

Multimodal Question Generation and Evaluation Using Large Language Models

Anonymous ACL submission

Abstract

To support the development of conversational agents for educational purposes, particularly those designed to engage children through interactive storytelling, there is a growing need for systems that can automatically generate relevant and pedagogically sound questions. Conversational agents can use such questions during interactive sessions to promote comprehension, reflection, and active participation. In this work, we develop an LLM-based pipeline that automates the generation of questions from story content, ensuring the appropriateness and clarity of questions to maximize children's learning outcomes. We use GPT-4o to generate interactive questions from stories based on various modality covering question types such as completion, recall, open-ended, and Wh questions. Our findings demonstrate the ability of the LLM to generate appropriate and contextually relevant questions, as well as its ability to align with human judgment in the evaluation of automatically generated questions.

1 Introduction

Question generation plays a vital role in educational settings, serving as a fundamental tool for assessing student understanding, promoting critical thinking, and facilitating active learning (Whitehurst et al., 1988; Zhang et al., 2022). Whether crafted by educators or generated automatically, well-designed questions can stimulate deeper engagement with content, encourage reflection, and provide valuable feedback on learning progress (Dietz Smith et al., 2024). The ability to generate contextually appropriate and pedagogically sound questions at scale has become increasingly important as educational systems seek to provide personalized and adaptive learning experiences. Automatic question generation (AQG) using large language models (LLMs) has emerged as a powerful solution to this challenge, offering scalable and personalized learning support. Recent advances in

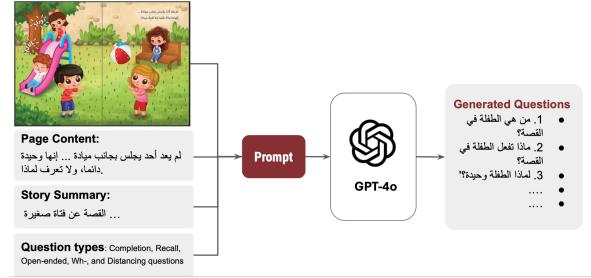


Figure 1: For each page, the story context (summary), the story page, textual content of the page , and a list of question types with their definitions are being concatenated with the prompt instructions and passed to the open AI's model. Then the model returns a list of questions and their corresponding question type. The model used was gpt-4-vision-preview

LLMs have significantly improved the efficiency and versatility of AQG, reducing the need for technical expertise and allowing educators to generate high-quality questions that can inspire student thinking and support self-assessment in online and offline learning environments (Yuan et al., 2022; Bulathwela et al., 2023; Jiang et al., 2024). In particular, AQG has shown promise in the domain of children's storytelling, where it can create questions with high cognitive demand that conversational agents use during reading sessions, fostering dialogic interaction between children and caregivers (Zhao et al., 2022; Lekshmi Narayanan et al., 2024).

While general-purpose models such as GPT-3 and GPT-4 have been successfully employed in educational AQG tasks (Lee et al., 2024; Yuan et al., 2022; Jiang et al., 2024), task-specific models such as MultiQG-TI and EduQG have also emerged. These specialized models leverage fine-tuning on specific datasets or incorporate multimodal inputs such as text and images to improve question quality and contextual relevance (Wang and Baraniuk, 2023; Bulathwela et al., 2023). In

the Arabic context, fine-tuned transformer-based models have been used to develop end-to-end AQG systems trained on datasets such as Arabic-SQuAD and ARCD, achieving good quality as assessed by automatic evaluations (Alajmi et al., 2025; Lafkiar and En Nahnhah, 2025). Some approaches utilize LLMs not only to generate questions but also to evaluate and filter them based on relevance and difficulty (Yuan et al., 2022; Xiao et al., 2023). The types of questions generated through AQG systems are diverse, including multiple choice, open-ended, and closed questions, as well as more abstract categories such as prediction and concept questions (Lee et al., 2024; Jiang et al., 2024; Lekshmi Narayanan et al., 2024).

Despite significant progress, key challenges persist in the field. The evaluation of generated question quality remains particularly challenging, with common automatic evaluation metrics including ROUGE-L, BLEU, BERTScore, and cosine similarity (Zhao et al., 2022; Wang and Baraniuk, 2023; Lamsiyah et al., 2024), while manual evaluation often involves expert reviewers assessing fluency, relevance, and answerability (Cho et al., 2021; Alajmi et al., 2025). GPT models may perform inconsistently when generating yes/no questions or cloze-style multiple-choice items (Lee et al., 2024; Xiao et al., 2023). Furthermore, multimodal AQG systems face challenges related to contextual grounding and hallucination (Wang and Baraniuk, 2023). There is also a pressing need for more transparent and scalable evaluation frameworks and better integration of teacher-provided materials to fine-tune model outputs (Bulathwela et al., 2023; Xiao et al., 2023; Lekshmi Narayanan et al., 2024).

In this work, we develop an LLM-based pipeline that automates the generation of questions from Arabic children’s story content. Our approach relies on multimodal question generation using LLMs. The LLM leverages dialogic reading strategies, specifically the CROWD framework, which encompasses several question types: Completion, Recall, Open-ended and Wh- questions (Zevenbergen and Whitehurst, 2003). The framework grounds the question generation process, ensuring that the LLM produces appropriate questions that support the goal of enhancing children’s learning outcomes through interactive engagement. Our proposed pipeline aims to address some of these gaps by leveraging GPT-4 to generate pedagogically valuable questions from story content, tailored to support young learners. By focusing on question

generation in narrative comprehension and diverse question modalities, our system contributes to the broader goal of enhancing educational interactions through LLMs.

We summarize our contribution as follows.

- We build a multimodal pipeline for question generation for illustrative stories following the CROWD framework.
- We design evaluation guidelines to assess the quality of the generated questions through human review.
- We develop a high-quality, scalable LLM-based evaluator, benchmarked against a batch with gold-standard human annotations, and find that it closely aligns with human judgments.

2 Data and Storybook Preprocessing

Our data set was constructed from 14 Arabic storybooks that cover a variety of age groups, all published by *We Love Reading*¹. The textual content of each book was manually transcribed to ensure precision and consistency. For the visual modality, each double-page spread was semi-manually merged into a single panoramic image, thereby preserving the full illustration context and allowing precise alignment between text and visuals. This preprocessing step ensured that both modalities could be jointly leveraged for question generation.

3 Method

Our approach consists of using LLMs for question generation and question evaluation.

Question Generation In order to harness the potential of using LLMs to generate helpful and interactive questions for children, we refined the prompting strategy through iterative adjustments and human review of the generated outputs, with a particular focus on producing knowledge-based and educational questions. Questions are generated at the page level to ensure both local relevance and comprehensive coverage of the story. Each prompt provides the LLM with a holistic view of the page by including the summary of the story, textual content, and visual context (illustrative page of the story as images). Additionally, the prompt incorporates explicit instructions to adhere to the CROWD

¹<https://welovereading.org>

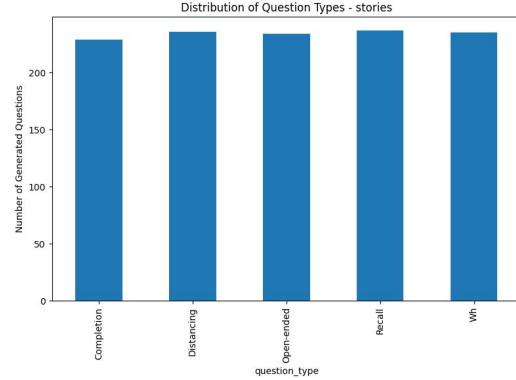
164
165
166
167
168
169
170
171
framework of dialogic reading, which consists of
five question types: completion, recall, open-ended,
wh-question, and distancing. Each type focuses on
specific aspects of learning and child engagement,
such as fostering connections with personal expe-
rience, encouraging narrative recall, and assessing
comprehension. Figure 1 illustrates an example of
the constructed prompt.

172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
Question Evaluation We measure the quality of
the generated questions using an LLM-based and
human-based evaluation. The evaluation consists
of five questions and covers key aspects of clarity,
appropriateness, and relevance, helping in the
assessment of whether each question is well un-
derstood, contextually meaningful, and suitable for
supporting children’s learning outcomes. In ad-
dition to evaluating the question, we measure the
effectiveness of incorporating various modality by
asking about the modality contribution for the gen-
erated question, whether it is relevant to the image,
the text, or both. For each evaluation question, the
evaluator (human or LLM) is asked to give a score
between 1-3 to indicate Yes / Partially / No. Full
evaluation guidelines are presented in Appendix A.

188
189
190
191
192
193
194
195
196
We use 14 stories for our evaluation purposes,
we randomly select one story from each age group
(indicated by a star in Table 5). We unify the eval-
uation guidelines and questions for both the human
evaluators and the LLM evaluator. For the eval-
uation prompt, we provide the context (i.e. story
image and textual content) for each page along with
the generated question and ask about the various
evaluation dimensions.

197
198
199
200
201
202
203
204
205
206
To measure the agreement among evaluators, as
well as between the LLM model and the major-
ity vote of human evaluators, we used percentage
agreement. In this metric, if all evaluators pro-
vided the same answer to every generated question,
the percentage agreement would be 100%. This
method is easy to interpret and accounts for the sit-
uation of no variance and no variability that might
not be possible in other agreement metrics. The
evaluation prompt is presented in Appendix B.

207
208
209
210
211
212
213
214
The model gpt-4o is used as the LLM eval-
uator, using the prompt described in Appendix B. For
each generated question, the text and visual con-
tent of the corresponding page is appended to the
evaluation prompt to ensure contextually grounded
assessments. Human evaluations are performed by
a native Arabic speaker. The evaluation instruc-
tions and structure mirror those provided to the



215
216
217
Figure 2: Distribution of generated question types
across all stories

215
216
217
LLM evaluator. In cases where the evaluator is un-
certain, a default score of 2 (indicating uncertainty)
is assigned.

Story	Avg.Q per-Page	Total-Q
<i>Amal</i>	5.00	35
<i>The Bridge To Dreamland</i>	4.92	59
<i>Questions in a Travel Bag</i>	4.93	69
<i>The Black Hen</i>	4.93	69
<i>The Open Faucet</i>	4.88	78
<i>“Um Hatta” the Cat</i>	4.85	97
<i>Why Did Electricity Run Away?</i>	5.00	97
<i>Something Really Strange</i>	5.00	100
<i>Word Cooker</i>	5.00	100
<i>Salma’s Riddle</i>	4.66	135
<i>The Eid Gift</i>	4.86	34
<i>The Amazing Water Hero</i>	5.00	60
<i>I’d Like to Introduce You To</i>	4.75	114
<i>My Brother Hani</i>	4.96	124
Average	4.9	83.6

218
219
220
221
Table 1: Average number of questions generated per
page and total questions per story. Variation primarily
due to differences in story length and content density.

4 Results

222
223
224
225
226
227
Question Generation We use gpt-4o to gener-
ate questions for stories and show the distribution
of question types in Figure 2. The model produces
a balanced set of questions in all CROWD cate-
gories. Each category is represented with a com-
parable frequency (approximately 230 questions
per type), indicating that the model is not biased
toward a particular form of questioning, but rather
provides comprehensive coverage across diverse
cognitive levels. We also examine the distribution
of the generated questions in all stories. Table 1

Category (%)	LLM Eval.	Human Eval.
Both	84.6	70.1
Image	3.9	3.0
Irrelevant	4.4	0.0
Text	7.1	26.9

Table 2: Comparison of modality reliance between LLM and human evaluations.

Story	Q1	Q2	Q3	Q4	Q5
<i>Amal</i>	0.91	0.86	0.91	0.69	1.00
<i>The Bridge To Dreamland</i>	0.89	0.84	0.93	0.74	1.00
<i>Questions in a Travel Bag</i>	0.92	0.88	0.91	0.62	1.00
<i>The Black Hen</i>	0.96	0.96	0.97	0.83	1.00
<i>The Open Faucet</i>	0.96	0.91	0.88	0.74	1.00
<i>"Um Hatta" the Cat</i>	0.99	0.94	0.95	0.76	1.00
<i>Why Did Electricity Run Away?</i>	0.91	0.88	0.90	0.74	0.99
<i>Something Really Strange</i>	0.92	0.91	0.93	0.67	1.00
<i>Word Cooker</i>	0.93	0.90	0.98	0.82	0.99
<i>Salma's Riddle</i>	0.83	0.77	0.79	0.67	0.95
<i>The Eid Gift</i>	0.91	0.85	0.82	0.73	0.97
<i>The Amazing Water Hero</i>	0.90	0.85	0.90	0.68	1.00
<i>I'd Like to Introduce You To</i>	0.87	0.86	0.94	0.72	1.00
<i>My Brother Hani</i>	0.85	0.72	0.78	0.63	0.96
Average Agreement	0.91	0.87	0.90	0.72	0.99

Table 3: Agreement scores (Q1–Q5) by story.

230 shows the average number of questions generated
231 per page and the total number of questions generated
232 per story. The results show that the model
233 maintains a stable density of approximately 4.8 to
234 5.0 questions per page across all stories, regardless
235 of content. However, the total number of questions
236 varies widely, ranging from 34 for shorter stories,
237 such as "The Eid Gift", to 135 for longer stories,
238 such as "Salma's Riddle". This indicates that the
239 variation in the total questions is primarily driven
240 by the length of the story rather than the inconsis-
241 tency in the model generation process.

242 **Question Evaluation** We then evaluate the qual-
243 ity of the questions using both human and LLM
244 evaluations. Agreement scores are calculated in all
245 stories and evaluation questions. In general, to eval-
246 uate the alignment between automated and human
247 assessment, we compare agreement scores between
248 questions and stories, as well as modality reliance
249 (text, image, or both). Table 2 shows that both LLM
250 and human rating are mainly based on multimodal
251 input, with LLM producing a higher proportion
252 (84.6%) compared to human evaluation (70.1%).
253 Table 3 summarizes the agreement scores in stories
254 for the Q1–Q5 questions. Overall, agreement was

Evaluation	Human	LLM	Overlap
Question			
<i>Is the question clear to a child?</i>	0.98	0.99	0.98
<i>Is the question relevant to the given image?</i>	0.96	0.99	0.96
<i>Is the question relevant to the page text?</i>	0.96	0.98	0.96
<i>Is the question about an important aspect (text+image)?</i>	0.96	0.99	0.96
<i>Is the question appropriate for a child?</i>	0.98	1.00	0.98

Table 4: Comparison of human and LLM evaluations with percentage of "Yes" responses and their overlap.

255 consistently high (≈ 0.85 –1.0), with Q5 achieving
256 the highest average score (0.99) in all stories. In
257 contrast, Q4 showed the lowest agreement (0.72),
258 indicating greater variability in responses. These re-
259 sults suggest that, while most question types yield
260 stable agreement, certain prompts (e.g., Q4) may
261 introduce interpretive differences across stories. As
262 shown in Table 4, the human and LLM evaluations
263 have near-perfect alignment in all five evaluation
264 criteria (96–100%). The agreement is strongest for
265 clarity (Q1) and appropriateness (Q5), both at 0.98
266 or higher, while the relevance to image, text, and
267 integration (Q2–Q4) consistently scored 0.96. The
268 overlap scores confirm that the model's judgments
269 are highly consistent with human ratings.

5 Conclusion

270 This study presents a pipeline grounded in large lan-
271 guage models (LLMs) for generating knowledge-
272 based evaluation questions from children's stories,
273 integrating both text and image modalities. Us-
274 ing gpt-4o, the system produced a balanced set
275 of question types, completion, recall, open-ended,
276 Wh, and distancing, with an average of 4.9 ques-
277 tions per page. The results indicated a significant
278 concordance with human evaluations (96 to 100%),
279 thus affirming the clarity, relevance, and suitabil-
280 ity of the generated inquiries. The findings under-
281 score the resilience of the methodology in a variety
282 of narratives and its potential to facilitate social-
283 emotional learning, as well as culturally relevant
284 educational methodologies within early childhood
285 environments. Future work will study the ability
286 of conversational agents to use automatically gen-
287 erated questions to facilitate an interactive reading
288 and learning session with children.

References

Anwar Alajmi, Haniah Altabaa, Sa'ed Abed, and Imtiaz Ahmad. 2025. Arabic question generation using transformers. *ACM Trans. Asian Low-Resour. Lang. Inf. Process.*, 24(3).

Sahan Bulathwela, Hamze Muse, and Emine Yilmaz. 2023. Scalable educational question generation with pre-trained language models. *Preprint*, arXiv:2305.07871.

Woon Sang Cho, Yizhe Zhang, Sudha Rao, Asli Celikyilmaz, Chenyan Xiong, Jianfeng Gao, Mengdi Wang, and Bill Dolan. 2021. Contrastive multi-document question generation. *Preprint*, arXiv:1911.03047.

Griffin Dietz Smith, Siddhartha Prasad, Matt J Davidson, Leah Findlater, and R Benjamin Shapiro. 2024. Contextq: Generated questions to support meaningful parent-child dialogue while co-reading. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference*, pages 408–423.

Hang Jiang, Xiajie Zhang, Robert Mahari, Daniel Kessler, Eric Ma, Tal August, Irene Li, Alex Pentland, Yoon Kim, Deb Roy, and Jad Kabbara. 2024. Leveraging large language models for learning complex legal concepts through storytelling. In *Proceedings of the 62nd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, pages 7194–7219, Bangkok, Thailand. Association for Computational Linguistics.

Said Lafkiar and Noureddine En Nahnahi. 2025. An end-to-end transformer-based model for arabic question generation. *Multimedia Tools and Applications*, 84(20):22009–22023.

Salima Lamsiyah, Abdelkader El Mahdaouy, Aria Nourbakhsh, and Christoph Schommer. 2024. Fine-tuning a large language model with reinforcement learning for educational question generation. In *Artificial Intelligence in Education*, pages 424–438, Cham. Springer Nature Switzerland.

U. Lee, H. Jung, Y. Jeon, and et al. 2024. Few-shot is enough: exploring chatgpt prompt engineering method for automatic question generation in english education. *Education and Information Technologies*, 29:11483–11515.

Arun Balajee Lekshmi Narayanan, Ligia E. Gomez, Martha Michelle Soto Fernandez, Tri Nguyen, Chris Blais, Maria Adelaida Restrepo, and Arthur Glenberg. 2024. Genq: Automated question generation to support caregivers while reading stories with children. In *Proceedings of the XI Latin American Conference on Human Computer Interaction, CLIHC '23*, New York, NY, USA. Association for Computing Machinery.

Zichao Wang and Richard Baraniuk. 2023. MultiQG-TI: Towards question generation from multi-modal sources. In *Proceedings of the 18th Workshop on Innovative Use of NLP for Building Educational Applications (BEA 2023)*, pages 682–691, Toronto, Canada. Association for Computational Linguistics.

Grover J Whitehurst, Francine L Falco, Christopher J Lonigan, Janet E Fischel, Barbara D DeBaryshe, Marta C Valdez-Menchaca, and Marie Caulfield. 1988. Accelerating language development through picture book reading. *Developmental psychology*, 24(4):552.

Changrong Xiao, Sean Xin Xu, Kunpeng Zhang, Yufang Wang, and Lei Xia. 2023. Evaluating reading comprehension exercises generated by LLMs: A showcase of ChatGPT in education applications. In *Proceedings of the 18th Workshop on Innovative Use of NLP for Building Educational Applications (BEA 2023)*, pages 610–625, Toronto, Canada. Association for Computational Linguistics.

Xingdi Yuan, Tong Wang, Yen-Hsiang Wang, Emery Fine, Rania Abdelghani, Pauline Lucas, Hélène Sauzéon, and Pierre-Yves Oudeyer. 2022. Selecting better samples from pre-trained llms: A case study on question generation. *Preprint*, arXiv:2209.11000.

Andrea A. Zevenbergen and Grover J. Whitehurst. 2003. Dialogic reading: A shared picture book reading intervention for preschoolers. In Anne van Kleeck, Steven A. Stahl, and Eurydice B. Bauer, editors, *On reading books to children: Parents and teachers*, pages 177–200. Lawrence Erlbaum Associates Publishers.

Zheng Zhang, Ying Xu, Yanhao Wang, Bingsheng Yao, Daniel Ritchie, Tongshuang Wu, Mo Yu, Dakuo Wang, and Toby Jia-Jun Li. 2022. Storybuddy: A human-ai collaborative chatbot for parent-child interactive storytelling with flexible parental involvement. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*, pages 1–21.

Zhenjie Zhao, Yufang Hou, Dakuo Wang, Mo Yu, Chengzhong Liu, and Xiaojuan Ma. 2022. Educational question generation of children storybooks via question type distribution learning and event-centric summarization. In *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, pages 5073–5085, Dublin, Ireland. Association for Computational Linguistics.

A Evaluation Guidelines

The annotator evaluation guidelines are shown in Table 6.

B Prompts

B.1 Question Generation

This appendix section gives example prompts for generating and evaluating the five types of questions designed for children aged 4 to 6. Words in all caps and square brackets were included verbatim

Split	Story	Age Group	Pages*
Train	Amal	7-10 YO	19/48
	The Bridge to Dreamland	5-8 YO	7/30
	Questions in a Travel Bag	4-6 YO	20/48
	The Black Hen	7-10 YO	24/56
	The Open Faucet	7-10 YO	16/28
	“Um Hatta” the Cat	4-6 YO	20/48
	Why Did Electricity Run Away?	4-6 YO	13/32
	Something Really Strange	4-6 YO	20/48
	Word Cooker	4-6 YO	20/48
	Salma’s Riddle	4-6 YO	29/48
Test	The Eid Gift	3-7 YO	7/24
	The Amazing Water Hero	4-6 YO	12/25
	I Would Like to Introduce You To	7-10 YO	24/56
	My Brother Hani	4-6 YO	25/56

Table 5: Overview of Storybooks. Content pages refer to pages that include story content and merged pages.

399 as prompt variables. Words in parentheses were
400 replaced with the relevant story text.
401

402 • Completion Prompt

403 The initial prompt is used to generate a candidate ques-
404 tion. *Act as an early childhood reading instructor, generating*
405 *completion prompts for children aged 4–6. The requirements*
406 *are:*

407 • *The question should be based on repetition or rhyme in*

408 *the story.*

409 • *It should be one sentence long and end with a blank for*
410 *the child to complete.*

411 • *It must be grounded in the current sentence or phrase,*
412 *without requiring broader story context.*

413 • *Example: I'll huff, and I'll puff, and I'll blow the house*
414 *—.*

415 (current page text) "With that context, generate a prompt of
416 type 'completion' for the above text." Format your response
417 in JSON using exactly the template below:

418 {
419 "prompt": PROMPT
420 }

421 • Recall Prompt

422 *Purpose: Ask about a past event that requires memory*
423 *across pages. You are an expert in early childhood education.*
424 *Generate a recall prompt suitable for a child aged 4–6. This*
425 *prompt should ask about a thematically important event that*
426 *occurred earlier in the story. The requirements are:*

427 • *The question should ask the child to recall a specific,*
428 *thematically important event from the story.*

429 • *It must reference content that requires integrating across*
430 *multiple pages or events.*

431 • *The question should begin with a wh-word (e.g., What,*
432 *When, Who).*

433 • *Do NOT include compound or multi-part questions.*
434 • *Example: What did the lion do after the mouse helped*
435 *him?*

436 (current page text) "With that context, generate a prompt of
437 type 'recall' for the above text." Format your response in
438 JSON using exactly the template below:

439 {
440 "prompt": PROMPT
441 }

442 • Open-ended Prompt

443 The initial prompt is used to generate a candidate question.
444 You are a specialist in dialogic reading with young children.
445 Create an open-ended question for a child aged 4–6. The
446 requirements are:

447 • *The question should invite speculation, prediction, or*
448 *explanation related to characters, setting, or themes.*

449 • *Avoid simple factual recall or yes/no questions.*

450 • *The child should be encouraged to provide a thoughtful*
451 *or imaginative response.*

452 • *Avoid asking about personal experiences.*

453 • *Example: What do you think the rabbit felt when he saw*
454 *the trap?*

455 (current page text)
456 "With that context, generate a prompt of type 'open-ended'
457 for the above text."
458 Format your response in JSON using exactly the template
459 below:

460 {
461 "prompt": PROMPT
462 }

463 • Wh Prompt

464 The initial prompt is used to generate a candidate question.
465 *Act as a reading instructor for children. Based on the*
466 *following story text, create a Wh-question for a child aged*
467 *4–6. The requirements are:*

Question	Answer Options
1- Is the question clear to a child? Ask yourself, if I was a child will I understand this question? Will I be able to comprehend it? Is the language simple enough to be understood by a child?	1) It is not at all clear: The question is ambiguous and is difficult for children to understand what is being asked. 2) It is somewhat clear: The question is understandable but may have minor ambiguities. Choose it when uncertain. 3) It is clear: The question is straightforward and unambiguous.
2 - Is the question relevant to the context of the given image? Given what is going on in the illustration of the image only, does the question make sense to be asked for this page?	1) It is not at all related: The question has no connection to the image. 2) It is somewhat related: The question is indirectly related to the provided context. Choose it when uncertain. 3) It is related: The question directly engages with the provided context.
3 - Is the question relevant to the context of the page's textual content? Only by referring to the text mentioned on the page and not the illustration.	1) It is not at all related: The question has no connection to the page's content. 2) It is somewhat related: The question is indirectly related to the provided context. Choose it when uncertain. 3) It is related: The question directly engages with the provided context.
4 - Is the question asking about an important aspect of the context (image and text)? Important aspects include: main events that support the storyline and are the core of the page content. This does NOT include, for example, details in illustrations that aren't relevant to the storyline or character development like "what is the person wearing?"	1) Not at all important. 2) It may be important. 3) It is very important.
5- Is the question appropriate for a child? Appropriate in terms of: Easy vocabulary. Does not include topics that could be frightening or too complex for the child (e.g., suicide/politics). Ask yourself, would I ask this question to a child?	1) It is not appropriate: The question contains content unsuitable for children. 2) It is somewhat appropriate: The question may be suitable for children. Choose it when uncertain. 3) It is appropriate: The question is suitable for children.

Table 6: Evaluation Questions used by Human evaluators and LLM

469			482
470			483
471			484
472			485
473	<ul style="list-style-type: none"> <i>The question must start with What, Who, Where, Why, or How.</i> 	{ "prompt": PROMPT }	486
474	<ul style="list-style-type: none"> <i>Focus on descriptive details from the current page only (e.g., characters, actions, locations).</i> 		487
475	<ul style="list-style-type: none"> <i>Do not use multiple questions in one.</i> 		488
476	<ul style="list-style-type: none"> <i>Ensure the answer is directly supported by the text, without inference.</i> 		489
			490
477	<i>(current page text)</i>		491
478	<i>"With that context, generate a prompt of type 'Wh' for the above text."</i>		492
479			493
480	<i>Format your response in JSON using exactly the template below:</i>		494

495 • Use a *wh-question* or *verb-based phrasing* (e.g., *Have*
 496 *you ever...?, Can you remember...?.*).

497 • *Ensure it cannot be answered with one word.*

498 • *Example: Have you ever had to help someone who was*
 499 *scared? What did you do?*

500 (*current page text*)
 501 "With that context, generate a prompt of type 'distancing'
 502 for the above text."

503 Format your response in JSON using exactly the template
 504 below:

```
505     {  

  506       "prompt": PROMPT  

  507     }
```

508 B.2 Question Evaluation

509 The evaluation prompt is used to assess the quality of the
 510 questions generated for children. Each evaluation considers
 511 both the page text and the illustration, but does not require
 512 explicit image description.

513 *System instructions:*

- 514 • *You are a helpful assistant tasked with evaluating educational questions for children.*
- 516 • *Each evaluation is based on a page of text and a corresponding illustration (image).*
- 518 • *Do not describe the image, only consider whether the question fits the context.*
- 520 • *Answer **only** in the specified JSON format, without explanation.*

522 *Response format:*

```
523     {  

  524       "clarity": 1|2|3,  

  525       "image_relevance": 1|2|3,  

  526       "text_relevance": 1|2|3,  

  527       "importance": 1|2|3,  

  528       "appropriateness": 1|2|3  

  529     }
```

530 *Evaluation criteria mapping:*

- 531 • **Clarity** 1 = Not clear at all (ambiguous) 2 = Mostly clear (minor ambiguities, choose when uncertain) 3 = Very clear (straightforward and unambiguous)
- 534 • **Image relevance** 1 = Not related at all 2 = Somewhat related (indirect, choose when uncertain) 3 = Directly related to the image
- 537 • **Text relevance** 1 = Not related at all 2 = Somewhat related (indirect, choose when uncertain) 3 = Directly related to the text
- 540 • **Importance** 1 = Not important 2 = May be important 3 = Very important
- 542 • **Appropriateness** 1 = Not appropriate (unsuitable for children) 2 = Somewhat appropriate (uncertain) 3 = Appropriate for children