

APPENDICES

Appendix 1. Permission Letter



KEMENTERIAN PENDIDIKAN TINGGI, SAINS,
DAN TEKNOLOGI
UNIVERSITAS PENDIDIKAN GANESHA
FAKULTAS BAHASA DAN SENI
Jalan A.Yani No. 67 Singaraja Bali Kode Pos 81116
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Nomor : 5588/UN48.7.1/ TA.00.03/2025 3 Desember 2025
Lamp : -
Hal : Permohonan Izin Observasi Awal Proposal Skripsi

Yth.
Kepala SD Mutiara Singaraja
di Singaraja

Dalam rangka pengumpulan data awal penyusunan proposal skripsi, dengan hormat kami mohon bantuan Bapak/Ibu untuk mengizinkan mahasiswa di bawah ini mengumpulkan data yang diperlukan pada institusi yang Bapak/Ibu pimpin :

1. Gusti Lanang Dananjaya
NIM : 2212021057
2. Putu Andre Wiranatha
NIM : 2212021081
3. I Kadek Teddy Jaya Nugraha
NIM : 2212021083

Demikian kami sampaikan permohonan ini, atas perhatian dan bantuan Bapak/Ibu, kami ucapkan terima kasih.

a.n. Dekan,
Wakil Dekan I,



Ni Luh Putu Eka Sulistia Dewi
NIP. 198104192006042002

Tembusan :
1. Dekan FBS Undiksha Singaraja
2. Koorprodi Pendidikan Bahasa Inggris
3. Sub Bagian Akademik FBS

Appendix 2. Final Storyline

Storyline Digital Storybook

Putu Andre Wiranatha | 2212021081

Theme: SDG 12 Responsible Consumption and Production

Topic: Maintaining the school environment

Title: Small Habits

Grade: 4

Characterization:

1. Leo (Main Character)

- Elementary school student
- Like Chocolate and Fruit Tea or Coca Cola
- Careless and irresponsible
- Often litters without realizing it
- Easily startled and sometimes reacts in a funny way
- Begins to learn responsibility after experiencing a strange dream
- Changes are gradual, not perfect all at once

2. Mrs. Poppy (Supporting Character)

- Classroom teacher
- Wise and patient
- Provides guidance through questions and examples, not punishment
- Inserts light humour to keep the classroom atmosphere fun

3. Classmates (Mob)

- Active and cheerful
- Likes to work together
- Learns to protect the environment together
- Becomes part of change at school

SYNOPSIS

Leo is a careless boy who often throws trash anywhere. Candy wrappers and bottles are always around him, even though Ms. Poppy often reminds the students to put trash in the trash can. Leo does not listen. One night, after a long day, Leo falls asleep and has a strange dream. Heavy rain floods the school yard because the gutters are full of trash. Suddenly, the trash talks to Leo and chases him in the water. The dream makes Leo very scared. The next morning at school, Leo sees the real gutter filled with trash. When Ms. Poppy asks the class to clean together, Leo remembers the dream. He finds candy wrappers under the desk and realizes they are his. From that day on, Leo changes. He throws trash in the trash can and helps keep the school clean. Leo learns that small actions can make a big difference.

Table Storyline and Illustration

Page	Illustration	Draft Story
Cover	Konsep Visual - Tampak depan sekolah dasar - Langit terbagi dua: sisi gelap hujan & sisi cerah bersih - Gaya ilustrasi kartun anak, warna cerah - Fokus pada ekspresi tokoh, tanpa aksi berlebihan Komposisi Ms. Poppy (Guru) - Berdiri di tengah - Tangan di pinggang - Ekspresi tegas tapi ramah Leo - Di depan ms. poppy - Memegang tas sekolah - Ekspresi bingung dan sedikit takut	Referensi Tokoh Ms Poppy  Leo 
Page 1	Setting: School yard, daytime Illustration detail: - Leo berdiri santai di halaman sekolah - Tangan Leo memegang snack terbuka (coklat batangan) - Bungkus coklat jatuh di tanah dekat kaki Leo - Botol minuman plastik tergeletak di samping nya (Fruitea / Coca cola) - Latar belakang halaman sekolah dengan beberapa sampah berserakan Character emotion: Careless, indifferent, relaxed Ambience: Messy, careless, daytime school atmosphere	Leo was a careless boy. Leo often threw trash anywhere. Candy wrappers and bottles were everywhere.
Page 2	Setting: Classroom, daytime Illustration detail: Ms. Poppy berdiri di depan kelas	At school, Ms. Poppy often said, "Please put trash in the trash can." Leo heard it, but Leo did not care.

	• Ms. Poppy menunjuk ke arah tempat sampah • Mulut Ms. Poppy terbuka sedang berbicara • Leo duduk di bangku dengan posisi santai • Leo melihat ke arah lain, tidak memperhatikan • Bungkus snack terlihat di meja Leo (Coklat) • Tempat sampah ada di sudut kelas, terlihat jelas • Beberapa siswa lain tampak mendengarkan guru Character emotion: Ms. Poppy: Caring, reminding Leo: Indifferent, careless, uninterested Ambience: Classroom learning atmosphere, light messy, daytime school mood	
Page 3	Setting: Bedroom Illustration detail: • Leo tidur di ranjang kecil • Leo masih memakai baju sekolah • Selimut menutup tubuh Leo sampai dada • Sepatu sekolah tidak rapi di samping tempat tidur • Meja kecil di samping ranjang berisi bungkus snack (Coklat) dan botol (Fruitea / Coca cola) minum kosong • Lampu kamar menyala redup • Jendela kamar tertutup, suasana malam Character emotion: Sleepy, tired, careless Ambience: Quiet, calm, night-time bedroom mood	After school, Leo was very tired. Leo went to bed without taking a bath. Plop! Soon, Leo had a strange dream.
Page 4	Setting: School yard, stormy weather (dream) Illustration detail: • Langit gelap dengan awan hitam tebal • Kilat terlihat di langit • Air hujan turun deras • Genangan air menutupi halaman sekolah • Air hampir mencapai mata kaki Leo • Leo berjalan pelan di air • Riak air terlihat di sekitar kaki Leo	In the dream, dark clouds came. <i>Boom!</i> Thunder was loud. <i>Splash! Splash!</i> Water filled the school yard. Leo walked in the water. <i>Splash! Splash!</i>

	Gedung sekolah tampak buram karena hujan Character emotion: Surprised, scared, confused Ambience: Stormy, loud, wet, dream-like atmosphere	
Page 5	Setting: School gutter, rainy weather (dream) Illustration detail: - Selokan sekolah terlihat dari dekat - Air hujan mengalir pelan di selokan - Selokan penuh bungkus plastik dan botol - Sampah menumpuk dan menyumbat aliran air - Air meluap keluar dari selokan - Gelembung air muncul di sela-sela sampah - Percikan kecil air di sekitar selokan Character emotion: Leo: Worried, confused Ambience: Wet, blocked, tense, rainy dream atmosphere	Leo saw the gutters. The gutters were full of trash. Glug... glug... Wrappers and bottles blocked the water.
Page 6	Setting: School gutter area, rainy dream Illustration detail: - Selokan sekolah penuh sampah plastic - Bungkus coklat dan botol minum (Fruitea / Coca cola) terlihat menonjol - Bungkus coklat digambar seperti bergerak dan terbuka - Botol minum miring seolah meloncat - Teks suara "Snap!" dan "Bonk!" muncul di udara - Leo berdiri mundur sedikit dari selokan - Tangan Leo terangkat karena kaget - Ekspresi wajah Leo terkejut dan takut - Garis-garis kecil di dada Leo menandakan detak jantung Character emotion: Scared, shocked, panicked Ambience: Spooky but child-friendly, rainy, dream-like mood	Suddenly, the trash talked to Leo. <i>Snap! "I am your snack wrapper!"</i> <i>Bonk! "I am your drink bottle!"</i> Leo felt very scared. <i>Thump! Thump! (Heart rate)</i>
Page 7	Setting: School yard, flooded (dream) Illustration detail: Halaman sekolah tertutup air sepenuhnya	AAA... Leo Scream... The Water moved fast. The school became a big pool. <i>Whoosh!</i>

	• Air bergerak deras dengan garis-garis arah aliran • Gedung sekolah terlihat setengah tenggelam • Leo berada di tengah air, tubuh hampir mengapung • Tangan Leo bergerak seperti berenang • Tas sekolah ikut terapung di dekat Leo • Percikan air besar di sekitar tubuh Leo • Teks suara "WHOOSH!" besar dan melengkung di atas air • Teks "AAA!" muncul dari mulut Leo Character emotion: Panicked, scared, struggling Ambience: Chaotic, loud, fast-moving water, dream-like danger	Leo tried to swim away
Page 8	Setting: School yard, flooded (dream) Illustration detail: • Air masih memenuhi halaman sekolah • Bungkus coklat dan botol minum (Fruitea / Coca cola) terlihat mengapung di air • Bungkus coklat dan botol digambar dengan wajah dan mulut terbuka • Bungkus coklat bergerak mendekati Leo • Botol minum seperti mengejar dari belakang • Teks suara "Ha Ha Ha..." melengkung di udara • Teks "I will catch you!" besar dan tebal • Leo berenang menjauh dengan cepat • Ekspresi wajah Leo sangat takut • Percikan air besar di sekitar Leo saat berenang Character emotion: Leo: Very scared, panicked Trash: Teasing, scary but playful Ambience: Chasing, tense, noisy, dream-like chaos	<i>"Leo, throw your trash properly!"</i> the trash shouted. <i>HaHaHa... Leo, I will catch you</i>
Page 9	Setting: Bedroom, morning Illustration detail: • Pintu kamar terbuka dengan cepat • Efek suara "BANG!" besar di dekat pintu • Cahaya pagi masuk dari pintu dan jendela • Leo duduk tegak di ranjang	BANG! The door opened. "Hey, Leo! Wake up!" "AAA!" Leo woke up in the morning. "What was that?" Leo thought.

	• Selimut sedikit berantakan • Mata Leo terbuka lebar • Mulut Leo terbuka sambil berteriak • Ekspresi wajah kaget dan bingung • Bayangan mimpi (air, sampah) samar di sekitar Leo • Jam dinding menunjukkan pagi hari Character emotion: Shocked, scared, confused Ambience: Sudden, noisy, morning surprise	
Page 10	Setting: Classroom, rainy morning Illustration detail: • Langit luar kelas berwarna abu-abu • Ms. Poppy berdiri di depan kelas • Ms. Poppy mengangkat satu tangan saat bertanya • Papan tulis di belakang Ms. Poppy • Para siswa duduk rapi di bangku • Beberapa siswa mengangkat tangan • Leo duduk di bangku, terlihat berpikir serius Character emotion: Ms. Poppy: Caring, guiding Students: Attentive, active Leo: Thoughtful, aware Ambience: Calm, rainy school morning, learning atmosphere	In the morning at school, it rained. Drip... drop... Ms. Poppy stood in front of the class. "If the gutter is full of trash, what happens?" "Flood!" the students said together.
Page 11	Setting: School yard, rainy morning Illustration detail: • ~~Selokan sekolah terlihat dari dekat~~ • ~~Air hujan mengalir pelan~~ • Sampah plastik dan bungkus coklat tersangkut di selokan • Air sedikit meluap keluar dari selokan • Leo berdiri di tepi selokan • Leo menunduk melihat ke dalam selokan • Ekspresi wajah Leo terkejut dan khawatir • Teks kecil "Oh no!" ~~muncul dekat wajah Leo~~ • Latar belakang halaman sekolah yang basah Character emotion: Worried, surprised Ambience: Wet, quiet, rainy school morning	Leo looked at the gutter. The trash was stuck. "Oh no!"

Page 12	Setting: School yard, daytime (after rain) Illustration detail: • Halaman sekolah masih sedikit basah • Ms. Poppy berdiri di tengah halaman • Ms. Poppy menepuk tangan • Teks suara "CLAP! CLAP!" muncul di dekat tangan Ms. Poppy • Para siswa memegang sapu dan kantong sampah besar • Beberapa siswa menyapu lantai • Beberapa siswa memasukkan sampah ke dalam karung • Kantong sampah terlihat penuh • Leo ikut menyapu dan memungut sampah Character emotion: Ms. Poppy: Encouraging, cheerful Students: Active, cooperative Leo: Willing, focused Ambience: Busy, positive, teamwork, clean-up mood	Ms. Poppy clapped her hands. "Let's clean together!" Sweep! Sweep! Rustle! Rustle! Trash went into big bags.
Page 13	Setting: Classroom, daytime (after cleaning) Illustration detail: • Ruang kelas terlihat lebih bersih • Beberapa meja sudah rapi • Leo berlutut di samping meja • Leo menunduk dan melihat ke bawah meja • Bungkus coklat terlihat di lantai • Leo memegang satu bungkus coklat • Ekspresi wajah Leo terkejut dan malu • Teks kecil "Oh" muncul dekat wajah Leo • Kantong sampah terlihat di dekat Leo Character emotion: Realizing, embarrassed, thoughtful Ambience: Quiet, reflective, clean classroom atmosphere	Leo cleaned the class. He looked under the desk. Candy wrappers were there. "Oh..." "This is like my dream."
Page 14	Setting: Classroom, daytime Illustration detail: • Ruang kelas sudah bersih dan rapi • Leo berdiri sambil membawa bungkus permen • Leo berjalan menuju tempat sampah • Tempat sampah berdiri jelas di sudut kelas	Leo picked up the trash. He walked to the trash can. Plop!

	• Leo memasukkan sampah ke dalam tempat sampah • Teks suara “Plop!” muncul dari dalam tempat sampah • Beberapa siswa terlihat di belakang, memperhatikan • Cahaya masuk dari jendela kelas Character emotion: Determined, calm, responsible Ambience: Clean, positive, hopeful classroom mood	
Page 15	Setting: School yard, sunny day Illustration detail: • Halaman sekolah terlihat bersih dan rapi • Matahari bersinar cerah • Tempat sampah terlihat tertutup rapi • Tidak ada sampah berserakan • Leo berdiri di tengah halaman sekolah • Leo tersenyum lebar • Leo memegang sapu atau kantong sampah kecil • Ms. Poppy terlihat di kejauhan tersenyum bangga • Beberapa siswa bermain dengan gembira Character emotion: Happy, proud, confident Ambience: Bright, clean, positive, hopeful ending	From that day, Leo tried to change. Leo kept the school clean. Leo smiled.
Blurb	What if trash can talk? Leo has a strange dream about his school turning into a swimming pool! After the dream, Leo learns an important lesson about trash and responsibility. This story teaches children to care for their school and protect the environment through simple actions.	

Appendix 3. Product Barcode



Appendix 4. Validation of Instrument from Expert 1

Validation of the Research Instrument for Observation Sheet

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating students' needs (Target Needs: Necessities, Lacks, Wants; and Learning Needs). Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items:

- Read each item thoroughly.
- Determine whether the item corresponds appropriately to the aspect being measured.
- Place a checkmark (✓) in either the R or NR column.
- Provide comments or recommended revisions in the Remarks column.
- Review all items systematically to ensure content validity.

No	Aspect	Indicator	R	NR	Remarks
1	Necessities	Is there availability of reading materials and exercises related to Responsible Consumption and Production (SDG-12)?	V	☐	
2	Necessities	Do students need guidance to stay focused while reading?	V	☐	
3	Necessities	Do students need clear explanations of unfamiliar SDG-12 terms?	V	☐	
4	Necessities	Is the story length appropriate to avoid cognitive overload?	V	☐	
5	Necessities	Is the reading content aligned with students' cognitive level?	V	☐	
6	Lack	Do students lack understanding of SDG-12 concepts?	V	☐	
7	Lack	Do students lack strategies to interpret SDG-related content?	V	☐	
8	Lack	Do students have limited prior knowledge to examples of responsible consumption and production?	V	☐	
9	Lack	Do students struggle to connect between story content and real-world issues?	V	☐	
10	Lack	Do students show limited awareness of SDG-12 relevance to problem-solving?	V	☐	
11	Wants	Do students prefer stories with themes related to Waste reduction?	V	☐	
12	Wants	Do students prefer visually appealing reading materials?	V	☐	
13	Wants	Do students prefer characters that match their age or personality	V	☐	
14	Wants	Do students prefer stories connected to real-life situation?	V	☐	
15	Wants	Do students engage with reading materials?	V	☐	
16	Learning Needs	Do students need relatable characters to support engagement and comprehension?	V	☐	
17	Learning Needs	Do students need guided questions to stay engaged during reading?	V	☐	
18	Learning Needs	Do students need visual or interactive elements to support understanding?	V	☐	
19	Learning Needs	Do students prefer individual, pair, or group reading activates?	V	☐	

General Comment: -

Date: November, 20, 2025

Validator Instrument



Dr. Ni Wayan Surya Mahayanti, S.Pd., M.Pd.
198805172012122002

Validation of the Research Instrument for Interview Guide

This validation sheet is used by teachers to assess the clarity, relevance, and alignment of each item in the Interview Guide Instrument for SDG-12: Responsible Consumption and Production Integration in Reading Lessons. Validators are expected to review each interview item carefully and determine whether it accurately represents the construct it is intended to measure (Necessities, Lacks, Wants, or Learning Needs).

Rating Criteria:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items

1. Read each interview item thoroughly under the *Item/Indicator* column.
2. Determine whether the item aligns with the specific aspect being measured, such as Necessities, Lacks, Wants, Learning Preferences, Classroom Conditions, Teacher Support, or Material Requirements.
3. Place a checkmark (✓) in either the R (Relevant) or NR (Not Relevant) column.
4. If needed, provide comments, suggestions, or recommended revisions in the Remarks column.
5. Review all items consistently and systematically to help ensure the content validity and appropriateness of the interview instrument.



No	Category	Question /Items	R	NR	Remarks
20	Necessities	Do you understand the concept of <i>Sustainable Development Goals</i> (SDGs)?	V	☐	
21	Necessities	Do you know the SDG-12 topics that are easiest for 4th grade students to understand?	V	☐	
22	Necessities	Can you identify SDG-12 topics that are relevant to students' daily lives?	V	☐	
23	Necessities	Can you determine which SDG-12 topics should be introduced to grade 4 students first?	V	☐	
24	Lacks	Do you understand the role of teachers in using SDG-12-based digital storybooks in the classroom?	V	☐	
25	Lacks	Can you identify the challenges that may arise when using SDG-12 digital storybooks?	V	☐	
26	Lacks	Do you know the best strategy to implement SDG-12 digital storybooks for 4th grade students?	V	☐	
27	Lacks	Do you know what aspects of SDG-12 are the most difficult for students to understand? (e.g.: waste reduction, waste management, recycling, resource efficiency)	V	☐	
28	Wants	Do you know what SDG-12 subtopic is most suitable for learning to read English? (e.g.: waste reduction, waste management, recycling, resource efficiency)	V	☐	
29	Wants	Do you understand whether students learn better individually or in groups?	V	☐	
30	Wants	Do you understand which learning style (individual or group) is most appropriate when using SDG-12-based digital storybooks?	V	☐	
31	Learning Preferences	Can you identify factors that help students understand the SDG-12 material well?	V	☐	
32	Learning Preferences	Do you know what support students need to understand the cause-and-effect relationship, key ideas, and supporting details related to SDG-12?	V	☐	
33	Learning Preferences	Do you know what teaching activities are most effective when integrating SDG-12?	V	☐	
34	Learning Preferences	Do you know what type of reading activity will help students understand SDG-12 the most, such as <i>shared reading</i> , <i>guided reading</i> , or <i>group reading</i> ?	V	☐	
35	Classroom Conditions	Can you predict how students will respond to interactive reading activities?	V	☐	
36	Classroom Conditions	Do you know what kind of classroom conditions help students stay focused and engaged during reading activities?	V	☐	
37	Classroom Conditions	Can you identify the dominant student learning style (visual, auditory, or multimodal) when reading SDG-12 stories?	V	☐	
38	Teacher Support	Do you know if students benefit from additional help such as images, audio, or animations?	V	☐	
39	Teacher Support	Do you know what types of feedback help students understand the sequence of stories and messages about responsible consumption and production?	V	☐	
40	Teacher Support	Do you know the most appropriate story duration to teach SDG-12 to 4th grade students? For example: Number of pages, Number of sentences per page	V	☐	
41	Material Requirements	Do you know what kind of character is easiest for students to understand in the SDG-12 story? Example: 1. Character of children of the same age as students	V	☐	

		2. Funny or quirky characters 3. Character of teachers or role models at school			
42	Material Requirements	Do you know what type of story content is most suitable for SDG-12 learning? Example: 1. Stories about students guarding the school environment 2. Stories about Not wasting food 3. Stories about Recycling Items 4. Stories about Using resources wisely	V	☐	
43	Material Requirements	Do you know what SDG-12 content can be effectively incorporated into reading stories and how students respond to the theme of responsible consumption and production? Example: 1. Keeping the environment clean 2. Not wasting food 3. Recycle items 4. Use resources wisely	V	☐	
44	Material Requirements	Do you know which SDG-12 theme is most interesting for 4th grade students? Example: 1. Keeping the environment clean 2. Not wasting food 3. Recycle items 4. Use resources wisely	V	☐	
45	Material Requirements	Do you know what support or resources are needed to help teachers teach SDG-12 effectively? Example: 1. Training and workshops 2. Complete teaching materials 3. Supportive school facilities	V	☐	



General Comment: -

Date: November, 20, 2025

Validator Instrument

Dr. Ni Wayan Surya Mahayanti, S.Pd., M.Pd.

198805172012122002



Validation of the Research Instrument for the Criteria of the Digital Storybook Reading Content.

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating digital storybook reading content. Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria

Validators should mark one of the following options for each item:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items

1. Read each item under the *Items* column thoroughly.
2. Determine whether the item corresponds appropriately to the aspect being measured (e.g., Purposeful, Sustained, Interactive).
3. Place a checkmark (✓) in **either** the **R** or **NR** column.
4. Provide comments, suggestions, or recommended revisions in the **Remarks** column if necessary.
5. Review all items systematically to ensure content validity of the instrument.

Notes for Validators

- Consider the clarity, relevance, and alignment of each item with the theoretical framework of digital storybook quality.
- Comments are highly encouraged, especially for items marked **NR**, to guide the improvement of the instrument.
- The overall feedback will be used to revise and refine the research instrument before implementation.



NO	Aspect	Items	R	NR	Remarks
46	Purposeful	The digital storybook has a clear learning goal and supports school-related learning content.	V	☐	
47	Purposeful	The digital storybook multimedia features such as images, sound, and animation <u>is</u> chosen to strengthen the content of the story.	V	☐	
48	Purposeful	The digital storybook content is presented concisely, not long, and does not require technical knowledge.	V	☐	
49	Sustained	The digital storybook story and features keep the children engaged while reading until the end.	V	☐	
50	Sustained	The digital storybook use cliffhangers, light conflicts, or curiosity that encourage children to continue reading.	V	☐	
51	Sustained	The digital content in digital storybooks provides small variations that encourage curiosity every time they are opened.	V	☐	
52	Intercultural	The language, names, or expressions in the story reflect the cultural realities depicted.	V	☐	
53	Intercultural	There is no character in digital storybook is depicted as inferior/superior based on cultural background.	V	☐	
54	Intercultural	The digital storybook story shows that cross-cultural cooperation strengthens shared values.	V	☐	
55	Interactive	In the digital storybook there are no excessive visual or audio elements to confuse the child.	V	☐	
56	Interactive	The digital storybook interaction helps children follow the story's progress gradually.	V	☐	
57	Interactive	The digital storybook activating features provides additional information that deepens understanding.	V	☐	
58	Child friendly	The digital storybook uses simple language that suits children's reading level.	V	☐	
59	Child friendly	The amount of text per page is age-appropriate, and the narrative language is simple and child-friendly.	V	☐	
60	Child friendly	The visual elements in the digital storybook are not too crowded and there is no distracting music or sound.	V	☐	
61	Accessible	The digital storybook includes helpful features like audio.	V	☐	
62	Accessible	The digital storybook provides simple pop-up explanations for difficult words.	V	☐	
63	Accessible	The digital storybook uses basic animations that help children understand the meaning of the story.	V	☐	
64	~~Personalizable~~	The digital storybook invites children to give a simple personal response at the end of the story.	V	☐	
65	~~Personalizable~~	The digital storybook asks children to choose which character they would like to be.	V	☐	
66	~~Personalizable~~	The digital storybook asks children to choose their favorite part of the story.	V	☐	
67	Creative	The digital storybook uses imaginative visuals such as unique characters, settings, or objects	V	☐	
68	Creative	The digital storybook uses sound effects or music that match the situation in the story for example calm music in peaceful scenes, lively sounds in action scenes	V	☐	
69	Creative	The digital storybook includes creative animation effects such as simple movements or transitions that enhance the reading experience.	V	☐	
70	Social	The digital storybook shows characters interacting in positive social ways for example helping and sharing.	V	☐	

71	Social	The digital storybook presents simple situations that illustrate social values such as empathy respect, or kindness.	V	☐	
72	Social	The digital storybook includes scenarios where characters work together to solve a problem, promoting teamwork and cooperation.	V	☐	

General Comment: -

Date: November, 20, 2025

Validator Instrument



Dr. Ni Wayan Surya Mahayanti, S.Pd., M.Pd.
198805172012122002

Validation of the Research Instrument for the Reading Behavioral Engagement based Reading Material

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating reading behavioral engagement-based reading material. Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria

Validators should mark one of the following options for each item:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items

1. Read each item under the *Items* column thoroughly.
2. Determine whether the item corresponds appropriately to the aspect being measured (e.g., Purposeful, Sustained, Interactive).
3. Place a checkmark (✓) in **either** the **R** or **NR** column.
4. Provide comments, suggestions, or recommended revisions in the **Remarks** column if necessary.
5. Review all items systematically to ensure content validity of the instrument.

Notes for Validators

- Consider the clarity, relevance, and alignment of each item with the theoretical framework of digital storybook quality.
- Comments are highly encouraged, especially for items marked **NR**, to guide the improvement of the instrument.
- The overall feedback will be used to revise and refine the research instrument before implementation.

NO	Aspect	Items	VR	QR	Remarks
73	Effort	The Digital Storybook is able to encourage students to keep reading even when the story is difficult.	V	☐	
74	Effort	The Digital Storybook is able to motivate students to try harder in understanding the story.	V	☐	
75	Effort	The Digital Storybook is able to encourage students to reread parts of the story to improve their understanding.	V	☐	
76	Persistence	The Digital Storybook is able to support students to finish the story until the end.	V	☐	
77	Persistence	The Digital Storybook is able to help students continue reading even when they encounter difficult words.	V	☐	
78	Persistence	The Digital Storybook is able to help students return to the story and continue reading after short breaks.	V	☐	
79	Attention	The Digital Storybook is able to maintain students' attention during reading activities.	V	☐	
80	Attention	The Digital Storybook is able to help students stay focused without being easily distracted.	V	☐	
81	Attention	The Digital Storybook is able to keep students focused through features that maintain their engagement.	V	☐	
82	Positive Conduct	The Digital Storybook is able to promote positive behavior during reading sessions.	V	☐	
83	Positive Conduct	The Digital Storybook is able to reduce disruptive behavior while students are reading.	V	☐	
84	Positive Conduct	The Digital Storybook is able to promote responsible use of digital tools during reading activities.	V	☐	
85	Active Participation	The Digital Storybook is able to encourage students to participate actively in shared reading activities.	V	☐	
86	Active Participation	The Digital Storybook is able to stimulate students to share their reading experiences with peers.	V	☐	
87	Active Participation	The Digital Storybook is able to motivate students to join discussions related to the story.	V	☐	
88	Reading Frequency	The Digital Storybook is able to increase how often students read storybooks at home or in school.	V	☐	
89	Reading Frequency	The Digital Storybook is able to motivate students to borrow or choose more storybooks to read.	V	☐	
90	Reading Frequency	The Digital Storybook is able to encourage students to read storybooks more regularly.	V	☐	
91	Interaction with Texts	The Digital Storybook is able to inspire students to explore more about the story they read.	V	☐	
92	Interaction with Texts	The Digital Storybook is able to help students connect the story to their own experiences or knowledge.	V	☐	
93	Interaction with Texts	The Digital Storybook is able to motivate students to explore other stories with similar themes.	V	☐	

General Comment: -

Date: November, 20, 2025

Validator Instrument



Dr. Ni Wayan Surya Mahayanti, S.Pd., M.Pd.
198805172012122002

Validation of the Research Instrument Expert Validation Checklist on SDG-12 Based Content

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating digital storybook SDG-12 related content. Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria

Validators should mark one of the following options for each item:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items

1. Read each item under the *Items* column thoroughly.
2. Determine whether the item corresponds appropriately to the aspect being measured (e.g., Purposeful, Sustained, Interactive).
3. Place a checkmark (✓) in **either** the **R** or **NR** column.
4. Provide comments, suggestions, or recommended revisions in the **Remarks** column if necessary.
5. Review all items systematically to ensure content validity of the instrument.

Notes for Validators

- Consider the clarity, relevance, and alignment of each item with the theoretical framework of digital storybook quality.
- Comments are highly encouraged, especially for items marked **NR**, to guide the improvement of the instrument.
- The overall feedback will be used to revise and refine the research instrument before implementation.



NO	Aspect	Items	3 R	4 NR	Remarks
94	Behavior in Maintaining Environmental Cleanliness	The storybook explains how careless waste disposal contributes to environmental problems such as clogged drains and flooding, helping students understand the direct connection between littering and natural disasters.	V	☐	
95	Behavior in Maintaining Environmental Cleanliness	The storybook illustrates how students can plan and implement simple actions to prevent flooding, such as disposing of waste properly, participating in school clean-up activities, and maintaining clean drainage areas.	V	☐	
96	Behavior in Maintaining Environmental Cleanliness	The storybook demonstrates how individual and collective responsibility play a crucial role in maintaining a clean school environment, emphasizing that preventing floods starts with small daily habits.	V	☐	
97	Behavior in Maintaining Environmental Cleanliness	The storybook encourages students to critically reflect on their waste disposal behavior, recognizing the environmental consequences of littering and making more responsible choices.	V	☐	
98	Behavior in Maintaining Environmental Cleanliness	The storybook promotes a culture of environmental awareness by challenging the habit of throwing trash carelessly, inspiring students to influence their peers and contribute to a flood-free school environment.	V	☐	

General Comment: -

Date: November, 20, 2025

Validator Instrument



Dr. Ni Wayan Surya Mahayanti, S.Pd., M.Pd.

198805172012122002



Appendix 5. Validation of Instrument from Expert 2

Validation of the Research Instrument for Observation Sheet

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating students' needs (Target Needs: Necessities, Lacks, Wants; and Learning Needs). Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items:

- Read each item thoroughly.
- Determine whether the item corresponds appropriately to the aspect being measured.
- Place a checkmark (✓) in either the R or NR column.
- Provide comments or recommended revisions in the Remarks column.
- Review all items systematically to ensure content validity.



No	Aspect	Indicator	R	NR	Remarks
1	Necessities	Is there availability of reading materials and exercises related to Responsible Consumption and Production (SDG-12)?	V	☐	
2	Necessities	Do students need guidance to stay focused while reading?	V	☐	
3	Necessities	Do students need clear explanations of unfamiliar SDG-12 terms?	V	☐	
4	Necessities	Is the story length appropriate to avoid cognitive overload?	V	☐	
5	Necessities	Is the reading content aligned with students' cognitive level?	V	☐	
6	Lack	Do students lack understanding of SDG-12 concepts?	V	☐	
7	Lack	Do students lack strategies to interpret SDG-related content?	V	☐	
8	Lack	Do students have limited prior knowledge to examples of responsible consumption and production?	V	☐	
9	Lack	Do students struggle to connect between story content and real-world issues?	V	☐	
10	Lack	Do students show limited awareness of SDG-12 relevance to problem-solving?	V	☐	
11	Wants	Do students prefer stories with themes related to Waste reduction?	V	☐	
12	Wants	Do students prefer visually appealing reading materials?	V	☐	
13	Wants	Do students prefer characters that match their age or personality	V	☐	
14	Wants	Do students prefer stories connected to real-life situation?	V	☐	
15	Wants	Do students engage with reading materials?	V	☐	
16	Learning Needs	Do students need relatable characters to support engagement and comprehension?	V	☐	
17	Learning Needs	Do students need guided questions to stay engaged during reading?	V	☐	
18	Learning Needs	Do students need visual or interactive elements to support understanding?	V	☐	
19	Learning Needs	Do students prefer individual, pair, or group reading activates?	V	☐	

General Comment:

Date: November, 25, 2025

Validator Instrument



Ni Luh Putu Era Adnyayanti, S.Pd., M.Pd.

NIP. 198904082023212043

No	Category	Question /Items	R	NR	Remarks
20	Necessities	Do you understand the concept of <i>Sustainable Development Goals</i> (SDGs)?	V	☐	
21	Necessities	Do you know the SDG-12 topics that are easiest for 4th grade students to understand?	V	☐	
22	Necessities	Can you identify SDG-12 topics that are relevant to students' daily lives?	V	☐	
23	Necessities	Can you determine which SDG-12 topics should be introduced to grade 4 students first?	V	☐	
24	Lacks	Do you understand the role of teachers in using SDG-12-based digital storybooks in the classroom?	V	☐	
25	Lacks	Can you identify the challenges that may arise when using SDG-12 digital storybooks?	V	☐	
26	Lacks	Do you know the best strategy to implement SDG-12 digital storybooks for 4th grade students?	V	☐	
27	Lacks	Do you know what aspects of SDG-12 are the most difficult for students to understand? (e.g.: waste reduction, waste management, recycling, resource efficiency)	V	☐	
28	Wants	Do you know what SDG-12 subtopic is most suitable for learning to read English? (e.g.: waste reduction, waste management, recycling, resource efficiency)	V	☐	
29	Wants	Do you understand whether students learn better individually or in groups?	V	☐	
30	Wants	Do you understand which learning style (individual or group) is most appropriate when using SDG-12-based digital storybooks?	V	☐	
31	Learning Preferences	Can you identify factors that help students understand the SDG-12 material well?	V	☐	
32	Learning Preferences	Do you know what support students need to understand the cause-and-effect relationship, key ideas, and supporting details related to SDG-12?	V	☐	
33	Learning Preferences	Do you know what teaching activities are most effective when integrating SDG-12?	V	☐	
34	Learning Preferences	Do you know what type of reading activity will help students understand SDG-12 the most, such as <i>shared reading</i> , <i>guided reading</i> , or <i>group reading</i> ?	V	☐	
35	Classroom Conditions	Can you predict how students will respond to interactive reading activities?	V	☐	
36	Classroom Conditions	Do you know what kind of classroom conditions help students stay focused and engaged during reading activities?	V	☐	
37	Classroom Conditions	Can you identify the dominant student learning style (visual, auditory, or multimodal) when reading SDG-12 stories?	V	☐	
38	Teacher Support	Do you know if students benefit from additional help such as images, audio, or animations?	V	☐	
39	Teacher Support	Do you know what types of feedback help students understand the sequence of stories and messages about responsible consumption and production?	V	☐	
40	Teacher Support	Do you know the most appropriate story duration to teach SDG-12 to 4th grade students? For example: Number of pages, Number of sentences per page	V	☐	
41	Material Requirements	Do you know what kind of character is easiest for students to understand in the SDG-12 story? Example: 1. Character of children of the same age as students	V	☐	

		2. Funny or quirky characters 3. Character of teachers or role models at school			
42	Material Requirements	Do you know what type of story content is most suitable for SDG-12 learning? Example: 1. Stories about students guarding the school environment 2. Stories about Not wasting food 3. Stories about Recycling Items 4. Stories about Using resources wisely	V	☐	
43	Material Requirements	Do you know what SDG-12 content can be effectively incorporated into reading stories and how students respond to the theme of responsible consumption and production? Example: 1. Keeping the environment clean 2. Not wasting food 3. Recycle items 4. Use resources wisely	V	☐	
44	Material Requirements	Do you know which SDG-12 theme is most interesting for 4th grade students? Example: 1. Keeping the environment clean 2. Not wasting food 3. Recycle items 4. Use resources wisely	V	☐	
45	Material Requirements	Do you know what support or resources are needed to help teachers teach SDG-12 effectively? Example: 1. Training and workshops 2. Complete teaching materials 3. Supportive school facilities	V	☐	

General Comment:

Date: November, 25, 2025

Validator Instrument



Ni Luh Putu Era Adnyayanti, S.Pd., M.Pd.

NIP. 198904082023212043

Validation of the Research Instrument for the Criteria of the Digital Storybook Reading Content.

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating digital storybook reading content. Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria

Validators should mark one of the following options for each item:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items

1. Read each item under the *Items* column thoroughly.
2. Determine whether the item corresponds appropriately to the aspect being measured (e.g., Purposeful, Sustained, Interactive).
3. Place a checkmark (✓) in **either** the **R** or **NR** column.
4. Provide comments, suggestions, or recommended revisions in the **Remarks** column if necessary.
5. Review all items systematically to ensure content validity of the instrument.

Notes for Validators

- Consider the clarity, relevance, and alignment of each item with the theoretical framework of digital storybook quality.
- Comments are highly encouraged, especially for items marked **NR**, to guide the improvement of the instrument.
- The overall feedback will be used to revise and refine the research instrument before implementation.



NO	Aspect	Items	R	NR	Remarks
46	Purposeful	The digital storybook has a clear learning goal and supports school-related learning content.	V	☐	
47	Purposeful	The digital storybook multimedia features such as images, sound, and animation <u>is</u> chosen to strengthen the content of the story.	V	☐	
48	Purposeful	The digital storybook content is presented concisely, not long, and does not require technical knowledge.	V	☐	
49	Sustained	The digital storybook story and features keep the children engaged while reading until the end.	V	☐	
50	Sustained	The digital storybook use cliffhangers, light conflicts, or curiosity that encourage children to continue reading.	V	☐	
51	Sustained	The digital content in digital storybooks provides small variations that encourage curiosity every time they are opened.	V	☐	
52	Intercultural	The language, names, or expressions in the story reflect the cultural realities depicted.	V	☐	
53	Intercultural	There is no character in digital storybook is depicted as inferior/superior based on cultural background.	V	☐	
54	Intercultural	The digital storybook story shows that cross-cultural cooperation strengthens shared values.	V	☐	
55	Interactive	In the digital storybook there are no excessive visual or audio elements to confuse the child.	V	☐	
56	Interactive	The digital storybook interaction helps children follow the story's progress gradually.	V	☐	
57	Interactive	The digital storybook activating features provides additional information that deepens understanding.	V	☐	
58	Child friendly	The digital storybook uses simple language that suits children's reading level.	V	☐	
59	Child friendly	The amount of text per page is age-appropriate, and the narrative language is simple and child-friendly.	V	☐	
60	Child friendly	The visual elements in the digital storybook are not too crowded and there is no distracting music or sound.	V	☐	
61	Accessible	The digital storybook includes helpful features like audio.	V	☐	
62	Accessible	The digital storybook provides simple pop-up explanations for difficult words.	V	☐	
63	Accessible	The digital storybook uses basic animations that help children understand the meaning of the story.	V	☐	
64	Personalizable	The digital storybook invites children to give a simple personal response at the end of the story.	V	☐	
65	Personalizable	The digital storybook asks children to choose which character they would like to be.	V	☐	
66	Personalizable	The digital storybook asks children to choose their favorite part of the story.	V	☐	
67	Creative	The digital storybook uses imaginative visuals such as unique characters, settings, or objects	V	☐	
68	Creative	The digital storybook uses sound effects or music that match the situation in the story for example calm music in peaceful scenes, lively sounds in action scenes	V	☐	
69	Creative	The digital storybook includes creative animation effects such as simple movements or transitions that enhance the reading experience.	V	☐	
70	Social	The digital storybook shows characters interacting in positive social ways for example helping and sharing.	V	☐	

71	Social	The digital storybook presents simple situations that illustrate social values such as empathy respect, or kindness.	V	☐	
72	Social	The digital storybook includes scenarios where characters work together to solve a problem, promoting teamwork and cooperation.	V	☐	

General Comment:

Date: November, 25, 2025

Validator Instrument



Ni Luh Putu Era Adnyayanti, S.Pd., M.Pd.

NIP. 198904082023212043

Validation of the Research Instrument for the Reading Behavioral Engagement based Reading Material

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating reading behavioral engagement-based reading material. Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria

Validators should mark one of the following options for each item:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items

1. Read each item under the *Items* column thoroughly.
2. Determine whether the item corresponds appropriately to the aspect being measured (e.g., Purposeful, Sustained, Interactive).
3. Place a checkmark (✓) in **either** the **R** or **NR** column.
4. Provide comments, suggestions, or recommended revisions in the **Remarks** column if necessary.
5. Review all items systematically to ensure content validity of the instrument.

Notes for Validators

- Consider the clarity, relevance, and alignment of each item with the theoretical framework of digital storybook quality.
- Comments are highly encouraged, especially for items marked **NR**, to guide the improvement of the instrument.
- The overall feedback will be used to revise and refine the research instrument before implementation.

NO	Aspect	Items	VR	QR	Remarks
73	Effort	The Digital Storybook is able to encourage students to keep reading even when the story is difficult.	V	☐	
74	Effort	The Digital Storybook is able to motivate students to try harder in understanding the story.	V	☐	
75	Effort	The Digital Storybook is able to encourage students to reread parts of the story to improve their understanding.	V	☐	
76	Persistence	The Digital Storybook is able to support students to finish the story until the end.	V	☐	
77	Persistence	The Digital Storybook is able to help students continue reading even when they encounter difficult words.	V	☐	
78	Persistence	The Digital Storybook is able to help students return to the story and continue reading after short breaks.	V	☐	
79	Attention	The Digital Storybook is able to maintain students' attention during reading activities.	V	☐	
80	Attention	The Digital Storybook is able to help students stay focused without being easily distracted.	V	☐	
81	Attention	The Digital Storybook is able to keep students focused through features that maintain their engagement.	V	☐	
82	Positive Conduct	The Digital Storybook is able to promote positive behavior during reading sessions.	V	☐	
83	Positive Conduct	The Digital Storybook is able to reduce disruptive behavior while students are reading.	V	☐	
84	Positive Conduct	The Digital Storybook is able to promote responsible use of digital tools during reading activities.	V	☐	
85	Active Participation	The Digital Storybook is able to encourage students to participate actively in shared reading activities.	V	☐	
86	Active Participation	The Digital Storybook is able to stimulate students to share their reading experiences with peers.	V	☐	
87	Active Participation	The Digital Storybook is able to motivate students to join discussions related to the story.	V	☐	
88	Reading Frequency	The Digital Storybook is able to increase how often students read storybooks at home or in school.	V	☐	
89	Reading Frequency	The Digital Storybook is able to motivate students to borrow or choose more storybooks to read.	V	☐	
90	Reading Frequency	The Digital Storybook is able to encourage students to read storybooks more regularly.	V	☐	
91	Interaction with Texts	The Digital Storybook is able to inspire students to explore more about the story they read.	V	☐	
92	Interaction with Texts	The Digital Storybook is able to help students connect the story to their own experiences or knowledge.	V	☐	
93	Interaction with Texts	The Digital Storybook is able to motivate students to explore other stories with similar themes.	V	☐	

General Comment:

Date: November, 25, 2025

Validator Instrument



Ni Luh Putu Era Adnyayanti, S.Pd., M.Pd.
NIP. 198904082023212043

Validation of the Research Instrument Expert Validation Checklist on SDG-12 Based Content

This validation sheet is used by expert validators to assess the relevance and clarity of each item in the research instrument for evaluating digital storybook SDG-12 related content. Validators are asked to review each item carefully and determine whether the item is appropriate, relevant, and aligned with the intended construct.

Rating Criteria

Validators should mark one of the following options for each item:

Score	Category
R (Relevant)	The item is appropriate, clearly stated, and accurately represents the intended aspect. No revision or only minor revision is needed.
NR (Not Relevant)	The item does not fit the intended aspect, is unclear, or requires major revision.

How to Validate the Items

1. Read each item under the *Items* column thoroughly.
2. Determine whether the item corresponds appropriately to the aspect being measured (e.g., Purposeful, Sustained, Interactive).
3. Place a checkmark (✓) in **either** the **R** or **NR** column.
4. Provide comments, suggestions, or recommended revisions in the **Remarks** column if necessary.
5. Review all items systematically to ensure content validity of the instrument.

Notes for Validators

- Consider the clarity, relevance, and alignment of each item with the theoretical framework of digital storybook quality.
- Comments are highly encouraged, especially for items marked **NR**, to guide the improvement of the instrument.
- The overall feedback will be used to revise and refine the research instrument before implementation.



NO	Aspect	Items	3 R	4 NR	Remarks
94	Behavior in Maintaining Environmental Cleanliness	The storybook explains how careless waste disposal contributes to environmental problems such as clogged drains and flooding, helping students understand the direct connection between littering and natural disasters.	✓	☐	
95	Behavior in Maintaining Environmental Cleanliness	The storybook illustrates how students can plan and implement simple actions to prevent flooding, such as disposing of waste properly, participating in school clean-up activities, and maintaining clean drainage areas.	✓	☐	
96	Behavior in Maintaining Environmental Cleanliness	The storybook demonstrates how individual and collective responsibility play a crucial role in maintaining a clean school environment, emphasizing that preventing floods starts with small daily habits.	✓	☐	
97	Behavior in Maintaining Environmental Cleanliness	The storybook encourages students to critically reflect on their waste disposal behavior, recognizing the environmental consequences of littering and making more responsible choices.	✓	☐	
98	Behavior in Maintaining Environmental Cleanliness	The storybook promotes a culture of environmental awareness by challenging the habit of throwing trash carelessly, inspiring students to influence their peers and contribute to a flood-free school environment.	✓	☐	

General Comment:

Date: November, 25, 2025

Validator Instrument



Ni Luh Putu Era Adnyayanti, S.Pd., M.Pd.

NIP. 198904082023212043



Appendix 6. Observation Result

Instrument for Observation Sheet

Instruction for Completing the Learners' Needs Observation Sheet (SDG-Based Reading Material Development)

This observation sheet is designed to identify students' needs related to SDG-based reading materials, specifically focusing on Responsible Consumption and Production (SDG-12). The instrument evaluates several aspects categorized into Target Needs (Necessities, Lacks, Wants) and Learning Needs.

Please read each item carefully and observe actual conditions during reading activities.

Rating Scale

Score	Category
A (Available)	The information, practice, or condition mentioned in the item is present or applicable in your teaching context.
NA (Not Available)	The information, practice, or condition is not present or does not apply to your teaching context.

How to Complete the Observation Sheet

1. Read each item in the indicator column carefully.
2. Observe students' behavior, reading materials, and classroom conditions.
3. Place a checkmark (✓) in **A** if the item is observed, or **NA** if it is not observed.
4. Provide brief notes or explanations in the Remarks column if needed.

Important Notes

- Observations should be based only on visible and measurable evidence during reading activities.
- If an item appears partially, inconsistently, or unclearly, please specify details in the Remarks column.
- This instrument may be used for observing one class or comparing needs across multiple classes.
- The findings from this instrument will support the development of a digital SDG-based storybook aligned with students' needs.

Observation Date: 18 February 2025

No	Aspect	Indicator	A	NA	Remarks
1	Necessities	Is there availability of reading materials and exercises related to Responsible Consumption and Production (SDG-12)?		NA	There are no reading materials and exercises related to Responsible Consumption and Production.
2	Necessities	Do students need guidance to stay focused while reading?	A		While reading, Students need visual aids like pictures and a colorful tone
3	Necessities	Do students need clear explanations of unfamiliar terms?	A		While reading, Students need a clear explanation of certain difficult terms
4	Necessities	Is the story length appropriate to avoid cognitive overload?	A		The story should be compact and use easy words
5	Necessities	Is the reading content aligned with students' cognitive level?	A		The content of the story in the school is appropriate for the students' cognitive level
6	Lack	Do students lack understanding of SDG-12 concepts?	A		Some students still have less understanding of SDG-12
7	Lack	Do students lack strategies to interpret SDG-related content?	A		Students lack strategies to interpret SDG-related content
8	Lack	Do students have limited prior knowledge of examples of responsible consumption and production?	A		Students have good prior knowledge of the responsibility of cleaning the environment
9	Lack	Do students struggle to connect between story content and real-world issues?	A		Students struggle to connect what they have read to the real-life context
10	Lack	Do students show limited awareness of SDG-12 relevance to problem-solving?	A		Students show limited awareness of SDG-12 relevance to problem-solving
11	Wants	Do students prefer stories with themes related to Waste reduction?	A		Students prefer stories that connect to their real-life situations
12	Wants	Do students prefer visually appealing reading materials?	A		Students prefer that the story has visually appealing elements, like a picture
13	Wants	Do students prefer characters that match their age or personality?	A		Students prefer characters that match their age or personality
14	Wants	Do students prefer stories connected to real-life situation?	A		Students prefer stories that connect to their real-life situations
15	Wants	Do students engage with reading materials?	A		Students engage with the reading material, but they easily get bored and stop reading
16	Learning Needs	Do students need relatable characters to support engagement and comprehension?	A		Students need relatable characters to support engagement and comprehension
17	Learning Needs	Do students need guided questions to stay engaged during reading?	A		Students need guided questions to stay engaged during reading
18	Learning Needs	Do students need visual or interactive elements to support understanding?	A		Students need visual or interactive elements to support understanding
19	Learning Needs	Do students prefer individual, pair, or group reading activities?	A		Students prefer to read it individually first, and then they will share and talk with their friends about the reading materials

Appendix 7. Interview Result

Instrument of Interview Guide

Instruction for completing the SDG-12 needs analysis instrument

This instrument is designed to gather information about teachers' perceptions, challenges, preferences, and needs related to integrating SDG-12: Responsible Consumption and Production into English reading lessons at the elementary school level. The instrument consists of several categories, including Necessities, Lacks, Wants, Learning Preferences, Classroom Learning Conditions, Teacher Support, and Material Requirements.

Please read each item carefully and observe actual conditions during reading activities.

Rating Scale

Score	Category
A (Available)	The information, practice, or condition mentioned in the item is present or applicable in your teaching context.
NA (Not Available)	The information, practice, or condition is not present or does not apply to your teaching context.

How to Complete the Observation Sheet

1. Read each item in the indicator column carefully.
2. Observe students' behavior, reading materials, and classroom conditions.
3. Place a checkmark (✓) in A if the item is observed, or NA if it is not observed.
4. Provide brief notes or explanations in the Remarks column if needed.

How to Complete the Instrument

1. Read each item thoroughly in the Item/Indicator column.
2. Decide whether the information or condition described is available or not in your classroom, teaching experience, or understanding of SDG-12.
3. Place a checkmark (✓) in either the A (Available) or NA (Not Available) column.
4. If needed, write additional explanations, examples, or notes in the Remarks column.
5. Continue until you have completed all items across all categories.

Important Notes: Your responses should be based on your real teaching experience and actual classroom conditions.

Date: 19 February 2025

No	Category	Question	A	NA	Remarks
20	Requirements	Do you understand the concept of <i>Sustainable Development Goals</i> (SDGs)?		NA	Teachers do not understand the <i>Sustainable Development Goals</i> (SDGs)
21	Requirements	Do you know the SDG-12 topics that are easiest for 4th grade students to understand? e.g.: • Use resources wisely • Reduce, reuse, recycle • Do not waste food • Keep the environment clean	A		According to the teacher, the most relevant material for grade 4 students is the theme of maintaining environmental cleanliness
22	Requirements	Can you identify SDG-12 topics that are relevant to students' daily lives?	A		According to the teacher, the SDG-12 topic that is most suitable for students' daily lives is about maintaining the cleanliness of the school environment
23	Requirements	Can you determine which SDG-12 topics should be introduced to grade 4 students first?	A		It is better to introduce maintaining the cleanliness of the school environment
24	Lacks	Do you understand the role of teachers in using SDG-12-based digital storybooks in the classroom?	A		If in grade 4 it is only a brief description and most of the teachers facilitate their students in reading
25	Lacks	Can you identify the challenges that may arise when using SDG-12 digital storybooks?	A		In terms of facilities, it is very capable because there is already a projector, wifi and students also have smartphones on average. However, the problem can occur for students, where students may not understand what the content of the story is if there is no translation.
26	Lacks	Do you know the best strategy to implement SDG-12 digital storybooks for 4th grade students?	A		When implementing digital storybook, the group learning style is recommended to be used by the teacher
27	Lacks	Do you know what aspects of SDG-12 are the most difficult for students to understand? (e.g.: waste reduction, waste management, recycling, resource efficiency)	A		Maybe in addition to the theme of maintaining environmental cleanliness, it will be difficult to understand for 4th grade students because the theme is the closest to them
28	Wants	Do you know what SDG-12 subtopic is most suitable for learning to read English? (e.g.: waste reduction, waste management, recycling, resource efficiency)	A		According to the teacher, the SDG-12 topic that is most suitable for students' daily lives is about maintaining the cleanliness of the school environment
29	Wants	Do you understand whether students learn better individually or in groups?	A		Students are better off learning individually, but there are times when students also enjoy learning in groups
30	Wants	Do you understand which learning style (individual or group) is most appropriate when using SDG-12-based digital storybooks?	A		When implementing digital storybook, the group learning style is recommended to be used by the teacher
31	Learning Preferences	Can you identify factors that help students understand the SDG-12 material well?	A		Learning hours are one of the challenges. Because if we want to implement a media that requires a projector, it will be very time-consuming and the material that we want to convey will be lacking.
32	Learning Preferences	Do you know what support students need to understand the cause-and-effect relationship, key ideas, and supporting details related to SDG-12?	A		Students tend to enjoy learning if they use games. And must use simple language

33	Learning Preferences	Do you know what teaching activities are most effective when integrating SDG-12?	A		Students tend to enjoy learning if they use games
34	Learning Preferences	Do you know what type of reading activity will help students understand SDG-12 the most, such as <i>shared reading</i> , <i>guided reading</i> , or <i>group reading</i> ?	A		When implementing digital storybook, group reading activities are recommended to be used by the teacher
35	Classroom Conditions	Can you predict how students will respond to interactive reading activities?	A		I predict that going to be is good because this is the first time they have used digital storybook media in learning
36	Classroom Conditions	Do you know what kind of classroom conditions help students stay focused and engaged during reading activities?	A		Insert games in the story because students tend to really like to play
37	Classroom Conditions	Can you identify the dominant student learning style (visual, auditory, or multimodal) when reading SDG-12 stories?	A		Students' learning styles are very diverse, all reading styles such as visual, auditory, or multimodal when reading stories
38	Teacher Support	Do you know if students benefit from additional help such as images, audio, or animations?	A		Extras such as pictures, audio, or games will make students more interested in reading. The colors should also be bright
39	Teacher Support	Do you know what types of feedback help students understand the sequence of stories and messages about responsible consumption and production?	A		Hold quizzes for students so that the message conveyed in the story can be better understood
40	Teacher Support	Do you know the most appropriate story duration to teach SDG-12 to 4th grade students? For example: Number of pages, Number of sentences per page		NA	The number of pages for 4th grade is not very known. However, it is emphasized that it must use easy and simple language. and provide the translation No more than 10 pages and the sentences should be short
41	Material Requirements	Do you know what kind of character is easiest for students to understand in the SDG-12 story? Example: 1. Character of children of the same age as students 2. Funny or quirky characters 3. Character of teachers or role models at school	A		Characters are familiar with them. Maybe it could be a funny character
42	Material Requirements	Do you know what type of story content is most suitable for SDG-12 learning? Example: 1. Stories about students guarding the school environment 2. Stories about Not wasting food 3. Stories about Recycling Items 4. Stories about Using resources wisely	A		According to the teacher, the SDG-12 topic that is most suitable for students' daily lives is about maintaining the cleanliness of the school environment
43	Material Requirements	Do you know what SDG-12 content can be effectively incorporated into reading stories and how students respond to the theme of responsible consumption and production? Example: 1. Keeping the environment clean 2. Not wasting food 3. Recycle items 4. Use resources wisely	A		According to the teacher, the SDG-12 topic that is most suitable for students' daily lives is about maintaining the cleanliness of the school environment

44	Material Requirements	Do you know which SDG-12 theme is most interesting for 4th grade students? Example: 1. Keeping the environment clean 2. Not wasting food 3. Recycle items 4. Use resources wisely	A		According to the teacher, the SDG-12 topic that is most suitable for students' daily lives is about maintaining the cleanliness of the school environment
45	Material Requirements	Do you know what support or resources are needed to help teachers teach SDG-12 effectively? Example: 1. Training and workshops 2. Complete teaching materials 3. Supportive school facilities	A		Provide laptops and sound, children can also use smartphones in learning

Appendix 8. Checklist result from Expert 1

A. Researcher's Identity

Name : Putu Andre Wiranatha
 NIM : 2212021081
 Study Program : English Language Education
 University : Universitas Pendidikan Ganesha
 Thesis Title : DEVELOPMENT OF DIGITAL STORYBOOK ON SDG-12
 TO FACILITATE READING BEHAVIOURAL ENGAGEMENT OF FOURTH
 GRADE STUDENTS AT SD MUTIARA|

B. Identity of the Product Being Evaluated

Title : Small Habits
 Theme : SDG-12 (Responsible Consumption and Production)
 Grade : 4th
 School : SD Mutiara
 Type of Product : Digital Storybook
 Product Link : <https://digital-storybook-small-habits.netlify.app/>

C. Expert's Identity

Name : Dr. Ni Wayan Surya Mahayanti, S.Pd., M.Pd.
 NIP : 198805172012122002
 Institution : Universitas Pendidikan Ganesha

CRITERIA OF DIGITAL STORYBOOK INSTRUMENT

Research Objective:

To evaluate the quality of the developed SDG-12 digital storybook, as assessed by experts, in terms of content, design, and relevance to literacy and sustainability education.

INSTRUMENT DEVELOPMENT BASIS

The development of this digital storybook evaluation instrument is based on the quality criteria proposed by Vackova et al. (2023), who identified nine key dimensions essential for ensuring meaningful, engaging, and developmentally appropriate digital reading experiences for young children. These dimensions include purposeful design, sustained engagement, intercultural representation, interactivity, and child-friendly usability, all of which reflect current theoretical and empirical understanding of effective digital literacy tools. Drawing on the literature on children's digital books, interactive multimodality, cognitive load theory, and inclusive design principles, each item in this instrument is structured to operationalize observable indicators that align with evidence-based characteristics of high-quality digital storybooks. The instrument aims to capture the pedagogical and experiential aspects of digital reading by assessing the clarity of learning objectives, the capacity to sustain children's attention, the cultural sensitivity of the content, the relevance of interactive features, and the appropriateness of the interface for young learners. Through this framework, the instrument ensures that digital storybook evaluation is systematic, reliable, and aligned with internationally recognized quality standards for children's digital media.

REFERENCESS

- Vackova, P., Cermakova, A. L., & Kucirkova, N. I. (2023). Children's digital books: Development, testing and dissemination of quality criteria. In *Children's Digital Books: Development, Testing and Dissemination of Quality Criteria*. University in Stavanger. <https://doi.org/10.31265/usps>.



Blue Print Criteria of Digital Storybook

Answer Scale: 1. VR= Very Relevant; 2. QR= Quite Relevant; 3. SR= Somewhat Relevant; 4. NR= Not Relevant

Category	Aspects	Items	No Item
Quality of Digital Storybook	Purposeful	- The Digital Storybook has a clear learning goal and supports school-related learning content. - Multimedia such as images, sound, animation is chosen to strengthen the content of the story. - The information is presented concisely, not long, and does not require technical knowledge.	1-3
	Sustained	- The story and features of this digital storybook keep the children engaged in reading until the end. - Stories use cliffhangers, light conflicts, or curiosity that encourage children to continue reading. - Digital content provides small variations that encourage curiosity every time it is opened.	4-6
	Intercultural	- The language, names, or expressions in the story reflect the cultural realities depicted. - No character is depicted as inferior/superior based on cultural background. - The story shows that cross-cultural cooperation strengthens shared values.	7-9
	Interactive	- There are no excessive visual or audio elements to confuse the child. - Interaction helps children follow the story's progress gradually. - Activating features provides additional information that deepens understanding.	10-12
	Child friendly	- Use of simple and clear language appropriate for children's reading level - The amount of text per page is age-appropriate, and the narrative language is simple and child-friendly. - The visual elements are not too crowded and there is no distracting music or sound.	13-15
	Accessible	- Availability of features that support children in reading like audio - Presence of simple explanations for difficult words	16-18

		- Use of visual or animated aids that help children understand the story	
	Personalizable	- Opportunities for children to give a simple personal response at the end of the story - Availability of options for children to choose preferred characters - Opportunities for children to select their favorite part of the story	19-21
	Creative	- Use of imaginative visuals that attract children attention for example, unique characters or settings - Presence of sound effects or music that match the events in the story - Use of animation effects such as movement or transitions that enhance engagement and interest	22-24
	Social	- Presence of character interactions that model positive social behavioral like helping, sharing or cooperating - Inclusion of scenarios that illustrate social values such as empathy, respect, or kindness - Opportunities for characters to work together to solve problems, promoting teamwork	25-27



Instrument Criteria of Digital Storybook

Instruction For Completing the Digital Storybook Criteria Instrument

This instrument is designed to evaluate the quality of a digital storybook based on several aspects, including Purposeful, Sustained, Intercultural, Interactive, and Child-Friendly, Accessible, Personalizable, Creative, and Social. Please read each item carefully and assess how well the digital storybook meets the stated criteria.

Rating Scale

Use the following scale to indicate the level of relevance for each item:

Score	Category
4. VR (Very Relevant)	The item is highly relevant and fully aligns with the characteristics of the digital storybook.
3. QR (Quite Relevant)	The item is moderately relevant, though some elements may be less strong.
2. SR (Somewhat Relevant)	The item is slightly relevant and only partially reflected in the storybook.
1. NR (Not Relevant)	The item is not relevant or not observed in the digital storybook.

How to Complete the Instrument

1. Read each item in the *Items* column thoroughly.
2. Determine the extent to which the digital storybook fulfills the criterion.
3. Place a checkmark (✓) in **one** of the following columns: **VR, QR, SR, or NR**.
4. If needed, provide explanations or notes in the **Remarks** column.
5. Continue rating all items across all aspects.

Important Notes

- Evaluations should be based solely on observable features in the digital storybook.
- If an item is unclear, partially present, or difficult to assess, please include comments in the *Remarks* column.
- This instrument may be used to evaluate a single digital storybook or for comparing multiple storybooks.

NO	Aspect	Items	1 NR	2 SR	3 QR	4 VR	Remarks
1	Purposeful	The digital storybook has a clear learning goal and supports school-related learning content.	☐	☐	☐	✓	
2	Purposeful	The digital storybook multimedia features such as images, sound, and animation are chosen to strengthen the content of the story.	☐	☐	☐	✓	
3	Purposeful	The digital storybook content is presented concisely, not long, and does not require technical knowledge.	☐	☐	☐	✓	
4	Sustained	The digital storybook story and features keep the children engaged while reading until the end.	☐	☐	☐	✓	
5	Sustained	The digital storybook use cliffhangers, light conflicts, or curiosity that encourage children to continue reading.	☐	☐	☐	✓	
6	Sustained	The digital content in digital storybooks provides small variations that encourage curiosity every time they are opened.	☐	☐	☐	✓	
7	Intercultural	The language, names, or expressions in the story reflect the cultural realities depicted.	☐	☐	☐	✓	
8	Intercultural	There is no character in digital storybook is depicted as inferior/superior based on cultural background.	☐	☐	☐	✓	
9	Intercultural	The digital storybook story shows that cross-cultural cooperation strengthens shared values.	☐	☐	☐	✓	
10	Interactive	In the digital storybook there are no excessive visual or audio elements to confuse the child.	☐	☐	☐	✓	
11	Interactive	The digital storybook interaction helps children follow the story's progress gradually.	☐	☐	☐	✓	
12	Interactive	The digital storybook activating features provides additional information that deepens understanding.	☐	☐	☐	✓	

13	Child friendly	The digital storybook uses simple language that suits children's reading level.	☐	☐	☐	✓	
14	Child friendly	The amount of text per page is age-appropriate, and the narrative language is simple and child-friendly.	☐	☐	☐	✓	
15	Child friendly	The visual elements in the digital storybook are not too crowded and there is no distracting music or sound.	☐	☐	☐	✓	
16	Accessible	The digital storybook includes helpful features like audio.	☐	☐	✓	☐	
17	Accessible	The digital storybook provides simple pop-up explanations for difficult words.	☐	☐	☐	✓	
18	Accessible	The digital storybook uses basic animations that help children understand the meaning of the story.	☐	☐	☐	✓	
19	Personalizable	The digital storybook invites children to give a simple personal response at the end of the story.	☐	☐	✓	☐	
20	Personalizable	The digital storybook asks children to choose which character they would like to be.	☐	☐	✓	☐	
21	Personalizable	The digital storybook asks children to choose their favorite part of the story.	☐	☐	☐	✓	
22	Creative	The digital storybook uses imaginative visuals such as unique characters, settings, or objects	☐	☐	☐	✓	
23	Creative	The digital storybook uses sound effects or music that match the situation in the story for example calm music in peaceful scenes, lively sounds in action scenes	☐	☐	☐	✓	
24	Creative	The digital storybook includes creative animation effects such as simple movements or transitions that enhance the reading experience.	☐	☐	✓	☐	
25	Social	The digital storybook shows characters interacting in positive social ways for example helping and sharing.	☐	☐	☐	✓	

26	Social	The digital storybook presents simple situations that illustrate social values such as empathy, respect, or kindness.	☐	☐	☐	✓	
27	Social	The digital storybook includes scenarios where characters work together to solve a problem, promoting teamwork and cooperation.	☐	☐	☐	✓	

SDG-12 LEARNING OBJECTIVE INSTRUMENT

Research Objective:

To evaluate the quality of the SDG-12 learning objectives integrated into the digital storybook, as assessed by experts, in terms of their accuracy, appropriateness, and alignment with sustainability education for young learners.

INSTRUMENT DEVELOPMENT BASIS

The development of this instrument is grounded in the theoretical and conceptual frameworks of Education for Sustainable Development (ESD), specifically the learning objectives outlined for Sustainable Development Goal 12 (Responsible Consumption and Production) by UNESCO (2017). SDG 12 emphasizes the need to cultivate learners' understanding, attitudes, and behaviors related to sustainable consumption patterns, resource efficiency, waste reduction, and environmental responsibility. Accordingly, the instrument is designed to evaluate the extent to which a digital storybook integrates essential cognitive, socio-emotional, and behavioral learning components aligned with ESD principles.

From the behavioral dimension, the instrument incorporates action-oriented learning and real-world connection. UNESCO behavioral objectives emphasize the importance of empowering learners to practice sustainable behaviors, participate in meaningful decision-making, and apply sustainability principles in real-life contexts. Accordingly, the instrument includes indicators evaluating whether the storybook provides actionable prompts, models sustainable practices, and connects narrative events to children lived experiences and real-world environmental impacts. By integrating these three dimensions, the instrument ensures comprehensive alignment with SDG 12 learning objectives, enabling an accurate evaluation of how effectively a digital storybook supports responsible consumption education. The resulting indicators are therefore theoretically grounded, developmentally appropriate for young learners, and directly linked to international standards for sustainability education.

References

UNESCO. (2017). Education for Sustainable Development Goals: Learning objectives. United Nations Educational, Scientific and Cultural Organization

SDG 12 Responsible Consumption and Production based material through Digital Storybook.

Skala Jawaban: 4. VR= Very Relevant; 3. QR= Quite Relevant; 2. SR= Somewhat Relevant; 1 NR= Not Relevant

Category	Aspect	Indicators Specific	Nomor Butir
Behavioural Learning Objective SDG-12	Behavior in Maintaining Environmental Cleanliness	- The storybook explains how careless waste disposal contributes to environmental problems. - The storybook illustrates how students can plan and implement simple actions. - The storybook demonstrates how individual and collective responsibility play a crucial role in maintaining a clean school environment - The storybook encourages students to critically reflect on their waste disposal behavior - The storybook promotes a culture of environmental awareness by challenging the habit of throwing trash carelessly	1– 5



Instrument Expert Validation Checklist on SDG-12 Based Content

Instruction For Completing the Digital Storybook Criteria Instrument

This instrument is designed to evaluate the quality of a digital storybook based on SDG-12 Learning objective. Several aspects, including Planning Sustainable Actions, Making Simple Eco-Friendly Decisions, Practicing Daily Sustainable Habits, Consumer Responsibility, and Challenging Wasteful Behaviors. Please read each item carefully and assess how well the digital storybook meets the stated criteria.

Rating Scale

Use the following scale to indicate the level of relevance for each item:

Score	Category
4. VR (Very Relevant)	The item is highly relevant and fully aligns with the characteristics of the digital storybook.
3. QR (Quite Relevant)	The item is moderately relevant, though some elements may be less strong.
2. SR (Somewhat Relevant)	The item is slightly relevant and only partially reflected in the storybook.
1. NR (Not Relevant)	The item is not relevant or not observed in the digital storybook.

How to Complete the Instrument

1. Read each item in the *Items* column thoroughly.
2. Determine the extent to which the digital storybook fulfills the criterion.
3. Place a checkmark (✓) in **one** of the following columns: **VR, QR, SR, or NR**.
4. If needed, provide explanations or notes in the **Remarks** column.
5. Continue rating all items across all aspects.

Important Notes

- Evaluations should be based solely on observable features in the digital storybook.
- If an item is unclear, partially present, or difficult to assess, please include comments in the *Remarks* column.
- This instrument may be used to evaluate a single digital storybook or for comparing multiple storybooks.

NO	Aspect	Items	1 NR	2 SR	3 QR	4 VR	Remarks
1	Behavior in Maintaining Environmental Cleanliness	The storybook explains how careless waste disposal contributes to environmental problems such as clogged drains and flooding, helping students understand the direct connection between littering and natural disasters.	☐	☐	☐	✓	
2	Behavior in Maintaining Environmental Cleanliness	The storybook illustrates how students can plan and implement simple actions to prevent flooding, such as disposing of waste properly, participating in school clean-up activities, and maintaining clean drainage areas.				✓	
3	Behavior in Maintaining Environmental Cleanliness	The storybook demonstrates how individual and collective responsibility play a crucial role in maintaining a clean school environment, emphasizing that preventing floods starts with small daily habits.				✓	
4	Behavior in Maintaining Environmental Cleanliness	The storybook encourages students to critically reflect on their waste disposal behavior, recognizing the environmental consequences of littering and making more responsible choices.				✓	
5	Behavior in Maintaining Environmental Cleanliness	The storybook promotes a culture of environmental awareness by challenging the habit of throwing trash carelessly, inspiring students to influence their peers and contribute to a flood-free school environment.				✓	

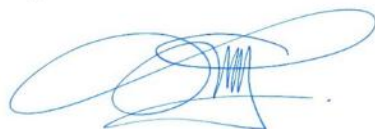
General Comment:

Make the loading faster

Change some font on the "sound effect" in the picture to make it more flexible

Date: 14 March 2026

Expert



Dr. Ni Wayan Surya Mahayanti, S.Pd., M.Pd.
NIP. 198805172012122002

Appendix 9. Checklist result from Expert 2

A. Researcher's Identity

Name : Putu Andre Wiranatha
 NIM : 2212021081
 Study Program : English Language Education
 University : Universitas Pendidikan Ganesha
 Thesis Title : DEVELOPMENT OF DIGITAL STORYBOOK ON SDG-12
 TO FACILITATE READING BEHAVIOURAL ENGAGEMENT OF FOURTH
 GRADE STUDENTS AT SD MUTIARA

B. Identity of the Product Being Evaluated

Title : Small Habits
 Theme : SDG-12 (Responsible Consumption and Production)
 Grade : 4th
 School : SD Mutiara
 Type of Product : Digital Storybook
 Product Link : <https://digital-storybook-small-habits.netlify.app/>

C. Expert's Identity

Name : Ni Luh Putu Era Adnyayanti, S.Pd., M.Pd.
 NIP : 198904082023212043
 Institution : Universitas Pendidikan Ganesha



CRITERIA OF DIGITAL STORYBOOK INSTRUMENT

Research Objective:

To evaluate the quality of the developed SDG-12 digital storybook, as assessed by experts, in terms of content, design, and relevance to literacy and sustainability education.

INSTRUMENT DEVELOPMENT BASIS

The development of this digital storybook evaluation instrument is based on the quality criteria proposed by Vackova et al. (2023), who identified nine key dimensions essential for ensuring meaningful, engaging, and developmentally appropriate digital reading experiences for young children. These dimensions include purposeful design, sustained engagement, intercultural representation, interactivity, and child-friendly usability, all of which reflect current theoretical and empirical understanding of effective digital literacy tools. Drawing on the literature on children's digital books, interactive multimodality, cognitive load theory, and inclusive design principles, each item in this instrument is structured to operationalize observable indicators that align with evidence-based characteristics of high-quality digital storybooks. The instrument aims to capture the pedagogical and experiential aspects of digital reading by assessing the clarity of learning objectives, the capacity to sustain children's attention, the cultural sensitivity of the content, the relevance of interactive features, and the appropriateness of the interface for young learners. Through this framework, the instrument ensures that digital storybook evaluation is systematic, reliable, and aligned with internationally recognized quality standards for children's digital media.

REFERENCESS

- Vackova, P., Cermakova, A. L., & Kucirkova, N. I. (2023). Children's digital books: Development, testing and dissemination of quality criteria. In *Children's Digital Books: Development, Testing and Dissemination of Quality Criteria*. University in Stavanger. <https://doi.org/10.31265/usps>.



Blue Print Criteria of Digital Storybook

Answer Scale: 1. VR= Very Relevant; 2. QR= Quite Relevant; 3. SR= Somewhat Relevant; 4. NR= Not Relevant

Category	Aspects	Items	No Item
Quality of Digital Storybook	Purposeful	- The Digital Storybook has a clear learning goal and supports school-related learning content. - Multimedia such as images, sound, animation is chosen to strengthen the content of the story. - The information is presented concisely, not long, and does not require technical knowledge.	1-3
	Sustained	- The story and features of this digital storybook keep the children engaged in reading until the end. - Stories use cliffhangers, light conflicts, or curiosity that encourage children to continue reading. - Digital content provides small variations that encourage curiosity every time it is opened.	4-6
	Intercultural	- The language, names, or expressions in the story reflect the cultural realities depicted. - No character is depicted as inferior/superior based on cultural background. - The story shows that cross-cultural cooperation strengthens shared values.	7-9
	Interactive	- There are no excessive visual or audio elements to confuse the child. - Interaction helps children follow the story's progress gradually. - Activating features provides additional information that deepens understanding.	10-12
	Child friendly	- Use of simple and clear language appropriate for children's reading level - The amount of text per page is age-appropriate, and the narrative language is simple and child-friendly. - The visual elements are not too crowded and there is no distracting music or sound.	13-15
	Accessible	- Availability of features that support children in reading like audio - Presence of simple explanations for difficult words	16-18

		- Use of visual or animated aids that help children understand the story	
	Personalizable	- Opportunities for children to give a simple personal response at the end of the story - Availability of options for children to choose preferred characters - Opportunities for children to select their favorite part of the story	19-21
	Creative	- Use of imaginative visuals that attract children attention for example, unique characters or settings - Presence of sound effects or music that match the events in the story - Use of animation effects such as movement or transitions that enhance engagement and interest	22-24
	Social	- Presence of character interactions that model positive social behavioral like helping, sharing or cooperating - Inclusion of scenarios that illustrate social values such as empathy, respect, or kindness - Opportunities for characters to work together to solve problems, promoting teamwork	25-27



Instrument Criteria of Digital Storybook

Instruction For Completing the Digital Storybook Criteria Instrument

This instrument is designed to evaluate the quality of a digital storybook based on several aspects, including Purposeful, Sustained, Intercultural, Interactive, and Child-Friendly, Accessible, Personalizable, Creative, and Social. Please read each item carefully and assess how well the digital storybook meets the stated criteria.

Rating Scale

Use the following scale to indicate the level of relevance for each item:

Score	Category
4. VR (Very Relevant)	The item is highly relevant and fully aligns with the characteristics of the digital storybook.
3. QR (Quite Relevant)	The item is moderately relevant, though some elements may be less strong.
2. SR (Somewhat Relevant)	The item is slightly relevant and only partially reflected in the storybook.
1. NR (Not Relevant)	The item is not relevant or not observed in the digital storybook.

How to Complete the Instrument

1. Read each item in the *Items* column thoroughly.
2. Determine the extent to which the digital storybook fulfills the criterion.
3. Place a checkmark (✓) in **one** of the following columns: **VR, QR, SR, or NR**.
4. If needed, provide explanations or notes in the **Remarks** column.
5. Continue rating all items across all aspects.

Important Notes

- Evaluations should be based solely on observable features in the digital storybook.
- If an item is unclear, partially present, or difficult to assess, please include comments in the *Remarks* column.
- This instrument may be used to evaluate a single digital storybook or for comparing multiple storybooks.

NO	Aspect	Items	4 VR	3 QR	2 SR	1 NR	Remarks
1	Purposeful	The digital storybook has a clear learning goal and supports school-related learning content.	☒	☐	☐	☐	
2	Purposeful	The digital storybook multimedia features such as images, sound, and animation are chosen to strengthen the content of the story.	☒	☐	☐	☐	
3	Purposeful	The digital storybook content is presented concisely, not long, and does not require technical knowledge.	☒	☐	☐	☐	
4	Sustained	The digital storybook story and features keep the children engaged while reading until the end.	☒	☐	☐	☐	
5	Sustained	The digital storybook use cliffhangers, light conflicts, or curiosity that encourage children to continue reading.	☒	☐	☐	☐	
6	Sustained	The digital content in digital storybooks provides small variations that encourage curiosity every time they are opened.	☒	☐	☐	☐	
7	Intercultural	The language, names, or expressions in the story reflect the cultural realities depicted.	☒	☐	☐	☐	
8	Intercultural	There is no character in digital storybook is depicted as inferior/superior based on cultural background.	☒	☐	☐	☐	
9	Intercultural	The digital storybook story shows that cross-cultural cooperation strengthens shared values.	☒	☐	☐	☐	
10	Interactive	In the digital storybook there are no excessive visual or audio elements to confuse the child.	☐	☒	☐	☐	
11	Interactive	The digital storybook interaction helps children follow the story's progress gradually.	☒	☐	☐	☐	
12	Interactive	The digital storybook activating features provides additional information that deepens understanding.	☒	☐	☐	☐	

13	Child friendly	The digital storybook uses simple language that suits children's reading level.	☒	☐	☐	☐	
14	Child friendly	The amount of text per page is age-appropriate, and the narrative language is simple and child-friendly.	☒	☐	☐	☐	
15	Child friendly	The visual elements in the digital storybook are not too crowded and there is no distracting music or sound.	☒	☐	☐	☐	
16	Accessible	The digital storybook includes helpful features like audio.	☐	☐	☐	☐	
17	Accessible	The digital storybook provides simple pop-up explanations for difficult words.	☒	☐	☐	☐	
18	Accessible	The digital storybook uses basic animations that help children understand the meaning of the story.	☒	☐	☐	☐	
19	Personalizable	The digital storybook invites children to give a simple personal response at the end of the story.	☒	☐	☐	☐	
20	Personalizable	The digital storybook asks children to choose which character they would like to be.	☐	☒	☐	☐	
21	Personalizable	The digital storybook asks children to choose their favorite part of the story.	☐	☒	☐	☐	
22	Creative	The digital storybook uses imaginative visuals such as unique characters, settings, or objects	☒	☐	☐	☐	
23	Creative	The digital storybook uses sound effects or music that match the situation in the story for example calm music in peaceful scenes, lively sounds in action scenes	☒	☐	☐	☐	
24	Creative	The digital storybook includes creative animation effects such as simple movements or transitions that enhance the reading experience.	☒	☐	☐	☐	
25	Social	The digital storybook shows characters interacting in positive social ways for example helping and sharing.	☐	☒	☐	☐	

26	Social	The digital storybook presents simple situations that illustrate social values such as empathy, respect, or kindness.	☒	☐	☐	☐	
27	Social	The digital storybook includes scenarios where characters work together to solve a problem, promoting teamwork and cooperation.	☒	☐	☐	☐	

SDG-12 LEARNING OBJECTIVE INSTRUMENT

Research Objective:

To evaluate the quality of the SDG-12 learning objectives integrated into the digital storybook, as assessed by experts, in terms of their accuracy, appropriateness, and alignment with sustainability education for young learners.

INSTRUMENT DEVELOPMENT BASIS

The development of this instrument is grounded in the theoretical and conceptual frameworks of Education for Sustainable Development (ESD), specifically the learning objectives outlined for Sustainable Development Goal 12 (Responsible Consumption and Production) by UNESCO (2017). SDG 12 emphasizes the need to cultivate learners' understanding, attitudes, and behaviors related to sustainable consumption patterns, resource efficiency, waste reduction, and environmental responsibility. Accordingly, the instrument is designed to evaluate the extent to which a digital storybook integrates essential cognitive, socio-emotional, and behavioral learning components aligned with ESD principles.

From the behavioral dimension, the instrument incorporates action-oriented learning and real-world connection. UNESCO behavioral objectives emphasize the importance of empowering learners to practice sustainable behaviors, participate in meaningful decision-making, and apply sustainability principles in real-life contexts. Accordingly, the instrument includes indicators evaluating whether the storybook provides actionable prompts, models sustainable practices, and connects narrative events to children lived experiences and real-world environmental impacts. By integrating these three dimensions, the instrument ensures comprehensive alignment with SDG 12 learning objectives, enabling an accurate evaluation of how effectively a digital storybook supports responsible consumption education. The resulting indicators are therefore theoretically grounded, developmentally appropriate for young learners, and directly linked to international standards for sustainability education.

References

UNESCO. (2017). Education for Sustainable Development Goals: Learning objectives. United Nations Educational, Scientific and Cultural Organization

SDG 12 Responsible Consumption and Production based material through Digital Storybook.

Skala Jawaban: 4. VR= Very Relevant; 3. QR= Quite Relevant; 2. SR= Somewhat Relevant; 1 NR= Not Relevant

Category	Aspect	Indicators Specific	Nomor Butir
Behavioural Learning Objective SDG-12	Behavior in Maintaining Environmental Cleanliness	- The storybook explains how careless waste disposal contributes to environmental problems. - The storybook illustrates how students can plan and implement simple actions. - The storybook demonstrates how individual and collective responsibility play a crucial role in maintaining a clean school environment - The storybook encourages students to critically reflect on their waste disposal behavior - The storybook promotes a culture of environmental awareness by challenging the habit of throwing trash carelessly	1– 5



Instrument Expert Validation Checklist on SDG-12 Based Content

Instruction For Completing the Digital Storybook Criteria Instrument

This instrument is designed to evaluate the quality of a digital storybook based on SDG-12 Learning objective. Several aspects, including Planning Sustainable Actions, Making Simple Eco-Friendly Decisions, Practicing Daily Sustainable Habits, Consumer Responsibility, and Challenging Wasteful Behaviors. Please read each item carefully and assess how well the digital storybook meets the stated criteria.

Rating Scale

Use the following scale to indicate the level of relevance for each item:

Score	Category
4. VR (Very Relevant)	The item is highly relevant and fully aligns with the characteristics of the digital storybook.
3. QR (Quite Relevant)	The item is moderately relevant, though some elements may be less strong.
2. SR (Somewhat Relevant)	The item is slightly relevant and only partially reflected in the storybook.
1. NR (Not Relevant)	The item is not relevant or not observed in the digital storybook.

How to Complete the Instrument

1. Read each item in the *Items* column thoroughly.
2. Determine the extent to which the digital storybook fulfills the criterion.
3. Place a checkmark (✓) in **one** of the following columns: **VR, QR, SR, or NR**.
4. If needed, provide explanations or notes in the **Remarks** column.
5. Continue rating all items across all aspects.

Important Notes

- Evaluations should be based solely on observable features in the digital storybook.
- If an item is unclear, partially present, or difficult to assess, please include comments in the *Remarks* column.
- This instrument may be used to evaluate a single digital storybook or for comparing multiple storybooks.

NO	Aspect	Items	1 NR	2 SR	3 QR	4 VR	Remarks
1	Behavior in Maintaining Environmental Cleanliness	The storybook explains how careless waste disposal contributes to environmental problems such as clogged drains and flooding, helping students understand the direct connection between littering and natural disasters.	☐	☐	☐	☒	
2	Behavior in Maintaining Environmental Cleanliness	The storybook illustrates how students can plan and implement simple actions to prevent flooding, such as disposing of waste properly, participating in school clean-up activities, and maintaining clean drainage areas.				☒	
3	Behavior in Maintaining Environmental Cleanliness	The storybook demonstrates how individual and collective responsibility play a crucial role in maintaining a clean school environment, emphasizing that preventing floods starts with small daily habits.				☒	
4	Behavior in Maintaining Environmental Cleanliness	The storybook encourages students to critically reflect on their waste disposal behavior, recognizing the environmental consequences of littering and making more responsible choices.				☒	
5	Behavior in Maintaining Environmental Cleanliness	The storybook promotes a culture of environmental awareness by challenging the habit of throwing trash carelessly, inspiring students to influence their peers and contribute to a flood-free school environment.				☒	

General Comment:

Date: 2 April 2026
Expert



Ni Luh Putu Era Adnyayanti, S.Pd., M.Pd.
NIP. 198904082023212043

Appendix 10. Checklist result from Teacher

READING BEHAVIOURAL ENGAGEMENT INSTRUMENT

Research Objective:

To evaluate the quality of the developed SDG-12 digital storybook, as assessed by teachers, in terms reading behavioral engagement.

INSTRUMENT DEVELOPMENT BASIS

The development of this instrument is based on the idea of reading behavioral engagement, which explains how students show their involvement in reading through clear and visible actions. According to Fredricks et al. (2004), Guthrie (2004), and McGeown & Smith (2024), reading behavioral engagement has seven important aspects: effort, persistence, attention, positive conduct, active participation, reading frequency, and interaction with texts. Each item in this instrument is designed to measure how students behave while reading. It looks at how much effort they give, how well they stay focused, how long they continue when the reading gets difficult, how actively they join reading activities, and how often they read. The instrument also observes how students interact with the text and how they show positive behavioral during reading. With this framework, the instrument provides a simple and clear way to understand students' reading involvement based on their real actions during reading activities.

REFERENCESS

- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109.
- Guthrie, J. T., & Wigfield, A. (2000). Engagement and motivation in reading. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), **Handbook of reading research** (Vol. 3, pp. 403–422). Lawrence Erlbaum.
- McGeown, S., & Smith, K. C. (2024). Reading Engagement Matters! A New Scale to Measure and Support Children's Engagement with Books. *Reading Teacher*, 77(4), 462–472. <https://doi.org/10.1002/trtr.2>

Blueprint of Reading Behavioral Engagement Validation

Answer Scale: 4. VR= Very Relevant; 3. QR= Quite Relevant; 2. SR= Somewhat Relevant;
1. NR= Not Relevant

Category	Aspect	Items	No Item
Reading Behavioral Engagement	Effort	- The Digital Storybook increases students' reading effort. - The Digital Storybook encourages students to try harder. - The Digital Storybook supports students in rereading difficult parts.	73-75
	Persistence	- The Digital Storybook helps students finish the story. - The Digital Storybook keeps students reading through challenges. - The Digital Storybook promotes consistent reading until completion.	76-78
	Attention	- The Digital Storybook maintains students' attention. - The Digital Storybook helps students stay focused. - The Digital Storybook reduces distraction during reading.	79-81
	Positive Conduct	- The Digital Storybook encourages positive reading behavioral. - The Digital Storybook supports orderly reading routines. - The Digital Storybook promotes responsible digital use.	82-84
	Active Participation	- The Digital Storybook encourages student participation. - The Digital Storybook stimulates sharing during reading. - The Digital Storybook increases involvement in reading activities.	85-87
	Reading Frequency	- The Digital Storybook increases reading frequency. - The Digital Storybook motivates students to read more. - The Digital Storybook encourages regular reading habits.	88-90
	Interaction with Texts	- The Digital Storybook encourages deeper story exploration. - The Digital Storybook promotes connections with the story. - The Digital Storybook motivates reading of similar texts.	91-93

Instrument Reading Behavioral Engagement

Instruction For Completing the Reading Behavioral Engagement Instrument

This instrument is designed to evaluate students' Reading Behavioral Engagement when using a digital storybook based on several aspects, including Effort, Persistence, Attention, Positive Conduct, Active Participation, Reading Frequency, and Interaction with Texts. Please read each item carefully and assess how well the digital storybook supports students' engagement in each area.

Rating Scale

Use the following scale to indicate the level of relevance for each item:

Score	Category
4. VR (Very Relevant)	The item is highly relevant and fully aligns with the characteristics of the digital storybook.
3. QR (Quite Relevant)	The item is moderately relevant, though some elements may be less strong.
2. SR (Somewhat Relevant)	The item is slightly relevant and only partially reflected in the storybook.
1. NR (Not Relevant)	The item is not relevant or not observed in the digital storybook.

How to Complete the Instrument

1. Read each item in the item's column thoroughly.
2. Determine the extent to which the digital storybook fulfills the criterion.
3. Place a checkmark (✓) in **one** of the following columns: **VR, QR, SR, or NR**.
4. If needed, provide explanations or notes in the **Remarks** column.
5. Continue rating all items across all aspects.

Important Notes

- Evaluations should be based on students' observable behaviors while using the digital storybook.
- If an item is unclear or difficult to assess, please provide additional explanation in the Remarks column.
- This instrument may be used to evaluate engagement with a single digital storybook or to compare students' engagement across multiple storybooks.

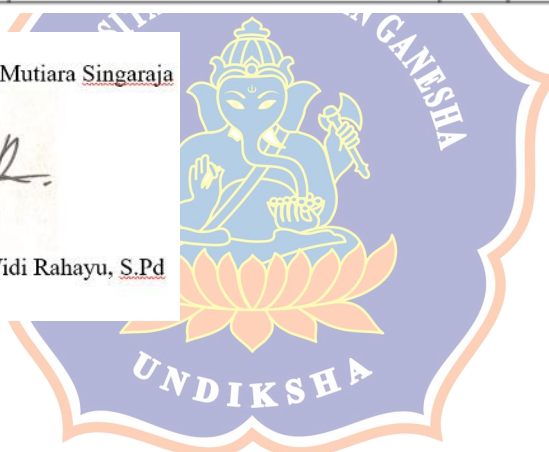
NO	Aspect	Items	1 NR	2 SR	3 QR	4 VR	Remarks
73	Effort	The Digital Storybook is able to encourage students to keep reading even when the story is difficult.				V	
74	Effort	The Digital Storybook is able to motivate students to try harder in understanding the story.				V	
75	Effort	The Digital Storybook is able to encourage students to reread parts of the story to improve their understanding.			V		
76	Persistence	The Digital Storybook is able to support students to finish the story until the end.				V	
77	Persistence	The Digital Storybook is able to help students continue reading even when they encounter difficult words.				V	
78	Persistence	The Digital Storybook is able to help students return to the story and continue reading after short breaks.				V	
79	Attention	The Digital Storybook is able to maintain students' attention during reading activities.			V		
80	Attention	The Digital Storybook is able to help students stay focused without being easily distracted.			V		
81	Attention	The Digital Storybook is able to keep students focused through features that maintain their engagement.				V	
82	Positive Conduct	The Digital Storybook is able to promote positive behavior during reading sessions.				V	
83	Positive Conduct	The Digital Storybook is able to reduce disruptive behavior while students are reading.				V	
84	Positive Conduct	The Digital Storybook is able to promote responsible use of digital tools during reading activities.				V	
85	Active Participation	The Digital Storybook is able to encourage students to participate actively in shared reading activities.			V		
86	Active Participation	The Digital Storybook is able to stimulate students to share their reading experiences with peers.				V	

87	Active Participation	The Digital Storybook is able to motivate students to join discussions related to the story.				V	
88	Reading Frequency	The Digital Storybook is able to increase how often students read storybooks at home or in school.				V	
89	Reading Frequency	The Digital Storybook is able to motivate students to borrow or choose more storybooks to read.				V	
90	Reading Frequency	The Digital Storybook is able to encourage students to read storybooks more regularly.			V		
91	Interaction with Texts	The Digital Storybook is able to inspire students to explore more about the story they read.				V	
92	Interaction with Texts	The Digital Storybook is able to help students connect the story to their own experiences or knowledge.			V		
93	Interaction with Texts	The Digital Storybook is able to motivate students to explore other stories with similar themes.				V	

Teacher Validation
Rabu, 1 April 2026. SD Mutiara Singaraja



Nama: Komang Santi Widi Rahayu, S.Pd
NIP. -



RIWAYAT HIDUP



Putu Andre Wiranatha lahir di Denpasar pada tanggal 30 April 2004. Penulis merupakan anak dari pasangan I Wayan Dedi Wiantha dan Ni Putu Aryantini. Penulis berkewarganegaraan Indonesia dan beragama Hindu. Saat ini penulis bertempat tinggal di Desa Padangsembian Kaja, Kecamatan Denpasar Barat, Kota Denpasar, Provinsi Bali. Penulis menyelesaikan pendidikan dasar di SD Negeri 29 Pemecutan, kemudian melanjutkan pendidikan di SMP Negeri 2 Denpasar dan lulus dari SMA Negeri 4 Denpasar. Pada tahun 2022, penulis melanjutkan pendidikan tinggi di Program Studi S1 Pendidikan Bahasa Inggris, Jurusan Bahasa Asing, Fakultas Bahasa dan Seni, Universitas Pendidikan Ganesha. Pada tahun 2026, penulis menyelesaikan skripsi yang berjudul: “Development of Digital Storybook on SDG-12 to Facilitate Reading Behavioral Engagement of Fourth-Grade Students at SD Mutiara” sebagai salah satu syarat untuk memperoleh gelar Sarjana Pendidikan (S.Pd.) pada Program Studi Pendidikan Bahasa Inggris, Universitas Pendidikan Ganesha.

