

## A LITERATURE REVIEW: THE IMPACTS OF DIGITAL TOOLS ON THE PROCESS OF TEACHING AND LEARNING IN MIDDLE SCHOOL LANGUAGE ARTS CLASSES

### ORTAOKUL ANA DİL DERSLERİNDE KULLANILAN DİJİTAL ARAÇLARIN ÖĞRENME VE ÖĞRETME SÜRECİNE ETKİSİ ÜZERİNE BİR ALAN ARASTIRMASI

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**ÖZET:** Son yıllarda yeni bilgi ve iletişim teknolojilerindeki gelişmeler sosyal yaşamı oldukça etkilemektedir. Özellikle, dijital araçlardaki hızlı değişim ve mobil araçlarla internetin yaygınlaşması bilgiye ulaşmada ve iletişim sağlamada birçok kolaylık sağlamaktadır. Bu araçlardaki gelişim ve değişim okuryazarlık becerileri için yeni ortamlar ve imkânlar sağladığından bütün bu değişimler okuryazarlık kavramını da etkilemiştir. Bu yüzden bu bilgi ve iletişim çağındaki gelişmeleri takip etmek için temel dil becerilerine sahip olmak artık yeterli değildir. Bu becerilere ek olarak, insanlar aynı zamanda 21. yüzyıl insanından beklenen dijital okuryazarlık becerilerine de sahip olmalıdır.

Bu çalışmada konuyla alakalı 2003 ve 2013 yılları arasında yapılmış 19 çalışma incelenmiştir. Bu çalışmalar, dijital araçların orta okuldaki ana dili derslerinde öğrenme ve öğretme sürecine etkisini ele almaktadır. Çalışmaların sonuçları göstermektedir ki dijital araçlar öğretmenlere derslerde okuryazarlık becerilerini bir araya getirmede, öğrencilere de farklı okuryazarlık deneyimleri edinmelerinde ve onların yazma becerilerini geliştirmede yardım etmektedir. Bunlara ek olarak dijital araçlar öğrencilere yaratıcılık, paylaşım ve diğer öğrencilerle uzaktan birlikte çalışma için imkânlar sağladığından ana dili derslerindeki öğrenme ve öğretme ortamını olumlu etkilemektedir. Ayrıca öğrenciler bu araçları kullanarak hem kolayca çok katmanlı metinler oluşturabiliyor hem de dijital okuryazarlık becerilerini geliştiriyorlar. Dijital araçların akademik başarıya etkisine gelince bu konuda araştırma sonuçlarının tutarsız olduğu görülmüştür. Bu yüzden bu konuda bir genelleme yapmak mümkün değildir. Çalışma, bu alanda gelecekte yapılacak çalışmalara ilişkin önerilerle sonlandırılmıştır.

**Anahtar sözcükler:** Dijital okuryazarlık, dijital araçlar, dil öğretimi, ana dili, yeni okuryazarlık, ana dili dersleri ve teknoloji, çokluokuryazarlık.

**ABSTRACT:** In recent years, new information and communication tools have impacted social life. Specifically, the rapid developments in digital technology and the Internet have been providing many benefits for transferring information and communication. These changes and developments are directly related to literacy because they have created new environments and opportunities for people to use their literacy skills. However, having basic literacy skills is not enough to adapt to this new information and communication era. In addition to basic literacy skills, 21<sup>st</sup> century citizens are expected to have digital literacy skills.

In this study, I reviewed 19 experimental studies. These studies addressed the impact of digital tools that were used in the middle school language arts classes and digital literacy practices. The results show that digital tools help teachers to integrate literacy practices, provide different literacy practices for students, and improve students' writing skills. Additionally, digital tools positively impact the teaching and learning process by creating opportunities to create, share, and collaborate or students. Students also use and create multimodal hybrid texts by using digital tools, which also helps students to improve their abilities to use digital tools. However, there is no consistency between studies about the effects of digital tools on increasing students' academic achievement. The review ends with suggestions for future studies.

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**Keywords:** Digital literacy, digital tools, language arts, new literacies, language arts and technology, multiliteracies.

## 1. INTRODUCTION

Through globalization and advancing technologies, new digital technology and multimedia tools are providing facilities to people for communication. Hence, to have basic literacy skills is not enough to adapt this new social and technological era. However, people have to have new literacy skills to be aware of the social, global, and technological changes in the world. In this paper, I will address digital tools in terms of their applications in language arts classes to improve the effectiveness of the teaching and learning process.

As stated by the National Council of Teachers of English (NCTE- 2008) 21st-century literacies position statement, “As society and technology change, so does literacy. Because technology has increased the intensity and complexity of literate environments, the 21st century demands that a literate person possess a wide range of abilities and competencies, many literacies.” (NCTE Executive Committee). These ‘many literacies’ are present in many students’ everyday lives, yet they are not necessarily incorporated into school curricula.

In this digital age, being literate means being able to create your own web page, blog, or wiki; using mobile devices effectively such as tablet laptops, or cell phones; connect to friends via Facebook, Twitter or other social networks; communicate with your colleagues all over the world simultaneously and instantaneously (Morrel, 2012). Furthermore, all these digital tools have created ‘new social interactions’ (Ranker, 2008).

Technology has had a big influence on these changes in the past three decades. Education systems cannot be oblivious to these changes in this digital age because at the same time technology has affected people’s learning styles. In practice, digital technologies provide new teaching and learning environments and “trigger a different kind of relationship between the teachers, the learners, and what is being learned” (Laurillard, 2013). For example, concepts such as online learning, e-learning computer-based instruction, virtual education, multimedia learning, and web/internet-based training are related to digital learning.

All these changes have impacted students’ daily life since using technology among teens has been increasing day by day. According to Teen and Technology 2013’s report’s results that was done by Pew Research Center:

- 78% of teens now have a cell phone, and almost half (47%) of those own smartphones.
- One in four teens (23%) have a tablet computer.
- Nine in ten (93%) teens have a computer or have access to one at home. Seven in ten (71%) teens with home computer access say the laptop or desktop they use most often is one they share with other family members.
- About three in four (74%) teens ages 12-17 say they access the Internet on cell phones, tablets, and other mobile devices at least occasionally (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013).

These results show how teens engage in technology and technologic tools. Gunter (2012) labeled today’s students as “media-centric” and “text-averse readers” and she also added that digital technologies could be used to reach out these students.

Likewise, today's students are called "Digital Natives" which means "native speakers of the digital language of computers, video games and the Internet" (Prensky, 2001). According to Prensky (2001) "today's teachers have to learn to communicate in the language and style of their students" (p. 4). Therefore, as Hick and Tuner (2013) stated, "digital literacy is no longer a luxury," (p.63) in contrast it is essential for everybody (Gilster, 1997). In this sense, teachers must have digital literacy as well as students.

According to Gilster (1997) being digitally literate is having a driver license. By using this license, as I mentioned above, students will use new technologies to adapt to the new global world. In International Reading Association's (2009) the new literacies and 21st-century technologies position statement, they claimed this case: "To become fully literate in today's world, students must become proficient in the new literacies of 21st-century technologies... Literacy educators have a responsibility to effectively integrate these new technologies into the curriculum, preparing students for the literacy future they deserve" (n.p).

In conclusion, according to Coiro, Knobel, Lankshear, and Leu, (2008) emerging new literacies have four characteristics:

- New technologies for information and communication and new visions for their use require us to bring new potentials to literacy tasks that take place within these technologies.
- New literacies are central to full civic, economic, and personal participation in a world community.
- New literacies are deictic: they rapidly change as defining technologies change.
- New literacies are multiple, multimodal, and multifaceted

Educators or curriculum makers should take these characteristics into consideration when they make decision about teaching and learning processes or curriculum development.

The purpose of this literature review is to address recent studies on using digital technologies in the language arts classes that were done in a middle school context. My main intent is not to critique these studies. I will review these studies to find research gaps when using digital tools in language arts classes. To this end, I will find the common themes in these studies with respect to their theories and results.

### **The Definitions of Digital Literacy**

Before I state my research questions, I would like to explore the definitions of digital literacies. I used definition as plural because digital literacy as a notion is addressed from different points by different researchers. Additionally, since there is a direct relationship between digital tools and digital literacy, I addressed the notion of digital literacy in my study. In the following paragraphs, I will explore how other researchers define the concept of digital literacy as skill, ability, capability, and social practices.

Lankshear and Knobel (2008) examined many definitions of digital literacy from a sociocultural view, they then define "digital literacy as a shorthand for the myriad social practices and conceptions of engaging in meaning making mediated by text that are produced, received, distributed, exchanged, etc., via digital codification," and they mentioned "blogs, video games, text messages, online social network pages, discussion forums, internet memes, FAQs, and online search results" as examples of digital literacy tools. These tools provide students digital environments for literacy practices. These literacy "practices are the social processes

which connect people with one another, and they include shared cognitions represented in ideologies and social identities” (Barton & Hamilton, 2000).

Buckingham (2008) claims that digital literacy is more than having basic skills that are necessary to use digital tools. According to him, in addition to functional skills such as “how to use a computer, and a keyboard, or how to do online searches”, digital literacy also includes critical thinking abilities such as how “to evaluate and use information critically if they are to transform it into knowledge” . Thus, digitally literate people can evaluate information as to whether the source is reliable or not and address this information from different point of views such as social, political, or gender biases. In this sense, as Morrel (2012) states language arts classes should help students to “understand the affordance and constraints of new communication” and information technologies and teach them to evaluate information or message in these Technologies.

Littlejohn, Beetham, and McGill (2012) define digital literacy as “capabilities required to thrive in and beyond education, in an age when digital forms of information and communication predominate”. From this aspect, digital literacies are not just related to educational contexts; moreover they are everywhere that there is digital communication and interaction.

Gilster (1997) defines digital literacy as an ability “to understand and use information in multiple formats from a wide range of sources” that come from digital tools. A digital read on literacy also involves being able to understand a problem and develop a set of questions that will solve that information need” He also mentioned the importance of critical thinking when information in the Internet is used.

Martin (2008) combined the definitions of digital literacy in terms of skill, competence, critical thinking, ability, and capability in his conceptualization, stating that digital literacy:

“is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process” .

The lengthy lists of actions that make up digital literacies, as taken from Martin (2008), highlight the complexity of the current definitions of digital literacies. These definitions show that in this information and communication era, digital literacies as ability, capability, skill, and social practice have important roles in the process of meaning making. Therefore, it should be part of the contemporary education systems and curriculums.

## 2. METHOD

This literature review was designed to examine the existing studies in the field of technology in language arts classes in terms of designing a new research(es) about integrating digital tools into middle school language arts curriculum. Related experimental studies that were done in middle schools between 2003 and 2013 were chosen for this review. Since the middle school includes fifth, sixth, seventh, and eighth grades in Turkey, the studies that focused on these grades were chosen.

In this review, these online databases and search engines were used to gather data: Education Resources Information Center (ERIC), Academic Search Complete, Education Research Complete, JSTOR, ProQuest, ScienceDirect, Springer Link, and Google Scholar. I

selected studies in which the abstracts included one or more of the following terms: digital literacy, new literacies, technology in literacy education, language arts and technology, multiliteracies, multimodal literacies, and digital tools. I chose these terms because they represents and identify studies, which were done associated with digital literacy and its components. As for journals, I searched The Reading Teacher, Journal of Adolescent & Adult Literacy, Reading Research Quarterly, Journal of Literacy Research, Language Arts, and The Journal of Literacy and Technology to find relevant works for this review. Studies that were found in these databases and journals were explored according to my research questions:

1. What are the impacts of digital tools on the process of teaching and learning in middle school language arts classes?

As a result, 19 articles were found. These articles were examined in terms of their research problems, theories, methodologies, and results. Research findings regarding digital literacies were synthesized to help educators. For example, language arts teachers in middle schools may be very aware of the importance and value of digital tools in teaching and learning processes. They also may get information about how digital literacies can be integrated with curriculums.

In the following sections, I will address related articles' outcomes in connection with my research question. I will address my findings under eight main titles. Finally, I will discuss existing studies to expose research gaps pertaining in order to using digital tools in language arts classrooms.

## **The Impacts of Digital Tools on Teaching and Learning Processes and Environments**

### **Integrating Literacy Practices**

Students are expected different roles when using digital tools in language arts classrooms. They should participate in the learning process actively. They also should use their digital and literacy skills in this process to show their abilities and learning levels. Gunter (2012) called these students 'apprentice producers'. Additionally, she asserted that through authentic literacy practices, students improve their literacy skills by 'being producers'. When doing this, students experience different literacy practices. For example, in her study, in order to create a digital video about a book, students used their print-based, oral, writing, academic, and digital literacy skills and abilities. The studies show that the same skills are used in different video creating studies (Spires, Hervey, Morris, & Stelpflug, 2012; Ranker, 2008).

For instance, in Spire, Hervey, Morris, and Stelpflug's (2012) study, the researchers state, "as a result of emerging technologies prompting new avenues for teaching and learning, students are positioned to 'create' to learn". In addition to video-creating studies, Mahiri's (2006)'digital DJ-ing' is a good example to show how students create multimodal texts via digital technologies. Through this project, students improved their research, presentation, digital literacy, and collaboration skills by creating multimodal texts (Mahiri, 2006). These studies showed that both in creating and producing processes, students explore different literacy practices via technologic tools. Thus, on one-hand students gain content knowledge; on the other hand they create or produce different contents by using their knowledge.

Different digital tools allow students to explore different literacy practices. One of these tools is "podcasts". Podcasts are a kind of audio file and "podcasting involves recording a series of spoken language or other sound files in digital format and then uploading each file to the Internet and making them freely available to listeners to download or play on their computer" (Lankshear and Knobel, 2006). Podcasts studies include different literacy practices. For instance, Smythe and Neufeld (2010) integrated reading, writing and oral literacy practices by

using podcasting. According to Lankshear and Knobel (2006), people use these literacy practices every day, however, technology attaches digital aspects into these practices through digital tools.

As for different literacy practices, students use critical literacy abilities when they use online web sites, in the most part, search engines. After they search on web sites such as Google, Yahoo or Bing, they may face a great volume of knowledge on a single topic. Therefore, they need to use their critical literacy abilities. To overcome this problem, McKeon (2010) suggests that teachers should organize their lessons to “not only capture the motivating nature of electronic text for students, but also develop critical thinking skills that they will need to effectively read, manage, organize, and evaluate the electronic text that they will encounter in the ever-changing technological World”. In addition to critical evaluation, Henry (2006) also suggested that “Internet information is often extracted from numerous sources; therefore, synthesis of that information is essential”.

Another important study that addressed digital tools and literacy practices was done by Warschauer (2008). In this study, the researcher used laptops as digital tools. In the teaching and learning process of reading, laptops provided changes scaffolding, epistemic engagement, and page to screen. Since Internet access helped teachers to use different texts and special programs to increase students’ background knowledge, using laptops extended teachers’ scaffolding activities. Epistemic engagement refers to literacy activities where “texts are used for students to demonstrate what they do or do not know”. Laptops provided new advantages for ‘epistemic literacy activities’ since students could engage in different literacy practices such as reading, writing, discussing, interpreting, or listening. Teachers mentioned that these scaffolding and engagement activities motivated lower-performing readers. The third benefit of laptops in the reading process was to give opportunities to students for online reading practices. When we consider that today many students engage in online reading practices out of school, such activities in the school may improve students’ online reading skills. Online reading skills are more complex and differ from print based reading skills (Coiro, 2011). According to Coiro and Dobler (2007) reading comprehension on the Internet and reading comprehension of printed informational texts have similarities and differences which are related to prior knowledge sources, inferential reasoning and self-regulated reading strategies. When it comes to the impacts of prior knowledge on online reading, Coiro (2011) found that “topic-specific knowledge played a significant role in online reading comprehension among readers with low levels of online reading skills, prior knowledge did not appear to influence online reading comprehension performance among readers with average and high levels of online reading skills”

Rowse and Burke studied two middle schools literacy learners’ digital reading practices in 2009. They examined students digital literacy practices and they asserted based on their findings that:

To understand the complexities of reading online, teachers need to understand how the reading of linear print text forms differs from the reading of digital texts. Digital text depends more readily on the design and representation of language and thus requires a semiotic understanding on the part of the reader. Online reading trajectories offer multiple genres and cross genres, often extended through the creator’s distribution of site. . . This means that reading content online requires a repertoire of skills, from interpreting visual clues, to mastering the nuances of subtext, to following ideas in a nonlinear fashion, to decoding simple reading. (Rowse & Burke, 2009)

From this perspective, Mahiri (2009) claimed that digital environments provide different and ‘multiple semiotic domains. Since teachers’ and students’ roles have changed during this process, new pedagogies should be used to address these roles .

Digital tools provide different literacy practices because these tools move the teaching and learning environment to different platforms. For example, online learning communities are a good opportunity for educators to create collaborative, social and interactive learning environments. Larson carried out an important study in online learning communities in 2009. In her study, she used ‘e-reading and e-responding’ digital strategies. While E-books were used for e reading, electronic journals and online message boards were used for e-responding. In this online learning environment, students constructed different types of prompts such as “experiential, aesthetic, cognitive, interpretive, and clarification prompts.” Thus, these tools provided a holistic approach to address e-books from different aspects. As Larson (2009) stated since these tools gave more time for students to think deeply about their responses, they created a more conversational and interactive environment. This case “promoted socially constructed learning”

Laptops also expend and facilitate writing activities. In Warschauer’s (2008) study, laptops helped students to find information about content, engage in collaborative working, and share their writings. In addition to that, since writing was used for real purposes, through these activities students experience authentic writing literacy practices. Furthermore, laptops helped students with information and communication literacies such as “individualized learning, conducting research, empirical investigation, and in-depth learning” (Warschauer, 2008).

Nowadays, many schools use iPads or tablet computers rather than desktop computers. As with other digital tools, iPads, too, provides different literacy practices for learners such as online or screen reading and writing, and visual literacies. For instance, Hutchison, Beschoner, and Crawford (2012) used iPads in their study, and they noticed that iPads gave opportunities for students to organize information by using a graphic organizer. Additionally ipads motivated students in terms of independent reading, and supported them to easily reread and revise their studies easily Thus, all these activities promote students’ 21st-century literacy skills.

### **Writing Practices**

While some studies integrate literacy practices, some studies only focus on writing practices. For instance, Witte (2007) studied online writing practices through blogs and the “Talkback Project.” In this project, 8th grade students and pre-service teachers worked together. Witte focused on collaboration and conversations during the project. Pre-service teachers helped students to start online conversations which provide inter-textual relationships on the blogs. With this project, students explored distinctive reading, digital, and online written literacy practices. According to Witte (2007), this project provided “opportunities for students and future educators to develop their digital fluency while also strengthening their traditional literacy skills”.

Likewise, McGrail and Davis (2011) used blogs to explore blogs’ impacts on 5<sup>th</sup>-graders students’ writing development. They found that blogs are providing a tool for students to connect with real audiences. Previously, teachers were mostly the audience of writing assignments. However, by using blogs students realized that “out there was an audience other than the teacher and that they, as writers, were in a relationship with this audience” (McGrail & Davis, 2011). In this case, students were much mindful and interactive and so “writing assumed completely new meanings for these students” (McGrail & Davis, 2011).

In a different study, Atkinson and Swaggerty (2011) used a different kind of blog which is called a “scrapblog.” Students could also add photos to their writing by using this blog. With the help of an ‘expert colleague,’ students could work collaboratively. Atkinson and Swaggerty (2011) state that “to integrate technology into classes create differentiating instruction, a tool to learn content areas, meaningful assessment, and student centered environment” .

Online writing or computer-based studies generally used qualitative methods (McGrail & Davis, 2011; Atkinson & Swaggerty, 2011; Witte, 2007). As a quantitative study, Silvernail and Gritter (2005) showed the impacts of using laptops on 7th and 8th grade students' writing. In this program, technology was integrated into the curriculum. Likert type scale results showed that teachers and students believed that using laptops in the teaching and learning process improved students' learning (Silvernail & Gritter, 2005). Laptops also positively affected students' state writing exam scores. Students' survey results showed that students used laptops mostly for "draft and final copy or final copy only or draft only" (Silvernail & Gritter, 2005).

In this review, qualitative studies show us how digital tools change the audience of the writing process (McGrail & Davis, 2011; Atkinson & Swaggerty, 2011; Witte, 2007). This case leads to authentic writing practices. Since students can create their writings in and out of school contexts, they have enough time to revise their works deeply. Aside from the Atkinson and Swaggerty (2011) study, other studies do not have much information about how teachers integrate technology with their programs. In this regard, Atkinson & Swaggerty (2011) used Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) model. This model also was used by the other digital literacy study that was examined in this review (Hutchison, Beschorner & Schmidt-Crawford, 2012).

### **Integrating Literacy Practices at Home and School Environments**

The significant purpose of digital tools is to enable both teachers and students to conveniently reach sources that are a bridge between home and school. These sources are related to students' cultural and linguistic backgrounds. Digital tools create an effective learning environment for students who come from minority cultural and linguistic backgrounds (Ranker, 2008).

The content of digital literacy studies should be arranged to address students' out of school literacies. For example, Smythe and Neufeld (2010) allowed students to use home, school, community and popular culture resources in their podcast study. This case helped the teacher to differentiate between the classic school curriculums by using multimodal and digital technologies and the students found a place for their voice.

According to Hull and Schultz (2001), digital literacies provide useful ways of constructing a bridge between in and out of school literacies. However, we, as educators, should prepare teachers to consider what the literacy is in this new digital age. Additionally, schools that have rich technological advantages should be constructed to provide more opportunities for more students.

### **Creativity**

In digital environments, creativity is addressed in different ways. For instance, in Spires, Hervey, Morris, and Stelpflug's (2012) video creating study, students found a new and original way, by using multimodal literacies and complex thinking to integrate information to create their videos. Since digital tools combine distinctive literacies such as oral, written, or visual, they help students to find extraordinary creative modality. Additionally, they stated that digital tools differentiate the learning process by providing personal learning and this case improves students' creativity and engagement.

Ranker (2008), too, used digital video production in his study. He states that digital tools provide different modes of communication; however they are not enough for creativity.

According to him, students should focus on the meaning-making process rather than piecing together.

In my reading list, there is no study that only focused on digital tools in language arts classes and their impacts on students' creativity. Through digital technologies, the platform of creativity has changed because digital tools provide online environments for students. In future studies about digital tools, the relationship of digital tools with creativity in education can be studied.

### **Motivations and Academic Achievement**

Students' motivation impacts their teaching and learning process. Since there is a positive relationship between the process of teaching-learning and motivation, many curriculums are supported by motivational tools. In recent years, digital tools are used to increase students' motivation toward learning.

However, there are limited studies that address digital tools and motivation in a middle school context. Gunter carried out an important study on this in 2012. In this study, Gunter (2012) used a video-creating program to motivate reluctant and struggling readers toward reading. Learning environment and process was designed according to extrinsic and intrinsic motivation factors. During the intervention, storytelling, reading and video creating processes were integrated. By the end of this study, data showed that this process affected students' thoughts on reading. For students who thought that reading is a waste of time, the students' pleasure of reading raised positively. According to quantitative data results, "participants' self-efficacy for visualizing increased after the intervention. Struggles with reading also decreased significantly". Additionally, this study's results showed that this process positively affected remedial students' attitudes toward reading. Lastly, this integrated approach "closes the gap between internal and external motivational factors and has caused students to become more actively engaged in the process of reading" (Gunter, 2012).

Studies that will address the relationship between motivation and digital tools should be long term in order to see the effects of motivation on language skills and literacy behavior. Gunter (2012) study is a good example in this context because the study encompasses a 4-year period and uses different types of students.

In a study that researched the relationship between students' reading motivation and using e-readers, Miranda, Williams-Rossi, Johnson, and McKenzie (2011) found that using e-books on e-readers in the reading improvement classes positively impacted students' attitudes toward reading. Moreover, quantitative data results showed that boys improved their attitudes toward reading more than girls. However, this motivation did not affect students' reading scores on state tests. While this study was well-designed in terms of content and research methods, the duration of the study (2 months) is likely not long enough to keep student motivation while also increasing their test scores.

However, Warschauer (2008) found the same results in terms of academic achievement although this study was a 2-year study. According to him, the reason for this case is that "multimedia literacy and information literacy promoted in the laptop classroom are barely addressed by standardized tests". Another important result in this study is that technology-related literacy activities did not reduce the academic achievement gap between students who came from low and high socioeconomic status. These findings are likely related to out of school literacies.

From a different perspective, Meyer, Abrami, Wade, Aslan and Dealout (2010) used an electronic portfolio to develop students' writing skills and self-regulated learning skills. The

study was designed as quantitative and the results of the study support Miranda, Williams-Rossi, Johnson, and McKenzie's (2011) and Gunter's (2012) studies in terms of motivation, self-efficacy and self-regulated learning skills. However, when it comes to standardized test results, there is a difference between this study and Miranda, Rossi, Johnson, and McKenzie's (2011) study because in this study, the experimental group students (n: 7 classrooms and 121 students) showed a significant improvement ( $p < .05$ ) vs. the control group students (n: 7 classrooms and 175 students). Likely the findings in this study are related to use of a digital medium, the "electronic portfolio." The electronic portfolio in this study was designed according to existing research results and includes many useful tools to increase both students' self-regulated learning skills and content knowledge. Control group studies show that different digital tools have different impacts on students' learning and motivation. Thus, based on a digital tool, researchers cannot make generalization such as "digital or technologic tools impact students' learning and motivation."

Apart from Miranda, Rossi, Johnson, and McKenzie's (2011) study, in the other studies there is no information about gender differences for motivation. Hence, further research should investigate the role that gender plays in digital literacies. For example, distinctive digital tools can be used in different contexts. I think that these cases will affect both boys' and girls' motivation from different aspects.

### **Sharing and Collaboration**

Summey (2013) explains digital literacies by five action verb groups. One of these verb groups is "sharing and collaborating." These are seen as the essential element of digital literacies. Today, many digital tools are used for sharing and collaborating such as blogs, Wikis, YouTube, GoogleDoc, Animato, and podcasts. From these tools podcasts (Smythe & Neufeld, 2010), video (Gunter, 2012; Spires, Hervey, Morris, & Stelpflug, 2012; Ranker, 2008), and blogs McGrail & Davis, 2011; Atkinson & Swaggerty, 2011; Witte, 2007) are mostly used in teaching and learning processes.

Sharing activities is mostly seen in video creating studies. For these activities web sites provide a rich environment to share created videos and get feedback from others. According to Spires, Hervey, Morris, and Stelpflug (2012), these sharing web sites widen learning environments and since their classmates, parents or teachers are able to watch these students' creative works, students' motivation increases.

In the constructivist literacy approach, collaboration between students is a significant element. Students can work collaboratively online because the Internet creates new ways to share study results with others and get feedback on their studies (Spires, Hervey, Morris, & Stelpflug, 2012).

Sharing activities is important for both teachers and students. For teachers, since they often do not have time to hear each student's voice in the classroom, digital tools or online learning environments provide a convenience. On the other hand, students find a place to explain their ideas through these tools. In this sense, as seen in McGrail and Davis's (2011), Atkinson and Swaggerty's (2011), Larson's (2009) and Witte's (2007) studies, online journals, discussion boards, and blogs provide many opportunities for students to share their opinions. A student in Witte's (2007) study stated "by taking away our access to the Talkback project blog, you have taken away my voice". From the other side, according to Larson (2009) "in a traditional literature circle, students who are shy, struggling as readers, or linguistically diverse may hesitate to share ideas in group settings. The asynchronous (online) message board discussions allowed for extra thinking time before formulating and posting responses". Hence, students can engage in the

lessons and interact with their peers more frequently and more deeply. This effective learning environment also provides social learning.

Students can also help each other with both the topics and digital tools in the classrooms. For example, Smythe and Neufeld (2010) used podcasts in their study in an ELL classroom. “Podcasting as a learning tool is that learners can create content relatively quickly and easily, often collaboratively, with the intention and capacity to reach an authentic audience” (Smythe & Neufeld, 2010). In this sense, students did not only work collaboratively to create their podcasts in the process of writing scripts, choosing appropriate sound effects and creating their texts, but also they shared their works with others.

To study collaboratively, classrooms should be well designed. As Oldaker stated (2010), in the constructivist classrooms, students should take “control of their own learning and assist one another with questions and problems”. In this study, students helped each other using digital tools and so this case promoted their collaborative skills to work other students.

Similarly, Spires, Hervey, Morris, and Stelpflug (2012) created well-designed classrooms with respect to collaborative learning in their video-creating project. Hence, students that had more knowledge and digital skills assisted “their peers with locating information and images on the Internet, file managements, and video editing process”. Students can be grouped according to their technologic skills and content knowledge or their interests (Ranker, 2008). Hence, peers can support each other learning. This case will allow “students to provide scaffolding for each other -which-takes advantage of the distributed cognition that is inherent within any class” (Spires, Hervey, Morris, & Stelpflug, 2012) since they have distinctive knowledge. Hayes (2010) called these students “expert colleagues” and added, “There are students in our classes who are more tech-savvy, who have more leisure time to experiment with software and tools, and who are better troubleshooters than we are. Let them. These are our expert colleagues”.

In another study by Witte (2007), online blogs were used as a collaboration tool. The blogs showed a different kind of collaboration between middle grade students and pre-service teachers. Thus, technology gave different opportunities both to students and future teachers to work collaboratively.

Witte (2007) used blogs to create collaborative work. In other studies, the effects of digital tools on collaboration are the result of qualitative study. However, there is no study that only focuses on the impacts of digital tools on students’ collaboration. This topic could be researched with a specific research question in further studies. In this sense, these existing studies will help researchers to design their studies.

### **Multimodal Hybrid Texts**

In today’s digital world, texts include different modes such as audio, visual, or print. Digital tools help students to create multimodal texts. Thus, students can actively attend the meaning- making process by integrate different text modes. Warschauer (2008), based on his study results, claims that by using different modes, students “developed sophisticated artistic and compositional skills as they explored the features of multimodal genres” and “multimodal work also helped students think deeply about texts”.

As digital tools provide multimodal text features, they also helped students to design multimodal texts. For example, in Smythe and Neufeld’s (2010) study, using podcasts helped students to create multimodal texts. Additionally, video creating programs have useful features to construct multimodal texts (Gunter, 2012; Spires, Hervey, Morris, & Stelpflug, 2012; Ranker, 2008).

In addition to creating text, digital learning environments provide hybrid means of communication between students. In Larson's (2009) study, students used virtual or internet-based communication experiences in addition to their real life communication experiences.

As seen in the podcast (Smythe and Neufeld, 2010) and video creating studies (Gunter, 2012; Spires, Hervey, Morris, & Stelpflug, 2012; Ranker, 2008), using digital tools to create multimodal texts has a positive impact. However, in existing studies, there is no study that only focused on the effect of digital tools in creating multimodal texts.

### **Using and Learning Digital Tools**

As I mentioned in the above section on definitions of digital literacy, to some extent digital literacies are related to using digital tools. Therefore, every study in digital literacies gives a place to teach digital tools. For example, students are educated in using a digital camera or computer (Ranker, 2008),

To teach digital tools to students, teachers should have information about how to use digital tools in the class and integrate them into curriculums. For example, in Silvernail and Gritter's (2005) study, if teachers did not have knowledge about using digital tools, how could they be helpful to students? In this regard, Mishra and Koehler (2006) think that today's teachers should have technological knowledge in addition to their content and pedagogical knowledge. Additionally, they should integrate this knowledge under the technological pedagogical content knowledge (TPCK). As I mentioned above, this approach was used in two studies (Silvernail & Gritter, 2005; Ranker, 2008). In this sense, I think that this approach should be a theoretical, methodical and pedagogical part of future studies to develop teacher's knowledge and create an effective teaching and learning process.

### **Discussion and Research Gaps**

All these experimental and non-experimental studies show that digital tools provide different benefits for literacy teaching and learning processes. My main findings specifically show that digital tools have an important role in language arts classes in order to integrate literacy practices, improve digital reading and writing skills, integrate home and school literacy practices, construct creative and motivational learning environments, increase students' achievement, provide new ways regarding sharing and collaboration activities, provide useful tools to create multimodal hybrid texts, and develop students' digital skills. In the following paragraphs, I will examine these findings and discuss the possibility of future studies' topics.

Firstly, existing studies showed that digital tools help teachers to integrate literacy practices in the language arts classes. Different studies used different tools, computer programs or mobile applications such as video creating programs (Spires, Hervey, Morris, & Stelpflug, 2012; Ranker, 2008), podcasts (Smythe and Neufeld, 2010), iPad (Hutchison, Beschoner, & Schmidt-Crawford, 2012), and laptops (Warschauer, 2008). Ranker (2008), Spires, Hervey, Morris, & Stelpflug, (2012), and Oldaker (2010) mostly used qualitative methods. Coiro (2011) and Gunter (2012) used quantitative methods. Miranda, Williams-Rossi, Johnson and McKenzie's (2011) and Coiro and Dobler's (2007) studies include both quantitative and qualitative methods. When I looked at the body of studies in my review, I realized that qualitative studies are more dominant than quantitative studies. These research methods address different types of research questions. For future studies, we need many qualitative studies to

create theories on digital literacy and also need many quantitative studies to generalize the results.

In many studies, the New Literacies Approach was used as a theoretical framework. For example, Rowsell and Burke (2009), Atkinson and Swaggerty (2011), Damico and Riddle (2006), Miranda, Williams-Rossi, Johnson and McKenzie (2011), Oldaker, (2010), Coiro and Dobler (2007), and Warschauer (2008). In addition to this approach, in two studies, the technological pedagogical content knowledge (TPCK) approach was used (Atkinson & Swaggerty, 2011; Hutchison, Beschoner, & Schmidt-Crawford, 2012) to integrate digital tools into the curriculums. For future studies, a new literacy approach can be used for increasing curriculum content and TPCK can be used for increasing teachers' knowledge on using digital tools. Thus, studies can be well laid out with respect to a strong theoretical framework.

McGrail and Davis (2011), Atkinson and Swaggerty (2011), Spires, Hervey, Morris, and Stelpflug's (2012), Ranker (2008), Meyer, Abrami, Wade, Aslan and Dealout (2010) and other studies showed that through digital tools, teachers' and students' roles have been changing in the process of teaching and learning. However, in all these studies, this finding was addressed in only one paragraph. For future studies, researchers should focus on how digital tools change students' and teachers' roles in literacy education.

Another important finding in my literature review is that digital tools provide new ways for collaboration and sharing activities. Spires, Hervey, Morris, and Stelpflug's (2012), McGrail and Davis's (2011), Atkinson and Swaggerty's (2011), Larson's (2009), Witte's (2007), Smythe and Neufeld (2010) studies showed how digital tools provide new environments for collaboration and sharing practices in literacy instruction. In future studies, researchers should study the effects of digital tools on collaborative activities because this is an important element of a student-centered approach.

When it comes to motivation and academic achievement, existing studies (Gunter, 2012; Meyer, Abrami, Wade, Aslan and Dealout, 2010; Miranda, Williams-Rossi, Johnson, and McKenzie, 2011) showed that digital tools have a positive impact on students' motivation in the language arts classrooms. However, based on the results' of these studies, I can say that future studies should focus on motivation in terms of gender differences. This aspect is also a major empirical gap. From the other side, in these existing studies, there is no consistent on the relationship between digital tools and academic achievement in language arts classrooms. Hence, this is a second major gap in this field because the aim of every change in education is to increase students' academic achievement. To fill these research gaps, both quantitative and qualitative studies should be designed by researchers.

### **3. CONCLUSION**

In addition to these benefits, using digital tools in classrooms has some drawbacks for both teachers and students. For example, in the study by Oldaker (2010), students mentioned technical difficulties, limited time for technology instruction, and multiple responsibilities (co-curricular activities and homework) as big handicaps. This is the problem with incorporating digital technologies into the middle school classroom; this is why it is important to solve this problem.

Experimental studies in this review showed that we need new pedagogical approaches and new methods to increase students' digital literacy skills, abilities and competences by using digital tools in middle school language arts classrooms. Digital tools create new and "complex discourses" (Rowsell & Burke, 2009). Thus, students need new literacy skills to engage in these new discourses. These digital literacy skills will also help students to effectively join new global world.

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