

Determining the Metaphor Perceptions of Generation Z Teacher Candidates for Handwriting and Keyboarding (Typing)

Zeynep Aydemirⁱ
Marmara University

Abstract

The aim of this study is to determine the metaphor perceptions of Generation Z teacher candidates towards handwriting and typing. Based on the metaphors obtained, elective courses related to handwriting may be included in undergraduate programs according to their point of view on handwriting. Many researches are carried out on the area created by the change that comes with the use of new technology. However, it is still necessary to ask new questions and seek answers. Therefore, in this study, according to the medium in which it is presented, whether in print or digital, how the nature of the content of the article changes according to the medium; what are the consequences of the superficialization of the content in terms of mental processes and what are the pre-service teachers' perspectives on handwriting. Study group of this research consists of 70 students among the Teacher Candidates in Istanbul in the fall semester of the 2020-2021 school year. For the data collection, a form with incomplete sentences such as "Handwriting is like... Because..." and "Keyboarding (typing) is like... Because..." was used to allow students to write down metaphors they attribute to "writing". Generation Z Teacher Candidates produced metaphors in the category of handwriting respectively the life (27.1 %), thought and feelings (20%), attention and production (15.7 %), skill (15.7 %), functional (12.9 %) and share/transfer (8.6 %). Teacher Candidates produced metaphors in the category of keyboarding (typing) high level attention/ production (24.3%), superficiality/forgery (21.4%), easy/effortless (17.1%), thought and feelings (12.9%), sound (10%), skill (8.6%) and future (5.7%). Teacher Candidates should provide content and environments that will increase the longing for handwriting in their students to create awareness of writing and make them feel the need for writing. The determination of the meanings attributed by the Generation Z Teacher Candidates to traditional writing and typing with keys, and the perspective of Teacher Candidates on this subject were discussed.

Keywords: Writing, Handwriting, Keyboarding, Typing, Metaphor

DOI: 10.29329/ijpe.2022.426.12

ⁱ **Zeynep Aydemir**, Research Assist Dr., Elementary Education, Marmara University, ORCID: 0000-0003-3002-1809

Email: zeynep.aydemir@marmara.edu.tr

INTRODUCTION

With the development of technology, educational environments have also entered the process of renewal. While preparing the programs in this renewal process, generation differences which are taken into consideration worldwide came to the fore. According to the Turkish Dictionary (2021), the group of people born in approximately the same years, experiencing similar problems under the conditions of the same age, sharing destinies and having similar duties is called a “generation”. A generation can be characterized as individuals who were born in a certain time period and who have similar behaviors and perceptions in social, cultural, political and economic aspects (TDK, 2021). The change or transformation that takes place depending on the time in the feelings, thoughts and behaviors of individuals has a significant role in the formation of different generation types. Historically, it is seen that the time periods that define the generations in researches are not standard. Population can be loosely categorized into four groups as defined by Strauss and Howe (1991): the Silent Generation (also known as the Matures—born between 1925 and 1942), the Baby Boomers (aka Boomers, born between 1943 and 1960), the 13th Generation (known most commonly as Generation X—born between 1961 and 1981), and the Millennial Generation (often referred to as Generation Y—those born between 1982 and 2000) (ex. Brosdahl & Carpenter, 2011). In addition to these generations, a Z Generation classification has been made for those born in 2000 and later at the beginning of the generations that we address with the millennium age, there is a mass called Generation Z whose number is substantially high. Individuals of the Generation Z have their own characteristics. Whether or not the education programs used by Generation Z individuals who are on the way to become teachers whose effects increase in the educational environment coincide with the traditional and their perspectives on traditional practices are a matter of curiosity and research. 33.7% of the world population, while 31% of Turkey's population is Generation Z (Kuran, 2019). In a study conducted with the generation Z, it was observed that this group used digital tools at a high rate to spend their free time and there were 10% of young people who said they would read books (Kuran, 2019). In the continuation of the research, it is stated that the Generation Z does not define itself in a single way, it is clearly pro-inclusion, less pro-conflict and more open to dialogue.

Actually, it is necessary to accept how the differences between generations can be made efficient and holistic by accepting that different generations have different wishes. In a study conducted jointly by UNIDAYS and Ad AGE in which 22.723 Generation Z students participated, seventy-seven percent of the participants preferred to read the books in print (as cited in Kuran, 2019). This situation actually shows that Generation Z is interested in and cared about traditional teaching methods. Instead of saying that Generation Z is indifferent or unsuccessful, or Generation Y before Z does not dominate the digital as much as Generation Z, it is necessary to talk about the effects of history and social events on generations, not the cyclicity of the generations as Mannheim says. While evaluating the generations, we should not ignore the socio-economic structure, culture and values of the geography they are in (Kuran, 2019).

Therefore, Generation Z should be given the opportunity to interpret, use and integrate traditional education programs with digital. Do Generation Z individuals like to use technology and reject many of the teachings brought by the traditionalist approach? Writing is one of the skills most affected by the developing technology. The main purpose of primary school teacher is to teach basal reading and writing. Reading and writing are considered as a whole and carried out together. This skill, which affects the success and daily life of the individual, is basically carried out on the basis of both technology and traditional approach. Based on this understanding, it is necessary to examine how the writing teaching process in our curriculum will change and the perspectives of Generation Z teacher candidates. Especially when Generation Z requests content related to writing, this generation mostly offers it written on a computer. Generation Z's preferences are also in this direction (Berk, 2009). In fact, the system and era we are in necessitate it to be like this.

Usually, digital texts are requested for many applications in daily life. In the past, when it comes to writing; writing with a pencil and pen, upright or cursive italic writing, calligraphy and writing in ink used to come to our minds. Nowadays, typing on computers, tablet computers and

mobile phones are generally understood (Bull, Thompon, Searson, Garofalo, Park, Young, & Lee, 2008). People prefer electronic devices for more functional writing with easy moves (Güneş, 2016). Because, effortless typing on keys of an electronic device have promptly been well accepted. On the other hand, these developments in the area of writing have always been discussed among the educators and how typing on electronic devices will affect our future and specifically the evolution of handwriting have been questioned.

Writing is consisted of the elements of the alphabet which are approximately 20 letters. Erik Havelock defined the alphabet as a technology boom and told it is the most revolutionary impact on human culture than any other inventions. He remarked the reason as this: Writing provided us protecting the things belong to the world without using our memories, keeping the things need to be remembered within the sentences and let the 26 letters contain whole world inside (as cited in Sanders, 1994). It is seen that writing had been affected from the inventions, sometimes rose and sometimes fell. McLuhan asserted that it was switched from verbal to writing, from writing to electronical/visual culture while each phase includes the previous one (as cited in Işık, 2016).

The written culture developed in line with the development of the bourgeoisie in West and accelareted with the invention of printing press and its spread. Writing and technology have always impacted each other in a positive way throughout the history. The use of writing was limited and the purposes and the functions of writing were different before the settled life. As the level of culture changed, the type of materials used in writing and the words which define them changed. The nomadic life did not need a detailed writing system so rulers and those around made the military and political activities written on big stone tablets in short and brief expressions. Thus, writing in both Mesopotamia and the Turkic states, and possibly in the other regions where it spread, was an upper-class activity far away from the masses, in the service of power with its political, religious and economic purpose and functions. Socrates' statement also supports this: He says that those who are not knowledgeable should not write. Modern science owes its principles and methods largely to the foundation of written culture. In particular, basic scientific behaviors such as comparison, generalization, criticism, and classification have developed in parallel with the development of written culture and have created scientific thinking methods (Işık, 2016).

Güneş (2014) states that the act of writing is a mental, emotional and cognitive process and that mental design should be done at the first stage of the writing process. The fact that the writing contains certain stages and is considered important is an indication of the value given to writing in the history and the need for written culture. It is an important step in every culture and period for an individual to make himself/herself understood with writing, share his/her opinion and put it on paper.

Writing is an act of narration. Writing is the confrontation of the individual with his / her own emotions (Oral, 2003). On the other hand, writing is discovering life, trying to get to know the universe of other people (Eryaman, 2008; Gündüz, 2003). Writing is the expression of feelings, thoughts, wishes and events in our minds with various symbols in accordance with certain rules. In other words, it is the process of writing down the mentally structured information. In fact, the definitions made describe the text written on the printed paper. When it comes to traditional writing, the first thing that comes to mind is pen. When we look at the use of the pen concept in Turkish language, the department where the documents and writing works are seen in the state offices is specified as the pen room, and pen owner people are said to be able to write well. Again, when we look at the proverbs about the pen in the language, it is interpreted as writing "blood dripping from the pen" as painful and touching, writing so smooth and beautiful that no correction is required.

The content that comes to mind with the digitalization of the text is the rapid creation of the written content, copying, reproduction and modification, people coming together to create common texts, and presenting the content in a ready-made form (Yücel, 2020). It is suggested that with the technological developments, Generation Z students will leave the pencil completely and write all their homework with the keys (Güneş, 2014). It is argued that these developments will completely change the writing styles and habits of children and young people (Güneş, 2014). Some claim that

handwriting will disappear over time, teaching pen writing in schools will now be among the old methods and techniques, and that this education will fall behind cultural and social developments. Others state that in the future, technological developments will accelerate even more, all people will have to use a keyboard, and new skills and habits will emerge in the field of writing (Güneş, 2014).

It is also a matter of curiosity that the content of the benefits provided by traditional writing and how much the mental processes developed by individuals with writing instruction will be affected. Research in the field of writing shows that there are important differences between writing with pen and keys. These differences are addressed in terms of hand movements, attention, understanding and mental processes. In typing, the individual's writing movements and their perception of the direction of letters change. In addition, the eye both following the texts on the screen and trying to find the keys on the keyboard causes the attention to be divided into two. Situations such as the fingers constantly moving on the keyboard and the sound of the keys increase physical and mental fatigue. Despite these negativities, typing with keys has various benefits for individuals. Both hands are used together when typing on the keyboard. This situation activates both hemispheres of our brain and improves various skills such as high-level attention, creativity and productivity. In addition, its benefits such as fast writing, producing qualified and legible texts are also known (Güneş, 2016). In this case, it is necessary to develop content for the interaction between handwriting and typing.

The amount of writing has increased in the digital environment, but the quality of the content has decreased. However, with the digitalization of the article, the text came side by side with the visuals and started to be presented together. Sound recordings, videos, graphics and animations took main roles from writing. It should not be forgotten that every innovation has two ends, positive and negative effects. Considering that the Generation Z is intertwined with the keys, it is wondered what way they will follow in teaching handwriting and how they attribute meanings to traditional writing. This situation is spreading rapidly among students in schools. Writing with easy and effortless tools comes to the fore instead of writing that takes a long time to write, is difficult and troublesome and requires intense attention. Keys are gradually replacing the pen. The aim of this study was to determine the metaphor perceptions of Generation Z teacher candidates towards handwriting and typing. Based on the metaphors obtained, elective courses related to handwriting may be included in undergraduate programs according to their point of view on handwriting. Many researches are carried out on the area created by the change that comes with the use of new technology. However, it is still necessary to ask new questions and seek answers. Therefore, in this study, according to the medium in which it is presented, whether in print or digital, how the nature of the content of the article changes according to the medium; what are the consequences of the superficialization of the content in terms of mental processes and what are the pre-service teachers' perspectives on handwriting.

METHOD

The design of the research

This research is utilizing qualitative research methods and aiming to determine the perception of teacher candidates on handwriting and keyboarding (typing) through metaphors was carried out in accordance with phenomenological research design. Phenomenological research design aims to determine differences regarding perceptions and phenomena recognized by being handled in their natural environment from a realistic and holistic point of view but not known comprehensively (Yıldırım & Şimşek, 2008).

Study Group

Study group of this research consists of 70 students among the teacher candidates in Istanbul in the fall semester of the 2020-2021 school year.

Table 1. Personal information about the participants.

Gender	n	%
Female	55	79
Male	15	21
Total	70	100

Table 1 shows that out of 70 participants, 55 (79%) are female and 15 (21%) are male.

Data collection and analysis

Metaphors can be one of the most effective data collection methods in order to understand some issues in the inner world of individuals and to learn what they think about certain events, facts and people (Yıldırım & Şimşek, 2018). For this reason, in order to determine the metaphorical perceptions of teacher candidates about handwriting and keyboarding (typing), examples were given to them by explaining what metaphor is. For the data collection, a form with incomplete sentences such as “Handwriting is like... Because..” and “Keyboarding (typing) is like... Because...” was used to allow students to write down metaphors they attribute to “writing”.

Content analysis, one of the qualitative data analysis methods, was applied to the data obtained from the data collection tool. Content analysis is defined as a systematic, repeatable technique in which a text is summarized under smaller categories with codings based on certain rules (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2018). Analysis of the forms was carried out by two experts. Temporary lists were obtained by transferring all the metaphors produced by the teacher candidates into separate lists.

Thus, it was tried to determine which metaphor and how often the students expressed. Teacher candidates produced 43 metaphors about handwriting and these metaphors were collected under 6 categories. Teacher candidates produced a total of 48 metaphors about keyboarding (typing) and these metaphors were grouped under 4 categories. The data obtained in this study were first subjected to content analysis and categorized, then the number of opinions (f) and percentage (%) values reported for each category were calculated. In addition, the views that are thought to represent the categories in the most descriptive way are included in this article. The order in which quotations are given are arranged according to the frequency of similar views.

Validity and reliability research design

The codings made by the researchers were compared and the reliability formula (Reliability = [agreement / (agreement + disagreement)] * 100) developed by Miles and Huberman (1994) was applied for each of the forms separately. In the calculations, the level of harmony between coders was calculated as 92.4% in metaphors and 89.7% in metaphor categories.

FINDINGS

Findings of this research carried out to reveal the perception of teacher candidates regarding the “writing” concept by means of metaphors are given below under two titles: (1) *Metaphors Formed by the Participants on the Handwriting* and (2) *Metaphors Formed by the Participants on the Keyboarding (Typing)*.

Metaphors formed by the participants on the handwriting

43 metaphors formed by the study group on the handwriting are given in Table 2 with their frequency distributions.

Table 2. Metaphors created for the handwriting of teacher candidates

Metaphor Code	Metaphor	f	%	Metaphor code	Metaphor	F	%
1	Walk	8	11.4	23	Carry stone	1	1.4
2	Freedom	6	8.6	24	Knit	1	1.4
3	Being with beloved ones	4	5.7	25	Turn off an alarm clock	1	1.4
4	Pour out	4	5.7	26	Open a door	1	1.4
5	Water	3	4.3	27	Impossible	1	1.4
6	Drawing a picture	3	4.3	28	Moneybox	1	1.4
7	Sunrise	2	2.9	29	Sunset	1	1.4
8	Suitcase	2	2.9	30	Character	1	1.4
9	Trip	2	2.9	31	Rainbow	1	1.4
10	Flower	2	2.9	32	Treatment	1	1.4
11	Building a wall	2	2.9	33	Making a necklace	1	1.4
12	Breathe	1	1.4	34	Fishing line	1	1.4
13	Looking at the sky	1	1.4	35	Lay dominoes	1	1.4
14	Boomerang	1	1.4	36	Massage	1	1.4
15	Learning	1	1.4	37	Bungee Jumping	1	1.4
16	Swing	1	1.4	38	Cook	1	1.4
17	Backbone	1	1.4	39	Toy	1	1.4
18	Cleaning	1	1.4	40	Embroider	1	1.4
19	Ride a bicycle	1	1.4	41	Treatment plant	1	1.4
20	Background music	1	1.4	41	Power	1	1.4
21	Reborn	1	1.4	43	Pick fruit	1	1.4
22	Seed	1	1.4				

When Table 2 is considered, it can be said that the study group developed 43 metaphors in total for the “handwriting”. 11.4% (f=8) of the participants said the “handwriting” is like “walk”. This metaphor is followed by “freedom” (f=6) with 8.6%, “being with beloved ones”, “pour out” have a frequency level of 5.7% (f=4). However, of these metaphors, “building wall” (2.9%), “backbone” (1.4%), “knit” (1.4%), and “massage” (1.4%) are very remarkable.

Metaphor Categories Developed by the Participants on the Handwriting

Metaphors developed by teacher candidates participants were collected under 6 categories (themes) among themselves. Metaphor categories are given in Table 3.

Table 3. Metaphorical perception categories for the handwriting of teacher candidates.

Categories	Metaphors	Metaphor	f	%
Life	Water (3), sunrise (2), flower (2), breathe (1), backbone (1), pick fruit (1), carry stone (1), massage (1), toy (1), background music (1), sunset (1), rainbow (1), looking at the sky (1), boomerang (1), bungee jumping (1)	15	19	27.1
Thoughts and Feelings	Freedom (6), pour out (4), impossible (1), character (1), power (1), reborn (1)	6	14	20
Attention/ Production	Drawing a picture (3), building a wall (2), seed (1), making a necklace (1), knit (1), cook (1), embroider (1), lay dominoes (1)	8	11	15.7
Skill	Walk (8), swing (1), ride a bicycle (1), learning (1)	4	11	15.7
Functional	Cleaning (1), suitcase (2), turn off an alarm clock (1), moneybox (1), treatment (1), fishing line (1), treatment plant (1), open a door (1)	8	9	12.9
Share/Transfer	Being with beloved ones (4), trip (2)	2	6	8.6
	Total	43	70	100

When Table 3 is considered, it can be said that 43 metaphors developed by the participants were collected under 6 main categories. These are all related to the handwriting as follows: (1) Life, (2) Thoughts and feelings, (3) Attention/Production, (4) Skill, (5) Functional, and (6) Share/Transfer.

When Table 3 is considered, handwriting as a Life is the category which was mostly developed with 15 metaphors (57.4%). Sample expressions by the participants and the distribution of metaphors from each category field are as follows (F=female, M=male).

Category 1: The category of **“Life”** consists of 15 metaphors developed by 19 participants. The following metaphors are considered under this category when their common attributes and simile aspects are taken into consideration. Sample expressions by the participants were selected according to their frequency level and the ones with high frequency in this category are given below:

“Writing is like watching a water flowing from a waterfall for me. Just as we feel a sense of relief while watching the water flowing from the waterfall, I also relax while writing” (M1).

“For me, writing is like the evening sun hitting the calm sea (sunset)” (M42).

“Writing is like the blooming of colorful flowers in spring for me. I like to write, I definitely have my notepad and pen in my bag with me everywhere” (M34).

“Writing is like breathing for me. Because it allows us to breathe comfortably by putting our inner troubles on paper” (F8).

“Writing is like picking fruit from a tree for me. It is a bit difficult, but the more you write, the more you want to write” (F38).

“Writing is like looking at the sky for me. This shows that writing represents comfort, peace and happiness for me” (F60).

“Writing is like a boomerang for me. Because no matter how well I try to write, I always go back to the beginning and find myself writing badly again” (F5).

Category 2: The category of **“Thoughts and Feelings”** consists of six metaphors developed by 14 participants. In this category, the metaphor samples with high frequency are given below.

“Writing is a path to freedom for me. All of our inner troubles, suppressed emotions, reckonings find their way after writing them down and attain calmness. We express ourselves to ourselves, and after a while we don't think about the rest” (F58).

“For me, writing is like pouring my heart out to a friend who cares about me in a time when I'm very troubled and stressful. Writing relaxes me and reminds me of the feeling that I have fulfilled my responsibilities” (M33).

“I like to write. It was said that people's spelling expresses the characters. That's why I have always worked to make my writing nice and organized since I was little” (F43).

“Writing is like having power for me. Because I always used writing when I felt I was weak in my life and it made me feel strong” (F70).

“Writing is like reborn for me. Because learning to write is the meaning of things that were meaningless to me until that day” (M27).

Category 3: The category of **“Attention/Production”** consists of eight metaphors developed by 11 participants. In this category, the metaphor samples with high frequency are given below.

“Writing is like drawing a picture. There is a perception that writing is an art for me” (F18).

“Writing is like building a wall with bricks to me. Because I think that I express myself most accurately only by writing” (F9).

“Writing is like hoping a seed for me. There is a perception that writing here carries hopes for me” (F29).

“Writing is like making a necklace by sequencing pearls for me” (F46).

“Writing is like knitting for me. Because writing is a job that requires patience for me” (F35).

“Writing is like cooking for me. Even if the same ingredients are present in the meal, the taste of the food will be different because the hand taste of the person making it is different. The important thing here is to be able to cook with the appropriate method and skillfully. Even if the subject is the same in the articles written in the same way, when the style of the writer is different, we get different tastes while reading the written article, the taste will be different. If the thing that adds flavor to the food is salt and spices, I think it is the verbal arts used that also add flavor to the writing. Food nourishes the body and written products nourish the soul and knowledge” (F62).

“Writing is like embroidering a fabric for me. It gives me the same feeling in the paragraphs formed at the end of the writing, such as the beautiful, pleasant image formed after the embroidery is finished” (F66).

Category 4: The category of **“Skill”** consists of four metaphors developed by 11 participants. This metaphor can be exemplified as follows:

“Writing is like walking for me. At first I enjoy it, I keep on my way. When I get tired, it feels like an unbearable ordeal; I would like to continue with another vehicle. There is a perception that the post is tiring for me” (F12).

“Writing for me is like riding a bike by the sea. Because it is fun and enjoyable” (F24).

“Writing is one of the most effective learning methods for me. Because as I write I think and learn” (M3).

Category 5: The category of **“Functional”** consists of eight metaphors developed by 9 participants. This metaphor can be exemplified as follows:

“Writing is like cleaning up for me. So I write the complicated thoughts in my head I feel like I have put my life in order more when I spend it” (F4).

“Writing is for me; it’s like a very heavy suitcase that I have to carry. There is a perception here that writing is an obligation for my life, but I have a hard time writing any article with my hand” (M7).

“Writing is like turning off the alarm clock for me. Because I list all the tasks and tasks I have to do, and write and plan them daily weekly. As I do that job, I cross the list. Here for me there is a perception of telling the order” (M30).

“Writing is like putting money into a moneybox for me. There is a perception here that writing is easy for me and provides accumulation” (F41).

“Writing is like the last minute dose of adrenaline given to a dying patient for me” (M45).

“Writing is like a treatment plant for me. Purification means making it more acceptable for a particular end use” (M69).

“Writing is fishing line that enables me to fish. So it is the tool for my purpose. How difficult is it to reach the toolless goal, so for me writing is a need, indispensable” (F48).

“Writing is like a row of dominoes for me. There is a perception here that writing is an occupation that requires attention for me” (F49).

Category 6: The category of **“Share/Transfer”** consists of two metaphors developed by 6 participants. This metaphor can be exemplified as follows:

“Writing for me is like spending a day with my loved ones. Because as much as I enjoy the time I spend with my loved ones, I enjoy the same when I put that day on paper” (F20).

“For me, writing is like taking an intercity bus ride or even taking a break there in the winter. You don't want to continue, you want to go down, but you can't stop anywhere, you can't get off. You have to finish that post. It is tiring” (F21).

Metaphors Formed by the Participants on the Keyboarding (Typing)

48 metaphors formed by the study group on the keyboarding (typing) are given in Table 4 with their frequency distributions.

Table 4. Metaphors created for the keyboarding (typing) of teacher candidates.

Metaphor Code	Metaphor	f	%	Metaphor code	Metaphor	f	%
1	Play a piano	4	8.3	25	Prefer	1	2.1
2	Soulless person	3	6.3	26	Watching Tv	1	2.1
3	Write with a soulless pen	3	6.3	27	Heating with natural gas	1	2.1
4	Driving fast	3	6.3	28	A free bird	1	2.1
5	Blow up balloons	3	6.3	29	Hug	1	2.1
6	Write thoughtlessly	3	6.3	30	Playing tetris	1	2.1
7	Run	3	6.3	31	Downhill cycling	1	2.1
8	Finger exercise	3	6.3	32	Sitting at the computer	1	2.1
9	Artificial flower	2	4.2	33	Eat fruit	1	2.1
10	Ride the escalator	2	4.2	34	Digging wells with a needle	1	2.1
11	Robot	2	4.2	35	Unsalted meal	1	2.1
12	Rain sound	2	4.2	36	Extracting rice stone	1	2.1
16	Teleport	2	4.2	37	Preparing homework	1	2.1
14	Lego	1	2.1	38	Make e presentation	1	2.1
15	Make the food s/he knows	1	2.1	39	Using ready-made cover	1	2.1
13	Play snowballs without gloves	1	2.1	40	Unnoticed change of season	1	2.1
17	Machine sounds	1	2.1	41	Untie a knot	1	2.1
18	Pull up curtain	1	2.1	42	Journey without route	1	2.1
19	Draw a picture	1	2.1	43	Be a acrobat	1	2.1
20	Ski	1	2.1	44	Play a instrument	1	2.1
21	Making pasta	1	2.1	45	Magnet	1	2.1
22	Composing songs with notes	1	2.1	46	Solving the first grade question	1	2.1
23	Do puzzles	1	2.1	47	Relaxation	1	2.1
24	Stress ball	1	2.1	48	Do an easy job	1	2.1

When Table 4 is considered, it can be said that the study group developed 48 metaphors in total for the “keyboarding (typing)”. 8.3 % (f=4) of the participants said the “handwriting” is like “play a piano”. This metaphor is followed by “soulless person”, “write with a soulless pen”, “driving fast” have a frequency level of 6.3 % (f=3). However, of these metaphors, “finger exercise” (6.3%), “teleport” (4.2%), “unsalted meal” (2.1%), and “do puzzles” (2.1%) are remarkable

Table 5. Metaphorical perception categories for the keyboarding (typing) of teacher candidates.

Categories	Metaphors	Metaphor	f	%
High level attention/production	Driving fast (3), lego (1), do puzzles (1), make a presentation (1), untie a knot (1), preparing homework (1), extracting rice stone (1), be an acrobat (1), downhill cycling (1), playing tetris (1), draw a picture (1), digging wells with a needle (1), composing songs with notes (1), prefer (1), ski (1)	15	17	24.3
Superficiality/forgery	Soulless person (3), write with a soulless pen (3), write thoughtlessly (3), artificial flower (2), robot (2) unnoticed change of season (1), Unsalted meal (1)	7	15	21.4
Easy/ Effortless	Ride the escalator (2), watching tv (1), make the food s/he knows (1), making pasta (1), do an easy job (1), solving the first grade question (1), using ready-made cover (1), heating with natural gas (1), play snowballs without gloves (1), pull up curtain (1), eat fruit (1)	11	12	17.1
Thoughts and feelings	Play a piano (4), stress ball (1), relaxation (1), journey without route (1), hug (1), a free bird (1)	6	9	12.9
Sound	Blow up balloons (3), rain sound (2), machine sounds (1), play an instrument (1)	4	7	10
Skill	Run (3), finger exercise (3)	2	6	8.6
Future	Teleport (2), magnet (1), sitting at the computer (1)	3	4	5.7
	Total	48	70	100

When Table 4 is considered, it can be said that the study group developed 48 metaphors in total for the “keyboarding (typing)”. 8.3 % (f=4) of the participants said the “handwriting” is like “play a piano”. This metaphor is followed by “soulless person”, “write with a soulless pen”, “driving fast” have a frequency level of 6.3 % (f=3). However, of these metaphors, “finger exercise” (6.3%), “teleport” (4.2%), “unsalted meal” (2.1%), and “do puzzles” (2.1%) are remarkable.

When Table 5 is considered, it can be said that 48 metaphors developed by the participants were collected under 7 main categories. These are all related to the Keyboarding (typing) as follows: (1) High level attention/production, (2) Superficiality/forgery, (3) Thoughts and feelings, (4) Sound, (5) Skill, and (6) Future. When Table 5 is considered, Keyboarding (typing) as a High level attention/production is the category which was developed the most with 15 metaphors (24.3%). Sample expressions by the participants and the distribution of metaphors from each category field are as follows:

Category 1: The category of “**High level attention/ production**” consists of 15 metaphors developed by 17 participants. The following metaphors are considered under this category when their common attributes and simile aspects are taken into consideration. Sample expressions by the participants were selected according to their frequency level and the ones with high frequency in this category are given below:

“Keyboarding (typing) is like driving fast on the highway for me. Because I write fast” (M32).

“Keyboarding (typing) is like playing with lego for me. Because a creation of the human mind is created from pieces with lego. I also create what's in my mind when typing, especially when typing” (F9).

“Keyboarding (typing) is like puzzle for me. Because I try to put together the mixed letters I see in front of me in order to write down the thoughts that cross my mind” (F62).

“Keyboarding (typing) is like untying knots for me. Sometimes difficult and sometimes easy” (F49).

“It's like removing white stone from rice. Here, there is a perception that keyboarding (typing) is as difficult for me as searching for individual letters and choosing a white stone from brass” (M41).

“Keyboarding (typing) is like being a acrobat for me. Because the harder it is to keep keyboarding (typing), the more difficult it is to walk on the rope, the more difficult it is for me. Keyboarding (typing) is very troublesome for me” (F37).

Category 2: The category of **“Superficiality/forgery”** consists of seven metaphors developed by 15 participants. In this category, the metaphor samples with high frequency are given below.

“Keyboarding (typing) is like writing with a soulless pen for me. Because I don't think it conveys my feelings or emotions” (F8).

“Keyboarding (typing) is like an artificial flower for me. Writing with pencil and paper; while real is a flower that I can smell and touch, typing with a button is artificial” (M36).

“Keyboarding (typing) is like looking like a robot for me. Handwriting has the characteristics of the writer, it is unique to that person. However, typing with keys means typing in the same style for everyone. So typing with keys seems fake and easy to me” (F59).

“Keyboarding (typing) is like a soulless, numb person for me. Because your pen and paper; is to write without knowing the warmth, feelings and feelings” (M3).

Category 3: The category of **“Easy/Effortless”** consists of 11 metaphors developed by 12 participants. In this category, the metaphor samples with high frequency are given below.

“Keyboarding (typing) is like riding an escalator for me. Because typing provides me speed and convenience”(F16).

“Keyboarding (typing) is like making a food I know the recipe very well for me. Because I can easily do a food that I know very well without difficulty, and I can easily write with the keys” (F11).

“Keyboarding (typing) is like watching a game on TV for me. When I write the text with a pen, I feel as if I am watching that game in a live stadium. But I also enjoy typing with keys even if I don't feel the same excitement” (M1).

“Keyboarding (typing) is like pasta made in a student house for me. Because it is the most practical meal that can be made at that time, but it does not replace the meal our mother cooked at home. So is typing with keys. It is practical, but it can not substitute for the writing we write with paper and pen, it can not give that pleasure” (F22).

“Keyboarding (typing) is for me; it is similar to the new bride removing the dowry lace and laying off ready-made embroideries. Because, in my opinion, dowry lace is like handwriting written with care and effort, while ready-made textile fabrics are like a simple and practical writing written with keys” (F56).

“Keyboarding (typing) is like removing curtains from a cornice for me. Because using my ten fingers on the keyboard, I can type quickly without resting and I don't get tired. While removing the curtain from the cornice, we can pull the whole curtain down with a single move” (F14).

“Typing with keys is like heating with natural gas for me. Because it is not as hot and traditional as the stove culture, but it warms, it is practical” (F35).

Category 4: The category of **“Thoughts and Feelings”** consists of six metaphors developed by 9 participants. In this category, the metaphor samples with high frequency are given below.

“Keyboarding (typing) is like a stress ball for me. Because every time I press a new key, I relieve my stress and the faster I press it, the more relaxed and lighter I am” (F63).

“Keyboarding (typing) is like a relief for me, a kind of expressions of getting off my load. Because the things I think, wishes, problems, etc. I have written many cases and I can find the opportunity to examine and research the solution steps in depth. In this case, it makes me happy and relaxed” (F66).

“Keyboarding (typing) means almost hugging a person I miss. It means communicating with my loved ones. Because today's communication and communication tools are now provided through messaging applications” (F30).

“Keyboarding (typing) is like playing the piano and expressing yourself with notes, expressing your feelings and thoughts. Because while writing without getting tired; the meaningful and legible words, sentences and texts that emerge with the movement of the fingers gives me a feeling of success and relaxation” (F7).

Category 5: The category of **“Sound”** consists of four metaphors developed by 7 participants. In this category, the metaphor samples with high frequency are given below.

“Keyboarding (typing) is like popping balloons in a bubble wrap bag for me. Because the sound of typing on the keyboard motivates me to continue typing. I try to think fast and write fast. The addiction that occurs when I pop the balloons in the packaging bag also happens when typing on the keyboard (F61).

“Keyboarding (typing) is like falling raindrops for me, because I feel freedom and peace when I hear the sound of the rain, and when I hear the sound of the keyboard when I click the keyboard keys. I feel that I radiate the freedom and peace that is now missing in the world” (M26).

“Keyboarding (typing) is like the product they produce at the end of the very loud machines in the factory for me. Both have the same feel to me. The sound of the keys satisfies me and makes me feel that I can really do something, especially when preparing homework” (F13).

Category 6: The category of **“Skill”** consists of two metaphors developed by 6 participants. In this category, the metaphor samples with high frequency are given below.

“Keyboarding (typing) is like running for me instead of walking. Because being able to convey my thoughts faster causes me to be more active and productive” (F5).

“Keyboarding (typing) is like playing finger wrestling for me. Because our fingers are always active and fast. It's fun to write this way” (F24).

Category 5: The category of **“Future”** consists of three metaphors developed by 4 participants. In this category, the metaphor samples with high frequency are given below.

“Keyboarding (typing) is like teleporting my thoughts to me. Because, thanks to the keys, I can reach my thoughts wherever I want in a very short time. What I want to say, I transfer it from my mind to my fingertips to the keys” (F12).

“Keyboarding (typing) is like magnet for me. Cause there is always, only the objects sticking to the magnet are changing” (M23).

DISCUSSION

Writing directly contributes to the development of many skills as it is intertwined with mental processes as well as language skills. Therefore, teacher candidates perspectives in developing writing skills will shape the future of writing education. Generation Z teacher candidates produced metaphors in the category of handwriting, respectively the life (27.1 %), thought and feelings (20%), attention

and production (15.7 %), skill (15.7 %), functional (12.9 %) and share/transfer (8.6 %). Teacher candidates produced metaphors in the category of keyboarding (typing) high level attention/production (24.3%), superficiality/forgery (21.4%), easy/effortless (17.1%), thought and feelings (12.9%), sound (10%), skill (8.6 %) and future (5.7%).

The metaphors, which are in the life and thoughts and feelings categories, which have the most percentile for handwriting, contain many elements that people use, do not give up and need in daily life. Writing, unlike language, is lifeless because it does not need sound. It is interesting that the metaphors attributed to the writing, which is seen as a lifeless skill, are about life. In fact, this situation shows the importance of inanimate writing and that it is an activity intertwined with thought. The most life metaphors related to writing were produced. It indicates the existence of the text that we will use in the lifelong learning process. Writing can be defined as explaining the opinions, ideas and feelings of those who have the power of thinking, as well as their observations, experiences, and experiences in accordance with the rules of the language (Göçer, 2010). As it can be understood from the definition, in fact, writing has an important effect in expressing daily life, expressing life, experiencing and sharing experiences. The transfer of knowledge and culture is provided by writing. People want to write and describe this feeling that they live and experience as what they want to be. According to people, life erases what is not told over time. The act of writing is carried out to express all these experiences and accumulations, to protect and hide all kinds of feelings and thoughts that take place in life indirectly or directly. In this context, it is similar to the person who overlaps with the identity of the author and tries to hide his writings over time. Writing, starting from a thought, makes the word permanent and transfers it to the other side, it is permanent and fixed (Özdemir, 2020). Therefore, it coincides with the actions that exist in life. The writing has added interaction to this balance it has created with people, and has offered various concepts, feelings and thoughts to people's use. We write because we see writing as a way of life and because we see writing as equivalent to living (Karasevda, 2010). "*Writing is like looking at the sky for me.*" and "*Writing is like breathing for me.*" statements also support this. The findings of the research coincide with the findings of Tiryaki and Demir (2016). The act of writing has two dimensions, and the first of these dimensions is the quality part that includes holding the pencil, where the basic skills of writing are gained, and the operational and psychomotor skills of transferring letters, syllables, words and sentences to paper. It is stated that the second dimension is the content part that includes transferring the thoughts to the paper in line with the basic skills gained in the first dimension (Akyol, 2005). In this respect, it can be said that writing is a skill beyond mechanical operations. In order to save the writing skill from the mechanical processing process, it is necessary to ensure that it is intertwined with life, which is the most produced metaphor category. Writing studies in classroom environment should be associated with life. The enjoyable aspects of writing should be shown to students with activities such as diary writing and memoirs. It is not true to think that students' interest in writing skill will increase by just writing an essay.

One of the categories in which metaphors such as freedom, pouring out etc. produced for handwriting take place is thought and feelings. On the other hand, it is among the metaphors produced for keyboarding (typing). Sanders (2014) emphasizes that literacy is more than just writing something, learning the alphabet system, or learning letters; it is a process in which the individual shares his or her experiences and enables personality formation. Writing directly contributes to the student's thinking, understanding, communication and emotion skills. In addition to the writing processes such as generating ideas, planning and reviewing that require attention at the same time, it is stated that the way an individual manages cognitive resources is critical for successful writing (Christensen & Jones, 2000; Saada-Robert, 1999). Students express their feelings by writing. While a person is writing or thinking about something, he / she is decontextualized, abstracted; regardless of the situation, defines, describes and classifies (Sanders, 1994). Comparative studies of handwriting and keyboarding (typing) also imply that computer use does not only affect specific handwriting skills, but also similarly affects fine motor skills and thus general characteristics of human behavior (Medwell & Wray, 2008; Sülzenbrück, Hegele, Rinkenauer & Heuer, 2011). Handwriting is a complex perceptual–motor skill encompassing a blend of visual–motor coordination abilities, motor planning, cognitive, and perceptual skills, as well as tactile and kinesthetic sensitivities. In a clinical study conducted by James Pennebaker in 1986, it was concluded that the act of writing had positive effects on the psychology of

the person, the selected subjects were asked to write about their most distressing and difficult experiences, and as a result of the study, interesting information was obtained: For this reason, the person chose to write for himself as the type of action. It is seen that he reflects the feelings that have accumulated in him from the moment on, with the method of writing, and confesses the issues that he is afraid to tell even to himself, through writing (as cited in Özdemir, 2020). Sait Faik Abasıyanık's "I would be crazy if I didn't write." expresses the psychological therapeutic feature of the act of writing words. Regarding this, the author stated in İnci Aral (2009) that writing is a therapy. In the studies conducted with teacher candidates (Kayabaşı & Yılmaz Karadağ, 2019; Tok, Rachim & Kuş, 2014), some of the teacher candidates stated that they experienced emotional relief while writing, while others stated that they had difficulty expressing themselves. It is among the important results of the research that teacher candidates do not have writing habits, they do not like writing, but they find writing important because it is permanent, provides emotional relief and offers personal freedom (Kayabaşı & Yılmaz Karadağ, 2019). In this case, it supports the findings of the research.

One of the common metaphors in both fields is attention and production. Attention and production is an important common category in both handwriting and keyboarding (typing). One of the important processes of writing skill on this subject is to produce a product. Le Guin (2018) states that writing requires first of all an art and therefore production. Keyboarding (typing) it easier to produce text and increases the productivity and creativity of individuals. Especially simple operations, corrections, producing quality text, drawing, adding images and sharing are easier. Digital writing can be edited and updated more easily than writing with pen and paper. According to Taipale (2014), digital writing increases textual productivity, especially as it allows editing quickly and efficiently (as cited in Susar Kırmızı, Kapıkıran, & Akkaya, 2021). Teacher candidates also stated their reasons for choosing to keyboarding (typing) in a way consistent with the findings of the research, such as saving time, being economical, easy sharing opportunity, use of visuals, legible writing, reduction of spelling and punctuation problems, page layout and archiving (Tüzel & Tok, 2013). The findings of the research overlap with the scale items developed to evaluate the attitudes of prospective teachers towards the digital writing process (Susar Kırmızı et al. 2021). The scale items in the convenience sub-dimension are as follows: It is easier to share what is written in the digital environment than when it is written on paper; I can easily correct the mistake due to the features of the program in digital manuscripts; I think more fluently when writing in digital environment; Writing digitally increases my self-confidence. The metaphors produced with the results of Ustabulut's (2021) research are consistent. Participants in the research stated that digital writing provides convenience and they can easily perform all kinds of writing operations in the digital environment. In addition, they stated that digital writing motivates them, writing in digital environment increases their self-confidence, gives them great pleasure, and they feel a great lack of themselves when they cannot write digitally. While individuals inevitably write something in front of the screen, they have to deal with processes that require attention.

On the other hand, when the metaphors that the teacher candidates upload for keyboarding (typing) are examined, one of the categories that rank second is superficiality/forgery. In handwriting, a relationship is established between the shape, image and spelling of each letter in our minds. Everyone has their own characteristic writing. In fact, character analyzes are made from the writing styles written by people on this subject. The text is coded by the writer; the meaning is built by the author within the text; expression passes through the linguistic ability of the author (Yücel, 2020). In Keyboarding (typing), a relationship is established between the shape of each letter we create in our mind and its place on the keyboard. This relationship is actually superficial and temporary. It is obvious that individuals who keyboarding (typing) want to explain the subject briefly and concisely while expressing themselves. There is a content in which the traces of daily life are seen more and do not require much mental effort. Writing with pen and handwriting, development of student's writing skills, personality, importance given to writing, clean and meticulous writing, etc. gives clues about. This situation helps the teacher to recognize the handwriting of the students and to check the homework from the handwriting. However, it is difficult to make such checks in electronic writing and to determine by whom the writing was produced. Yücel (2020) mentioned the dilution and superficialization process of content as one of the resonances that writing experiences with

digitalization, which is consistent with the finding. He states that the reason for this is that the users show interest in easier content and the creation of easily consumed content. One of the metaphors obtained in the research findings is that keyboarding (typing) is a process that does not require easy/effortless. In the digital environment, the message is instant. The article is produced and circulated instantly. Its strength has weakened in terms of content, and it will end with another news, message. Readers see many content at the same time and deal with instant, daily articles. During the day, they have to give an emotional response as well as a cognitive response. This situation actually brings up the artificial behaviors of Generation Z in the background. "Better" now means "faster" in digital culture. Aragón-Mendizábal, Delgado-Casas, Navarro-Guzmán, Menacho-Jiménez and Romero-Oliva (2016) stated in their study with 251 university students that those who took notes with computers were faster than handwriting and therefore wrote more sentences. Digital writing is used in the preparation of homework, diaries, online uses, browsing the internet, e-mail, written messages, blogs, software creation and website design. The texts may contain multimedia elements such as images and sounds from time to time. Digital writing has become the social norm of recent years. Digital writing refers to new ways of communicating in the new age. Reading and writing proficiency may change with digital technologies, but this does not mean that writing on paper is excluded, taking into account the benefits of handwriting (Armstrong, 2014; Grapes, Parsons, & Towne, 2014; Vincent, 2014). It can be said that with the increase in the use of technology in recent years, there has been an explosion of digital writing. The rapidly spreading computer networks and the use of technology will continue to become widespread day by day. Accordingly, there is a period of rapid change in how and with which tools writing is written. It is an undeniable fact that the importance of digital writing has increased. Written language used in digital environments can also lead to many spelling mistakes caused by the use of digital communication tools (such as typing fast, making keyboard mistakes), and these wrong expressions can cause a negative perception on the readers. Studies have shown that texts with spelling mistakes negatively affect the reader's perception of reliability (Cox, Cox, & Cox, 2017; Fogg et al., 2001; Horn, Nelson, & Brannick, 2004; Vignovic & Thompson, 2010) associate spelling errors in texts that readers encounter mostly with fast typing or the indifference of the text writer. Texts in which the author is evaluated as reckless are accepted as texts with low reliability (Cox et al., 2017; Vignovic & Thompson, 2010). Fogg et al. (2001), in their research examining the factors affecting the reliability of web sites, concluded that even a single letter error can negatively affect the reader's perception of that web page.

Among the expressions under the superficiality category, "*Keyboarding (typing) is like writing with a soulless pen for me. Because I don't think it conveys my feelings and emotions.*" "*Keyboarding (typing) is like an artificial flower for me. Writing with pencil and paper; while real is a flower that I can smell and touch, typing with a button is artificial.*" It is seen that such discourses are also expressed in researches. It is possible to see that this close relationship between individuals' personality traits and word preferences continues in the production and sharing of content in digital environments. According to Kottke (2007), when readers encounter spelling mistakes, they think that it is more of a technical error (such as keyboard errors, pressing the wrong key), and when they encounter spelling mistakes, they attribute this to the author's lack of knowledge on the subject. (as cited in Erdem & Ünlü, 2018). In addition, the perception of digital texts, which are error-free or in accordance with the spelling rules of the language, on the reader also emerges as an important determinant in terms of increasing the effect of expression styles in digital environments (Erdem & Ünlü, 2018). For this reason, it is possible to pay more attention to the use of written language in the virtual world and, if there are technological updates in the acquisitions related to reading, it can be added to the acquisitions related to writing. For example: "It pays attention to punctuation marks in digital writing." or "Examines the correct spelling of words in digital writing".

Among the advantages of keyboarding (typing), while there are studies for individuals to develop skills such as high-level attention, creativity and productivity, and the metaphors obtained in the research have also been seen in this direction, "Why is pen writing / handwriting still taught in schools? What would be lost if teaching to write with direct keys is done in schools? "The question comes to mind. Today, there is a strong emphasis on improving students' pencil writing skills in many countries. Because writing skills developed at an early age make a great contribution to students' self-

expression, learning, and developing their language, mental, emotional and social skills. The findings of the study are in this direction. Recent research once again reveals that writing with a pencil is important for students' language, mental development and creativity. On the other hand, researches reveal that students who first learn to read and write with the keyboard have reading problems, and their reading and writing skills are not sufficiently developed. For this reason, priority is given to writing with pencil in primary school (Güneş, 2016). As the use of technology has expanded, the focus on time spent on handwriting instruction has dramatically decreased. Research suggests that the process of writing by hand is highly complex and allows students to gain cognitive and literacy skills that cannot be duplicated when using a keyboard (Alonso, 2015; Stevenson & Just, 2012). Handwriting practice wires the brain for reading and writing success and contributes to reading fluency (Berninger, 2013). The contribution of handwriting to thinking skills is undeniable, but as Bull et al. (2008) said, it is emphasized that the experiences of young people in communication technologies should be evaluated by educators and course contents should be prepared in accordance with pedagogical principles based on these experiences. In a study conducted by Lenhart, Arafeh and Smith (2008), it is said that the majority of young people prefer to write cursive. In the findings of the research, it was revealed that they knew and used the importance of handwriting. Lenhart et. al. (2008) revealed that despite widespread technology ownership and use among young people, the vast majority of young people generally prefer handwriting. It has been revealed that students who prefer to write on the computer prefer to write on the computer because of faster and smoother writing. On the other hand, students who prefer handwriting stated that they prefer handwriting more because of organizing thoughts and revealing creativity more easily when writing in handwriting.

The first thing that comes to mind when it comes to writing is handwriting. But today's children especially the Generation Z Children have become writing with keys without taking the pen in their hands, and many of them have trouble holding a pencil. As can be seen, defenders of the pen argue that writing will be difficult without technological tools, internet and electricity, people will not be able to express themselves and written communication will be compromised (Mogey, Sarab, Haywood, Van Heyningen, Dewhurst, Hounsell & Neilson, 2008). On the other hand, those who defend the keyboard claim that the future of writing depends on technological tools, it cannot be considered separately, writing with pen is an old tradition and has no place in the future. On the other hand, educators emphasize that students should be taught to write with a pen first then switch to the keys and focus on developing both skills (Freeman, Mackinnon & Miller, 2005; Güneş, 2016).

Teacher candidates should provide content and environments that will increase the longing for handwriting in their students to create awareness of writing and make them feel the need for writing. The determination of the meanings attributed by the Generation Z teacher candidates to traditional writing and typing with keys, and the perspective of teacher candidates on this subject were discussed. Children can not learn handwriting from digital tools but Teacher Candidates should be a model by sharing their writing experiences with students. Primary responsibility for teaching students to have writing skills and to awaken their interest and enthusiasm for writing lies with classroom teachers and Turkish teachers. According to Morgan (2010), determining the writing habits and preferences of teacher candidates will contribute to the development of writing education more effectively and to produce solutions to the problems experienced in this regard.

According to Güneş (2014), children's prior knowledge should be qualified and functional and their writing activities should be effective and permanent. For this reason, children should be given print awareness training from an early age. Teacher candidates' thoughts about writing are important in order to raise their students' awareness of writing and to train them in writing awareness. Not limiting the education of writing to the studies in schools, making the student gain the habit of writing outside of the school and integrating keyboarding (typing) with handwriting may arouse pleasure and desire in terms of writing.

CONCLUSION

Within the scope of the study, the meanings attributed to handwriting by Generation Z teacher candidates are significant. With the psychomotor aspect of writing, that is, with the use of the hands, a record is created, but this record leaves a trace and is permanent. Since writing is a psychomotor skill, it represents touching and touching signs. Generation Z teacher candidates do not want to leave a mark in their lives, to make their lives meaningful and to give up on traditional writing. It was emphasized that handwriting is a process beyond writing skills and especially its contribution to personality development. The metaphors produced highlight the longing for handwriting and show that handwriting is different from keyboarding (typing). Writing acquisition can only be met by writing acquisition. Handwriting teaching should not be decreased, but rather increased, the studies done on its current and future situation. It is important for teachers to be aware of the significant of writing skills.

REFERENCES

- Abasıyanık, S. F. (1993). *Bütün Eserleri 6, Havuz Başı - Son Kuşlar*. İstanbul: Bilgi Yayınevi.
- Akyol, H. (2005). *Türkçe ilk okuma yazma öğretimi*. Ankara: Pegem A Yayıncılık.
- Alonso, M. (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. doi: 10.1016/j.sbspro.2015.01.470
- Aral, İ. (2009). *Anlar İzler Tutkular*. İstanbul: Turkuvaz Yayınları.
- Aragón-Mendizábal, E., Delgado-Casas, C., Navarro-Guzmán, J., Menacho-Jiménez, I., & Romero-Oliva, M. (2016). A comparative study of handwriting and computer typing in note-taking by university students. [Análisis comparativo entre escritura manual y electrónica en la toma de apuntes de estudiantes universitarios]. *Comunicar*, 48, 101-107. <https://doi.org/10.3916/C48-2016-10>
- Armstrong, K. (2014). Cursive handwriting in an internet age. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 8(11), 3594-3600.
- Berk, A. Ronald. (2009). Teaching strategies for the net generation. *Transformative Dialogues: Teaching & Learning*, 3 (2).
- Berninger, V. (2013). Educating students in the computer age to be multilingual by hand. *National Association of State Boards of Education (NASBE)*, 19(1), 1-4. Alexandria, VA: Policy Information Clearinghouse.
- Brosdahl, D. J., & Carpenter, J. M. (2011). Shopping orientations of US males: A generational cohort comparison. *Journal of Retailing and Consumer Services*, 18, 548-554.
- Bull, G., Thompon, A., Searson, M., Garofalo, J., Park, J., Young, C. & Lee, J. (2008). Connecting informal and formal learning: Experiences in the age of participatory media. *Contemporary Issues in Technology and Teacher Education*, 8(2). <http://citejournal.org/vol8/iss2/editorial/article1.cfm>
- Büyüköztürk, Ş., Kılıç, Ç. E., Akgün Ö. E., Karadeniz, Ş. & Demirel, F. (2009). *Bilimsel araştırma yöntemleri*. Ankara: Pegem Akademi.
- Christensen, C. A. & Jones, D. (2000). Handwriting: An underestimated skill in the development of written language. *Handwriting Today*, 2, 56-69.

- Cox, D., Cox, J. G., & Cox, A. D. (2017). To Err is human? How typographical and orthographical errors affect perceptions of online reviewers. *Computers in Human Behavior*, 75 (Supplement C), 245–253. <https://doi.org/10.1016/j.chb.2017.05.008>
- Erdem, B. & Ünlü, D. (2018). A Review of readers' evaluations of the typing errors in digital communication environments. *Global Media Journal TR Edition*, 9 (17), 264.
- Eryaman, M. Y. (2008). Writing, Method and Hermeneutics: Towards an Existential Pedagogy . *İlköğretim Online* , 7 (1) , 2-14
- Freeman, A. R., Mackinnon, J. R. & Miller, L.T. (2005). Keyboarding for Students with Handwriting Problems. *Physical & Occupational Therapy In Pediatrics*, 25 (1-2), 119-147, DOI: 10.1080/J006v25n01_08
- Fogg, B.J., Marshall, J., Laraki, O., Osipovich, A., Varma, C., Fang, N., Paul, J., Rangnekar, A., Shon, J., Swani, P., & Treinen, M. (2001). What makes Web sites credible? A report on a large quantitative study. *Proceedings of CHI'01, Human Factors in Computing Systems*, 61-68.
- Glenn, J. M. (2000). Teaching the Net Generation. *Business Education Forum*, 54 (3), 6-14.
- Göçer, A. (2010). Türkçe öğretiminde yazma eğitimi. *Uluslararası Sosyal Araştırmalar Dergisi*, 3 (12), 178-195.
- Grapes, M., Parsons, E., & Towne, R. (2014). On cursive writing, keyboarding, and handwriting: An argument of efficacy. Undergraduate Student Publications. Paper 10. Cedarville, OH: Cedarville University.
- Güneş, F. (2014). *Turkish teaching (Türkçe öğretimi)*. Ankara: Pegem Academy.
- Güneş, F. (2016). The Discussion on writing with pencil and typing on keyboard in education. *Bartın University Journal of Faculty of Education*, 5 (1), 10-33. DOI: 10.14686/buefad.v5i1.5000155472
- Gündüz , S. (2003). *Öykü ve roman yazma sanatı*. İstanbul: Toroslu.
- Hay, L. E. 2000. Educating the Net Generation. *The Social Administrator*, 57 (54), 6-10.
- Horn, J., Nelson, C. E., & Brannick, M. T. (2004). Integrity, conscientiousness, and honesty. *Psychological Reports*, 95(1), 27–38. <https://doi.org/10.2466/PR0.95.5.27-38>
- Işık, S. Y. (2016). *İnsan okudum*. Ankara: Ütopya Yayınevi.
- Karasevda, N. (2010). *Yazarlık okulu: Sen de yazar olabilirsin!* İstanbul: Popüler Yayınları.
- Kayabaşı, B. & Yılmaz Karadağ, R. (2019). Sınıf öğretmeni adaylarının yazma alışkanlıkları, tercihleri, tutum ve inançları. *Kastamonu Eğitim Dergisi*, 27(6). DOI: 10.24106/kefdergi.3417
- Kuran, E. (2019). *Z-Bir kuşağı anlamak*. İstanbul: Mundi Yayınları.
- Le Guin, U. K. (2018). Dümeni yaratıcılığa kırmak (D. Göl, Çev.) İstanbul: Hep Kitap Yayınları.
- Lenhart, A., Arafeh, S., & Smith, A. (2008). Writing, technology and teens. *Pew internet & American life project*.

- Medwell, J. & Wray, D. (2008). Handwriting – A Forgotten Language Skill?, *Language and Education*, 22 (1), 34-47. DOI: 10.2167/le722.0
- Miles, M. B. & Huberman, A. M (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
- Mogey, N. N., Sarab, G. G., Haywood, J. J., Van Heyningen, S. S., Dewhurst, D. D., Hounsell, D. D., & Neilson, R. R. (2008). The end of handwriting? Using computers in traditional essay examinations. *Journal of Computer Assisted Learning*, 24(1), 39-46.
- Oral, G. (2003). *Yine yazı yazıyoruz*. Ankara: Pegem Akademi.
- Özdemir, R. (2020). *Türk ve Yabancı Yazarların Yazma Eylemi Üzerine Görüş ve Düşünceleri*. Yayınlanmamış yüksek lisans tezi. Ankara Üniversitesi, Güzel Sanatlar Enstitüsü.
- Saada-Robert, M. (1999). Effective means for learning to manage cognitive load in second grade school writing: A case study. *Learning and Instruction*, 9, 189–208.
- Sanders, B. (1994). A is for ox (Öküzün A'sı). Ayrıntı Yayınları: İstanbul.
- Stevenson, N., & Just, C. (2012). In early education, why teach handwriting before keyboarding? *Early Childhood Education*, 42, 49-56. doi: 10.1007/s10643-012-0565-2
- Susar Kırmızı, F., Kapıkıran, Ş., & Akkaya, N. (2021). Attitude scale for digital writing (DWS): Scale development study. *Pamukkale University Journal of Education*, 52, 417-444 .
- Sülzenbrück, S., Hegele M., Rinkenauer, G. & Heuer, H.(2011). The death of handwriting: secondary effects of frequent computer use on basic motor skills. *Journal of Motor Behavior*, 43 (3), 247-251.
- Tiryaki, E. & Demir, A. (2016). Turkish teacher candidates' metaphorical perceptions related to writing skills. *Mustafa Kemal University Journal of Graduate School of Social Sciences*, 13 (33), 18-27.
- Tok, M., Rachim, S. & Kuş, A. (2014). Yazma alışkanlığı kazanmış öğrencilerin yazma nedenlerinin incelenmesi. *GEFAD/ GUJGEF*, 34(2), 267-292.
- Tüzel, S. & Tok, M. (2013). Investigation of teacher candidates' experiences in digital writing. *Journal of History School (JOHS)*, 6 (XV), 577-596. DOI: <http://dx.doi.org/10.14225/Joh292>
- Türk Dil Kurumu (TDK). <https://sozluk.gov.tr/> (Erişim tarihi: 01.10.2021)
- Ustabulut, M. Y. (2021). Analysis of the opinions of Turkish language teachers about digital writing. *Manisa Celal Bayar University Journal of Social Sciences*, 19 (2), 300-311.
- Vignovic, C.N. & Thompson, L.F. (2010). Computer-mediated cross-cultural collaboration: attributing communication errors to the person versus the situation. *Journal of Applied Psychology*, 95(2), 265-276.
- Vincent, J. (2014). Sociological insights on the comparison of writing/reading on paper with writing/reading digitally. *Telematics and Informatics*, 31(1), 39-51.
- Yıldırım, A. & Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri (3. Baskı)*. Ankara: Seçkin Yayıncılık.
- Yücel, R. (2020). Digital resonance of writing and becoming superficial of the content. *Journal of Erciyes Communication*, 7 (1), 487-506.