

How Child-Friendly is Web Search? An Evaluation of Relevance vs. Harm



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How Child-Friendly is Web Search?

Motivation: Many Parents know this Situation...

[Opening Session ECIR'25]



No Mum, you are wrong!
The central park did cost
39 trillion dollar.

Google said so!

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About 1'300'000'000 results (0.81 seconds)

39 trillion dollars

Central Park is 848 acres, which translates to over 39 million square feet. At US\$1,000/square foot, **Central Park** is worth over 39 trillion dollars.

[How much would Central Park be worth if it were to be sold off ...](#)

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How much would **Central Park** be worth if it were to be sold off ...

A Solution: Eductation

How Child-Friendly is Web Search?

What is important to Educate to children?

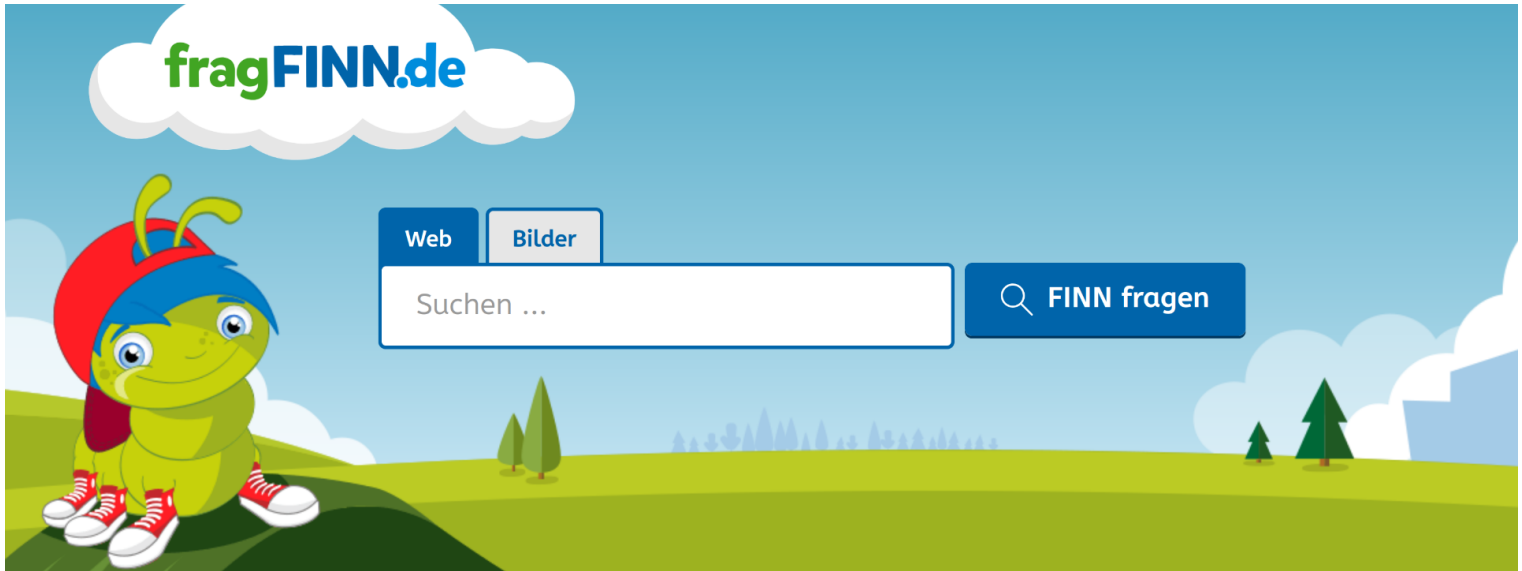
[Pera'24]

- ❑ How to search?
- ❑ When to search?
- ❑ How does search work?

How Child-Friendly is Web Search?

One Possible Way to Educate Children: Child-Safe Search

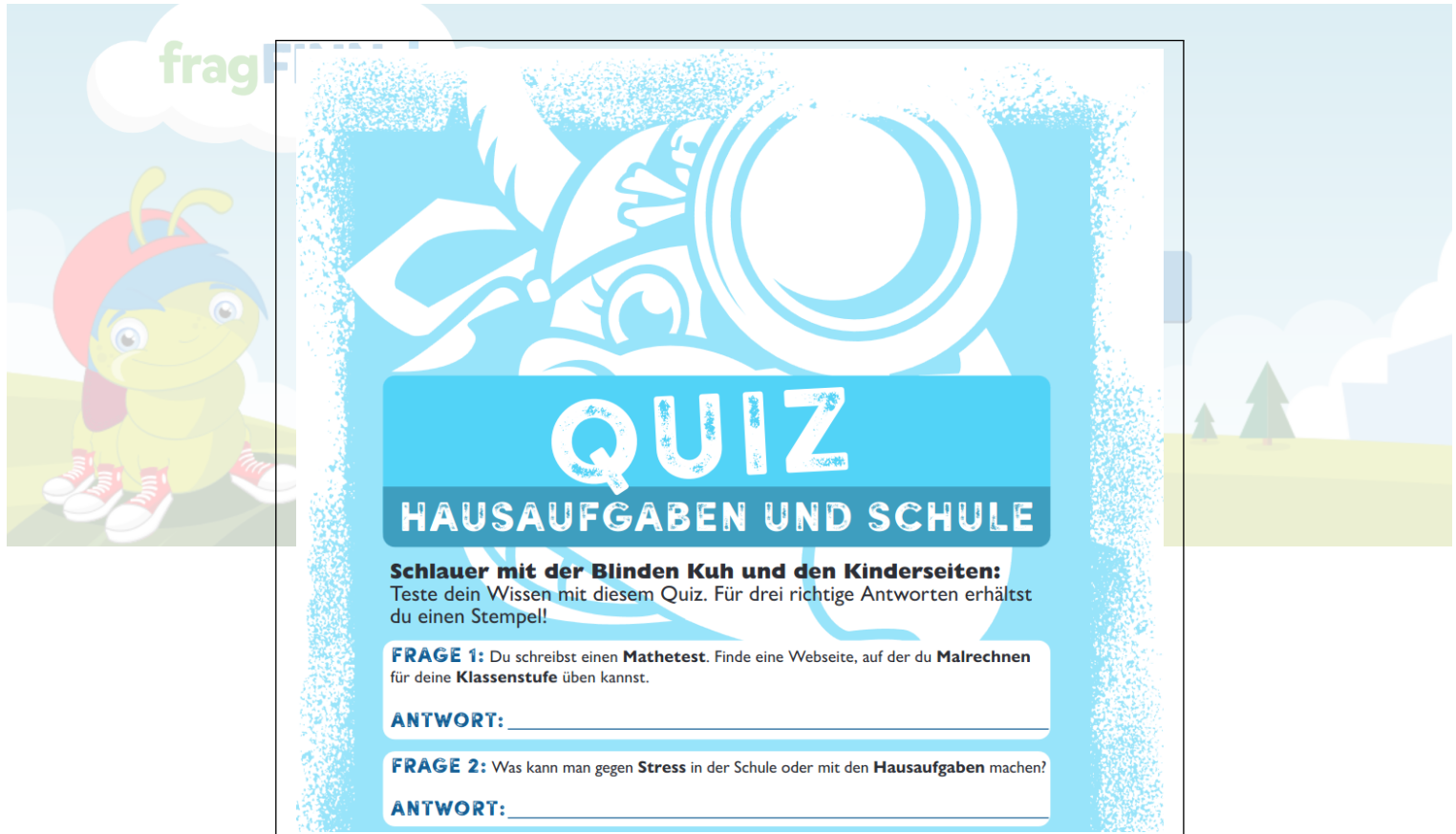
- There are some Non-Profit Child-Safe Search Engines in Germany



How Child-Friendly is Web Search?

One Possible Way to Educate Children: Child-Safe Search

- There are some Non-Profit Child-Safe Search Engines in Germany



frag

QUIZ

HAUSAUFGABEN UND SCHULE

Schlauer mit der Blinden Kuh und den Kinderseiten:
Teste dein Wissen mit diesem Quiz. Für drei richtige Antworten erhältst du einen Stempel!

FRAGE 1: Du schreibst einen **Mathetest**. Finde eine Webseite, auf der du **Malrechnen** für deine **Klassenstufe** üben kannst.

ANTWORT: _____

FRAGE 2: Was kann man gegen **Stress** in der Schule oder mit den **Hausaufgaben** machen?

ANTWORT: _____

- They provide training material and hold courses visit schools

How Child-Friendly is Web Search?

Some Background on German Child-Safe Search Engines

- ❑ We talked with people from two child-safe search engines
- ❑ Two exist for more than 25 years
- ❑ Operate as non-profit organizations
 - funded via public money and/or donations
- ❑ High attention to content and didactics. Team consists of:
 - 4 content moderators/teachers
 - 0.5 admins
- ❑ Technical background:
 - Index manually created: Only documents that are suitable for children
 - Sometimes manually keyworded
 - Index ca. 2 GB
- ❑ Child-safe searches are only used for a short time. E.g.,
 - 60 minutes, e.g., during the class
 - 1 year: when children use it also outside the class (one co-author:))
- ❑ Even when only used for a short time, it is highly valuable.
- ❑ **They never evaluated their search**

How Child-Friendly is Web Search?

Evaluate German Child-Safe Search

Setup

- We create 50 topics covering all four harm types by Coleman

Domain	#Topics	Aggression	Sexual	Values	Commercials
Education	15	X	✓	✓	✓
Entertainment	11	✓	✓	X	✓
Personal	14	X	✓	X	✓
Political	10	✓	X	✓	X

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- We crawl the top-10 results six search engines
 - Commercial: Bing, DuckDuckGo, Google
 - Child-Safe: FragFinn, Helles-Koepfchen, Seitenstark
- Annotated for relevance and harm

Ideal child-safe search

Highly relevant documents without potential harm

How Child-Friendly is Web Search?

Results

Search Engine		SDCG	
Type	Name	Relevance	Harm
Commercial	Bing	.78	.39
	DuckDuckGo	.56	.39
	Google	.67	.32
Child-Safe	FragFinn	.38	.13
	Helles-Koepfchen	.17	.06
	Seitenstark	.12	.00

How Child-Friendly is Web Search?

Examples: Potential to improve relevance

The screenshot shows the fragFINN.de search engine interface. At the top left is the logo 'fragFINN.de' inside a white cloud. Below it is a cartoon character, a green frog-like creature with a red and blue hat and red sneakers. To the right is a search bar with the text 'How to have children?' and a blue button labeled 'FINN fragen'. Below the search bar is a white box with a blue header that reads 'Your search results for: How to have children?'. The search results are displayed in a list format. The first result is titled 'Concrete - the children lexicon' with the URL 'https://klexikon.zum.de/wiki/Zement' and a snippet 'To build concrete, you need to ...'. To the right of the snippet are two icons: a smiley face labeled 'Kinder' and a lightbulb labeled 'Wissen'. The second result is titled 'Poison - the children lexicon' with the URL 'https://miniklexikon.zum.de/wiki/Gift' and a snippet 'When you take poison, you either become sick or die.' To the right of the snippet are the same two icons: a smiley face labeled 'Kinder' and a lightbulb labeled 'Wissen'.

fragFINN.de

Web

How to have children?

FINN fragen

Your search results for: How to have children?

Concrete - the children lexicon
<https://klexikon.zum.de/wiki/Zement>
To build concrete, you need to ...

Kinder
Wissen

Poison - the children lexicon
<https://miniklexikon.zum.de/wiki/Gift>
When you take poison, you either become sick or die.

Kinder
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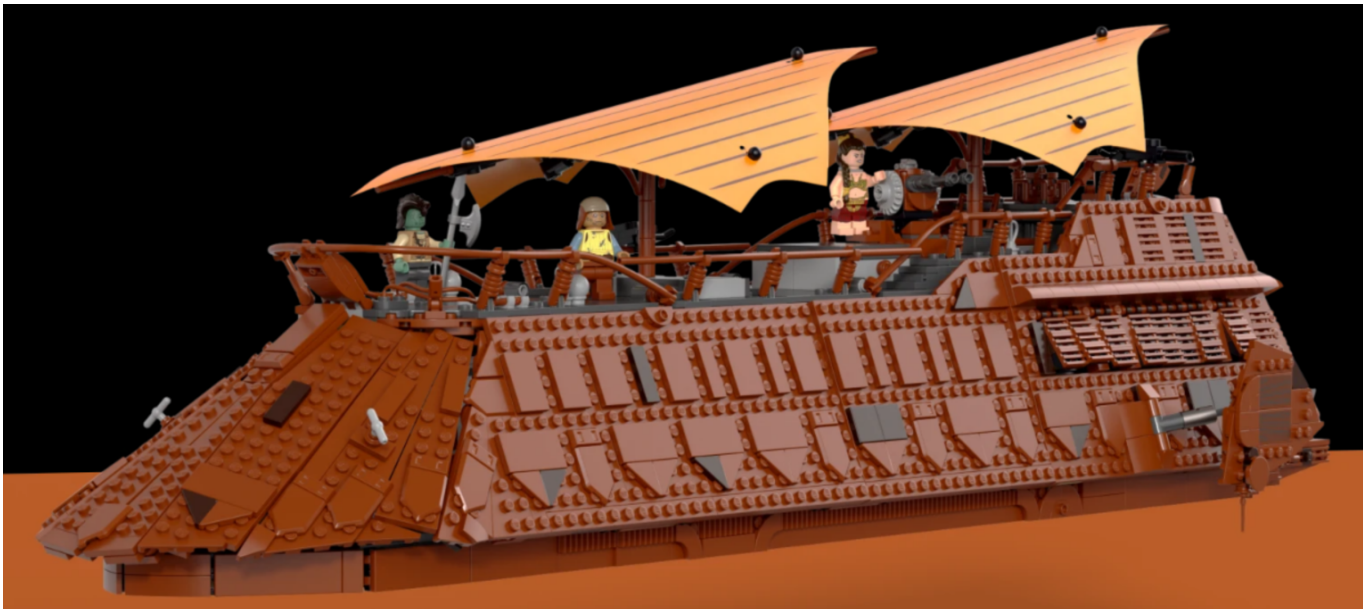
Examples: Potential to reduce harm



Jabbas Segelbarke 75397 | Star Wars™ | Offizieller LEGO® Shop DE

<https://www.lego.com/de-de/product/jabba-s-sail-berge-75397>

Spektakuläres **LEGO® Star Wars™** Set zum Ausstellen
UP **LEGO® SERIOUS PLAY®** Sonic the Hedgehog™ **LEGO®**
Speed Champions **LEGO® Spider-Man** **LEGO® Star Wars™**
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Conclusions

- ❑ We created a new German evaluation corpus
 - Comparison of six search engines
 - Focus: Suitability for children as searchers
 - We labeled results for relevance and potential harm
- ❑ Integration into `ir_datasets` is available
- ❑ Commercial search engines show more relevant but also more inappropriate content

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Future Work

- ❑ Expand the dataset to more queries and more language
- ❑ Large language models to scale corpus creation?
- ❑ How to improve the effectiveness of child-safe search engines

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Thank you!