Education and Science

Original Article

Vol 48 (2023) No 213 25-55

The Quality of Virtual Activity Pages with Specific Content to Resolve Reading and Writing Difficulties *

Fadime Akgül [1], Banu Aktürkoğlu [2]

Abstract

This paperwork has the objective to determine whether the websites with specific content are efficacious in resolving reading and writing difficulties. Data resource is made up of 100 pages selected in accordance with the criteria of maximum variation sampling. The documents were consulted through five different mediums chosen according to the method of homologous sampling. Data were collected using a Checklist for Identifying Content Features of Activity Pages (CICFAP) and a Checklist for Determining the Purpose-Activity Compliance of Activity Pages (CDPACAP) developed by the researchers. Two experts made use of Lawshe's method to assess the checklists for face and content validity. The first researcher assessed the documents twice within 15 days of time to assure reliability. The interrater reliability was 98% according to the reliability formula suggested by Miles and Huberman (1994) in the terms of accuracy/authenticity. Descriptive analysis and content analysis were performed on the data obtained through the two checklists. Some of the analysis results were reported using percentage distribution, one of the descriptive statistical methods, while others were reported as plain text. The results demonstrate that majority of the virtual activity pages do not tally with the criteria of content and purpose-benefit.

Keywords

Activity pages
Reading difficulties
Specific learning disabilities
Virtual environment
Writing difficulties

Article Info

Received: 12.28.2021
Accepted: 07.06.2022
Online Published: 01.02.2023

DOI: 10.15390/EB.2023.11514

* This article is derived from Fadime Akgül's Master's thesis entitled "Characteristics of activity pages for removing the reading and writing difficulties in virtual environments ", conducted under the supervision of Banu Aktürkoğlu.

[1] Muş Alparslan University, Faculty of Education, Department of Basic Education, Turkey, fadime.akgul@outlook.com
[2] Hacettepe University, Faculty of Education, Department of Early and Elementary Education, Turkey, banuakturkoglu@gmail.com

Introduction

Reading and writing are two of the four basic skills that first-year primary school students should acquire to carry out teaching activities in a qualified manner. Although everyone learns differently, students with reading and writing difficulties are more disadvantaged than their non-disabled peers. Therefore, it takes the former more time and effort to acquire reading and writing skills than the latter. Students with reading and writing difficulties are referred to as individuals with specific learning disabilities. Pierangelo and Giuliani (2006) define a specific learning disability as slowness or a developmental delay in acquiring academic (reading, writing, and math) and language skills. According to Hussar et al. (2020), individuals diagnosed with specific learning disabilities constitute 33% of individuals with special needs (33%). Even this percentage shows that current and further research on this topic is valuable. In this respect, it would be appropriate to give more detailed information about specific learning disabilities. According to the American Psychiatric Association (APA, 2013), there are four basic criteria for diagnosing specific learning disabilities. A person is diagnosed with a specific learning disability (1) if he has difficulties in reading, writing, and math skills that persist despite intervention for at least six months, (2) if the academic skills in question are lower in relation to his chronological age and intelligence, (3) although he has high intelligence, he cannot show his capacity in academic skills due to learning difficulties, and (4) although he does not have mental, physical, and psychological problems, he is academically incompetent. Specific learning disabilities are divided into subclasses. Morris (1988) conducted a literature review on the classification of specific learning disabilities and found that they are classified into three subgroups: difficulties in reading, writing, and mathematical problem solving skills.

Reading is a complex process involving different skills, such as vision, perception, attention, recall, interpretation, synthesis, and assessment (Bıyık Ataş, Erdoğan, & Yıldız, 2017). Reading disability is characterized by unexpected reading difficulties in children and adults despite the intelligence, motivation, and educational level required for accurate and fluent reading. Reading disability, also called dyslexia or reading difficulty, is the most common specific learning disability (Shaywitz, 2003). Students with reading difficulties invert, add, skip, repeat, and follow with their fingers and cannot achieve prosodic reading (Akyol, 2019; Güneş, 2019; Taşkaya, 2017). These errors prevent fluent and comprehensible reading. We need to address reading difficulties to help students develop reading fluency and comprehension skills.

According to Özçivit Asfuroğlu and Fidan (2016), individuals with reading difficulties also have difficulty writing and perceiving that written language (words) consists of phonemes. They add that people with writing difficulties may have other learning difficulties. Based on this explanation, reading and writing are two intertwined basic skills. Beard, Myhill, Riley, and Nystrand (2009) define writing skills as checking written content after translating ideas into writing. Dysgraphia, also known as writing difficulty, is a type of specific learning disability in which individuals with at least average intelligence and without any neurological problems have difficulty reproducing both alphabetic and numerical signs (i.e., written language) and putting their ideas on paper. People with dysgraphia write slowly and have poor mechanics in their writing (Safarova, Mekyska, & Zvoncak, 2021). Writing difficulties are characterized by some spelling mistakes (Özçivit Asfuroğlu & Fidan, 2016), such as adding, omitting, confusing, writing slowly and incorrectly, writing figures and letters outside their basic forms, missing or misusing punctuation marks, writing illegibly due to incorrect placement, writing upside down, writing words without spaces, and failing to maintain the coherence of meaning, dividing syllables, and following lines correctly (Akyol, 2019; Bayraktar, 2019; Dyslexia Center, 2021; Ferah, 2007; Güneş, 2019; Kükürt, 2010; Özcan, 1992; Seçkin Yılmaz, 2020; Şen Kösem & Bakacak, 2019; Taşkaya, 2017; Yıldız, 2013). These errors prevent fluent writing. According to Atasoy (2015), writing involves automatization characterized by the following: (1) the text should be written without interruption, (2) words should be

easily vocalized, (3) the narrative should flow smoothly, and (4) sentences should be organized harmoniously. For this automaticity, we need to overcome writing difficulties.

Although there are technological applications, such as “Multi-Sensory Learning” and “Touch and Write," that offer an alternative to traditional applications to overcome reading and writing difficulties, there are also virtual activity pages shared by different content creators. Şahin (2015) found that teachers mostly used textbooks, written materials, and blackboards as teaching materials. Considering this result, we can state that written materials are the most frequently used teaching materials. According to the Ministry of National Education (MoNE, 2014), activity pages are also popular written materials. Doğanay Bilgi (2017) argues that note papers or worksheets prepared for students with reading and writing difficulties should have appropriate page layouts and content features.

Şahin and Çakır (2018) claim that the lack of materials is one of the reasons for difficulties in reading and writing skills. Therefore, we should prepare materials or revise existing materials to help students with reading and writing difficulties to overcome their difficulties. MoNE (2014) states that worksheets for students with reading and writing difficulties should contain colorful, appealing, and easy-to-understand visuals in line with the intended messages. However, both visuals and written content for students with reading and writing difficulties should be placed according to certain principles. The words should be readable, and contrasting colors should be used in the figures and background to avoid straining the eyes (Şahin, 2009). Therefore, it would be appropriate to state that the written materials on activity pages should be in contrasting colors in terms of "shape (text color)-background (page color)."

According to the Head Council of Education and Morality (HCEM, 2019), written materials should be free from punctuation errors, inaccuracies, and typos. One should follow the spelling rules in the Turkish Language Association Spelling Guide to ensure that one’s text does not contain such errors. Again, a text should be free from semantic and structural defects of expression. It should be simple, plain, and easy to understand. Güneş (2019) maintains that texts should not have incoherencies because they prevent readers from developing reading skills, reading fluently, and understanding what they read.

According to Yılmaz (2019), the texts, which are among the written elements in the activity pages to overcome reading and writing difficulties, should consist of narrative text types because narrative text types are more interesting especially for students at the primary education level.. According to the Turkish curriculum (MoNE, 2019), activity pages should also include rhymes, lullabies, riddles, and poems to help students develop reading skills. Texts should be placed on activity pages in an orderly manner. An activity page should not be filled with too many texts; the font size should be large enough; information should spread across the entire page, and there should be blank spaces within the page; main headings, subheadings, and paragraphs should be indented; headings and keywords should be bold (Reid & Green, 2020).

Activity pages for reading and writing difficulties should have instructions explaining tasks or questions that help resolve those difficulties. Instructions should be simple and clear (Doğanay Bilgi, 2017; Reid & Green, 2020). Senemoğlu (2013) argues that both written and verbal instructions are cues that support instruction and improve performance. According to Kalkan (2019), the instruction should be presented according to the teaching principles of near to far, from known to unknown, and simple to complex to make the tasks easier for students with specific learning disabilities. The tasks should be easy enough for students to complete. The date and time for completing the tasks should be indicated on the page. There should be a variety of activities. Students should be allowed to monitor themselves and correct their mistakes (Doğanay Bilgi, 2017; Reid & Green, 2020).

According to the MoNE (2014), worksheets are teaching materials that enable students to review the subjects they have learned and transfer new information to other areas. Worksheets should not contain intimidating practices. They should give students cues to help them complete the tasks. Yılmaz (2019) states that motivational reinforcers should be used to ensure the repetition of tasks. According to Kaya (2006), cues, reinforcements, feedback, correction, and active student participation increase course success and the quality of instruction.

Activity pages for reading and writing difficulties can include both tasks as well as questions. Questions on activity pages should check whether students have learned a new topic and encourage them to go over what they have learned (Albayrak Sarı, 2018; Ankara Yıldırım Beyazıt University, 2019; HCEM, 2019; Özçelik, 2013). Activity pages should have questions that can be answered with pen and paper. Those questions can be short-answer (fill-in-the-blank), classification (true-false), matching and multiple-choice, or limited and free response questions. They should be of appropriate difficulty for the learning level of the target skills. Questions focusing on cognitive characteristics can address all sub-levels of Bloom's Taxonomy. Questions should be appropriately limited to the scope of the characteristics. Activity pages should provide sample questions with complete and error-free answers. All questions must have clear, easy-to-understand, and error-free constructs, roots, and premises. Answers to all questions, except for open-ended questions, should be on a separate page and should be error-free. According to Senemoğlu (2013), students should be given feedback on the correctness or incorrectness of the questions.

The starting point of this study is that the first researcher, during her tenure as a classroom teacher, and her colleagues used virtual activity sheets to help students with reading and writing difficulties in their classrooms. Moreover, the parents of those children also used those activity pages. Each student develops and learns differently. Considering that each student develops and learns differently, we observe that the direct presentation of virtual activity pages to students with reading and writing difficulties, assuming that their difficulties are the same, indicates that they ignore that education and training should be based on individual differences. The first researcher observed that the activity pages did not contain features suitable for the literature. Therefore, the researchers felt responsible for determining the quality of those activity pages for students with reading and writing difficulties, identifying errors and shortcomings, and providing recommendations based on the results. Our results will show classroom and preservice teachers that they should not use online activity pages without organizing them according to the individual differences of their students with reading and writing difficulties. In addition, teachers and preservice teachers will be able to use our checklists to prepare high-quality activity pages to resolve reading and writing difficulties. Therefore, the researchers decided to examine the quality of activity pages shared by different content creators in virtual environments.

The main research question was as follows: What is the quality of online activity pages addressing reading and writing difficulties?

Sub-questions:

1. To what extent do virtual activity pages addressing reading and writing difficulties have content features?
2. To what extent do virtual activity pages addressing reading and writing difficulties adhere to purpose-activity compliance?

Method

Research Method

The documents constituting the virtual data sources were defined as they are without any intervention on them to reveal the quality of the virtual activity pages shared by different content creators to overcome reading and writing difficulties. Therefore, this is a basic descriptive study (Karasar, 2019). The documents have two types of qualitative content: verbal and visual. In terms of data type, this is a qualitative study.

Data Source

The data source consists of activity sheets, in other words, documents aimed at overcoming reading and writing difficulties. The documents were accessed through virtual environments selected according to the homogeneous sampling, which is a qualitative sampling method. Yıldırım and Şimşek (2016) define the goal of homogeneous sampling as creating a distinct subgroup. The criteria for homogeneous sampling were as follows: (1) a sufficient number of activity pages were shared in virtual environments during the data collection period; (2) the first researcher observed her colleagues use those virtual environments; (3) according to the review conducted by the researchers, those virtual environments were suitable for the purpose of this research. Based on these criteria, the researchers focused on five virtual environments.

The researchers accessed 420 activity pages on virtual environments between 25.08.2020 and 25.10.2020 and selected 100 activity pages based on maximum variation sampling. The purpose of maximum variation sampling is to reveal what kind of similarities or differences exist between diverse situations and to reveal different dimensions of a research problem according to that diversity (Yıldırım & Şimşek, 2016). The maximum variation criterion for the activity pages selected by the researchers was that they had different objectives and contained different types of activities. Table 1 shows the data sources.

Table 1. Data Sources

No of Virtual Environments	Number of Documents	Target Difficulty
1	52	29 Reading and writing 21 Reading-2 Writing
2	16	12 Reading and writing 4 Reading
3	12	7 Reading and writing 3 Reading-2 Writing
4	12	4 Reading and writing 8 Reading
5	8	5 Reading and writing 3 Reading

Data Collection Tools

The data were collected using the Checklist for Identifying Content Features of Activity Pages (CICFAP) and the Checklist for Determining the Purpose-Activity Compliance of Activity Pages (CDPACAP) developed by the researchers. According to Yıldırım and Şimşek (2016), researchers can create a code list before data collection if a study is based on a theory or conceptual framework. Therefore, the analysis items of the checklists were created before data collection in the present study. First, the researchers reviewed the national and international literature to determine the analysis items in the checklists. Second, they noted and recorded the features that activity pages should possess. Third, they noted and recorded the learning outcomes specified for the first reading and writing skills in the Turkish curriculum (MoNE, 2019). Fourth, they reviewed sample activities, materials, and books for dyslexia and dysgraphia. Fifth, they examined the activity pages shared by content creators in virtual environments and noted their shortcomings. Sixth, they developed the analysis items in the checklists before data collection. Seventh, they listed the items under different themes according to their interrelatedness. Eighth, they identified codes that were related to each other and had internal consistency. Ninth, they added the codes (analysis items) to the checklists in accordance with the sub-problems of the research. Tenth, they consulted two experts to finalize the checklists.

Checklist for Identifying Content Features of Activity Pages (CICFAP)

The Checklist for Identifying Content Features of Activity Pages (CICFAP) was used to determine the quality of the content features that should be present on the activity pages. The checklist consisted of 30 items collected under nine themes: "Visuals," "Written Content," "Language and Expression," "Instructions," "Questions," "Texts," "Tasks," "Feedback," and "Answer Key." The checklist included closed-ended and open-ended questions with the sub-analysis unit of "Please explain."

Checklist for Determining the Purpose-Activity Compliance of Activity Pages (CDPACAP)

The Checklist for Determining the Purpose-Activity Compliance of Activity Pages (CDPACAP) was used to determine the quality of the purpose-activity compliance that should be present on the activity pages. The checklist consisted of one closed-ended and seven open-ended items. Table 2 shows which checklist was used for which subquestion.

Table 2. Checklists

Subquestion	**Data Collection Tool**
1) To what extent do virtual activity pages addressing reading and writing difficulties have content features?	Checklist for Identifying Content Features of Activity Pages (CICFAP)
2) To what extent do virtual activity pages addressing reading and writing difficulties adhere to purpose-activity compliance?	Checklist for Determining the Purpose-Activity Compliance of Activity Pages (CDPACAP)

Data Collection Process

First, the checklists were developed. Then, the study was approved by the ethics committee of Hacettepe University. Five virtual environments were selected according to the homogenous sampling. One hundred activity pages (documents) were selected according to the maximum variation sampling. The data were collected through document analysis using the checklists. The first researcher used the checklists to examine an activity page. Then, the second research examined the same activity page. They compared their results and discussed the parts on which they disagreed. They sometimes turned to the literature to reach a consensus. They performed the same procedure for ten activity pages. They reached a consensus on how to collect the data from the activity pages. To that end, they used the checklists to collect data from 100 documents.

Data Analysis

The data were analyzed using description and content analysis (Yıldırım & Şimşek, 2016). The features corresponding to the closed-ended items in the checklists were analyzed using description analysis. The verbal data were analyzed using content analysis. The verbal explanations made by the first researcher regarding the open-ended items on the CDPACAP were also analyzed using content analysis to develop themes. The data from closed-ended items were quantified using frequency and percentage distribution (descriptive statistics methods). Some of the data were reported as plaintext (Yıldırım & Şimşek, 2016). New codes were developed from verbal data.

Validity

The researchers consulted experts twice to establish the face and content validity of the checklists. First, they consulted six experts. Then, they modified (added or removed items) the checklist based on expert feedback. Second, they consulted 11 experts who made use of Lawshe's method to calculate the content validity ratio (CVR) and content validity indices (CVI). All items in the CICFAP had a CVR of greater than 0.59. Both checklists had a CVI of greater than 0.636. The CICFAP and CDPACAP had a CVI of 0.912 and 0.952, respectively, indicating that they had high content validity. No items were removed because they represented the construct they were intended to measure.

Reliability

The first researcher coded the documents twice within 15 days of time to assure the reliability of the checklists. She compared the two codings and calculated interrater reliability using the formula [Reliability = (number of agreements) / (number of agreements + number of disagreements)*100] suggested by Miles and Huberman (1994). An interrater consistency of greater than 70% indicates reliability. The interrater reliability was 98%, indicating that the codings had high reliability (Miles & Huberman, 1994). Miles and Huberman's reliability formula is used to calculate the consistency between the researcher's responses and an independent expert according to the scope of the research. In this study, Miles and Huberman's reliability formula was adapted and used to calculate the consistency of the same researcher's (first researcher) responses to the codes at different times. We think that this adaptation will contribute to the literature. Consistent results over time indicate external reliability (Karasar, 2019). In the present study, the researchers ensured external reliability by keeping the documents, checklists, and results of data analysis to show that the research could be confirmed by another expert.

Results

The results were presented under two headings: “Findings Related to the Content Features of Activity Pages” and “Findings Related to Purpose-Activity Compliance Features of Activity Pages.” The results presented as percentages were as follows: “0-20 = Present/absent in very few,” “20-40 = Present/absent in less than half,” “40-60 = Present/absent in almost half,” “60-80 = Present/absent in more than half,” “80-100 = Present/absent in almost all.”

Findings Related to the Content Features of Activity Pages

Table 3 shows the results regarding the theme "Visuals."

Table 3. Results regarding the Theme "Visuals"

n **Item**	**Frequency** **(f)**	**Percentage** **(%)**
n=100 (Total Number of Activity Pages)		
Item 1. The activity pages		
include ( )	78	78
do not include ( )	22	22
visuals (photos, pictures, illustrations, figures, tables, charts, graphs, maps, etc.). n= 740 (Total Number of Visuals on 78 Activity Pages)		
Item 2. The images on the activity pages are		
colorful. ( )	479	64.7
black and white. ( )	261	35.3
n= 740 (Total Number of Visuals on 78 Activity Pages)		
Item 3. The images on the activity pages are		
sources of tasks.	422	57
support new learning.	4	0.5
support instructions.	38	5.1
Other ( ) Please explain:		
support the subject matter of the texts.	14	1.9
support the intelligibility of non-textual script units.	38	5.1
do not support any element of the content.	224	30.3
n= 516 (Total Number of Images Related to Any Aspect of Content out of 740 Visuals on 78 Activity Pages)		
Item 4. The images on the activity pages are closely related to the content.		
Yes ( )	455	88.2
No ( )	61	11.8
n= 516 (Total Number of Images Related to Any Aspect of Content out of 740 Visuals on 78 Activity Pages)		
Item 5. The visuals on the activity pages make the content understandable.		
Yes ( ) Please Explain:	475	92.1
No ( )	41	7.9

The verbal content analysis of the explanation made by the first researcher for the "Other" option marked for Item 3 showed that 14 visuals were used to increase the comprehensibility of the subject matter of some texts, while 38 visuals were used to enhance the clarity of some non-text units (Table 3). However, the results showed that the remaining 224 images did not support any content element. The verbal content analysis of the explanations made by the first researcher for the "Yes" option marked for Item 4 suggested that the visuals made tasks (n=407), text topics (n=28), non-text units (n=28), and instructions (n=12) comprehensible.

More than half of the activity pages had images. Less than half of those images were black and white. Less than half of the images were unrelated to any content on the activity pages. Furthermore, very few of the images that were related to any of the elements on the activity pages had no affinity with the content. Very few of the visuals supporting some elements of the content of the activity pages had no effect at all in making the related content comprehensible.

Table 4 shows the results regarding the theme "Written Content."

Table 4. Results regarding the Theme "Written Content"

n Item	Frequency (f)	Percentage (%)
n=100 (Total Number of Activity Pages)		
Item 6. The written content is		
colorful. ( )	7	7
black and white. ( )	29	29
colorful to some extent. ( )	64	64
n= 98 (Number of Pages Complying with the Principle of Figure-Background Color Contrast)		
Item 7. Figure-background color contrast is present to attract attention.		
Black-white ( )	95	96.9
Blue-white ( )	34	34.7
White-black ( )	1	1
Green-white ( )	24	24.5
White-blue ( )	2	2
Yellow-black ( )	1	1
Blue-yellow ( )	0	0
Yellow-blue ( )	0	0
Orange-black ( )	0	0
Red-white ( )	53	54.1

According to Item 6, most activity pages were black (text) and white (page). There were no other shape-background color contrasts on the activity pages. According to Item 7, most activity pages adhered to the shape-background color contrast of "black-white," while they adhered to the shape-background color contrast of "white-black" and "yellow-black" the least. The activity pages had no "blue-yellow," "yellow-blue," or "orange-black" shape-background color contrasts. Less than half of the written content was black and white. Moreover, the written content on almost all activity pages had the figure-background color contrast.

Table 5 shows the results regarding the theme "Language and Expression."

Table 5. Results regarding the Theme "Language and Expression"

n Item	Frequency (f)	Percentage (%)
n=100 (Total Number of Activity Pages)		
Item 8. There is a typo on the activity page.		
Yes ( ) Please explain what and where the typo is:	30	30
No ( )	70	70
n=100 (Total Number of Activity Pages)		
Item 9. There is a punctuation error on the activity page.		
Yes ( ) Please explain what and where the punctuation error is:	18	18
No ( )	82	82
n=100 (Total Number of Activity Pages)		
Item 10. There is incoherency on the activity page.		
Yes ( ) Please explain what and where the incoherency is:	9	9
No ( )	91	91

Thirty activity pages had typos. Six activity pages contained lowercase letters instead of uppercase letters. Two of those typos were in texts. One of them was in a question. Three of them were in instructions. An activity page contained four words starting with uppercase letters for emphatic reasons. An activity page said, "wise owl," which should have been "Wise Owl." An activity page had a quotation that started with a lowercase letter. The other three typos were words that started with uppercase letters, which should have been lowercase. Three activity pages contained three words without circumflexes where they should have had circumflexes. Those words were "*hikâye*" (x2) " and "*hâlâ*" (x1). Three activity pages included words with the wrong number of spaces. Four activity pages included words with misspelled vowels. Two of those typos were in the instructions. The dots in the letters "i" in an instruction were replaced with hearts. The word "*aşağıdaki*" in another instruction was misspelled as "*aşağidaki*" (below). Another typo was at the heading of an activity, where the word "*sözlük*" (dictionary) was misspelled as "*sözluk*." The last typo was in a question, where the word "*maymun*" (monkey) was misspelled as "*mayman*." Ten activity pages had misspelled words. Seven of them were in instructions. For example, the word "*dizininin*" was misspelled as "*dizinin*," "*eşleştirme*" as "*eşlendirme*," "*yanındaki*" as "*yanın*," "*bölümlere*" as "*bölümlerine*," "*yukarıda*" as "*aşağıda*," "*kelimelerle*" as "*kelimeleriyle*," and "*tersten*" as "*tersen*." The other three misspelled words were in the questions. For example, the word "*örtü*" was misspelled as "*örtüyü*," "*kamyonuna*" as "*kamyonu*," and "*oynamayı*" as "*oynadı*." Another typo was that an adjective clause had a coma in between. The adjective clause "*yumuşacık patileri*" was written as "*yumuşacık, patileri*." An activity page had an answer key with misspelled distributive numerals. For example, "*ikişer*" was written as "*2şer*" and "*beşer*" as "*5er*." An activity page had a spelling mistake. The word "*telefon*" was syllabified as "*tel-le-fon*," where it should have been "*te-le-fon*." An activity page had the symbol "&" in its heading.

The findings related to Item 9 showed that eighteen activity pages had punctuation errors. Ten activity pages had missing full stops at the end of instructions. One activity page missed a coma. In the sentence, there should have been a coma after "*Ahmet Bey*." On two activity pages, quotation marks were used incorrectly. One of those errors was that the quote to the right of the letter 'd' in the title was closed outwards when it should have been closed inwards. The other error was that the number "0" was not put in quotes. Short lines on two activity pages were used incorrectly. One of those errors was that the word "*kaba*" was written as "*-kaba*." The other error was that the word "*at*" was written as "*-at-*." The content given as a hint on an activity page used brackets incorrectly. Question marks on two activity pages were used unnecessarily.

Nine activity pages had incoherencies. Four of them had extra words that caused incoherencies. Two were in instructions, while the other two were in questions. The other five had incoherencies due to the use of wrong words. On one activity page, the sentence "*Birbiriyle kafiyeli olan resimleri eşleyelim*" (Let's match pictures that rhyme with each other.) had an incoherence because pictures do not rhyme. This sentence should have been "*Adları birbiriyle kafiyeli varlıkların görsellerini eşleyelim*" (Let's match the images of things whose names rhyme with each other.) On an activity page, the sentence "*Okunan cümledeki boşluğa en iyi uyan resmi seçiniz*" (Choose the picture that fits the blank in the sentence best.) could have been "*Okunan cümledeki boşluğa en uygun resmi seçiniz*" (Choose the most appropriate picture for the blank in the sentence.). An activity page said, "*Aşağıdaki soruları resme göre cevaplayınız*" (Answer the following questions according to the picture), although the answers were in the text. Therefore, the word "picture" should have been "text." On another activity page, it said "*Tersten ve okunuşları karışık olarak verilen canlı isimlerinin doğru biçimlerini yanlara yazınız*" (Write to their sides the correct forms of the names of living things that are written backwards with mixed pronunciations.). However, the word "*yanlara*" should have been "*yanlarına*." Another activity page said "*Pamuk çok yorgun olduğunu düşünüyordu*." (Pamuk thought she was too tired.) However, the word "*düşünüyordu*" should have been "*hissediyordu*" (feeling). Less than half of the activity pages had typos, while a few activity pages had punctuation errors and incoherencies.

Table 6 shows the results regarding the theme "Instructions."

Table 6. Results regarding the Theme "Instructions"

n **Item**	**Frequency** **(f)**	**Percentage** **(%)**
n=100 (Total Number of Activity Pages)		
Item 11. The activity page has instructions.		
Yes ( )	91	91
No ( )	9	9
n= 111 (Total number of instructions on 91 activity pages)		
Item 12. The instructions are		
in different colors than the other written content. ( )	17	15.3
written in different font sizes. ( )	67	60.4
written in a different format. ( )	38	34.2
bolder. ( )	30	27
in the right place. ( )	91	82
tailored to one task. ( )	62	55.9
able to describe the tasks in full. ( )	69	62.2

The findings regarding the theme "Instructions" showed that very few activity pages were without instructions. Very few of the instructions were in different colors than the texts. More than half of the instructions were in different font sizes than the texts. More than half of the instructions were tailored to one task and described it fully. Less than half of the instructions were written in a typeface and bold different from the rest of the content. Almost all of the instructions were in the right place.

Table 7 shows the results regarding the theme "Questions."

Table 7. Results regarding the Theme "Questions"

n **Item**	**Frequency** **(f)**	**Percentage** **(%)**
n= 718 (Total Number of Questions on 91 Activity Pages)		
Item 13. The questions are		
correct. ( )	674	93.9
incorrect. ( ) Please explain:	44	6.1
n= 27 (Number of Multiple-Choice Questions)		
Item 14. The options of the multiple-choice questions are		
correct. ( )	26	96.3
incorrect. ( ) Please explain:	1	3.7
n= 718 (Total Number of Questions on 91 Activity Pages)		
Item 15. The question needs answering …….		
by speaking ( )	1	0.1
by writing ( )	551	76.7
by marking/choosing ( )	136	18.9
with a visual ( )	30	4.2
Other ( ). Please explain:	5	-
n= 91 (Total Number of Activity Pages with Questions)		
Item 16. The questions are ….. in terms of answer format		
uniform. ( )	81	89
Two-type. ( )	9	9.9
More than two types. ( )	1	1.1
n= 551 (Total Number of Questions Requiring Written Answers)		
Item 17. The questions requiring written answers are		
short-answer questions. ( )	548	99.5
long-answer questions. ( )	3	0.5
n= 91 (Total Number of Activity pages with Questions)		
Item 18. The answer to the question is		
in the text. ( )	5	5.5
in the visual. ( )	9	9.9
in the text and visual. ( )	3	3.3
in the non-text unit. ( )	54	59.3
in the non-text unit and visual. ( )	20	22
n= 718 (Total Number of Questions on 91 Activity Pages)		
Item 19. The answer to the question is		
correct. ( )	673	93.7
incorrect. ( ) Please explain:	45	6.3

Ninety-one activity pages had 718 questions. Of those questions, 674 were correct, while 44 were incorrect. Of the 44 incorrect questions, 33 had content written with a mirror image; three had content written upside down; six had directive tasks incompatible with the content tasks; two asked for a selection of misspelled content. Twenty-seven questions were multiple-choice questions. Of those questions, 26 had correct choices, while one had incorrect choices. The choice was incorrect because the first option of the question had an incorrect word, and none of the options was the correct answer. When the findings related to item 15 were examined, the types of tasks in the activity pages that were not given a question in the "Other" option marked for the related item were evaluated by the first researcher. Nine activity pages without questions had five types of tasks: reading, writing, drawing, puzzles, and sequencing. Of the 718 questions, 673 had the right answer source, while 45 had the wrong answer source. When the explanations made by the first researcher regarding the incorrect answer source of forty-five questions were analyzed, the following findings were obtained: There were contents written with a mirror image in non-textual writing units given as the source of the answers to 32 questions. The two text units given as answer sources for the ten questions did not actually have the characteristics of texts because they did not comply with the formal features of texts. There were letters written upside down in the non-textual writing units given as answer sources for two questions. Some expressions prevented correct thinking in the text given as the source of the answer to one question. For example, the sentence "*Kahverengi tüyleri yumuşacık patileri pamuk gibiydi*" (His brown fur was soft paws were like cotton wool) had an incoherence because it is not certain whether the word "soft" is used to describe the paws or fur. Therefore, the error in the sentence was due to a lack of a coma. For example, the sentence should have been "*Kahverengi tüyleri yumuşacık, patileri pamuk gibiydi*."

Almost all activity pages had questions. Very few questions had errors. Moreover, very few multiple-choice questions had errors. Nearly half of the sources of answers to the questions were non-textual writing units. Very few sources of answers to the questions were page contents where text and visuals were used together. Very few sources had errors. Almost all the activity pages had questions requiring a single type of answer. More than half of the questions required written answers. Almost all of the questions with written answers required short answers.

Table 8 shows the results regarding the theme "Texts."

Table 8. Results regarding the Theme "Texts"

n **Item**	**Frequency (f)**	**Percentage (%)**
n= 13 (Total Number of Texts)		
Item 20. Text type:		
Story ( )	3	23.1
Tale ( )	0	0
Memoire ( )	0	0
Fable ( )	1	7.7
Diary ( )	0	0
Travelogue ( )	0	0
Letter ( )	0	0
Play ( )	0	0
Informative ( )	2	15.4
Poem ( )	0	0
Joke ( )	0	0
Nursery Rhyme ( )	1	7.7
Counting-out rhyme ( )	0	0
Other ( ) …		
Short story ( )	5	38.5
Fast-reading text with repeated words ( )	1	7.7
n= 13 (Total Number of Texts)		
Item 21. …… page layout is followed by the content given in the text layout.		
Leaving space at the top-left-right and bottom corners. ( )	1	7.7
paragraph headings, main headings, and subheadings are indented. ( )	4	30.8
spaces are left between paragraphs. ( )	1	7.7

Five texts were short stories, while one was a fast-reading text with repeated words. However, there were no tales, diaries, letters, memoirs, travelogues, plays, poems, jokes, and counting-out rhymes. More than half of the text types did not have an appropriate page layout.

Table 9 shows the results regarding the theme "Tasks."

Table 9. Results regarding the Theme "Tasks"

n **Item**	**Frequency** **(f)**	**Percentage** **(%)**
n= 814 (Total Number of Tasks)		
Item 22. The activity page provides an example of the task.		
Yes ( )	93	11.4
No ( )	721	88.6
n=814 (Total Number of Tasks)		
Item 23. The activity page has tasks of different difficulty.		
Yes ( ). Difficulty level:		
Information ( )	370	45.5
Comprehension ( )	138	17
Practice ( )	248	30.5
Analysis ( )	54	6.6
Synthesis ( )	4	0.5
Assessment ( )	0	0
No ( )	0	0
n=100 (Total Number of Activity Pages)		
Item 24. The tasks are presented from simple to complex.		
Yes ( )	4	4
No ( )	96	96
n=814 (Total Number of Tasks)		
Item 25. The activity page has symbolic reinforcers for continuing the task.		
Yes ( ). Please explain:	3	0.4
No ( )	811	99.6
n=814 (Total Number of Tasks)		
Item 26. The time required to complete the task is		
given on the activity page. ( )	45	5.5
not given on the activity page. ( )	769	94.5
n=814 (Total Number of Tasks)		
Item 27. The tasks on the activity page		
support repetition. ( )	795	97.7
support further learning. ( )	19	2.3
n=100 (Total Number of Activity Pages)		
Item 28. The activity page has daunting repetitions (too many and/or uniform tasks for the same purpose).		
Yes ( ). Please explain:	55	55
No ( )	45	45

The activity pages had 814 tasks and provided examples for 93 tasks. The tasks were based on information (n=370), comprehension (n=138), practice (n=248), analysis (n=54), and synthesis (n=4). There were no tasks based on assessment. Only four activity pages presented the tasks from simple to complex. There were symbolic reinforcers only for three tasks. The symbolic reinforcers were coloring stars after the completion of the tasks. Fifty-five activity pages had daunting repetitions. Forty-six activity pages had uniform tasks. Nine activity pages had both uniform tasks and multi-tasks.

Nearly half of the tasks were information-based. Very few of the tasks were based on comprehension. Less than half of the tasks were practice-based. Very few tasks were based on analysis, synthesis, and assessment. Almost none of the tasks moved from simple to complex. Almost none of the activity pages provided examples to help students complete the tasks. Almost none of the activity pages had reinforcers. Moreover, none of the activity pages stated the time duration to complete the tasks. Almost all activity pages had tasks that promoted repetition. However, almost half the activity pages had daunting repetitions.

Table 10 shows the results regarding the theme "Feedback."

Table 10. Results regarding the Theme "Feedback"

n=100 (Total Number of Activity Pages**)**	**Frequency (f)**	**Percentage (%)**
Item 29. The activity page has content regarding giving feedback.		
Yes ( ). Please explain:	0	0
No ( )	100	100

None of the activity pages had content providing feedback.

Table 11 shows the results regarding the theme "Answer Key."

Table 11. Results regarding the Theme "Answer Key"

n=100 (Total Number of Activity Pages)	**Frequency (f)**	**Percentage (%)**
Item 30. The activity page has an answer key.		
Yes ( )	4	4
No ( )	87	87
This is not a convenient feature for this activity. ( )	9	9

Only four activity pages had answer keys. Eighty-seven activity pages had no answer keys. Nine activity pages had no content regarding presenting answer keys. Almost none of the activity pages had answer keys. Very few activity pages had no content regarding question types.

Findings Related to Purpose-Activity Compliance Features of Activity Pages

Table 12 shows the results regarding the correct statement of the objectives in the activity pages.

Table 12. Results regarding the Correct Statement of the Objectives in the Activity Pages

n=100 (Total Number of Activity Pages)	**Frequency (f)**	**Percentage (%)**
Item 1.		
A. The purpose of the activity is included.		
Yes ( )	3	3
No ( )	97	97
B. The purpose is stated correctly.		
Yes ( )	3	3
No ( )	0	0
This is not a convenient feature for this activity. ( )	97	97

Only three activity pages addressed the objectives of the tasks. Moreover, those activity pages presented the objectives correctly.

Table 13 shows the results regarding the special objectives of the activity pages.

Table 13. Results regarding the Special Objectives of the Activity Pages

n= 118 (Total Number of Task Types)	**Frequency (f)**	**Percentage (%)**
Item 2. The special objectives of the activity pages:		
Following instructions	2	1.7
Distinguishing sounds	2	1.7
Knowing the properties of letters (vowel and consonant letter knowledge)	2	1.7
Recognizing syllables	8	6.8
Knowing the order of letters in the alphabet	4	3.4
Knowing the meaning of words	5	4.2
Identifying the missing letters in words	4	3.4
Sorting words according to their order in the dictionary	4	3.4
Knowing antonyms	2	1.7
Knowing synonyms	1	0.8
Using plural affixes correctly	1	0.8
Recognizing rhymes	1	0.8
Making meaningful and well-structured sentences	14	11.9
Sorting events in the appropriate order of occurrence	1	0.8
Reading visuals	2	1.7
Reading fluently	3	2.5
Understanding what you read	9	7.6
Writing correctly	10	8.5
Writing a story	3	2.5
Writing a title	1	0.8
Drawing lines correctly	3	2.5
Perceiving visuals	14	11.9
Writing numbers correctly	5	4.2
Following the rules of spelling and punctuation	2	1.7
Comprehending patterns	1	0.8

The most common special tasks in the activity pages were making meaningful and well-structured sentences and perceiving visuals. The least common special tasks were knowing synonyms, using plural affixes correctly, recognizing rhymes, sorting events in the appropriate order of occurrence, writing a title, and comprehending patterns.

Table 14 shows the results regarding the tasks in the activity pages.

Table 14. Results regarding the Tasks in the Activity Pages

n= 118 (Total Number of Task Types)	**Frequency (f)**	**Percentage (%)**
Item 3. The tasks in the activity pages:		
Painting images in colors specified by instructions	2	1.7
Finding a letter from a plurality	14	11.9
Marking the places of sounds in the name of visuals	2	1.7
Writing the number of vowels and consonants in words	2	1.7
Decoding and combining syllables	8	6.8
Writing letters before and after letters	4	3.4
Choosing meaningful and correctly spelled words and writing new words	5	4.2
Completing missing letters in words	4	3.4
Sorting words in dictionary order	4	3.4
Finding antonyms	2	1.7
Finding synonyms	1	0.8
Writing plural forms of visual names	1	0.8
Matching images that rhyme	1	0.8
Making meaningful and regular sentences	14	11.9
Sorting images according to the flow of events	1	0.8
Answering questions about visuals	2	1.7
Reading a text five times	3	2.5
Answering questions about a text	8	6.8
Answering questions about sentences	1	0.8
Writing correctly	16	13.6
Drawing the same figures	3	2.5
Identifying figures that are the same or different	14	11.9
Selecting digits that are the same or different	5	4.2
Selecting figures according to the pattern rule and continuing the pattern	1	0.8

The most common type of task in the activity pages was writing, while the least common type of task was finding synonyms, writing plural forms of visual names, matching images that rhyme, sorting images according to the flow of events, answering questions about sentences, and selecting figures according to the pattern rule and continuing the pattern.

Table 15 shows the results regarding the compliance of the tasks with the objectives in the activity pages.

Table 15. Compliance of Tasks with Objectives

n= 118 (Total Number of Task Types and Objectives)	**Frequency (f)**	**Percentage (%)**
Item 4. The task … the purpose		
fits ( )	104	88.1
does not fit ( ). Please explain:	14	11.9

The activity pages had 118 tasks. Of those tasks, 104 fit the special objectives, whereas 14 did not fit the special objectives. Three of those 14 tasks asked students to write the upside-down and mirror-image contents in the correct direction. Four tasks asked them to choose upside-down numbers. Five tasks asked them to select inverted symbols from a multiplicity of different symbols. Two tasks asked them to choose inverted and upside-down symbols from a multiplicity of different symbols. Almost all types of tasks fit the special objectives in the activity pages.

Table 16 shows the results regarding the content for the tasks on the activity pages.

Table 16. Results regarding the Content for the Tasks on the Activity Pages

n= 118 (Number of Content Related to 118 Tasks)	**Frequency (f)**	**Percentage (%)**
Item 5. Content for the tasks on the activity pages:		
n=2 (1. Number of Tasks)		
1. Content for painting images in colors specified by instructions:		
Instructions and Visuals ( )	2	100
n=14 (2. Number of Tasks)		
2. Content for finding a letter from a plurality:		
Letters ( )	10	71.4
Letters and Symbols ( )	4	28.6
n=2 (3. Number of Tasks)		
3. Content for marking the places of sounds in the name of visuals		
Letters and Visuals ( )	2	100
n=2 (4. Number of Tasks)		
4. Content for writing the number of vowels and consonants in words:		
Words ( )	1	50
Letters ( )	1	50
n=8 (5. Number of Tasks)		
5. Content for decoding and combining syllables:		
Syllables ( )	1	12.5
Syllables and symbols ( )	1	12.5
Syllables and words ( )	1	12.5
Words ( )	1	12.5
Text ( )	1	12.5
Visuals ( )	3	37.5
n=4 (6. Number of Tasks)		

Table 16. Continued

n= 118 (Number of Content Related to 118 Tasks)	**Frequency (f)**	**Percentage (%)**
6. Content for writing letters before and after letters:		
Letters ( )	4	100
n=5 (7. Number of Tasks)		
7. Content for choosing meaningful and correctly spelled words and writing new words:		
Letters and words ( )	3	60
Words ( )	1	20
Instructions ( )	1	20
n=4 (8. Number of Tasks)		
8. Content for completing missing letters in words:		
Words with missing letters ( )	1	25
Words with missing letters and visuals ( )	3	75
n=4 (9. Number of Tasks)		
9. Content for sorting words in dictionary order:		
Words ( )	4	100
n=2 (10. Number of Tasks)		
10. Content for finding antonyms:		
Words and visuals ( )	2	100
n=1 (11. Number of Tasks)		
11. Content for finding synonyms:		
Words and visuals ( )	1	100
n=1 (12. Number of Tasks)		
12. Content for writing plural forms of visual names:		
Visuals ( )	1	100
n=1 (13. Number of Tasks)		
13. Content for matching images that rhyme:		
Visuals ( )	1	100
n=14 (14. Number of Tasks)		
14. Content for making meaningful and regular sentences:		
Words ( )	6	42.9
Words and visuals ( )	2	14.3
Words and incomplete sentences ( )	1	7.1
Visuals and incomplete sentences ( )	2	14.3
Incomplete sentences ( )	2	14.3
Visuals ( )	1	7.1
n=1 (15. Number of Tasks)		
15. Content for sorting images according to the flow of events:		
Visuals ( )	1	100
n=2 (16. Number of Tasks)		
16. Content for answering questions about visuals:		
Sentences and visuals ( )	2	100
n=3 (17. Number of Tasks)		
17. Content for reading a text five times:		
Text ( )	3	100
n=8 (18. Number of Tasks)		
18. Content for answering questions about a text:		
Text ( )	8	100
n=1 (19. Number of Tasks)		

Table 16. Continued

n= 118 (Number of Content Related to 118 Tasks)	**Frequency (f)**	**Percentage (%)**
19. Content for answering questions about sentences:		
Sentences ( )	1	100
n=16 (20. Number of Tasks)		
20. Content for writing correctly:		
Words written in a mirror image ( )	2	12.5
A paragraph written in a mirror image ( )	1	6.25
Letters ( )	2	12.5
Words ( )	3	18.75
Text ( )	2	12.5
Visuals ( )	6	37.5
n=3 (21. Number of Tasks)		
21. Content for drawing the same figures:		
Figures ( )	3	100
n=14 (22. Number of Tasks)		
22. Content for identifying figures that are the same or different:		
Letters ( )	3	21.4
Letters and symbols ( )	7	50
Words ( )	1	7.1
Symbols ( )	1	7.1
Visuals ( )	2	14.3
n=5 (23. Number of Tasks)		
23. Content for selecting digits that are the same or different:		
Letters and numbers ( )	2	40
Symbols and numbers ( )	3	60
n=1 (24. Number of Tasks)		
24. Content for selecting figures according to the pattern rule and continuing the pattern:		
Figures ( )	1	100

Table 17 shows the results regarding the relevance of the content provided for the completion of the tasks.

Table 17. Results regarding the Relevance of the Content Provided for the Completion of the Tasks

n= 118 (Number of Content Provided for 118 Tasks)	**Frequency (f)**	**Percentage (%)**
Item 6. The content provided for the task fits the purpose:		
Yes ( )	104	88.1
No ( ). Please explain:	14	11.9

One hundred and four contents for completing the tasks fit the objectives of the activity pages. However, fourteen contents did not fit the objectives of the activity pages. When the content of the explanations made by the first researcher about the inappropriateness of the 14 contents given for the completion of 14 task types was analyzed, the following findings were obtained: The reason for the inappropriateness was the content given for the completion of one task was visuals in the thirteenth task (Table 16). The content did not fit the purpose because it did not characterize the names of the entities in the visuals. Therefore, the rhymes could not be accurately identified through the visual names. Two of the contents for completing the twentieth task had words written in a mirror image. One of the contents had a paragraph written in a mirror image. Five of the twenty-second task content had symbols written in a mirror image. Two of them had symbols written both upside down and backward.

Four of the content for completing the twenty-third task had numbers written in a mirror image. Inverting error is observed in individuals with reading and writing difficulties. The mirror-image content for completing the twentieth, twenty-second, and twenty-third tasks perpetuates that error rather than eliminating it. Therefore, the content did not fit the objectives of the activity pages. Almost all of the task content was consistent with almost all of the specific objectives.

Table 18 shows the results regarding the support elements provided for the tasks in the activity pages.

Table 18. Support Elements for the Tasks in the Activity Pages

n= 118 (Total Number of Tasks)	**Frequency (f)**	**Percentage (%)**
Item 7. The activity pages provide support elements:		
Yes ( )	46	39
No ( )	72	61

The activity pages provided support elements for 46 tasks. However, they did not provide any support elements for 72 tasks. These results showed that the activity pages did not provide support elements for more than half the tasks.

Table 19 shows the results regarding the congruency of the support elements with the objectives of the activity pages.

Table 19. Results regarding the Congruency of the Support Elements with the Objectives of the Activity Pages

n= 46 (Number of Tasks with Support Elements)	**Frequency (f)**	**Percentage (%)**
Item 8. The support elements fit the objectives of the activity pages:		
Yes. ( )	45	97.8
No. ( ) Please explain:	1	2.2

Forty-five support elements fit the objectives of the activity pages. An activity page gave the task of sorting words in dictionary order. The support for this task was the alphabetical order of the letters. It is clear from the example that the support element fits the task. When the content of the explanation made by the first researcher regarding the inappropriateness of a support element was analyzed, the following findings were obtained: The images of a house at the beginning of the guidelines for the writing task are unnecessary stimuli, which will cause confusion. Almost all of the support elements provided for less than half of the tasks fit the special objectives of the activity pages.

Discussion and Conclusion

Content creators share activity pages in virtual environments to address reading and writing difficulties. This study investigated the quality of 100 online activity pages. The first research question addressed the quality of the content features of the activity pages. The results showed that the activity pages contained visuals that did not satisfy some content features. For example, most visuals were black and white. They did not fit the objectives of the activity pages. They were not related to the contents of the activity pages. They did not make the contents more intelligible. Activity pages should have visuals because visuals help students focus on and understand the content. Visuals should be in color because colors make topics more interesting for students with reading and writing difficulties and help them learn. Türkben (2019) found that almost all the visuals on the texts in the fifth-year Turkish textbook, which is used to ensure the development of the four basic language skills, were prepared using four colors to draw students' attention to the contents of the texts and to increase their aesthetic sensitivity. Sulak and Çapanoğlu (2021) focused on classroom teachers' views to assess the physical appearance of textbooks used to acquire basic language skills and mother tongue through texts and activities. Most classroom teachers reported that the appearance of the visuals in the Turkish textbooks was of high quality and adequate. The visuals on activity pages should serve specific objectives, as they facilitate the understanding of the content and prevent the use of unnecessary elements on the written material. Visuals should be related to the content because they help students with reading and writing difficulties to read texts quickly and confirm their accuracy through visual reading. Visuals that make the content comprehensible enable students to access the learning products sooner. İşcan and Karadağ (2021) investigated the congruency between visuals and texts in primary school fourth-grade Turkish textbooks and reported four findings. First, more than half of the visuals do not support the main idea and do not help students guess the content. Second, half of the visuals do not support the titles of the texts. Third, half of the visuals are partially compatible with the content of the texts. Fourth, the story elements (event, protagonist, and time) in the texts do not exactly match the elements in the visuals. Şahin (2014) found that the visuals in social studies textbooks fell short of conveying the messages in the content. He concluded that textbooks should contain colorful, esthetically-appealing, and intelligible visuals that could convey the messages related to the content. All in all, research shows that visuals and their features play a critical role in making content more comprehensible. However, our results indicate that the visuals of most online activity pages that address reading and writing difficulties are not of high quality. In other words, they fall short of drawing students' attention to written materials and making them appealing and comprehensible.

The results regarding the theme "written content" showed that most activity pages did not satisfy the criteria of colorfulness and figure-background contrast. The written content on activity pages should be in color with a contrast between figures and the background to promote readability and learning. According to Güvendi Kaptan and Kaptan (2004), written content should be in warm colors, readable, and left-aligned, and should not contain divisions. Moreover, there should be color contrasts between the page color and written content in the sections where readability is desired to be enhanced. The results regarding the theme "written content" show how important written content criteria are in positively affecting learning. However, our results show that the written content on most activity pages does not satisfy the criteria that are supposed to promote learning.

The results regarding the theme “language and expression” showed that the written content on the activity pages contained errors in terms of language and expression. The written content on activity pages should be free of punctuation, spelling, and expression errors to help students develop reading and writing skills. Nar (2019) assessed the fourth- and fifth-grade social studies textbooks regarding language and expression. He found that both books contained errors in punctuation, spelling, simplicity, and clarity of expression. Our results are consistent with the literature. Based on our results, we can state that most activity pages fail to satisfy the criteria of language and expression and contain errors that would exacerbate reading and writing difficulties.

The results regarding the theme “instructions” showed that the instructions on most activity pages did not meet the criteria. The instructions on activity pages help students understand the tasks and questions on activity pages. Instructions should be short, simple, and free of expression errors. They should be different from the text in terms of color, size, shape, and darkness. Such instructions draw the attention of people with reading and writing difficulties to tasks and help them correct learning errors. Hopcan (2013) prepared a web-based adaptive teaching system for students with specific learning disabilities who had difficulty understanding and communicating instructions. Therefore, the system included written instructions for paper and pencil activities and verbal instructions for educational software activities. His results disagree with ours. Instructions help people with reading and writing difficulties to learn. However, our results indicate that the activity pages fail to satisfy this criterion.

The results regarding the theme "questions" showed that the accuracy level of the questions, choices, and answer sources on the activity pages was not close to one hundred percent. The activity pages did not provide a variety of answers for almost any of the questions. The right questions, options, and answer sources help students eliminate learning errors and acquire the right learning products. Various questions and answers allow students to focus their attention better and enjoy learning. Our results are consistent with Polat and Dedeoğlu's (2020) results. They examined various aspects of the sub-text questions (on two virtual environments) prepared by classroom teachers to improve fourth-grade students' reading comprehension skills. They detected that teachers mostly used the narrative text type and preferred short-answer and multiple-choice questions. They also determined that most questions were at a simple comprehension level and that the answer sources were texts. Görgün (2018) focused on what teachers who had previously worked with students diagnosed with specific learning disabilities thought about the variety of activities and materials that should be included in the "Fluent Reading and Reading Comprehension Support Education Program." The teachers made the following recommendations: (1) Teachers should ask “five Ws and one H” questions about reading genres and texts in order to help students develop reading and comprehension skills. (2) Teachers should have their students complete missing texts. (3) Teachers should encourage students to explain what they understand from texts. (4) teachers should use audio texts to determine whether students understand what they listen to. (5) Before reading, teachers should allow students to find the words mentioned in the texts. (6) Students should follow the text while another student is reading. (7) Teachers should offer activities to improve eye jumping, attention, and memory. (8) Teachers should include writing genres in their lessons to help students develop writing skills. Based on these results, we can state that questions, choices, and answer sources help students focus on the content, eliminate learning errors, and arrive at the right learning products. However, our results indicate that most activity pages fail to meet this criterion.

The results regarding the theme "texts" showed that most activity pages did not comply with the diversity of text types and the placement of texts on activity pages, taking into account page layout features. Text type diversity and paper layout help students develop reading habits, mother tongue awareness, and meaningful and organized text writing skills. Including various text types in activity pages is also important because each text type contains different information. Our results are similar to those of Beşgül (2015), who compared the reading comprehension levels of fifth-grade students with and without reading difficulties. She concluded that students without reading difficulties were better at comprehending what they read than those with reading difficulties. This is because textbooks do not have different types of texts but contain informative ones. Arıkan Açıkgöz (2019) investigated the effect of worksheets with English content page design on learning. He reported that the principles of leaving 2.5 cm margins, 1.5-2 spaces between lines, and matching line lengths were not followed. These results suggest that activity pages should be arranged in accordance with text types and page layouts. However, the activity pages fail to meet this criterion. Therefore, most activity pages do not help students develop reading habits, mother tongue awareness, and text writing skills. The results regarding the theme "tasks" showed that none of the activity pages provided examples, presented the tasks from simple to complex, included reinforcers, or stated the duration of the tasks. Almost half the activity pages had daunting repetitions. Almost half the tasks were based on information. The tasks did not assess upper-level skills. People with reading and writing difficulties need examples to understand and complete tasks easily. Öksüz (2021) found that teachers provided sample solutions in operations and problems related to fractions to help both academically developing students and students with learning difficulties to learn conceptually. Tasks at different levels enable students with reading and writing difficulties to accomplish increasingly difficult tasks. Uçar Rasmussen and Cora İnce (2017) used fifteen questions to test the effectiveness of the think-aloud method in helping students adopt metacognitive reading comprehension strategies. They determined that the questions helped students with specific learning disabilities answer "five Ws and one H" questions, predict events, remember the order of events, make inferences and predictions, visualize in mind, associate with prior knowledge, and understand what they read. The questions were at different difficulty levels. This result differs from ours because the activity pages did not include questions at different difficulty levels. The transition from simple to complex tasks prevents students from suddenly moving from an easy task to a very difficult one, allowing them to experience a sense of accomplishment. Başbay (2008) investigated the relationship between learners' learning tasks, mental skills, and cognitive activities. He presented learners with task lists consisting of stages A, B, and C in accordance with the step-by-step teaching program. Stage C addressed tasks about information and comprehension. Stage B included tasks on practice and analysis. Stage A included tasks on synthesis and assessment. He found that learners at the lower level spent more time completing tasks at the upper level and had more difficulty making decisions. While he presented the tasks from simple to complex, the activity pages did not. Therefore, the results of the two studies differed. The reinforcements provided upon completion of the tasks are important in terms of increasing the likelihood of repetition of success in similar tasks for students with reading and writing difficulties. Activity pages that present the completion time of tasks prevent students from working in a scattered manner. The absence of daunting repetitions also increases students' willingness to complete tasks. However, most activity pages do not have features related to the theme "tasks." We can state that most tasks on the activity pages do not make students with reading and writing difficulties more interested and enthusiastic and do not help them feel a sense of achievement and develop study habits.

The results regarding the theme "feedback and answer key" showed that the activity pages did not provide feedback or did not have any answer keys. Feedback elements inform students about their answers and help them to overcome learning difficulties and deficiencies. Çelen (2010) investigated the effect of confirmatory feedback on motivation, academic achievement, and retention in virtual practice environments. He found that confirmatory feedback contributed to students' motivation and retention but did not contribute to their academic achievement. This result differs from ours because the activity pages did not provide feedback. Answer keys prevent students from acquiring incorrect learning products. On the other hand, Aydemir, Sakız, and Doğan (2019) gave an answer key for the digital literacy skills rubric they developed at the primary school level. All in all, research shows that feedback and answer keys are very important in increasing students' learning levels. However, our results indicate that the activity pages do not increase the learning levels of students with reading and writing difficulties because they do not have feedback and answer keys.

The second research subquestion addressed the quality of the purpose-activity compliance of the activity pages. The results showed that none of the activity pages included elements regarding purpose and support. The objectives on activity pages help students with reading and writing difficulties to stay motivated and focused on completing relevant tasks, while support allows them to achieve success and feel competent. According to Turgut, Çolak, and Salar (2017), teachers should tell students what worksheets will be used for, arouse their curiosity about tasks (through questions and short videos), and encourage them to accomplish them. Most activity pages do not help students with reading and writing difficulties feel motivated and stay focused on tasks because they do not include elements regarding purpose and support. The results showed that almost all of the tasks and contents on the activity pages fit the specific objectives of the tasks. The relevance of tasks and content to specific objectives helps students with reading and writing difficulties acquire the right learning products. Our result is similar to that of Olçay Gül (2014), who emphasized that content should be compatible with the subject matter (curriculum). The activity pages help students with reading and writing difficulties to access the right learning products because the tasks and contents fit the specific objectives.

This study analyzed 100 activity pages shared by different content creators in virtual environments to overcome reading and writing difficulties. We focused on the content and purpose-activity compliance features of the activity pages. We developed the Checklist for Identifying Content Features of Activity Pages (CICFAP) and the Checklist for Determining the Purpose-Activity Compliance of Activity Pages (CDPACAP). The results showed that most activity pages did not satisfy the criteria of content and purpose-activity compliance. Our results indicate that most activity pages are unsuitable for addressing reading and writing difficulties.

Suggestions

The following are recommendations based on the results:

1. People interested in developing activity pages to address reading and writing difficulties should consider the features in our two checklists to develop quality activity pages.
2. Researchers should design action research to determine the performance of activity pages developed by considering the features in our two checklists.

References

Akyol, H. (2019). *Türkçe ilk okuma yazma öğretimi.* Ankara: Pegem Akademi Yayıncılık.

Albayrak Sarı, A. (2018). *Eğitimde kullanılan ölçme araçları* [Lecture notes]. Retrieved from http://yunus.hacettepe.edu.tr/~aylinalb/

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Arıkan Açıkgöz, S. (2019). *Görsel tasarım ilkelerine göre hazırlanmış çalışma yapraklarının öğrencilerin öğrenme ürünleri üzerine etkisi* (Unpublished doctoral dissertation). Hacettepe University, Ankara.

Atasoy, A. (2015). *Ortaokul öğrencilerinin akıcı yazma becerilerinin değerlendirilmesi* (Unpublished master's thesis). Mustafa Kemal University, Hatay.

Ankara Yıldırım Beyazıt University. (2019). *Ölçme ve değerlendirme el kitabı.* Ankara: Yıldırım Beyazıt Üniversitesi.

Aydemir, Z., Sakız, G., & Doğan, M. C. (2019). İlkokul düzeyinde dijital okuryazarlık becerileri rubriğinin geliştirilmesi. *Milli Eğitim Dergisi, 48*(1), 617-638.

Başbay, A. (2008). Öğrenenlerin bireysel öğrenme görevleri ile zihinsel becerileri ve bilişsel faaliyet hızları arasındaki ilişki. *Eğitim ve Bilim Dergisi, 33*(149), 1-17.

Bayraktar, M. (2019). Özel öğrenme güçlükleri. In Ş. Şentürk & Y. Barut (Eds.), *Öğrenme güçlüğü ve özel yetenek* (pp. 2-7). Ankara: Nobel Yayıncılık.

Beard, R., Myhill, D., Riley, J., & Nystrand, M. (Eds.). (2009). *The SAGE handbook of writing development.* Los Angeles: SAGE.

Beşgül, M. (2015). *Okuma güçlüğü olan ve olmayan öğrencilerin okuduğunu anlama becerilerinin incelenmesi* (Unpublished master's thesis). Near East University, Kıbrıs.

Bıyık Ataş M., Erdoğan, T., & Yıldız, M. (2017). The examining reading motivation of primary students in the terms of some variables. *International Journal of Progressive Education, 13*(3), 31-49.

Çelen, B. (2010). *Sanal alıştırma ortamlarında doğrulayıcı geribildirim kullanımının motivasyona, akademik başarıya ve kalıcı öğrenmeye etkisi* (Unpublished master's thesis). Marmara University, İstanbul.

Dyslexia Center. (2021, 5 November). *Disleksi nedir? Belirtileri nelerdir?.* Retrieved from https://www.disleksi.com.tr/

Doğanay Bilgi, A. (2017). Okuma yazmada öğretimsel stratejiler. In E. R. Özmen (Ed.), *Öğrenme güçlüğü sınıf içi destek seti (ilköğretim dönemi)* (pp. 1- 75). Ankara: Eğiten Kitap Yayıncılık.

Ferah, A. (2007). *Türkçe ilk okuma yazmayı öğrenme Türkçe okuyup yazmak için.* Ankara: Nobel Yayın Dağıtım.

Görgün, B. (2018). *Akıcı okuma ve okuduğunu anlama destek eğitim programının özel öğrenme güçlüğü olan öğrencilerin okuma becerilerine etkisi* (Unpublished doctoral dissertation). Eskişehir Osmangazi University, Eskişehir.

Güneş, F. (2019). *İlk okuma yazma öğretimi yaklaşımlar ve modeller.* Ankara: Pegem Akademi Yayıncılık.

Güvendi Kaptan, S., & Kaptan, A. Y. (2004). *Ders kitaplarındaki tasarım sorunları ve öğrencilerin öğrenme düzeyine etkisi.* XIII. Ulusal Eğitim Bilimleri Kurultayı, İnönü Üniversitesi, Malatya.

Head Council of Education and Morality. (2019). *Taslak ders kitabı ve eğitim araçları ile bunlara ait e-içeriklerin incelenmesinde değerlendirmeye esas olacak kriterler ve açıklamaları.* Ankara: T. C. Milli Eğitim Bakanlığı.

Hopcan, S. (2013). *Öğrenme güçlüğü yaşayan 1-3. Sınıf öğrencileri için web destekli uyarlanabilir öğrenme sistemi geliştirilmesi, uygulanması ve değerlendirilmesi* (Unpublished master's thesis). Sakarya University, Sakarya.

Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., & Dilig, R. (2020). *The condition of education 2020.* Washington, D.C.: National Center for Education Statistics.

İşcan, A., & Karadağ, K. (2021). İlkokul 4. sınıf Türkçe ders kitabındaki resimlerin metinlerle uyumunun incelenmesi. *Academia Eğitim Araştırmaları Dergisi, 6*(1), 196-215.

Kalkan, A. (2019). *Özgül öğrenme güçlüğü.* Adana: İzge Yayınevi.

Karasar, N. (2019). *Bilimsel araştırma yöntemi.* Ankara: Nobel Yayıncılık.

Kaya, Z. (2006). *Öğretim teknolojileri ve materyal geliştirme.* Ankara: Pegem Yayıncılık.

Kükürt, S. (2010). *Yazı yazma bozukluğu (disgrafi)*. Retrieved from https://www.tavsiyeediyorum.com/makale_4895.htm

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* Thousand Oaks, CA: Sage Publications.

Ministry of National Education. (2014). *Öğretim materyalleri hazırlama kılavuzu.* Ankara: Programlar ve Öğretim Materyalleri Daire Başkanlığı.

Ministry of National Education. (2019). *Türkçe dersi öğretim programı (ilkokul ve ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. sınıflar).* Ankara: T.C. Milli Eğitim Bakanlığı.

Morris, R. D. (1988). Classification of learning disabilities: Old problems and new approaches. *Journal of Consulting and Clinical Psychology, 56*(6), 789-794.

Nar, H. (2019). *4. ve 5. sınıf sosyal bilgiler ders kitaplarının dil ve anlatım yönünden değerlendirilmesi* (Unpublished master's thesis). Tokat Gaziosmanpaşa University, Tokat.

Olçay Gül, S. (2014). Farklılaştırılmış öğretim ve uyarlamalar. *Ufuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 3*(5), 111-123.

Öksüz, H. (2021). *5. sınıf matematik öğretmenlerinin kesirlerle işlemler alt öğrenme alanında öğrenme güçlüğüne sahip öğrenciler ve normal öğrenciler için sınıfta oluşturmayı amaçladıkları sosyomatematiksel normlar* (Unpublished master's thesis). Uşak University, Uşak.

Özcan, A. O. (1992). İlk okuma-yazma öğretim programlarının geliştirilmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 8*(8), 167-178. Retrieved from https://dergipark.org.tr/tr/pub/hunefd/issue/7830/103006

Özçelik, D. A. (2013). *Okullarda ölçme ve değerlendirme öğretmen el kitabı.* Ankara: Pegem Yayıncılık.

Özçivit Asfuroğlu, B., & Fidan, S. T. (2016). Özgül öğrenme güçlüğü. *Osmangazi Tıp Dergisi, 38*(1), 49-54.

Pierangelo, R., & Giuliani, G. (2006). *Learning disabilities: A practical approach to foundations, assessment, diagnosis, and teaching.* Boston: Pearson Company.

Polat, İ., & Dedeoğlu, H. (2020). Sınıf öğretmenlerinin hazırladığı metin altı sorularının incelenmesi. *Ana Dili Eğitimi Dergisi, 8*(4), 1468-1482.

Reid, G., & Green, S. (2020). *Disleksi ile başa çıkmak için 100+ pratik öneri* (5th ed., S. Aras, Trans.). Ankara: Arkadaş Yayınevi.

Safarova, K., Mekyska, J., & Zvoncak, V. (2021). Developmental dysgraphia: A new approach to diagnosis. *The International Journal of Assessment and Evaluation, 28*(1), 143-160. doi:10.18848/2327-7920/CGP/v28i01/143-160

Seçkin Yılmaz, Ş. (2020). Yazma güçlüğü (disgrafi). In M. Sümer & Ş. Seçkin Yılmaz (Eds.), *Öğrenme güçlüklerinde değerlendirme ve müdahale* (pp. 59-79). Ankara: Anı Yayıncılık.

Senemoğlu, N. (2013). *Gelişim, öğrenme ve öğretim.* Ankara: Yargı Yayınevi.

Shaywitz, S. (2003). *Disleksi ile başa çıkma rehberi* (Ö. Yılmaz, Trans.). İstanbul: Epsilon Yayınevi.

Sulak, S. E., & Çapanoğlu, A. Ş. (2021). İlkokul Türkçe ders kitaplarının sınıf öğretmenlerinin görüşlerine dayalı olarak bütüncül bir yaklaşımla değerlendirilmesi. *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 7*(3), 830-849.

Şahin, F., & Çakır, R. (2018). Çoklu ortam materyallerinin okuma-yazma güçlüğü çeken öğrencilerin okuma-yazma becerileri üzerindeki etkisi. *Journal of Technologies & Teacher Education, 7*(2), 75-90.

Şahin, G. (2009). Görsel tasarım. In S. Perkmen & A. Öztürk (Eds.), *Multimedya ve görsel tasarım* (pp. 15-34). İstanbul: Profil Yayıncılık.

Şahin, M. (2014). Sosyal bilgiler ders kitaplarının görsel tasarım ilkeleri açısından değerlendirilmesi. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 23*(1), 31-46.

Şahin, M. (2015). Öğretim materyallerinin öğrenme-öğretme sürecindeki işlevine ilişkin öğretmen görüşlerinin analizi. *Kastamonu Eğitim Fakültesi Dergisi, 23*(3), 995-1012.

Şen Kösem, F., & Bakacak, S. (2019). *Evde ve okulda disleksi.* İstanbul: Nobel Tıp Kitabevleri.

Taşkaya, S. M. (2017). İlk okuma ve yazma öğretiminde karşılaşılan sorunlar ve çözüm yolları. In F. Susar Kırmızı & E. Ünal (Eds.), *İlk okuma yazma öğretimi* (pp. 233-294). Ankara: Anı Yayıncılık.

Turgut, Ü., Çolak, A., & Salar, R. (2017). 7E öğrenme modeline uygun olarak çalışma yaprağı hazırlama (elektromanyetizma ünitesi örneği). *Bayburt Eğitim Fakültesi Dergisi, 12*(23), 227-251.

Türkben, T. (2019). Türkçe ders kitaplarındaki metin resimlerinin incelenmesi. *İnönü Üniversitesi Eğitim Fakültesi Dergisi, 20*(2), 650-672.

Uçar Rasmussen, M., & Cora İnce, N. (2017). Özel öğrenme güçlüğü olan bireylere üstbilişsel okuduğunu anlama stratejilerinin öğretiminde sesli düşünme yönteminin etkililiği. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 17*(4), 2180-2201.

Yıldırım, A., & Şimşek, H. (2016). *Sosyal bilimlerde nitel araştırma yöntemleri.* Ankara: Seçkin.

Yıldız, M. (2013). Yazma güçlüğü (disgrafi) olan bir ilkokul 2.sınıf öğrencisinin el yazısı okunaklılığının geliştirilmesi: Eylem araştırması. *Uşak Üniversitesi Sosyal Bilimler Dergisi, 6*(4), 281-310. Retrieved from https://dergipark.org.tr/en/download/article-file/202249

Yılmaz, M. (2019). *Okuma güçlüğü ve tedavisi.* Ankara: Gece Akademi.