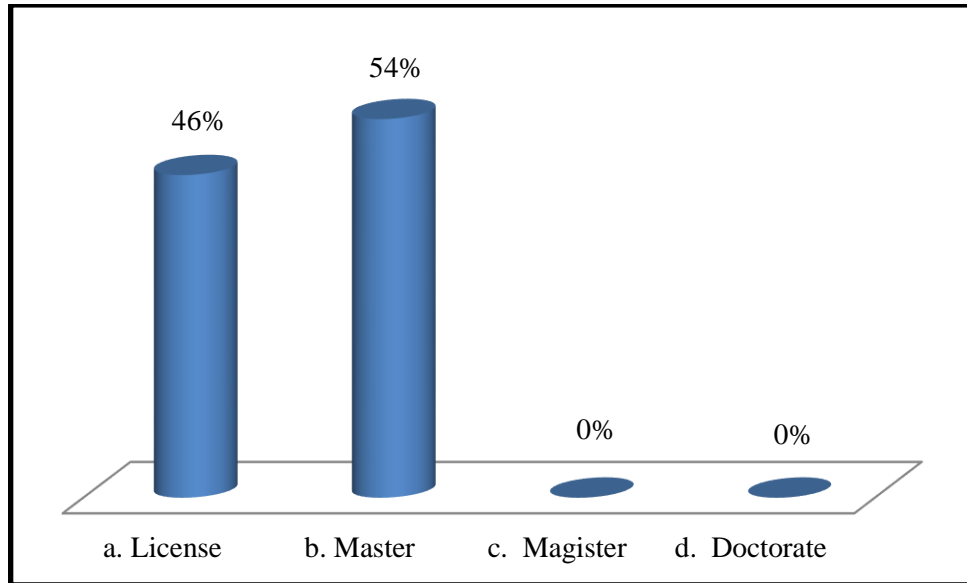


Figure 3.1:Teachers' Qualification

Question one aims to know Teachers' degrees. Results above the table and diagram show that most participating teachers are 7 (54%) hold Master degree , and 6 teacher (46%) hold license degree . Knowing the qualifications of our sample is very important factor These differences in the teachers' degree allow us to have different points of view and perceptions about our subject.

Item 2.How long have you been teaching English in middle school?

Table 3.2:Teachers' Experience in Teaching in Middle School

Options	Respondents	Percentage
a. 1-5 years	5	38%
b. 5-10 years	1	8%
c. More than 15 years	7	54%
Total	13	100%

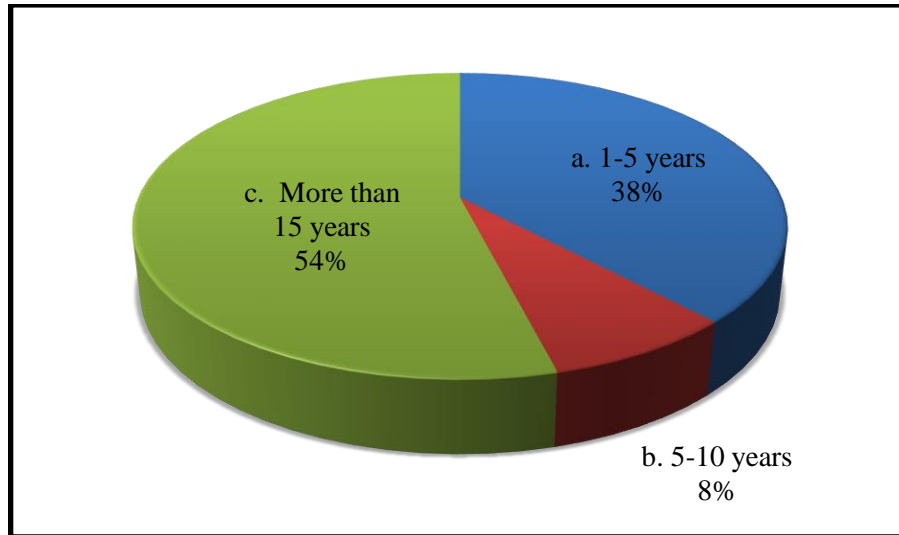


Figure 3.2: Teachers' Experience in Teaching in Middle School

Question 2 aims is to know teachers' years of experience in teaching English language at middle school level . the table and the pie chart show that 7 teachers (54%) have taught English more than 15 years and 5 teachers (38%) taught English 5 to 10 years , while only 1 teacher (8%) have teaching English 1 to 5 years. Also , knowing the experience of our sample is very important factor, These differences in the teachers' experience allow us to have different points of view and perceptions about our subject.

Section Two: Introduction to Handwriting

Item 3. According to you, developing one's writing skills from an early age is:

Table 3.3: The Importance of Developing One's Writing skills from an Early Age

Options	Respondents	Percentage
a. Very important	9	69%
b. Somehow important	4	31%
c. Not important at all	0	0%
Total	13	100%

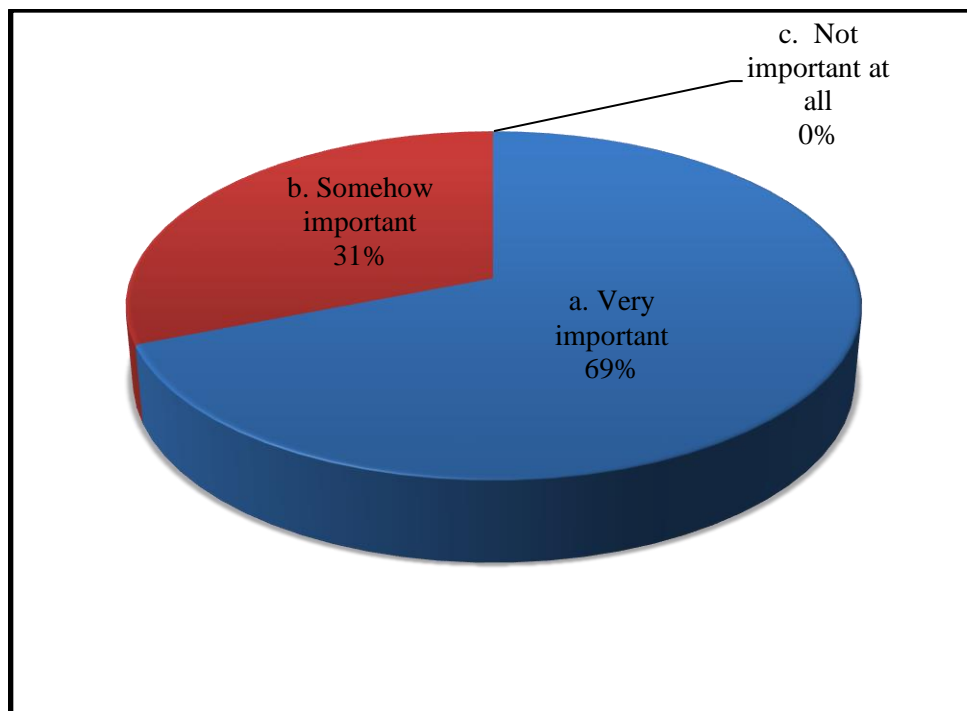


Figure 3.3: The Importance of Developing One's Writing skills from an Early Age

The following pie-chart illustrates the findings , above it is noted that 9 teachers (69%) considered that a very important thing in order to develop their pupils written production in early ages , while 4 teachers (31%) think that its somehow important .

Teachers' justifications:

a) For 'Very important'

- To express their ideas in a good way
- It helps to build their vocabularies .
- As they said "good readers make good writers". So, in order to improve our learner's writing skills, we should assess their reading abilities by giving them short stories and some useful articles.
- It's very important that pupils acquired the first base need to be correctly to achieve better performance in the future
- To communicate and express ideas

- "To gradually acquire an advanced writing skill."
- To avoid fossilized errors
- To communicate and organize ideas
- Because writing skill is one of the fourth skills learners use it to express their knowledge and express their ideas through written language writing is a fundamental skill learners need it from early years of education.

b) For ‘Somehow important’

- Just focus on oral and listening
- Not too early because the kid muscles are weak.
- "It is better to teach them to express themselves first"
- Depending on age not for children under 7

Item 4. How do you find teaching and assessing writing?

Table 3.4: Teachers’ Attitudes towards Teaching and Assessing Writing

Options	Respondents	Percentage
a. An easy task	1	8%
b. A hard task	12	92%
Total	13	100%

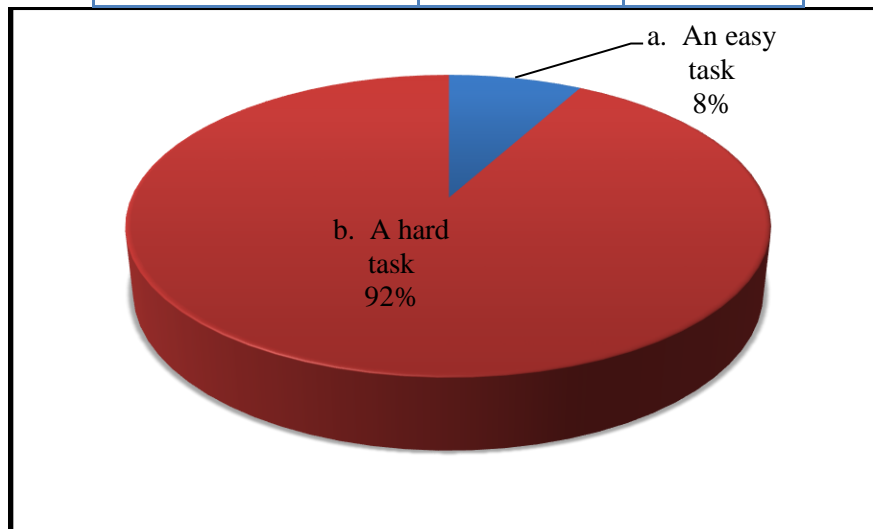


Figure 3.4: Teachers’ Attitudes towards Teaching and Assessing Writing

Question 4 aims to investigate teachers' opinion about teaching and assessing writing skills. Results show that most of 12 teachers (92%) considered it as a hard task to achieve while only 1 teacher (8%) considered it as an easy task referred to their pupils' level and comprehension. The pie-chart above represents the results of this question.

Teachers' justifications

a) For 'An easy task'

- Using the assessment grid makes it easier.

b) For 'A hard task'

- Assessing writing is a hard task especially for first year pupils. There are some mistakes that prevent pupils from writing such as lack of reading and they usually use L1 in their writing.
- Both considered as heavy process need to be well constructed
- Especially in middle school with adolescents
- In the middle school is hard because many pupils learned writing in a bad manner so it is not easy to rectify not only wrong ways but also wrong beliefs.
- It needs patience and focus.
- Learners' skills face difficulties despite that teachers apply all strategies
- "only few learners produce something legible"
- Pupils cannot express their ideas clearly
- "Students are not trained to write most of teachers neglect this skill"
- Teaching writing is a hard task because teachers need feedback and previous knowledge about how to teach writing also need a competent and experienced one who can convey the information with an easy and smooth way. In other hand, assessing writing is a hard task because need a Teacher who knows procedures of assessing writing
- Writing depends on other subskills
- You have to be a reader before being a writer

Item 5. How do you consider your pupil's level in handwriting skill?

Table 3.5: Teachers' Evaluation of Their Pupils' Level in Handwriting Skill

Options	Respondents	Percentage
a. Good	0	0%
b. Medium	7	54%
c. Weak	6	46%
Total	13	100%

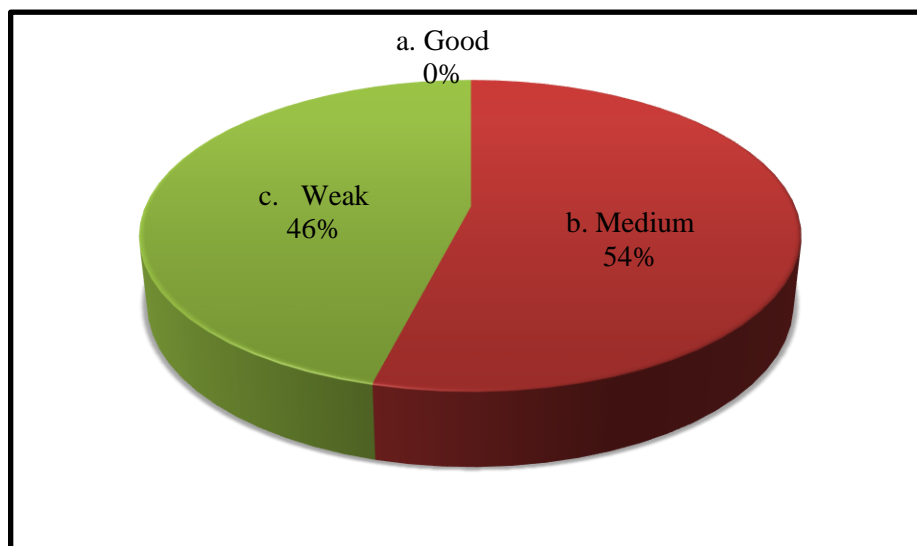


Figure 3.5: Teachers' Evaluation of Their Pupils' Level in Handwriting Skill

The Question main purpose is to identify teachers evaluation of their pupils level in handwriting skills , the graph above show that 7 teachers (54%) view that as a medium , other 6 teachers (46%) said that its weak , The pie-chart and the table above reveals the results of this question.

Item 6. From the following, what are the main aspects that have greater effect on your pupils' written production in the exams? (You may choose more than one aspect).

Table 3.6: The Main Aspects That Have Greater Effect on Pupils' Written Production in the Exams

Options	Respondents	Percentage
a. Lack of vocabulary	0	0%
b. Grammatical mistakes	0	0%
c. Sentence structure	0	0%
d. Punctuation	0	0%
e. Handwriting	1	8%
f. All of them	4	31%
g. More than one	8	61%
Total	13	100%

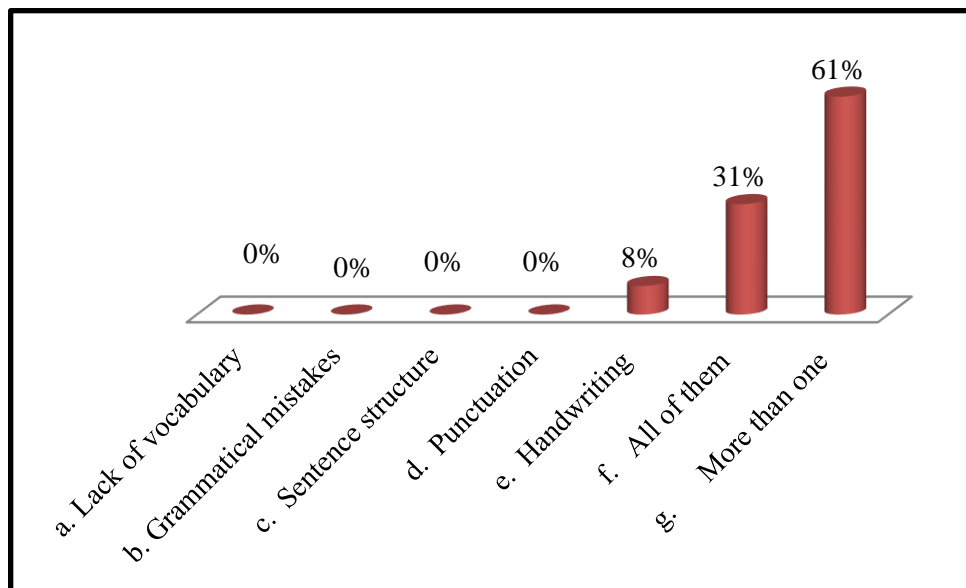


Figure 3.6: The Main Aspects That Have Greater Effect on Pupils' Written Production in the Exams

The aim of this question is to investigate teachers' opinion on the main aspects that have great impact on their pupils' written production. In the figure above, teachers' answers according to the

choices that given to them , 8 teachers 61% said that its more than one aspects , 4 teachers 31% said that all of them , only1 teacher 8% answer handwriting .

Item 7. When correcting your pupils' exam sheets, do you take their handwriting into consideration?

Table 3.7: Teachers' Responses about whether they take their pupils' handwriting into consideration or not

Options	Respondents	Percentage
a. Yes	6	46%
b. No	7	54%
Total	13	100%

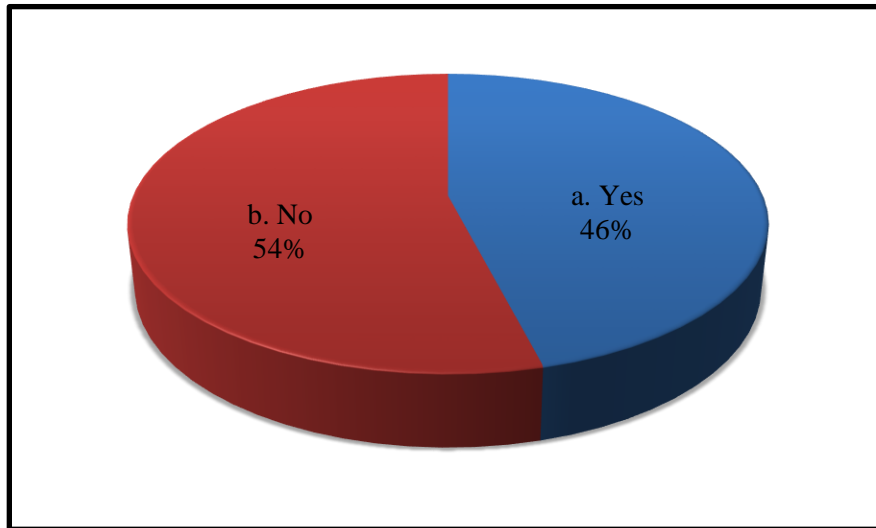


Figure Table 3.7: Teachers' Responses about whether they take their pupils' handwriting into consideration or not

This question aims to identify whether teachers taking handwriting in consideration while correcting their pupils exam sheet , the results show above that 7 teachers 54% said No , Whereas 6 teachers 46% said Yes .

Item 8. What do you do when finding unreadable exam sheets?

This questions aimed to investigates teachers attitudes when they found unreadable exam sheets ,most participants answer the following :

- Sometimes I even ask a pp to read his paper
- Try to understand the most readable words then I pass with remarks to enhance his /her handwritten
- Hardly keep correct it.
- I don't bother myself. Simply I will give them 0
- I try to read many times
- I don't correct
- It affects scoring
- Repeat the exam for the pupil
- I try to make my best to read it
- Try hard to understand, no other option.
- I try and try before taking my final decision

Item 9. Do you think that legible (capable of being read or deciphered) handwriting is helpful to students because: (You may choose more than one answer).

Table 3.8: The Benefits of Legible Handwriting

Options	Respondents	Percentage
a. It gives a bad/negative first impression to the reader	1	8%

b. It affects' readers' motivation to read	0	0%
c. It makes teachers at ease when correcting	0	0%
d. It affects pupils' final score	0	0%
e. It affects pupils' academic progress	1	8%
f. All of them	3	23%
g. More than one benefit	8	61%
Total	13	100%

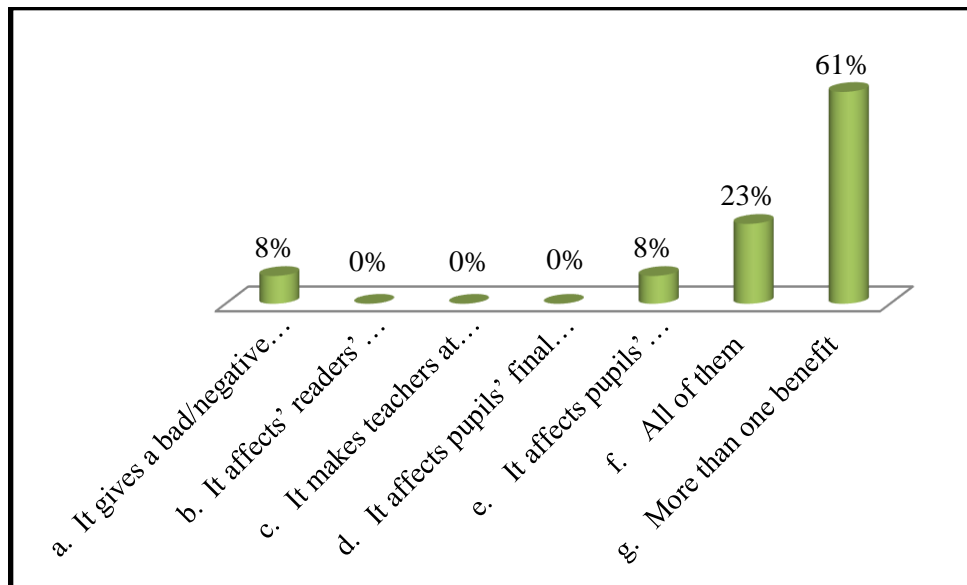


Figure3.8: The Benefits of Legible Handwriting

This questions tends to identify teachers point view above that legible handwriting is helpful to pupils because of ,the graph above shows that 8 teachers 61% answer More than one benefit , 3 teachers 23% answer All of them , only 1 teacher 8% said that It gives a bad/negative first impression to the reader , other 1 teacher 8% said that It affects pupils' academic progress . It show that Teachers attitude toward legible handwriting seems to be positive .

Others

- It's important for pupils to master legible handwriting as well as to achieve their self-esteem and personal level.

Section Three: The Importance of Teaching Handwriting

Item 10. Do you think that teaching pupils how to develop their handwriting is:

Table 3.9: Teachers' Attitudes towards Teaching Pupils How to Develop Their Handwriting

Options	Respondents	Percentage
a. Important	13	100%
b. Not important	0	0%
Total	13	100%

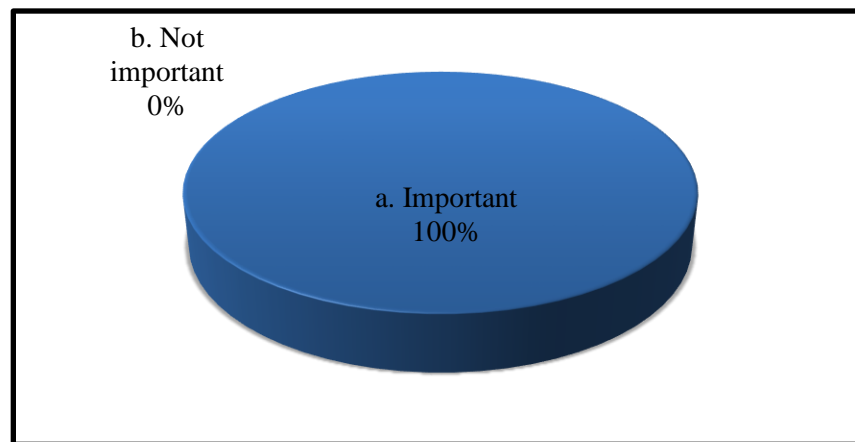


Figure 3.9: Teachers' Attitudes towards Teaching Pupils How to Develop Their Handwriting

The question aims to investigate the teachers' attitudes on how to teach pupils to develop their handwriting. The pie chart above represents the results, all 13 participants (teachers) 100% said it is important.

Teachers' justifications

- We always try to convince them to improve their h/ writing as far as bem exam is concerned
- Because it's an essential process growth with them till the end
- Site and just write
- If they include one session for handwriting, it would be better.
- Increase self-esteem since we congratulate the best ones
- To fix their hands on good handwriting
- Through oral and written feedback
- It is an important skill that would be used in the daily life of the learner
- It is important for their study
- Because handwriting is the mirror that reflects the ability of the pupil through which can express his ideas and knowledge
- Ministry of education must devote special classes or sessions to improve pupils' handwriting.
- For them, for the reader and the marks

Item 11. Is there any part of the current syllabus that focuses on handwriting?

Table 3.10: Handwriting as Part in the Current Syllabus

Options	Respondents	Percentage
a. Yes	2	15%
b. No	11	85%
Total	13	100%

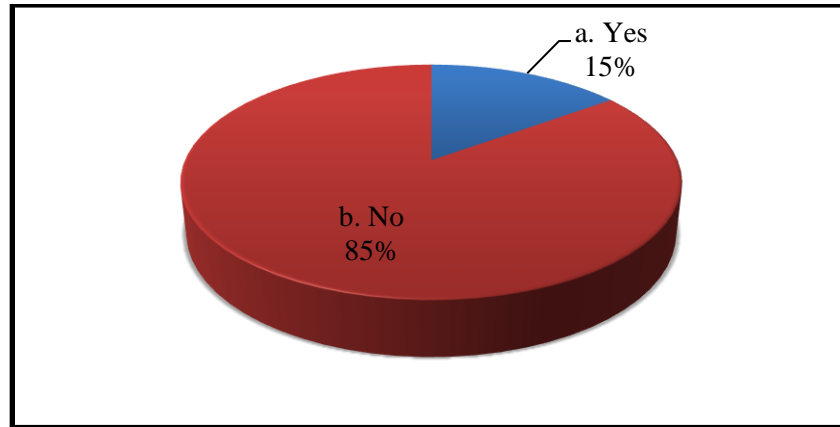


Figure 3.10:Handwriting as Part in the Current Syllabus

The goal of this question is investigating teachers' views if there any part of the current syllabus focuses on handwriting , the pie chart above show that 11 teacher 85% answer NO , while other 2 teachers 15% answer Yes . The current syllabus designer should consider handwriting teaching as apart parcel in the teaching curricular in order to enhance handwriting skills correctly base .

Teachers' justifications

a) For 'Yes'

- It is a physical competency that should be focused on during all lessons' copying
- It is important

b) For 'No'

- As a homework or AT the end of the session or through games.
- Because handwriting is an important skill that needs to be regarded from syllabus maker as well as its part from learners learning and the useful means that transmitted their achievement
- Because it is vital skill needed by pupils, without handwriting they cannot write through it the teachers
- Dictation
- I don't think it should
- It gives more self-confidence to learners

- It is an essential skill
- To help and teach writing skill.
- Well, handwriting might help pupils to express themselves in a good way. It might open many doors to them in order to advance their learning process.

Item 12. Have you ever participated in training or in an online course about handwriting ?

Table 3.11: Participating in a Training or an Online Course about Handwriting

Options	Respondents	Percentage
a. Yes	2	15%
b. No	11	85%
Total	13	100%

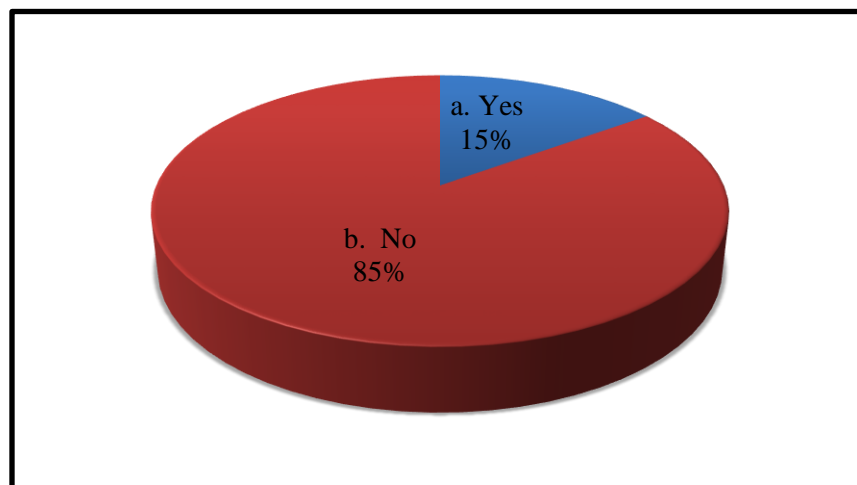


Figure 3.11: Participating in a Training or an Online Course about Handwriting

The goals of this question is to know if teachers have participated in training or an online be course concerned with handwriting , the results show that 11 teachers 85% said NO , other 2 teachers 15% said Yes . It seems that teachers of middle school with no training courses in handwriting due to lack of such programs in their curricular trainings . thus educational

specialties needs to reconsider the handwriting training programs as a significant stage to the teachers training .

Item 13. From your experience as a teacher of English language, which of the following strategies do you think is more effective for enhancing middle school pupils' handwriting?

Table 3.12: The Most Effective Strategies for Enhancing Pupils' Handwriting

Options	Respondents	Percentage
a. Assigning extra-curricular handwriting tasks and/or activities	5	38%
b. Reward and punishment	1	8%
c. Peer-tutoring sessions	0	0%
d. Teaching pupils how to write in the print way	2	16%
e. All of them	5	38%
Total	13	100

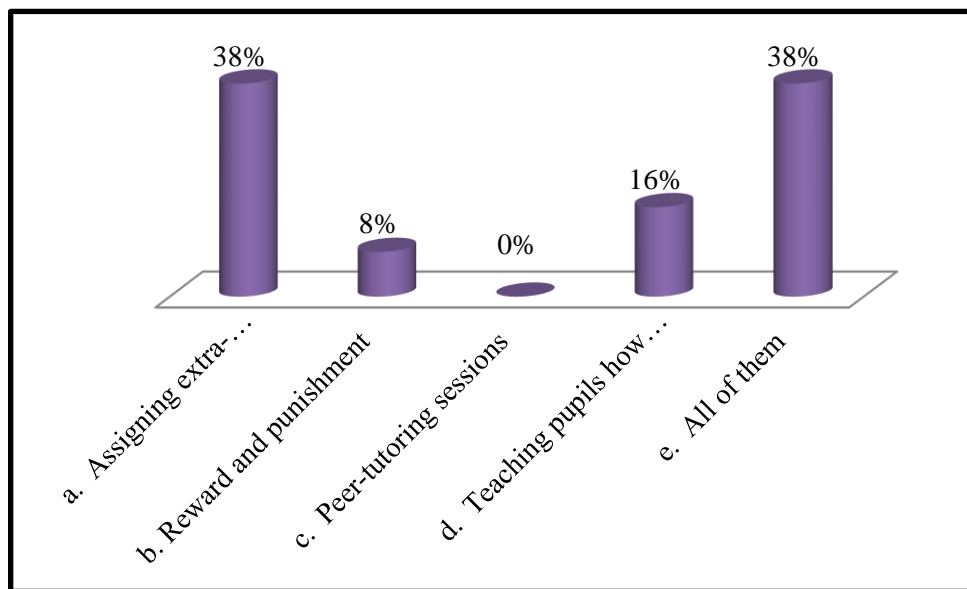


Figure 3.12: The Most Effective Strategies for Enhancing Pupils' Handwriting

According to the choices were given to investigated teachers' opinion on which effective strategies they do for enhancing middle school pupils' handwriting, the graph above show that 5 teachers 38% said All of them, other 5 teachers 38% said Assigning extra-curricular handwriting tasks and /or activities, while 2 teachers 16% said Teaching pupils how to write in the print way, only 1 teacher 8% said that Reward and punishment. It shows that each teacher is using various strategies refer to their learners type of deficit in order to reduce it and enhance their handwriting.

Other teachers suggest the following strategies :

- Giving useful feedbacks written or oral that helps them the maximum
- I presented a topic on handwriting during a workshop

Item 14. Does the students' handwriting matter for you when giving the final score?

Table 3.13: Teachers' Attitudes towards Pupils' Handwriting

Options	Respondents	Percentage
a. Yes	7	54%
b. No	6	46%
Total	13	100%

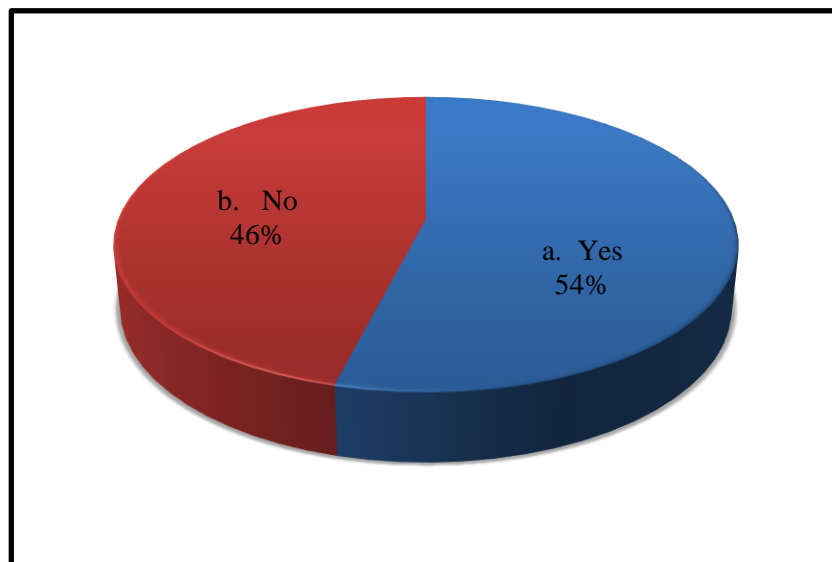


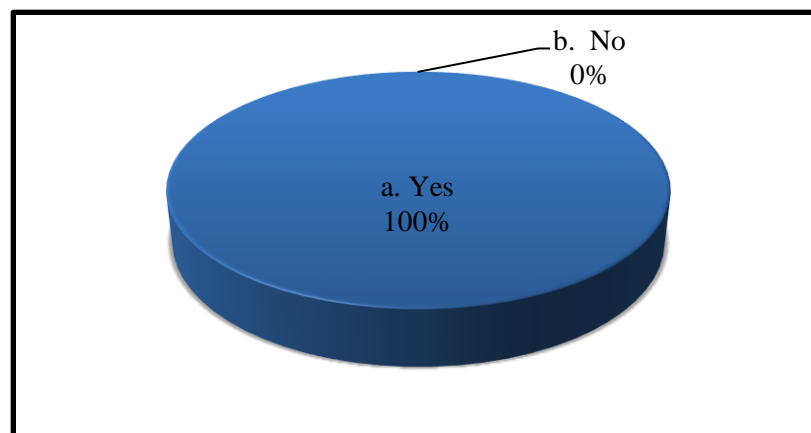
Figure 3.13:Teachers' Attitudes towards Pupils' Handwriting

The purpose of this question is to know teachers attitude above the handwriting of their pupils while giving the final score , results show 7 teachers 54% said Yes, 6 others 45% said No. it seems that most teachers gives some attention to their pupils handwriting while correcting and giving scores as a tool of motivation to make them aware in the future .

Item 15. When finding some students' poor handwriting, do you encourage them to develop or to ameliorate their handwriting?

Table 3.14:Teachers' Attitudes towards Their Pupils' Poor Handwriting

Options	Respondents	Percentage
a. Yes	13	100%
b. No	0	0%
Total	13	100%

**Figure 3.14:Teachers' Attitudes towards Their Pupils' Poor Handwriting**

The Question obtained to know teachers point view , towards their pupils' poor handwriting , weather they encourage them to develop or to ameliorate their handwriting , results show that majority of the participants 13 teachers 100% answer Yes . Teachers response toward their

pupils poor performance referred to their experiences in order to ameliorate their handwriting level in various interventions that were suggested in the following .

If yes, please explain how:

- Because they need to improve their handwriting especially in their formal exams
- Punish them.
- By giving them some resources that help them to do so.
- I just tell them orally
- Positive and negative feedback
- I frequently highlight the problem and ask them to improve their handwriting
- Ask them to improve their handwriting by the repetition of writing some alphabet and phrases and passages with both print and cursive styles
- Praise and reward
- By giving them pieces of advice and writing remarks or observations AT the bottom of their copybooks

Item 16. Which of the following signs/symptoms that are likely to appear on learners with handwriting difficulties? (You may choose more than one sign).

Table 3.15: Kind of Signs/Symptoms of Poor Handwriting

Options	Respondents	Percentage
a. They usually do not complete assignments	0	0%
b. They do not complete their assignments in time	1	8%
c. They do not take notes	0	0%
d. They have poor class attendance	0	0%
e. More than one symptom	9	69%
f. All of them	3	23%
Total	13	100

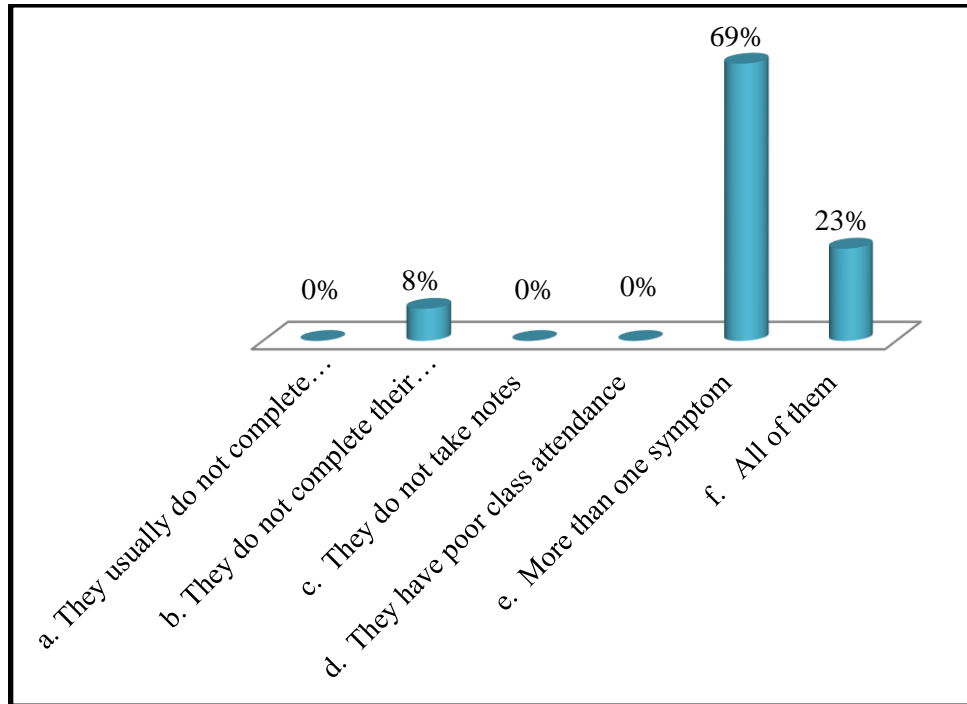


Figure 3.15: Kind of Signs/Symptoms of Poor Handwriting

The aim of this question is to investigate teachers' opinion, on which signs that are likely to appear on learners with handwriting difficulties, 9 teachers 69% said More than one symptom, 3 teachers 9% said All of them, while 1 teacher 8% said They do not complete their assignments in time. In this case teachers need to be more concentrate to such signs which are able to recognize their pupils problems behind poor handwriting performance.

Others:

- They have bad memory to store and retrieve what they learned in written form
- It is due to some illnesses

Item 17. According to you, which of the following personal factors greatly affects learners' handwriting quality?

Table 3.16: The Effects of Personal Factors on Learners' Handwriting Quality

Options	Respondents	Percentage
---------	-------------	------------

a. Learners' attitude towards writing and handwriting	3	23%
b. The fine motor (The coordination of small muscles to control precise movements in the hands and face)	1	8%
c. Learners' vision difficulties	1	8%
d. Visual-Motor Integration (The process that links what the eye sees to what the hand produces)	1	8%
e. Learners' emotions	0	0%
f. Perception/spatial requirements (direction, size, shape, slope, and positioning)	1	8%
g. All of them	6	45%
Total	13	100%

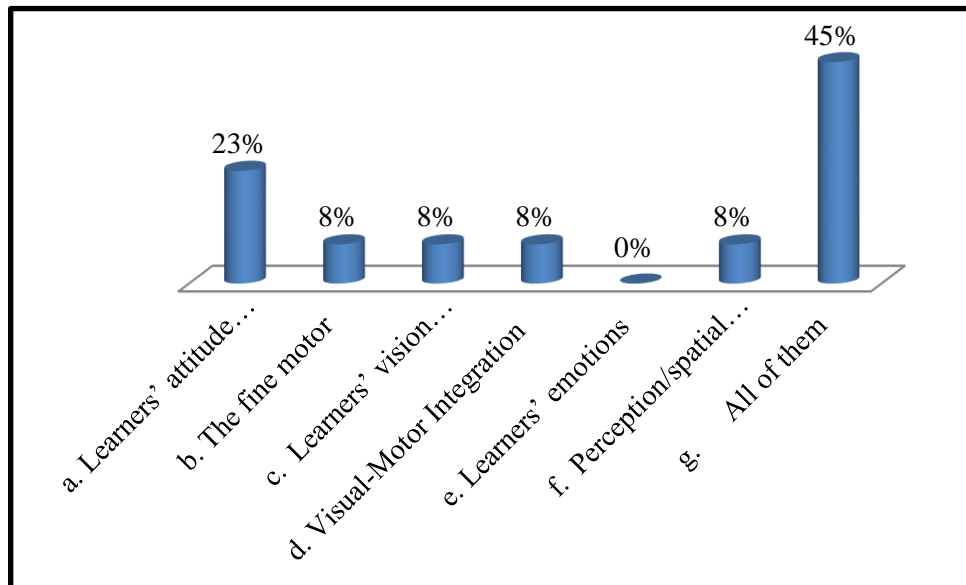


Figure 3.16: The Effects of Personal Factors on Learners' Handwriting Quality

This question aims to investigate teachers' opinion on which personal factors greatly affect learners' handwriting quality. The results show that 6 teachers (46%) said 'All of them', 3 teachers (23%) said 'Learners' attitude toward writing and handwriting', while 1 teacher (8%) said 'The fine motor', other 1 teacher (8%) said 'learners' vision difficulties', also only 1 teacher (8%) said 'Visual-

Motor Integration (The process that links what the eye sees to what the hand produces) . It seems that teachers should be well considered to this kind of difficulties which may cause future problems to the development of their teaching process .

Other personal factors were suggested :

- Orthographic- coding, Pressure. Dysgraphia

Item 18. According to you, which of the following external factors greatly affects learners' handwriting quality?

Table 3.17: The Effects of External Factors on Learners' Handwriting Quality

Options	Respondents	Percentage
a. Lack of curricular and/extracurricular handwriting courses/activities	9	69%
b. Lack of teacher's feedback	0	0%
c. Writing instruments' quality (The pen/pencil, the paper, the table, etc)	0	0%
d. All of them	4	31%
Total	13	100%

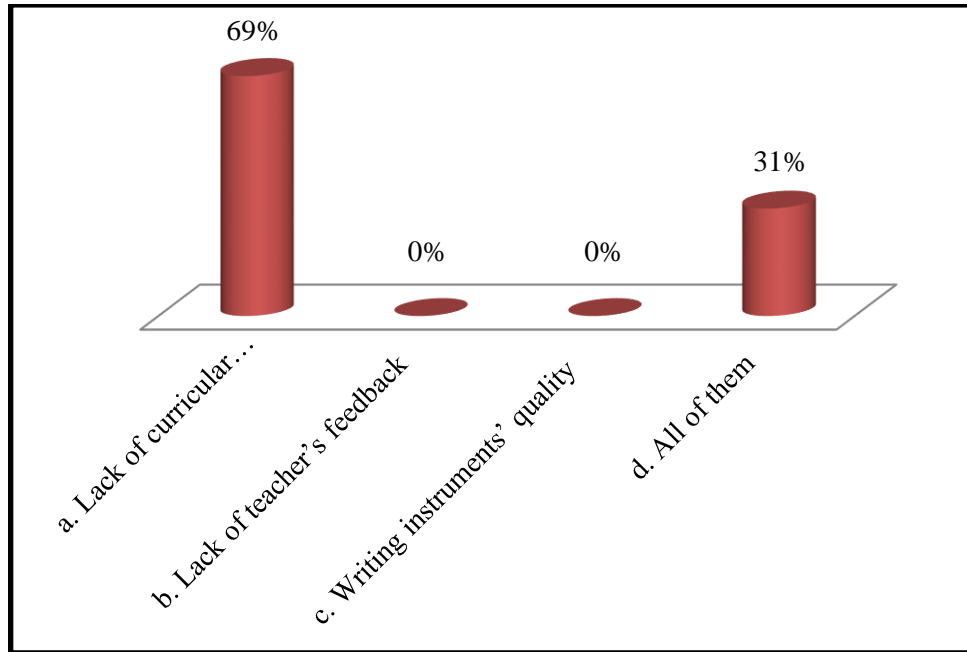


Figure 3.17: The Effects of External Factors on Learners' Handwriting Quality

The purpose of this question is to identify teachers' opinions on which external factors affect their learners' handwriting quality. 9 teachers (69%) said Lack of curricular and/extracurricular handwriting courses/activities, other 4 teachers (31%) said All of them. As well, it reveals that most of the external factors that impact the pupils' legible handwriting is due to the syllabus lack of good interventions and instructions of teaching and assessing handwriting skills.

Other external factors were suggested :

- Materials such as pen and paper also social personality

Item 19. According to you, which factors greatly affect learners' handwriting quality?

Table 3.18: Types of Factors that Greatly Affect Learners' Handwriting Quality

Options	Respondents	Percentage
a. Personal factors	9	69%
b. External factors	4	31%
Total	13	100%

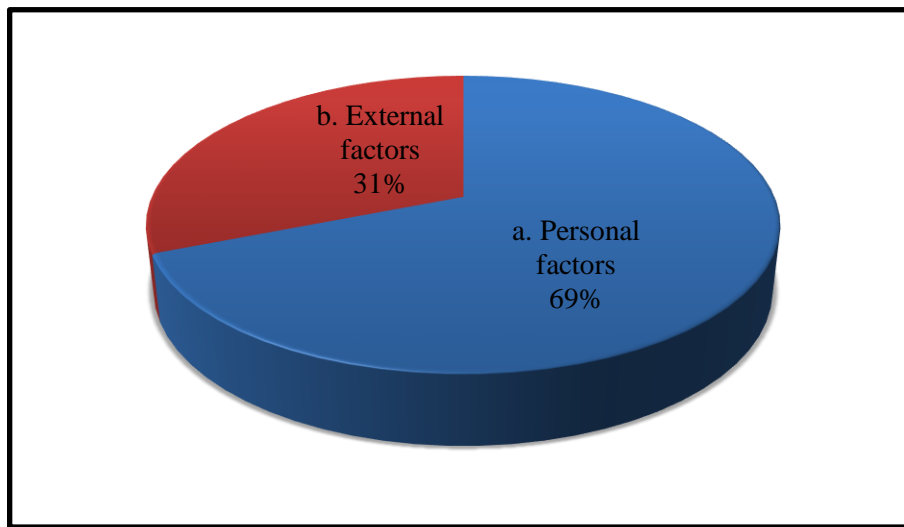


Figure 3.18:Types of Factors that Greatly Affect Learners' Handwriting Quality

This question aims to clarified teachers opinions' on which factor that may affects their pupils handwriting quality , from the pie chart above it is remarked that 9 teachers 69 % said Personal factors , other 4 teachers 31% said External factors .It seems that most of the teachers observe that their learners are affected by their personal difficulties .

Teachers' justifications

a) For 'Personal factors'

- Tools affect handwriting but they do not lead to total illegibility
- Hence it esteemed from the learners themselves
- It depends on the learner's personality
- Motivation to teach and emotional factors.
- I think both Factors.

- All principles are shown and explained by the teacher however learners fail in developing their handwriting
- They should write more
- Purely psychological

b) For ‘External factors’

- Teachers parents ' interests courses ...etc.
- Pupils are shaped the way there have raised them and the way their teachers have trained them.
- Sometimes the type of pen and paper position the high of the table influence the pupil's handwriting quality.
- Imitation of others' handwriting

Section Four: Teachers’ Attitudes towards the Positive and the Negative Effects of Pupils’

Handwriting

Item 20.To what extent do you agree or disagree with the following statements:

Statements:

Statement A:Handwriting is one of the most important means of communication used by humans even with modern society's dependency on computers.

Table 3.19 : the importance of handwriting skill

Statements	Respondents	Percentage
Strongly agree	7	54%
Agree	4	30%
Neutral	1	8%
Disagree	1	8%
Strongly disagree	0	0%

Total	13	100%
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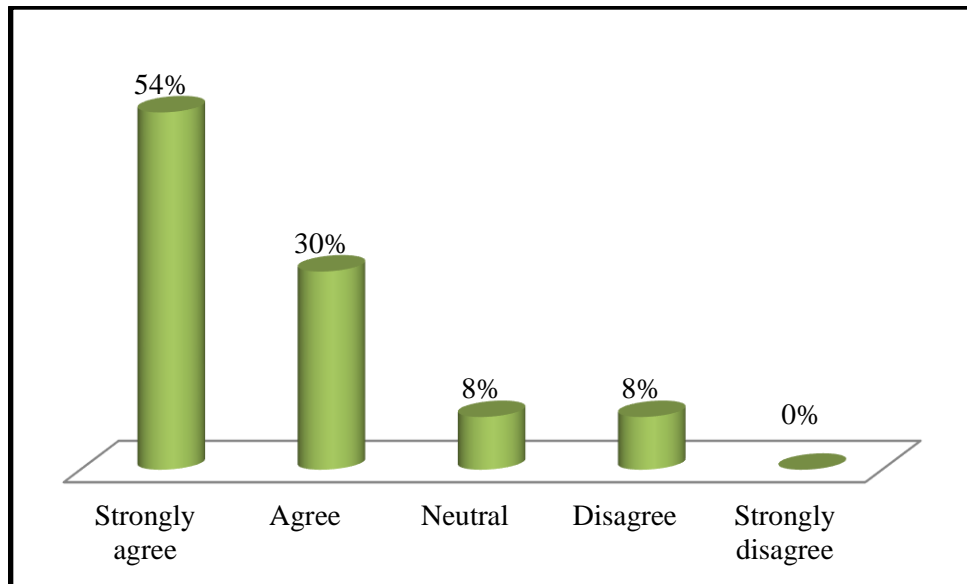


Figure3.19 : the importance of handwriting skills

The purpose of this question is to show agreement and disagreement above the importance of handwriting even with spread of technology tool that society depend on , the results show that 7 teachers 54% are Strongly agree with the statement , 4 teachers 30% Agree , also 1 teacher 8% Neutral , while 1 teacher 8% Disagree . it shows that despite the widespread of using technology tools, teachers still aware on the role of handwriting skills in order to develop their pupils educational progress .

Teachers' justifications :

a) For 'Strongly agree'

- Computers are not available anywhere handwriting is a means of communication it is a part of humans identity
- Although the spread of the technology tools handwriting still the most important process which express others written form
- To entertain, inform, persuade, and express feelings.

- Handwriting is much better than using a keyboard. It is proved scientifically.
- A know how tool to express one's emotions
- All social media depends on writing
- Even with the development of the technology and improvement of main of communication handwriting remains a great importance in this digital age because it allows pupil's to take notes quickly and easily when the Teacher is talk

b) For 'Agree'

- Since the world did not reach the project of 00 paper .handwriting remains of vital importance
- Only in written form.

c) For 'Neutral'

- Not all specialties require good handwriting.

d) For 'Disagree'

- I succeeded with no good handwriting

Statement B: According to some scientists, handwriting is considered as an essential ingredient for success in school, and in building learners' self-esteem.

Table 3.20 : The role of handwriting in building learner' self-esteem

Statements	Respondents	Percentage
Strongly agree	7	54%
Agree	5	38%
Neutral	0	0%
Disagree	1	8%

Strongly disagree	0	0%
Total	13	100%

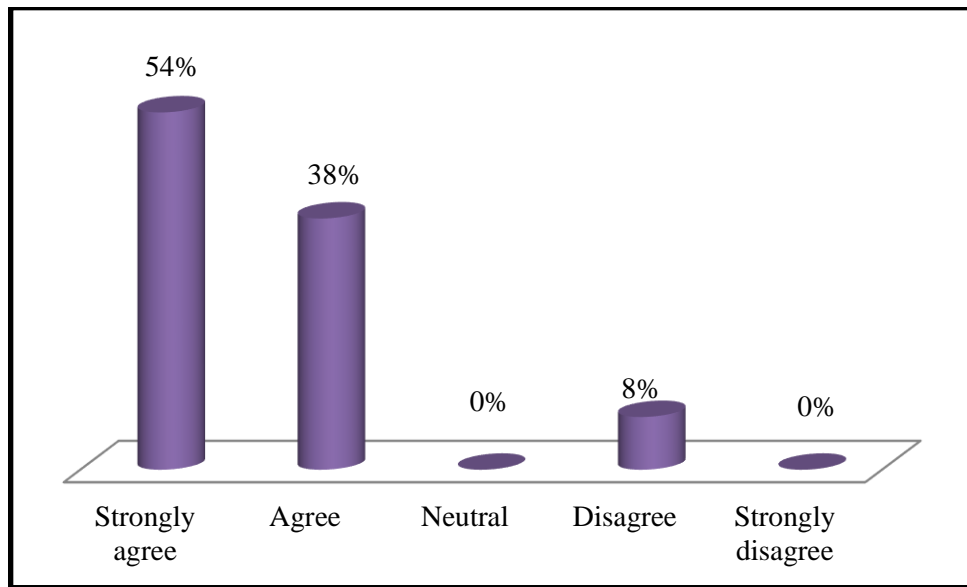


Figure 3.20 : The role of handwriting in building learner' self-esteem

In this Question teachers are required to show their agreement or disagreement on the statement which say that Handwriting is considered as an essential ingredient for success in school , also building a learner's self-esteem , 7 teachers 54% are Strongly agree , 5 teachers 38% Agree , only 1 teacher 8% Disagree .

Statement C : Handwriting helps in promoting intellectual abilities better than using computer

Table 3.21 : Handwriting improve learners intellectual abilities

Statements	Respondents	Percentage
Strongly agree	6	45%

Agree	4	31%
Neutral	1	8%
Disagree	2	16%
Strongly disagree	0	0%
Total	13	100%

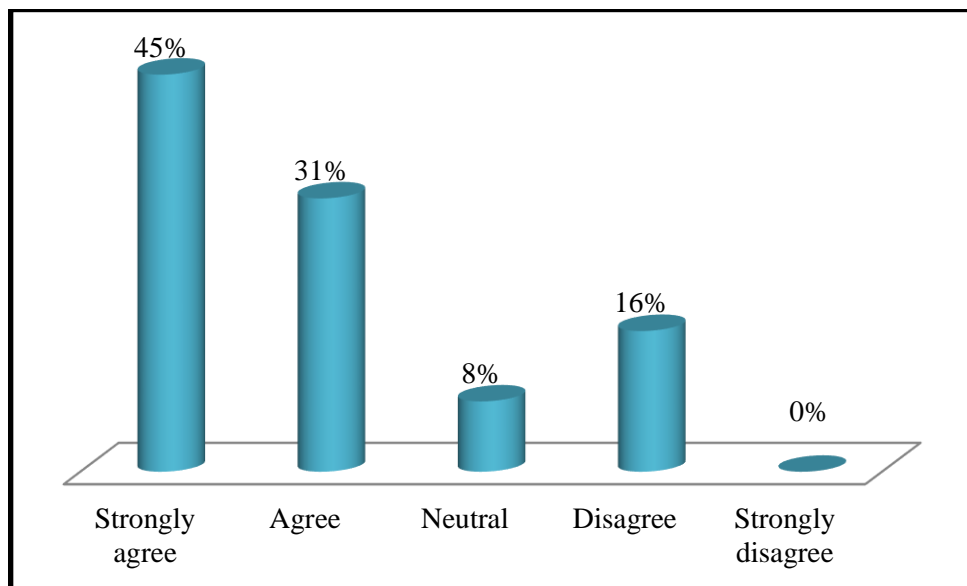


Figure 3.21 : Handwriting improve learners intellectual abilities

The purpose of this question is to identify teachers' view on which tool is useful that helps their pupils in promoting their intellectual abilities , it is noted that 6 teachers 45% are Strongly Agree that handwriting is the useful tools , other 4 teachers 31 % Agree , only 1 teacher 8 % Neutral , while 2 teacher 16% .

Statement D: According to some scientists, handwriting is considered as a tool to evaluate the learner's intellectual abilities.

Table 3.22 : Handwriting as a tool to evaluate the learner's intellectual abilities

Statements	Respondents	Percentage
Strongly agree	5	38%
Agree	4	31%
Neutral	1	8%
Disagree	3	23%
Strongly disagree	0	0%
Total	13	100%

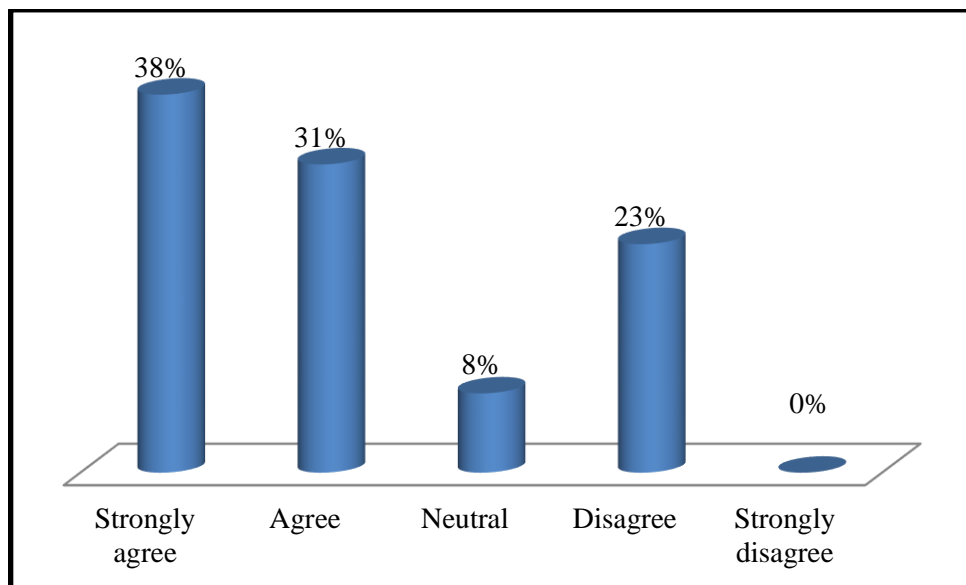


Figure 3.22 : Handwriting as a tool to evaluate the learner's intellectual abilities

This Question is put forward to express teachers agreement or disagreement that Handwriting is considered as a tool to evaluate the learner's intellectual abilities , the results show that 5 teachers 38% are Strongly agree , 4 teachers 31% Agree , 3 teachers 23% Disagree , while only 1 teacher 8% said Neutral . it seems that most teacher considered handwriting skill as a process to evaluate their learners intellectual abilities which reflect on the pupils writing production .

Teachers' justifications

a) For 'Strongly agree'

- The amount and the richness of their production . The topics they can write about.
- Through their handwriting Teacher can know their level , abilities
- Because good handwriting is a sign of an organized person.

b) For 'Agree'

- Yes because it enhance learners to be more flexible and self-esteem
- Through writing the learner can communicate
- It is a tool to evaluate themselves

c) For 'Neutral'

- It has no relation with the intellectual side

d) For 'Disagree'

- I actually teach learners who have poor handwriting but they get full Marks and have good intellectual capacities
- What handless people who are excellent

Item 21. How does handwriting quality impact the overall development of a learner? (You may choose more than one answer).

Table 3.23: The Effects of Handwriting Quality on the Overall Development of a Learner

Options	Respondents	Percentage
a. Poor handwriting contributes to poor grades in class tests	0	0%
b. Pupils with good handwriting feel motivated to learn	3	23%
c. Examiners are frustrated in marking work with poor handwriting	2	16%
d. Teachers form negative attitude on pupils with poor handwriting	0	0%
e. All of them	2	16%
f. More than one effect	6	45%
Total	13	100%

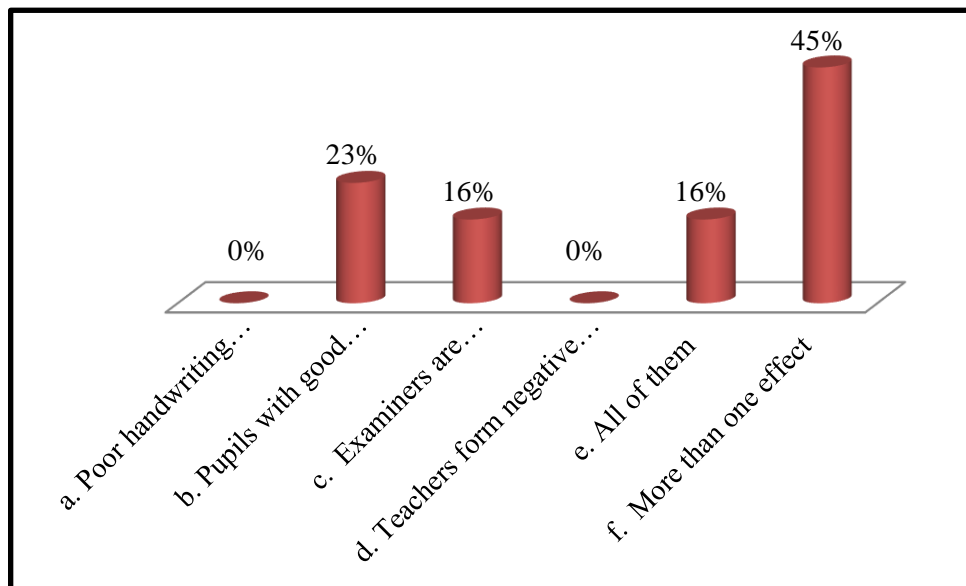


Figure 3.23: The Effects of Handwriting Quality on the Overall Development of a Learner

This Question aims to investigate teachers' opinions' toward the effects of handwriting quality on the overall development of their learners , the results shows that 6 teachers 45% Said More than one effect , 3 teachers 23 % said Pupils with good handwriting feel motivated to learn , also 2 teachers 16 % said Examiners are frustrated in marking work with poor handwriting , while other 2 teachers 16% said All of them .

Other teacher specify the following :

- Quality of handwriting measures the pupils abilities
- Generally bad handwriting causes the teacher to form a good impression about the learner's level ,his intellectual capacities and his motivation.

3.3.Discussion of the Main Results

The questionnaire was addressed for English language teachers at middle school . The whole numbers questioned teachers were Thirteen (13). The aim behind this questionnaire is to finding out teachers' point of view concerning handwriting skills despite the factors that impact their pupils legible writing .The findings of the questionnaires revealed that teachers had similar views concerning some issues, but they differ in other respects. For instance, majority of the participant teachers agree that developing One's Writing skills from an Early Age is an important thing , beside Knowing the experience of our sample is very important factor, regarding that most of them have License and Master degree, and they all have a long experience in teaching English in middle school ,These differences in the teachers' experience allow us to have different points of view and perceptions about our subject .

In other hand , when asking teacher whether teaching handwriting is a hard or an easy task most of the considered that as a hard task except one teacher consider it as an easy task , which demonstrate that teaching handwriting is worthy a needed to be well regarded in order to accomplish better results , concerning the teachers view about the Factors that Greatly Affect their Learners' Handwriting Quality and legibility most of them agree that the personal factors (internal) which impact more their learners performance ,with different justification obtained from their experience in teaching handwriting skill . In other hand majority of the teacher said that Lack of curricular and/extracurricular handwriting courses/activities may affect too as an external factor .

The researcher has noticed that the majority of the participant teachers who took part in providing their views to fulfill the questionnaire proposed, showed their awareness about the importance of the most effective Strategies for Enhancing Pupils' Handwriting which reveals through Assigning extra-curricular handwriting tasks and/or activities beside other strategies . As they give arguments include: Giving useful feedbacks written or oral that helps them the maximum , and presented a topic on handwriting during a workshop.

The researcher has also noticed that majority of the English teachers in middle school have not engaged in any kind of programs or trained course concerning handwriting , therefore they need to be trained in Courses about Handwriting in order to be able to overall their learners poor handwriting difficulties .

In addition; the majority of teachers' agreed that handwriting is the most effective tool that can be used to develop learners' intellectual abilities than using computer . Furthermore , handwriting can be considered as keys element to evaluate learners intellectual abilities and to build their self-esteem during the learning process . As they give argument include: The amount and the richness of their production .Through their handwriting Teacher can know their level

abilities , and Because good handwriting is a sign of an organized person It is a tool to evaluate themselves.

To sum up this discussion , For the sake of testing the hypotheses which were formulated by the investigator at the beginning of this work which was designed for middle school English teachers and their learners, the researcher will try to interpret the results obtained from teachers' questionnaire and the classroom observation which supply with large amount of data and reactions. The first hypothesis denotes that “ *Are there any effective assessment and teaching tools used by teachers to measure the learners handwriting legibility and how can they improve it* ” the results obtained from the questionnaire reveals that most teachers considered that teaching and assessing handwriting in a hard task especially for middle school first year , which means that it s hard to measure their legibility too referred to learner's level , intellectual capacities and motivation. Thus it can be said that the first hypothesis is valid.

The Second hypothesis denotes that “ *which type of factors that impact middle school pupils handwriting legibility and quality ?* ”. The results obtained from the questionnaire reveals that both factors external and internal one impact learners handwriting legibility and quality , in which reflects on their poor performance and academic scholar achievement . thus it can be said that the second hypothesis is valid too.

The third hypothesis assumes that “ *To what extent can middle school pupils overcome their major handwriting difficulties ?* ” the results obtained from the questionnaire represents that its hard somehow for middle school pupils to overcome their difficulties , without their teachers intervention and useful strategies which still an effective especially for the pupils within handwriting disorder . thus it can be said that the third hypothesis is valid .

The fourth hypothesis indicates that “ *Is there any standardized methods in the current syllabus focus on teaching handwriting in middle schools* ” the results from the teachers questionnaire shows that there is no any standardize method in the current syllabus helps for teaching

handwriting in middle school , thus the majority of them suggest and agree that handwriting should be part parcel in the recent syllabus ,likewise it is a crucial skill for learners and they need it along their life career . these hypothesis is valid .

the last hypothesis argue that *“If learners suffer from those various factors , teachers in turn, will be negatively affected in their teaching and assessing methods”* results show that most teachers still aware on the way of teaching and assessing handwriting skills especially for middle school pupils , in order to develop their performance . It is true that teachers will suffer in turn as well as most of them consider handwriting skill as an essential process growth till the end with learners likewise Some of them argue that ; Assessing writing is a hard task especially for first year pupils. ; There are some mistakes that prevent pupils from writing such as lack of reading and they usually use L1 in their writing. Teaching and assessing handwriting Considered as a heavy task need to be well constructed . the last hypothesis is also valid .

3.3.1. Limitation of the study

Despite the fact that the present work has reached its objectives .The study is limited . due to the complex nature of handwriting, key factors were selected, also the handwriting problems of healthy learners is difficult to find thus , not all factors could be included or predicted Furthermore, this review is not systematic and only included studies published in the English language. Therefore, although efforts were made to include key studies, not all relevant studies have been included .It is important to declare that there were no official study found about the diagnostic potential of the handwriting problems in middle schools grades , hence there is pedagogical lack tool for EFL learners treatment .Thus, proper correction is necessary to assist learners who have handwriting difficulties.

3.3.2.Suggestions and Recommendations

Handwriting problems impact school achievement further , the development of legible handwriting skills on EFL learners’ is regarded to be quite challenging. This study tries to spotlight on the major handwriting difficulties that impact middle schools pupils’. It suggests that pupils would perform better if teachers gives more attention to overcome their pupils handwriting problems in order to enhance their writing performance .

The paper has also identified research that suggests there is a link between pupils' legible handwriting skill and the impact of external and internal factors on their performance through establishing knowledge of the various factors that influence handwriting development among learners, in addition to facilitate this process for learners learning English as a foreign language, Sassoons, Berninger and other researchers suggested the following points to enhance learners with difficulties also giving some instruction for teachers and designer makers while teaching handwriting :

For the Teachers

- Educators who want to support struggling writers may start by helping them to improve their handwriting.
- Educators should be consciously aware of the different factors that may affect their learners, so they need to close observation during the act of writing to better diagnose the actual factors that lead to poor handwriting
- Teachers need to be aware of the essential role of handwriting plays in education process through giving an effective instruction that can ameliorate this skill .
- Teachers can provide students with opportunities to develop handwriting skills, free up cognitive energy to better focus on writing content, and potentially increase their academic achievement.
- Teachers should focus on pupils' pen hold, speed and writing style these aspects need to be emphasized as well as it can be used as an aid to predict and diagnosis their future difficulties .
- The more thoroughly handwriting is taught at the beginning the less time will be necessary later on to control further learners difficulties
- Providing a good foundation within a relatively short time for those who struggle poor handwriting by giving them different feedback, monitoring and immediate feedback, that can be worthy .
- Teachers need to assess handwriting characteristics among learners with learning disabilities, helpful to look at the situation in a slightly different way and to reveal the pupils' underlying difficulty or condition

- Teachers need to assess handwriting difficulties among learners in order to develop pupils' with formal courses ,classroom remediation and regular practice
- Educators needs to establish knowledge of factors influencing handwriting development among learners with learning disabilities, to find out measures taken to address handwriting problems
- The teacher should give more reinforcements to the students struggling handwriting problems. Reinforcements could increase the frequency of productive for better writing composition and reduce maximum of their difficulties .

For syllabus designers

- Providing pedagogical focus on pupils' handwriting skills, teachers will not only help them to attain and secure better marks but it will also define their individuality and help them to improve their creative abilities.
- Providing enough priority to teachers training in systematic strategy to support the device of handwriting programs for the classroom courses .
- Progress needs to be made on the teaching and learning of handwriting skills
- Handwriting should be taught systematically from the start of formal teaching, by including special part of teaching handwriting in the current syllabus
- Systematic handwriting instruction, supplemental skill development, and practice with functional tasks can help increase handwriting skills.
- The choice of a particular handwriting model must be a whole school decision , that it may influence pupils' handwriting in the future .
- It is useful to keep parents in close contact with schools and occupational therapists to minimize most handwriting difficulties within their students .
- The Collaboration between occupational therapy practitioners and teachers can provide evidence-based instruction and individualized interventions to meet the diverse needs of middle schools learners.

For the Pupils :

- Pupils should practice intensive writing performance in order to enhance their handwriting and strengthen their fine motor skills
- Pupils who face handwriting problems need to be under intensive practice, and provided with suitable feedback .
- There is evidence indicate that handwriting aids memory as well as its useful for those suffering difficulties needs to be more awareness and carried to correct their hand mistakes
- Pupils need to be more aware of the importance of handwriting in their educational achievement , personality self-esteem and self-evaluation
- The needs of students should be taken in consideration, since they are the first aspect of motivation .
- Pupils need to develop readiness skills for forming letters, such as the comprehensive abilities of various systems, the development of large and small muscles, fine motor skills, in order to achieve better hand manipulation skills.
- Handwriting does not only develop pupils' ability in the subjects but gives them confidence in themselves (Yates et al., 1994).
- Forming letters by hand also engages the pupils' thinking brain, allowing them to explore, analyze and synthesize textual information.
- Pupils' performance in controlled/assessed activities such as exams where speed, legibility and correct formulation of words have a positive impact which help them to secure good grades
- Pupils must become into contact with the new teaching tools progressively, in order to become a part of the learning environment as possible to overcome their difficulties

Conclusion

This research work is a descriptive study. It aims to observe and analyze the impact of the external and internal factors on EFL learners' legible handwriting . The study is based on collecting qualitative data, using consequently the qualitative research instruments. Classroom Observation and the teachers' questionnaire have been chosen as the basic research tools, The chapter involves the analysis of teachers' questionnaire in which researchers have put a great emphasis on this, and then it moved to the description and analysis of the classroom observation. Both parts in the questionnaire were developed to the teachers' view , perceptions and attitudes about the handwriting skills and the various factors that affected it inside EFL classes at middle school . Researchers in education are encouraged to conduct studies in the benefits of Legibility handwriting in addition to focus more on handwriting difficulties that impact the learners through exploring effective and efficient teaching programs and assessing methods . Finally , The discussed results brought evidence of the impact of the mentioned factors on EFL learners' handwriting legibility and quality at middle school first grade . According, the results obtained from the analysis some implications, limitations and recommendations for further research are presented .

General Conclusion

Handwriting researchers over the years were faced with essential problems in attempting to identify poor hand writers in an objective and standardized process ,This research has purpose to explain handwriting skill and the external and internal factors that may impact learners' handwriting skill throughout investigating the middle school pupils 6th grade level .the study suggests that schools and educationalists are missing out on an opportunity to raise pupils' attainment levels for legible handwriting due to the lack of better instructions and interventions tools that may reduce handwriting difficulties .

Based on the findings of this research, it can be concluded that handwriting remains an important developmental skill for learners to master inside and outside the classroom .the findings also identified that handwriting difficulties Which impact pupils' handwriting skill at middle school may be the result of internal factors such as poor component skills, finger function , handwriting disorder such dysgraphia . external factors considerations such as academic environment ; including size ,speed ,form and pressure , teacher's training . Besides to another factors that have not been discussed or predicted yet must not be overlooked.

However , research in the 20th century has led to several important advancements in the area of evaluation of handwriting difficulties as well as It is important that handwriting performance be evaluated using a valid, reliable, standardized tool combined with informal classroom observation and teacher consultation and feedbacks . Al thought The handwriting difficulties or as they are known as factors cannot be avoided by any kind of remedies, yet it can be improved with the efforts of teachers , parents and other teaching programs and evaluations which enable teachers and occupational therapists to measure legibility and quality of handwriting among middle school pupils particularly first grades , The legibility scale and evaluation scale battery to identify learners suspected of having learning disorder especially in handwriting skills , On the other hand, although the development of computerized analysis has advanced the understanding of the spatial and temporal characteristics of learners with poor and proficient handwriting, further study is still needed to determine how these data are related to the actual functional deficits in handwriting. In most studies, learners' handwriting has been evaluated via copying assignments , formal exams and other informal classroom observations .

In addition, this paper advocates that the occupational therapy approach may aim to improve handwriting, a complex and important skill that supports occupational performance in the area of education .It is especially important that health practitioners and educators appreciate the far-reaching academic and psychosocial consequences of poor handwriting .Despite the widespread use of technological devices ,greater consideration should be given to learner's handwriting skill , and provides occupational therapists with information for working with learners experiencing difficulties in this area within competency in teaching and assessing. educationalists, our government and policy makers want to raise pupils' literacy skills, they would be advised to focus their attention on handwriting to support schools' curriculum and pedagogical practices.

To this end, teachers need to consider the enforcement of effective, whole school handwriting policies. These would be aided by a specific framework with a standard set of criteria which recognizes the importance of handwriting skills and how to minimize most of the factors that impact learners' with poor and good handwriting as well as a handwriting policy should be a core priority for all grades schools.

References

Articles

- Afonso, O., Martínez-García, C., Cuetos, F., & Suárez-Coalla, P. (2020). The development of handwriting speed and its relationship with graphic speed and spelling. *Cognitive Development, 56*, 100965.
- Alonso, M. A. P. (2015). Metacognition and sensorimotor components underlying the process of handwriting and keyboarding and their impact on learning. An analysis from the perspective of embodied psychology. *Procedia-Social and Behavioral Sciences, 176*, 263-269
- Alston, J. (1983). A legibility index: Can handwriting be measured?. *Educational Review, 35*(3), 237-242.
- Amundson, S. (1995). *Evaluation Tool of Children's Handwriting*. Homer, AK: OT KIDS.
- Asher, A. V. (2006). Handwriting instruction in elementary schools. *The American journal of occupational therapy, 60*(4), 461-471.
- Barnett, A. L., Prunty, M., & Rosenblum, S. (2018). Development of the Handwriting Legibility Scale (HLS): A preliminary examination of Reliability and Validity. *Research in developmental disabilities, 72*, 240-247.
- Benbow, M. (1995). Principles and Practices of Teaching Handwriting. In: Henderson, A. and Pehoski, C., Eds., *Hand Function in the Child*, Mosby, St. Louis, 255-281.
- Berninger, V.W., & Fuller, F. (1992). Gender differences in orthographic, verbal, and compositional fluency: Implications for assessing writing disabilities in primary grade children. *Journal of School Psychology, 30*, 363-382.

- Berninger, V. W., Vaughan, K. B., Abbott, R. D., Abbott, S. P., Rogan, L. W., Brooks, A., Reed, E., & Graham, S. (1997). Treatment of handwriting problems in beginning writers: Transfer from handwriting to composition. *Journal of Educational Psychology*, 89(4), 652-666. <https://doi.org/10.1037/0022-0663.89.4.652>
- Berninger, V.W., Fuller, F. & Whitaker, D. (1996). A process model of writing development across the life span. *Educ Psychol Rev* 8, 193–218 <https://doi.org/10.1007/BF01464073>
- Bishop, E., & Esgate, A. (2001). Writing speed and extra time in examinations. *In 5th BDA international conference*.
- Cahill, S. M. (2009). Where does handwriting fit in? Strategies to support academic achievement. *Intervention in school and clinic*, 44(4), 223-228.
- Candeias, M., Reis, M. G. A., Escola, J., & Reis, M. J. (2019). Using Android Tablets to develop handwriting skills: A case study. *Heliyon*, 5(12), e02970.
- Case-Smith, J. (2002). Effectiveness of school-based occupational therapy intervention on handwriting. *The American Journal of Occupational Therapy*, 56(1), 17-25.
- Case-Smith, J. (2002). Effectiveness of school-based occupational therapy intervention on handwriting. *American Journal of Occupational Therapy*, 56, 17-25.
- Case-Smith, J., Weaver, L., & Holland, T. (2014). Effects of a classroom-embedded occupational therapist-teacher handwriting program for first-grade students. *The American journal of occupational therapy : official publication of the American Occupational Therapy Association*, 68(6), 690–698. <https://doi.org/10.5014/ajot.2014.011585>
- Cornhill, H., & Case-Smith, J. (1996). Factors that relate to good and poor handwriting. *American Journal of Occupational Therapy*, 50, 732–739.

- Danna, J., & Velay, J. L. (2015). Basic and supplementary sensory feedback in handwriting. *Frontiers in psychology*, 6, 169.
- Danna, J., Paz-Villagrán, V., Gondre, C., Aramaki, M., Kronland-Martinet, R., Ystad, S., & Velay, J. L. (2015). "Let Me Hear Your Handwriting!" Evaluating the Movement Fluency from Its Sonification. *PLoS one*, 10(6), e0128388. <https://doi.org/10.1371/journal.pone.0128388>
- Donica , D.K . (2015). Handwriting Without Tears®: General Education Effectiveness Through a Consultative Approach *The American Journal of Occupational Therapy*, ,Vol.69(6),6906180050p1–6906180050p8.
- Doug, R. (2019). Handwriting: Developing Pupils' Identity and Cognitive Skills. *International Journal of Education and Literacy Studies*, 7(2), 177-188.
- Engel, C., Lillie, K., Zurawski, S., & Travers, B. G. (2018). Curriculum-Based Handwriting Programs: A Systematic Review With Effect Sizes. *The American journal of occupational therapy : official publication of the American Occupational Therapy Association*, 72(3), 7203205010p1–7203205010p8.
- Falk, T.H., Tam, C., Schellnus, H., & Chau, T. (2011). On the development of a computer-based handwriting assessment tool to objectively quantify handwriting proficiency in children. *Computer methods and programs in biomedicine*, 104 3, e102-11 .
- Feder, K. P., & Majnemer, A. (2007). Handwriting development, competency, and intervention. *Developmental Medicine & Child Neurology*, 49(4), 312-317.
- Feder, K.P., & Majnemer, A. (2003). Children's Handwriting Evaluation Tools and Their Psychometric Properties. *Physical & Occupational Therapy In Pediatrics*, 23, 65 - 84.

- Feng, L., Lindner, A.L., Ji, X.R., & Malatesha Joshi, R. (2019). The roles of handwriting and keyboarding in writing: a meta-analytic review. *Reading and Writing*, 32, 33-63.
- Franken, A.M. & Harris, S.R. ,(2021) .Teachers' Perceptions of Handwriting Legibility Versus the German Systematic Screening for Motoric-Handwriting Difficulties (SEMS) , *Vol. 41(4)* 251–258 <https://doi.org/10.1177/15394492211033828>
- Gargot, T., Asselborn, T., Pellerin, H., Zammouri, I., M. Anzalone, S., Casteran, L., ... & Jolly, C. (2020). Acquisition of handwriting in children with and without dysgraphia: A computational approach. *PLoS One*, 15(9), e0237575.
- Gophna, S. (2009). A Program to Prepare for Handwriting in Schools for Children with Special Needs. *Journal of Occupational Therapy, Schools, & Early Intervention*, 2, 24 - 34.
- Graham, S. (1986). A review of handwriting scales and factors that contribute to variability in handwriting scores. *Journal of School Psychology*, 24(1), 63-71.
- Graham, S. (1992). Issues in handwriting instruction. *Focus on exceptional children*, 25(2).
- Graham, S. (2010). Want to improve children's writing? *The Education Digest* 76, 49–55.
- Graham, S., & Hebert, M. (2010). Writing to read: Evidence for how writing can improve reading: A report from Carnegie Corporation of New York.
- Graham, S., Berninger, V. W., Abbott, R. D., Abbott, S. P., & Whitaker, D. (1997). Role of mechanics in composing of elementary school students: A new methodological approach. *Journal of Educational Psychology*, 89(1), 170–182.

- Graham, S., Berninger, V., Weintraub, N., & Schafer, W. (1998). Development of handwriting speed and legibility in grades 1–9. *Journal of Educational Research*, 92, 42–52. <http://dx.doi.org/10.1080/00220679809597574>
- Graham, S., Harris, K. R., & Fink, B. (2000). Is handwriting causally related to learning to write? Treatment of handwriting problems in beginning writers. *Journal of Educational Psychology*, 92(4), 620-633. <https://doi.org/10.1037/0022-0663.92.4.620>
- Graham, S., Harris, K. R., Mason, L., Fink-Chorzempa, B., Moran, S., & Saddler, B. (2008). How do primary grade teachers teach handwriting? A national survey. *Reading and writing*, 21(1), 49-69.
- Graham, S., Harris, K.R., & Mason, L. (2005). Improving the writing performance, knowledge and motivation of struggling young writers: The effects of self-regulated strategy development. *Contemporary Educational Psychology*, 30, 207-241.
- Graham, S., McKeown, D., Kiuvara, S., & Harris, K. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology*, 104(4), 879-896. <https://doi.org/10.1037/a0029185>
- Graham, S., Struck, M., Santoro, J., Berninger, V. W. (2006). Dimensions of good and poor handwriting legibility in first and second graders: Motor programs, visual-spatial arrangement, and letter formation parameter setting. *Developmental Neuropsychology*, 29(1), 43–60. https://doi.org/10.1207/s15326942dn2901_4
[Google Scholar](#)
- Graham, S., Weintraub, N., & Berninger, V. W. (1998). The relationship between handwriting style and speed and legibility. *Journal of Educational Research*, 91, 290–297. <http://dx.doi.org/10.1080/00220679809597556>
- Guilbert, J., Alamargot, D., & Morin, M. F. (2019). Handwriting on a tablet screen: Role of visual and proprioceptive feedback in the control of movement by children and adults. *Human movement science*, 65, 30-41.

- Hammerschmidt, S. L., & Sudsawad, P. (2004). Teacher's survey on problems with handwriting: Referral, evaluation and outcomes. *American Journal of Occupational Therapy*, 58, 185–192.
- Hamstra-Bletz, L., & Blöte, A.W. (1993). A Longitudinal Study on Dysgraphic Handwriting in Primary School. *Journal of Learning Disabilities*, 26, 689 - 699.
- Hebert, M., Kearns, D. M., Hayes, J. B., Bazis, P., & Cooper, S. (2018). Why children with dyslexia struggle with writing and how to help them. *Language, speech, and hearing services in schools*, 49(4), 843-863.
- Henderson, A., & Pehoski, C. (2005). *Hand function in the child: Foundations for remediation*. Elsevier Health Sciences.
- Herdi, H. (2015). "An Analysis On Factors Influencing The Students' Writing Skill." *ELT-Lectura*, vol. 2, no. 2.
- Hurschler Lichtsteiner, S., Wicki, W. & Falmann, P. (2018). Impact of handwriting training on fluency, spelling and text quality among third graders. *Read Writ* 31, 1295–1318 . <https://doi.org/10.1007/s11145-018-9825>
- Jones, D., & Christensen, C. (1999). The relationship between automaticity in handwriting and students' ability to generate written text. *Journal of Educational Psychology*, 91, 44–49.
- Kavak, S. T., & Bumin, G. (2009). The effects of pencil grip posture and different desk designs on handwriting performance in children with hemiplegic cerebral palsy. *Jornal de pediatria*, 85, 346-352.
- Klein, S., Guiltner, V., Sollereeder, P., Cui, Y. (2011). Relationships between fine-motor, visual-motor, and visual perception scores and handwriting legibility and speed. *Physical & Occupational Therapy in Pediatrics*. 31(1):103-14. DOI:10.3109/01942638.2010.541753
- Koziatek, S. M., & Powell, N. J. (2003). Pencil grips, legibility, and speed of fourth-graders' writing in cursive. *American Journal of Occupational Therapy*, 57, 284–288. <http://dx.doi.org/10.5014/ajot.57.3.284>

- Lelong, M., Zysset, A., Nievergelt, M., Luder, R., Götz, U., Schulze, C., & Wieber, F. (2021). How effective is fine motor training in children with ADHD? A scoping review. *BMC pediatrics*, 21(1), 1-21.
- Li-Tsang, C. W., Au, R. K., Chan, M. H., Chan, L. W., Lau, G. M., Lo, T. K., & Leung, H. W. (2011). Handwriting characteristics among secondary students with and without physical disabilities: A study with a computerized tool. *Research in developmental disabilities*, 32(1), 207-216.
- Li- Tsang, C. W., Li, T. M., Lau, M. S., Ho, C. H., & Leung, H. W. (2018). Handwriting assessment to distinguish comorbid learning difficulties from attention deficit hyperactivity disorder in Chinese adolescents: A case–control study. *International journal of methods in psychiatric research*, 27(4), e1718.
- Lopez, C., Vaivre-Douret, L. (2021). Influence of visual control on the quality of graphic gesture in children with handwriting disorders. *Sci Rep 11*, 23537 (2021).
<https://doi.org/10.1038/s41598-021-02969-7>
- Lopez-de-Ipina, K., Solé-Casals, J., Sánchez-Méndez, J.I., Romero-García, R., Fernández, E., Requejo, C., Poologaindran, A., Faúndez-Zanuy, M., Martí-Massó, J., Bergareche, A., & Suckling, J. (2021). Analysis of Fine Motor Skills in Essential Tremor: Combining Neuroimaging and Handwriting Biomarkers for Early Management. *Frontiers in Human Neuroscience*, 15.
- Mangen, A ., Anda, L.G., Oxborough, H.G. & Brønneck, K.K. (2015).Handwriting versus Keyboard Writing: Effect on Word Recall *Journal of Writing Research* 7(2):227-247 DOI:[10.17239/jowr-2015.07.02.1](https://doi.org/10.17239/jowr-2015.07.02.1)
- Medwell, J. , & Wray, D. (2008). Handwriting–A forgotten language skill?. *Language and education*, 22(1), 34-47.
- Parush, S., Levanon-Erez, N., & Weintraub, N. (1998). Ergonomic factors influencing handwriting performance. *Work*, 11(3), 295-305.

- Parush, S., Lifshitz, N., Yochman, A., & Weintraub, N. (2010). Relationships between handwriting components and underlying perceptual-motor functions among students during copying and dictation tasks. *OTJR: Occupation, Participation and Health*, 30(1), 39-48.
- Parush, S., Pindak, V., Hahn-Markowitz, J., & Mazor-Karsenty, T. (1998). Does fatigue influence children's handwriting performance?. *Work*, 11(3), 307-313.
- Ray, R., Graham, S. (2019). Effective practices for teaching students who have difficulty with writing. *Volume 51, No 1, Learning Difficulties Australia* <https://archive.ldaustralia.org/client/documents>
- Rosenblum, S., Parush, S. & Weiss PL (2003) Computerized temporal handwriting characteristics of proficient and non-proficient hand-writers. *Am J Occup Ther*, 57(2): 129–138
- Rosenblum, S., Gafni-Lachter, L. (2015). Handwriting proficiency screening questionnaire for children (HPSQ–C): development, reliability, and validity. *The American Journal of Occupational Therapy*, 69(3), 6903220030p1-6903220030p9. DOI: 10.5014/ajot.62.3.298.
- Rosenblum, S., Weiss, P. L., & Parush, S. (2003). Product and process evaluation of handwriting difficulties. *Educational Psychology Review*, 15, 41–81.
- Rosenblum, S., Weiss, P. L., & Parush, S. (2004). Handwriting evaluation for developmental dysgraphia: Process versus product. *Reading and writing*, 17(5), 433-458.
- Santangelo, T., & Graham, S. (2016). A comprehensive meta-analysis of handwriting instruction. *Educational Psychology Review*, 28(2), 225-265.
- Schneck, C. & Amundson, S. (2010). Prewriting and writing. In J. Case-Smith & J. O'Brien (Eds.) *Occupational therapy for children (6th ed)* (pp. 555-582). St. Louis: Mosby/Elsevier
- Schneck, C. M. (1991). Comparison of pencil-grip patterns in first graders with good and poor writing skills. *American Journal of Occupational Therapy*, 45, 701–706.

- Schneck, C. M., & Henderson, A. (1990). Descriptive analysis of the developmental progression of grip position for pencil and crayon control in non dysfunctional children. *American Journal of Occupational Therapy*, 44, 893–900.
- Schwellnus, H., Carnahan, H., Kushki, A., Polatajko, H., Missiuna, C., & Chau, T. (2013). Writing forces associated with four pencil grasp patterns in grade 4 children. *The American journal of occupational therapy : official publication of the American Occupational Therapy Association*, 67(2), 218–227. <https://doi.org/10.5014/ajot.2013.005538>
- Seo S. M. (2018). The effect of fine motor skills on handwriting legibility in preschool age children. *Journal of physical therapy science*, 30(2), 324–327. <https://doi.org/10.1589/jpts.30.324>
- Smith, T. L. (1953). Six basic factors in handwriting classification. *J. Crim. L. Criminology & Police Sci.*, 44, 810.
- Smoker, T. J., Murphy, C. E., & Rockwell, A. K. (2009, October). Comparing memory for handwriting versus typing. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 53, No. 22, pp. 1744-1747). Sage CA: Los Angeles, CA: SAGE Publications.
- Stevenson, N. C., & Just, C. (2014). In early education, why teach handwriting before keyboarding?. *Early Childhood Education Journal*, 42(1), 49-56.
- Suárez- Coalla, P., Afonso, O., Martínez-García, C., & Cuetos, F. (2020). Dynamics of Sentence Handwriting in Dyslexia: The Impact of Frequency and Consistency. *Frontiers in Psychology*, 11.
- Summers, J. (2001). Joint laxity in the index finger and thumb and its relation to pencil grasps used by children. *Australian Occupational Therapy Journal*, 48, 132–141. <http://dx.doi.org/10.1046/j.0045-0766.2001.00247.x>
- Sumner, E., Connelly, V., & Barnett, A. L. (2013). Children with dyslexia are slow writers because they pause more often and not because they are slow at handwriting execution. *Reading and writing*, 26(6), 991-1008.

- Teasdale, N., Forget, R., Bard, C., Paillard, J., Fleury, M., & Lamarre, Y. (1993). The role of proprioceptive information for the production of isometric forces and for handwriting tasks. *Acta Psychologica*, 82(1-3), 179-191
- Truckenmiller, A. J., Eckert, T. L., Coddling, R. S., & Petscher, Y. (2014). Evaluating the impact of feedback on elementary aged students' fluency growth in written expression: A randomized controlled trial. *Journal of school psychology*, 52(6), 531-548.
- Tseng, M. H. (1998). Development of pencil grip position in preschool children. *Occupational Therapy Journal of Research*, 18(4), 207–224. doi:10.1177/153944929801800406
- Tseng, M. H., & Cermak, S. A. (1993). The influence of ergonomic factors and perceptual-motor abilities on handwriting performance. *American Journal of Occupational Therapy*, 47, 919–926
- Tseng, M.H., &Chow, S.M. (2000).Perceptual-motor function of school-age children with slow handwriting speed. *The American Journal of Occupational Therapy*. 54(1),83-88. DOI:10.5014/ajot.54.1.83
- Van Drempt, N., McCluskey, A., & Lannin, N.A. (2011). A review of factors that influence adult handwriting performance. *Australian occupational therapy journal*, 58(5), 321-328. <https://doi.org/10.1111/j.>
- Van Galen, G. P. (1991). Handwriting: Issues for a psychomotor theory. *Human Movement Science*, 10, 165–191.
- Weintraub, N., & Graham, S. (2000). The contribution of gender, orthographic, finger function, and visual-motor processes to the prediction of handwriting status. *The Occupational Therapy Journal of Research*, 20(2), 121-140. [WeintraubandGraham.2000.HW_VMI_OMI_finger.pdf](#)

- Weintraub, N., Yinon, M., Hirsch, I. B. E., & Parush, S. (2009). Effectiveness of sensorimotor and task-oriented handwriting intervention in elementary school-aged students with handwriting difficulties. *OTJR: Occupation, Participation and Health*, 29(3), 125-134.
- Weldemariam, D.G., Amaha, N.D., Abdu, N. *et al.* (2020). Assessment of completeness and legibility of handwritten prescriptions in six community chain pharmacies of Asmara, Eritrea: a cross-sectional study. *BMC Health Serv Res* 20, 570. <https://doi.org/10.1186/s12913-020-05418-9>
- Williams, G.J., Larkin, R.F., Coyne-Umfreville, E., & Herbert, T.C. (2019). The Effects of Planning and Handwriting Style on Quantity Measures in Secondary School Children's Writing. *Frontiers in Psychology*, 10.
- Yinon, M., & Weintraub, N. (2000). Intervention programs for improving handwriting performance: A review. *The Israeli Journal of Occupational Therapy*, 9, 17–35. doi: 10.2307/23467341 .
- Ziviani, J. (1983). Qualitative changes in dynamic tripod grip between seven and 14 years of age. *Developmental Medicine and Child Neurology*, 25, 778–782. <http://dx.doi.org/10.1111/j.14698749.1983.tb13846.x>
- Ziviani, J. (1984). Some elaborations on handwriting speed in 7-to 14-year-olds. *Perceptual and motor skills*, 58(2), 535-539.
- Ziviani, J., & Elkins, J. (1986). Effect of pencil grip on handwriting speed and legibility. *Educational Review*, 38(3), 247-257.
- Ziviani, J., & Watson- Will, A. (1998). Writing speed and legibility of 7–14- year- old school students using modern cursive script. *Australian Occupational Therapy Journal*, 45(2), 59-64.

- Zwicker, J.G., & Montgomery, I. (2012). Application of Motor Learning Principles to Handwriting Instruction and Intervention, *Handwriting Today*, 11, 9-19 Article · [ApplicationofMotorLearningPrinciplestoHandwritingInstructionandInterventionbyJillGZwicke-2012.pdf](#)

Books

- Harmer, J (2004). How to Teach Writing (series editor), (p.44-45). Harlow, UK : Pearson Education Ltd.
- Harmer , J (2007). How to teach English (2nd .Ed), (121-122) Harlow, UK : Pearson Education Ltd.
- Mather, N., & Wendling, B. J. (2009). *Writing assessment and instruction for students with learning disabilities* (2nd ed.). Retrieved from <https://books.google.dz/books?id=B2yea1OJF48C&pg=PA89&dq=pencil%20gras>
- Robert M. Klassen Lisa E. Kim (2021) Teacher Selection: Evidence-Based Practices ISBN 978-3-030-76186-8 ISBN 978-3-030-76188-2 (eBook) <https://doi.org/10.1007/978-3-030-76188-2>
- Sassoon, R. (1990). Handwriting, a new perspective. Cheltenham, UK: Stanley Thornes.
- Sassoon, R. (2003). Handwriting: The way to teach it (2nd ed.). London: Paul Chapman.
- Sassoon, R. (2006). Handwriting problems in the secondary school. London, UK: Paul Chapman.

Thesis

- Brevoort, K. N. (2017). Effect of Slant Boards in Combination with Handwriting Practice. Doctoral dissertation. Nova Southeastern University. Retrieved from NSUWorks, College of Health Care Sciences – *Occupational Therapy Department*. (58) https://nsuworks.nova.edu/hpd_ot_student_dissertations/58.
- Lohman, J.W., (1993). "Factors Influencing Handwriting Legibility" (1993). Honors Theses. Paper 22 [Factors Influencing Handwriting Legibility.pdf](#) Southern Illinois University Carbondale OpenSIUC
- McFarland , E. (2015) . The Importance of Handwriting: How Montessori Didactic Materials support Handwriting. *A Master’s Paper Submitted in Partial Fulfillment of The Requirements for the Degree of Master of Science in Education- Montessori. The University of Wisconsin - River Falls 2015.*
- Schwellnus, H. D. (2012). *Pencil grasp pattern: How critical is it to functional handwriting?*. University of Toronto (Canada). *A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy Graduate Department of Rehabilitation Science University of Toronto.*
- Seddik,A.(2017) . The impact of poor handwriting on the readability of pupils’ written production. *Master dissertation, Mohamed khidher University , biskra, Algeria.*

Appendices

Appendix One :

1. A Questionnaire for Middle School Teachers of English Language

An Investigation of the impact of external and internal factors on EFL pupils' handwriting legibility

Dear teachers :

You are invited to answer the following questionnaire which intends to gather the important data to achieve the purpose of this study which investigates “The impact of External and Internal factors on EFL pupils' handwriting legibility “ with your help ,the study would be based on realities .

Thank you in advance for your collaboration .

Section One : General Information

Q1. Would you specify your degree?

License Master Magister Doctorate

Q2.How long have you been teaching English in middle school?

- 1-5 years
- 5-10years
- More than 10 years

Section Two : Introduction to Handwriting

Q3. According to you, developing one's writing skills from an early age is:

- Very important
- Somehow important
- Not important at all

Justify your answer, please

.....

.....

.....

Q4. How do you find teaching and assessing writing?

An easy task A hard task

Justify your answer, please

.....

.....

.....

Section Three : General Overview about Handwriting

Q5. How do you consider your pupil's level in handwriting skill?

Good Medium Weak

Q6. From the following, what are the main aspects that have greater effect on your pupils written production in the exams?

- Lack of vocabulary
- Grammatical mistakes
- Sentence structure
- Punctuation
- Handwriting
- All of them

Q7. When correcting your pupils' exam sheets, do you take their handwriting into consideration?

Yes No

Q8. What do you do when finding unreadable exam sheets?

.....

.....

.....

Q9. Do you think that legible (**Syn**) handwriting is helpful to students because:

- It gives a bad/negative first impression to the reader
- It affects' readers' motivation to read

- Teaching pupils how to write in the **print** way
- All of them

If others, please specify

.....

.....

Q14. Does the students' handwriting matter for you when giving the final score?

Yes No

Q15. When finding some students' poor handwriting, do you encourage them to develop or to ameliorate their handwriting?

Yes No

If yes, please explain how

.....

.....

.....

Q16. Which of the following signs/symptoms that are likely to appear on learners with handwriting difficulties?

- They usually do not complete assignments
- They do not complete their assignments in time
- They do not take notes
- They have poor class attendance
- All of them

If others, please specify

.....

.....

Q17. According to you, which of the following personal factors greatly affects learners' handwriting quality?

- Learners' attitude towards writing and handwriting

- The fine motor (skills that require coordination of small muscles to control small, precise movements, particularly in the hands and face)
- Learners' vision** difficulties
- Visual-Motor Integration** (It is the process that links what the eye sees to what the hand produces)
- Learners' emotions**
- Perception/spatial requirements** (direction, size, shape, slope, and positioning)
- All of them

If others, please specify

.....
.....

Q18. According to you, which of the following external factors greatly affects learners' handwriting quality?

- Lack of curricular and/extracurricular handwriting courses/activities
- Lack of teacher's feedback
- Writing instruments' quality (The pen/pencil, the paper, the table, etc)
- All of them

If others, please specify

.....
.....

Q19. According to you, which factors greatly affects learners' handwriting quality?

- Personal factors
- External factors

Justify your answer, please

.....
.....
.....

Section Five : Teachers' attitudes towards the Positive and the Negative Effects of Pupils' Handwriting

Q20. To what extent do you agree or disagree with the following statements:

a) Handwriting is one of the most important means of communication used by humans even with modern society's dependency on computers.

Strongly agree Agree Neutral Disagree Strongly disagree

Justify your answer please

.....
.....
.....

b) According to some scientists, handwriting is considered as an essential ingredient for success in school, and in building learners' self-esteem.

Strongly agree Agree Neutral Disagree Strongly disagree

c) Handwriting helps in promoting intellectual abilities better than using computer

Strongly agree Agree Neutral Disagree Strongly disagree

d) According to some scientists, handwriting is considered as a tool to evaluate the learner's intellectual abilities.

Strongly agree Agree Neutral Disagree Strongly disagree

Justify your answer please

.....
.....
.....

e) Learners' ability to write legibly, as well as quickly and efficiently, enables them to achieve both functional written communication and academic advancement.

Strongly agree Agree Neutral Disagree Strongly disagree

Q21. How does handwriting quality impact the overall development of a learner?

- Poor handwriting contributes to poor grades in class tests
- Pupils with good handwriting feel motivated to learn
- Examiners are frustrated in marking work with poor handwriting
- Teachers form negative attitude on pupils with poor handwriting
- All of them

If others, please specify

.....
.....
.....

Thank you for your time, efforts and collaboration

Appendix Two

2- Classroom Handwriting Observation Checklist

Number of pupils : Males : Females :

Hand dominance : left : right :

Number of pupils wearing glasses :

		comment
posture	Position on chair	Appropriate <input type="checkbox"/> Not appropriate <input type="checkbox"/>
	Chair height	Appropriate <input type="checkbox"/> Not appropriate <input type="checkbox"/>
	Desk height	Appropriate <input type="checkbox"/> Not appropriate <input type="checkbox"/>
tools	Paper angled appropriately	Appropriate <input type="checkbox"/> Not appropriate <input type="checkbox"/>
	Non- dominant hand stabilize the paper	Yes <input type="checkbox"/> No <input type="checkbox"/>
pressure	Pressure on paper	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Pressure on pen	Yes <input type="checkbox"/> No <input type="checkbox"/>
Pen hold	Pencil grip	Fingers are at a functional distance from the tip of the pencil
		Fingers are too close to the tip
	Grasp	Number of pupils with Immature grasps
		Number of pupils with mature grasps

General features	Letter size	appropriate <input type="checkbox"/> Not appropriate <input type="checkbox"/>
	spacing	appropriate <input type="checkbox"/> Not appropriate <input type="checkbox"/>
	copying	By groups <input type="checkbox"/> By word <input type="checkbox"/> By letter <input type="checkbox"/>

Appendix Three

Pupil 1 :

Hello Steve,
My name is Sunny. I am 16 years old from London.
I live in the world's largest continent at capital
but capital city is London. I am a member of school
club. I am very good at sports. I play football.

Good luck

Pupil 2 :

Hello Steve,
My name is Khabala. I am 16 years old from London.
I live in the world's largest continent at capital
but capital city is London. I am a member of school
club. I am very good at sports. I play football.

Good luck

Pupil 3:

Sunday, February 10th 2011

Hi Margaret,

My name is Noisia, I am 12 years old. I am from Nigeria I speak ~~English~~ Hausa and Ibrancea and I have 75 years, my granddad has 70 years my father has 57 years, but my mother has 54 years, my name is Noisia I want to tell you also that I have 2 brothers of them is still studying and the other is a doctor, my sister is young she has 10 years.

Sequence: 01 Sunday, February
Lesson: I think ~~it~~ ~~is~~ ~~an~~ ~~easy~~ ~~to~~ ~~write~~
Task 01: I fill in the profile about myself.

Pupil 4:

My name is Giradij Lamb from Algeria
I'm Algerian in sport Arabic we are
(Algeria)
Muslims, our flag is red, green
and white our national celebration
day is 5th of July our religious celebration
day is

ملخص:

يعاني طلاب المرحلة الإعدادية الجزائريون من صعوبات في الكتابة اليدوية ، فهم يسعون جاهدين للتغلب على هذه المشكلة التي لها تأثير كبير ، خاصة على تحصيلهم الأكاديمي. تهدف هذه الدراسة إلى التحقق من تأثير العوامل الخارجية والداخلية على وضوح خط يد المتعلمين في إنتاجهم الكتابي. افترضنا أنه إذا كان المعلمون على دراية بصعوبات الكتابة اليدوية لتلاميذهم والعوامل التي تؤثر عليهم ، فيسكونون قادرين على اتخاذ الإجراءات وتكييف الاستراتيجيات داخل البيئة المدرسية لتقليل هذه المشكلات ، كما أن فهم تأثير هذه العوامل يمنح المعلمين رؤية واضحة حول مشاكل الكتابة اليدوية وتمكينها من إجراء التدخل المناسب. ولإثبات أطروحتنا أجريت دراسة وصفية بالإضافة إلى دراسة نوعية من أجل جمع البيانات وتحليلها. وبالتالي ، لاختبار أطروحتنا ، اخترنا أداتين لجمع البيانات. تم تصميم استبيان وتقديمه عبر الإنترنت إلى ثلاثة عشر مدرساً للغة الإنجليزية في المدارس الإعدادية تم اختيارهم عشوائياً من متوسطات مختلفة ، من أجل استكشاف مواقفهم حول خط تلاميذهم وأيضاً للحصول على إجابات لهذا البحث. بالإضافة إلى ذلك ، تم إجراء دراسة حالة على سبعة وعشرين تلميذاً في مدرسة سعد بن واكاس للسنة الإعدادية الأولى ببلدية عين الخضراء بولاية المسيلة بالجزائر ، وذلك للتحقق من العوامل المختلفة التي تؤثر على خط المتعلمين خلال فترة الدراسة. أربع جلسات عادية (دروس) وجلستان امتحان في الفصل الثالث. بناءً على النتائج التي تم الحصول عليها من أداتي جمع البيانات المستخدمة ، يمكن الاستنتاج أن عدم وضوح خط اليد لدى التلاميذ يرجع إلى تأثير العوامل الخارجية والداخلية. علاوة على ذلك ، تم اقتراح بعض التوصيات بناءً على نتائج البحث ، في نهاية هذه الدراسة من أجل تعزيز أداء خط اليد للمتعلمين.

الكلمات المفتاحية: الكتابة اليدوية ، العوامل الخارجية والداخلية ، تلاميذ المرحلة الإعدادية ، صعوبات الكتابة اليدوية

Résumé

Les collégiens algériens sont aux prises avec des difficultés d'écriture manuscrite, ils s'efforcent de surmonter ce problème, qui a un grand impact, notamment sur leur réussite scolaire. Par conséquent, cette étude vise à examiner l'effet de facteurs externes et internes sur la lisibilité de l'écriture manuscrite des apprenants dans leur production écrite. Nous avons émis l'hypothèse que si les enseignants sont conscients des difficultés d'écriture de leurs élèves et des facteurs qui les affectent, ils seront en mesure d'agir et d'adapter des stratégies au sein de l'environnement scolaire pour réduire ces problèmes. Sur les problèmes d'écriture et leur permet de faire l'intervention appropriée. Afin de prouver notre thèse, une étude descriptive a été menée en plus, une étude qualitative afin de collecter et d'analyser les données. De plus, pour tester notre thèse, nous avons choisi deux outils de collecte de données. Un questionnaire a été conçu et remis en ligne à treize professeurs d'anglais de collège sélectionnés au hasard parmi différentes moyennes, afin d'explorer leurs attitudes vis-à-vis de la ligne de leurs élèves et également de prendre des réponses pour cette recherche. En plus du questionnaire, une observation de classe a été menée auprès de vingt-sept élèves de première année du collège Saad Ibn Ouakas de la commune d'Ain El khadra dans l'Etat de M'sila, Algérie, afin de vérifier les différents facteurs affectant le parcours des apprenants au cours de quatre sessions normales (cours) et deux sessions d'examens du 3e trimestre . Sur la base des résultats obtenus à partir des deux outils de collecte de données utilisés, on peut conclure que le manque de lisibilité de l'écriture manuscrite des élèves est dû à l'impact de facteurs externes et internes .

Mots clés : écriture manuscrite , facteurs externes & internes , collégiens , difficultés d' écriture ,