In this section we detail the results of initial experiments conducted for validating the performance of YouUnderstooMe. We would first like to highlight, that YouUnderstoodMe is more than a search engine oriented to children, incorporating more features oriented to enhance the learning process. However, in this initial assessment we only consider its search engine for comparison purposes. For doing so we compare YouUnderstoodMe to popular search engines oriented to children, including Kiddle \footnote{ <http://www.kiddle.co/>}, KidRex \footnote{http://www.kidrex.org/}, SafeSearchKids \footnote{ <http://www.safesearchkids.com/>} and Gogoolingans \footnote{ <http://www.gogooligans.com/primary.html>} . In addition, studies [Ref?] show that children tend to prefer popular search engines such as Google or Bing, oriented to a more general. Therefore we also include Google in our comparisons.

(I know I cannot copy directly from our ReQuIK paper, so I will rephrase this. But I would like to know how much of it needs to be explained here before doing so. Since, this query gathering was from another project. Should I just reference ReQuIK or I need to give this whole explanation?)

Obtaining children-related data is not a simple task, especially due to children protection regulations that make sharing this type of data highly restricted. Given that neither datasets that can be used to evaluate query recommendations for children, nor query logs comprised only of children queries are publicly available, we collected our own sample of queries written by children, which we refer to as QSC from now on. We asked various K-12 teachers in the Idaho (USA) area to propose their students an information discovery task for which the students had to create queries. A total of 50 children between the ages of 6 and 13 participated in the study, generating around 300 unique queries.

We manually submitted the aforementioned queries (how many of them?) to each of the compared search engines and extracted diverse facts oriented to assess, not only the quality of the retrieved results, but also the general experience of the search from a child perspective. A description for each of the considered facts as well as the results for each of them (see Table XX) can be seen below.

**Unable to retrieve.** Children are known to struggle when composing queries, often composing too long queries that contain terms more pertaining to natural language than to the keywords a search usually expects [REF?]. As a result, some of the queries written by children do not retrieve any result, due to the incapability of popular search engines to handle this type of queries. Therefore, we measured the percentage of queries for which each of the compared search engines is unable retrieve results. As results in Table XX show, YouUnderstoodMe outperforms all other compared SE in this aspect, demonstrating the validity of using a children oriented search intent strategy.

**Readability.** Overall readability of retrieved results is also a relevant aspect for success of a search from a child perspective.Retrieving too complex documents can lead a child to frustration due to the inability to understand what has been retrieved. Therefore, we measured the average readability level of the top n results for each tested query. Given that "Children are known to systematically go through retrieved resources and rarely judge retrieved information sources" [r15] we computed readability scores base on top 3 retrieved documents. For measuring the readability we selected two commonly used metrics, Flesch [Ref] and Spache [Ref] (Does this need any further explanation?). Note that YouUnderstoodMe enables the selection of the target grade level wanted for the retrieved documents, for this experiment we selected grade level 7. As shown in Table XX, YouUnderstoodMe outperforms all other tested systems…, more precisely, documents retrieved by YouUnderstoodMe are in average at least X grades lower that all its other contenders … demonstrating that X and Y only filter results based on children-friendliness and not on the adequateness of those results…

**General experience.** The quality of a search engine is not only determined by its retrieved results. Hereby, we highlight the most noticeable issues arises during our manual experimental process. The presence of ads was recurrent among the tested search engines, usually well blended among the retrieved documents and more importantly, sometimes containing non adequate information for children, e.g., we were shown ads containing information about drug rehabilitation programs. Platform adaptability was also an issue for some of the tested systems, showing poor support for small screens such as the ones from phones or tablets, making it hard for a child to use the same system in all platforms. Finally, we would also like to highlight that none of the search engine oriented to children that have been tested provided support for local searches such as in school libraries or catalogs, making YouUnderstoodMe a unique system in this sense.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | YUM | Google | Kiddle | KidRex | Safe Search Kids | Gogooligans |
| **Unable to retrieve** |  |  |  |  |  |  |
| Average readability |  |  |  |  |  |  |
| Non adequate contents |  |  |  |  | Ads showing infor related to drug recovery and alcohol rehab |  |
| Mobile friendly? |  |  |  |  |  |  |
| Can search on local/school libraries? |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

(I do not like this last part, I do not know how to phrase it without repeating myself)

The ability to handle long natural language queries, the retrieval of documents adequate to children reading skills and the child friendly and adaptable environment, make YouUnderstoodMe and unique system in the area of search engines for children. Furthermore, the search engine is not everything YouUnderstoodMe has to offer, incorporating features such as student tracking that can enhance the learning experience. All this features, make searching as learning a continuous but pleasant (ameno?) for the education of children, allowing them to integrate in the information society at early stages, while also improving their reading skills at the same time.