

THE INFORMATION ARCHITECTURE OF THE SEARCH INTERFACE IN THE INTERNATIONAL CHILDREN'S DIGITAL LIBRARY

“I like to read books that make me happy or scared” (girl, age 8)”
“I can't just ask for the red books” (girl, age 7)”
(Druin 2005, p. 38)

Thanks to the widespread incorporation of information technology into the educational process and new technologies presence in every aspect of human life, children have become active members of information society and one of the target consumer groups of the Internet resources. One can find many Internet websites specifically dedicated to children. There are search engines such as Polish Mamuu (Mamuu, n.d.) or American KidRex (KidRex, n.d.), as well as educational portals like Yummy, which was created to satisfy young language learners' needs (Yummy, n.d.). The collections of children literature have also become available in digital libraries, as the one offered by Polona (Polona, n.d.). Additionally, the comprehensive research on children's usage of the Internet is being carried out. The analysis of children information searching skills and information seeking models has been conducted (i.a. Bilal, Bahir, 2007b; Bilal, Sarangthem, 2010; Gossen, Nürnberger, 2013; Hutchinson, Druin, Bederson, 2007; Spink, Danby, Allan, Butler, 2010) as well as the examination concerning children requirements for website interface design (Bilal, 2005; Bilal, Bahir 2007a; Hourcade, 2008) or usability (i.a. Martens, 2012).

The International Children's Digital Library [ICDL] was created in 2002 as a result of the cooperation between an interdisciplinary research team from the University of Maryland in the United States of America and the

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Internet Archive (Background & History, n.d.). Nowadays, the ICDL is managed by a non-profit ICDL Foundation (ICDL Foundation, n.d.).

The objective of this article is to analyse the information architecture of the ICDL search interface and visualise it in tables. The analysis of simple and advanced search interface, location and keyword search as well as browsing options of library resources has been conducted. A search interface was chosen thanks to its unique information architecture design, which is not present on other websites. The ICDL main page, information pages and digitalized book interfaces are not in scope of this article. The ICDL search interface was also compared with basic principles of the information architecture design presented by Louis Rosenfeld and Peter Morville.

The information architecture is defined as ‘the combination of the way in which the information is organized, labelled and searched’ (Rosenfeld, Morville, 2003, p. 20). The above definition shows the main aspects of the information architecture: schemes and structures of information organization, labelling, navigation and search systems. This article is focused on the analysis of book attributes scheme available in the digital library, which forms the ICDL main search structure. The description of search structure mentions several examples of interesting elements of graphic design interface, even though they do not constitute a part of the information architecture.

Skórka claims that information architecture design has an effect on the comfort and the ease of use of information resources. “Type and needs of user, the surrounding environment of information [...], type of information transmission, readability, purpose and graphic design” (Skórka, 2004) has an influence on the design of information architecture. The article also presents conditions which have had an influence on the ICDL search interface design structure, and one of the conditions is the way how children search for books in digital libraries. The introductory quotes to this article illustrate well children’s needs of book searching. Children like to find books with red covers, or books with stories causing specific emotions.

The search interface for the International Children’s Digital Library

The team of children between 7 and 11 years old worked on a prototype of the digital library as the College Park Kidsteam. The team of the ICDL started a cooperation with children from Chicago, La Ceiba in Honduras, Munich in Germany and Wellington in New Zealand (College Park Kidsteam, n.d.). Druin in her article „What Children Can Teach Us” described in detail how children were enrolled on the team, the research methods used during the work-like brainstorming method and the whole process of creation of the prototype of the digital library (Druin, 2005). Founders of the ICDL claimed that the children’s participation in designing the process

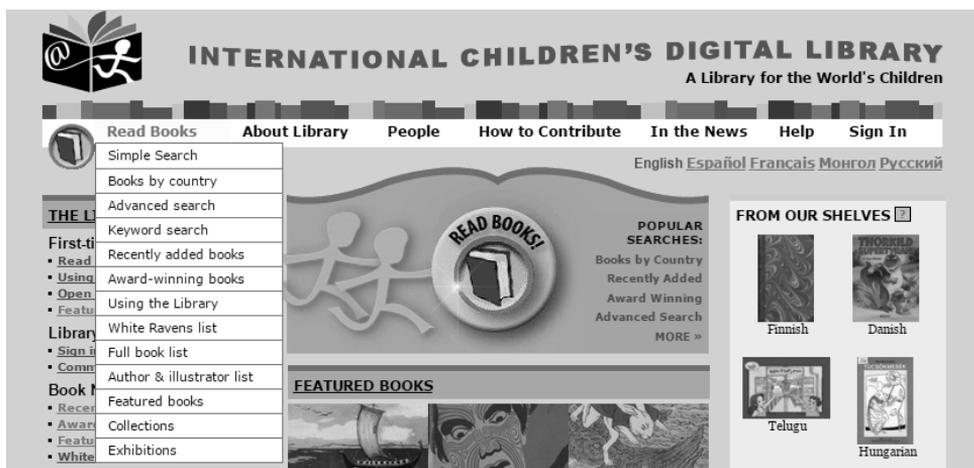
was absolutely essential for that project because the finished product was aimed at meeting young users' needs. Children sometimes have problems with spelling, typing on a computer keyboard, reading fluently, navigating through the websites, making search queries and clicking on small objects on a screen; they also use different book search criteria than the adults so they definitely need alternative interface designs (Hutchinson et al., 2005). The authors distinguished basic differences between children and adults, which could have an influence on the search information process. Among these the authors described differences in information processing such as speed and motor skills, differences in searching and browsing skills, and differences in book selection criteria (Hutchinson et al., 2005). It is stated that children choose books based on the color of the cover and the illustrations. Druin brought research results of a group of 154 children. The results show that children between the ages of 4 and 7 choose books based on the exterior design and children between 8 and 11 years old pay attention to books that evoke strong feelings (Druin, 2005, p. 30). Children's preferences of book searching were included in the interface design and information architecture in the ICDL.

Design and evaluation processes of the search interface in the ICDL were presented by Hutchinson, Bederson and Druin (Hutchinson, Bederson, Druin, 2006). The authors noticed that navigation in hierarchical structures of books' attributes during searching is complicated for children (Hutchinson et al., 2006, p. 106) so the hierarchical structure of books' attributes was replaced by a flat structure in a simple search interface.

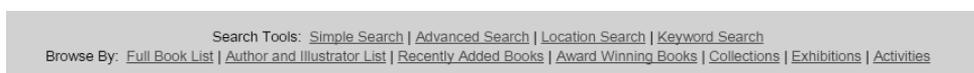
The interface of the main page of the ICDL can be translated into English, Spanish, French, Mongolian and Russian. The search interface is available in 20 language versions which include for example Polish, Arabic, Croatian, Korean, Hebrew, Thai and Persian. Translations are made by volunteers from all around the world in cooperation with the ICDL Foundation. The Polish translation definitely needs verification and proofreading because it includes some mistakes. An example of a mistake is the label of one of the categories of books – the label “plays” was translated into “zabawy”. The category “plays” includes books with theatre plays, however “zabawy” in Polish means fun children's games. Another example of an incorrect translation is the label “rozdziały książek” as translated to “Chapter books”. Chapter books are books divided into short chapters or stories, which contain usually more text than illustrations. The Polish translation “rozdziały książek” suggests that the user can search for a specific chapter of a book.

The ICDL offers four searching tools: a simple search, an advanced search, a location search (by geographic terms) and a keyword search. In addition, users of the ICDL have the possibility to browse digitalized books in six different ways. Searching tools and browsing options are

available from the main menu on the home page of the ICDL with the label „Read Books” (illustration 1) or from the tools list on the bottom of the main page (illustration 2).



II. 1. Home page of the ICDL. Source: (ICDL, n.d.)

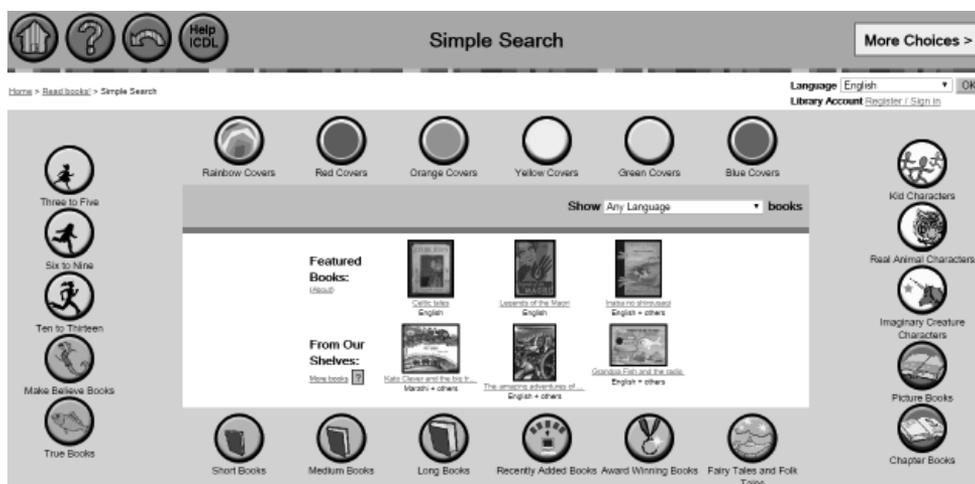


II. 2. List of search and browse tools on the bottom of the main page of ICDL. Source: (Simple Search ICDL, n.d.)

Simple search

The Simple search tool is accessible through an easy to use, colorful graphic interface (illustration 3), designed especially for young library users for unproblematic book searching. Designers of the ICDL interface added a graphical icon to every search option (besides language choice option) for children who are not yet fluent readers. At the beginning of the ICDL the working icons were square, but now finally the icons are round. Square icons were misleading for children because they were almost the same shape as book covers (Hutchinson et al., 2006, p. 108). A search box was placed under the illustrated simple search interface. The search box allows users to search through library resources with keywords in different languages (the search box is not visible at illustration 3). The Simple search interface is based on

a scheme of narrowing search results by book attributes rather than on common and traditional keyword searching. During the first three months since the ICDL was created approximately 90% of searching was realized by graphic interface and only 10% by keyword searching (Druin, 2005, p. 31).



II. 3. Simple search interface in the ICDL. Source: (Simple Search ICDL, n.d.)

Books available in the ICDL were catalogued by both formal and content attributes. The Simple search option allows searching for books by all attributes listed in tables 1, 2 and 3. A division of attributes into formal, content and other attributes is designed for this article. This division does not appear in the ICDL. There is no hierarchical structure of book attributes in a simple search interface. All the graphical search options that are possible to be chosen by the users are presented on one level in two screens. To pass to the second screen it is necessary to choose the option „More Choices >” showed on illustration 3. Among the search options by formal attributes there are search options by cover color, length of text, publication type, illustrations and the language of the text (table 1). The option of searching by the color of a cover is particularly worth mentioning here because it is not a common search option in information systems. Users can choose a book with one basic color cover such as yellow, red or blue, or pick a book with a colorful, rainbow cover. The book length is also important for young users so publications available in the ICDL were divided into short, medium and long books. Additionally, the user can find chapter books, series books, plays and popup books. Unfortunately, the popup books category did not include any book during this study. There is the possibility of searching for books in 59 differ-

Table 1. Analysis of search-information scheme by formal attributes of books in the ICDL

	Formal attributes (pol. cechy formalne)	Particular classification	
1.	Cover color (pol. kolor okładki)	- rainbow (pol. tęczyowy) - red (pol. czerwony) - orange (pol. pomarańczowy) - yellow (pol. żółty) - green (pol. zielony) - blue (pol. niebieski)	- purple (pol. fioletowy) - pink (pol. różowy) - black (pol. czarny) - white (pol. biały) - gray (pol. szary) - brown (pol. brązowy)
2.	Length of book (pol. objętość książki)	- short books (pol. książki krótkie) - medium books (pol. książki średniej długości)	- long books (pol. książki długie) - short story (pol. krótka historyjka)
3.	Publication type (pol. typ publikacji)	- series (pol. seria) - popup book (pol. książka rozkładanka)	- plays (pol. sztuka teatralna)
4.	Illustrations (pol. występowanie ilustracji)	- picture books (pol. książki obrazkowe) - comic books (pol. komiks)	- chapter books (pol. książki z rozdziałami (dominuje w nich tekst)
5.	Language of text (pol. język tekstu)	59 language versions, m. in.: - Amharic (pol. amharski) - Chinese (pol. chiński) - Finnish (pol. fiński) - Indonesian (pol. indonezyjski) - Catalan (pol. kataloński)	- Macedonian (pol. macedoński) - Samoan (pol. samoński) - Swahili (pol. suahili) - Tongan (pol. tongijski) - Urdu (pol. urdu)

Source: own study based on (Simple Search ICDL, n.d.)

ent languages. Some books are available both in their original language and translations. The ICDL offers 18 publications in Polish, 6 of them translated into Polish from other languages.

Search criteria based on content attributes includes searching by the type of characters in a book, the type of story, genre and main topic (table 2). Users can find books with kid characters, real animal characters and imaginary creature characters. Books are also divided into “make believe books” and “true books”. The ICDL simple search interface also offers the possibility of searching for books based on genre or topic, but the range of options is not exhaustive. Books are divided into action and adventure books, fantasy and science fiction, mythology and folk tales, fairy tales and folk tales as well as poems, songs and rhymes. There is also the possibility of choosing funny and humorous books or scary horror books.

Table 3 presents other search criteria which are not included in formal and content attributes' groups. Among them there are searching for recently added to the library books and award winning books. Books in the ICDL were reviewed by young readers. Based on their opinions books were divided into 3 categories: books which received three, four or five stars, as well as into the category of books which caused feelings of happiness or sadness. There is also the possibility of narrowing search results by age of eventual reader. The ICDL has three age categories of readers: 3-5, 6-9 and 10-13 years of age.

All of the presented search options including formal, content and other attributes can be chosen together to create complex search queries. A search query is displayed above a search results screen. The chosen icons are marked in the search interface. Options which are not possible to choose stop being active.

It has been decided to add the Polish translation of certain names of book attributes to the tables as a proposition for the future improvement of the Polish translation of the ICDL interface.

Table 2. Analysis of search-information scheme by content attributes of books in the ICDL

	Content attributes (pol. cechy związane z treścią)	Particular classification
1.	Characters (pol. bohaterowie książki)	- kid characters (pol. dzieci) - real animal characters (pol. prawdziwe zwierzęta) - imaginary creature characters (pol. postacie fantastyczne)
2.	World description (pol. sposób przedstawienia świata)	- make believe books (pol. historie fantastyczne (nierealistyczne)) - true books (pol. historie rzeczywiste (realistyczne))
3.	Topic / Genre (pol. tematyka / gatunek)	- action, adventure books (pol. książki przygodowe) - poems, songs, rhymes (pol. wiersze, piosenki, rymowanki) - mythology, folk tales (pol. mitologia, opowieści ludowe) - fantasy, science fiction (pol. fantastyka, science fiction) - fairy tales and folk tales (pol. baśnie i bajki ludowe) - funny, humorous books (pol. książki zabawne, humorystyczne) - scary, horror books (pol. książki przerażające, horrory)

Source: own study based on (Simple Search ICDL, n.d.)

Table 3. Analysis of search-information scheme by other attributes of books in the ICDL

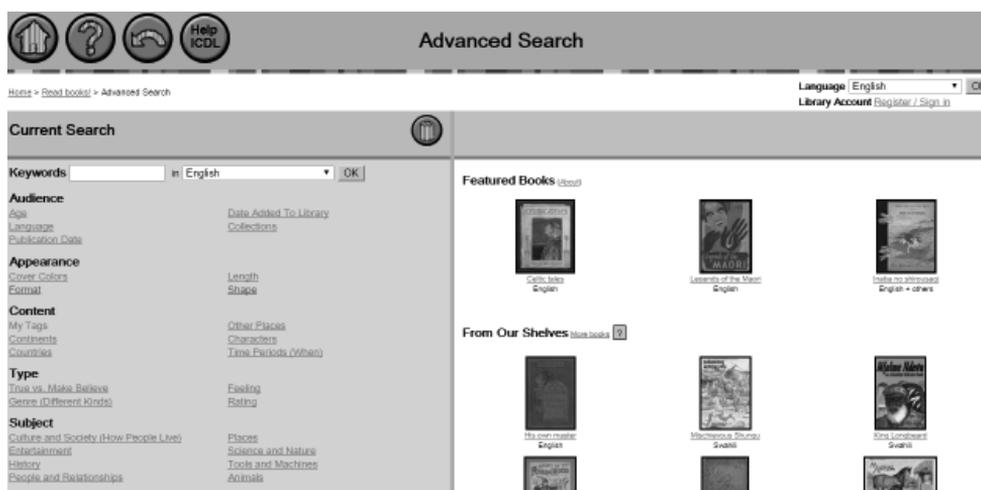
	Other attributes (pol. inne cechy)	Particular classification						
1.	Period of time when book was added to the library resources (pol. czas włączenia książki do zasobów biblioteki)	Recently added books (pol. ostatnio dodane książki)						
2.	Awards (pol. nagrody)	Award winning books (pol. książki nagrodzone)						
3.	Book evaluation (general and in the context of caused feelings) (pol. ocena książki (ogólna i w kontekście wywołanych emocji)	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">- three star rating (pol. 3 gwiazdki)</td> <td style="width: 50%; border: none;">- happy books (pol. książki wywołujące radość)</td> </tr> <tr> <td style="border: none;">- four star rating (pol. 4 gwiazdki)</td> <td style="border: none;">- sad books (pol. książki wywołujące smutek)</td> </tr> <tr> <td style="border: none;">- five star rating (pol. 5 gwiazdek)</td> <td style="border: none;"></td> </tr> </table>	- three star rating (pol. 3 gwiazdki)	- happy books (pol. książki wywołujące radość)	- four star rating (pol. 4 gwiazdki)	- sad books (pol. książki wywołujące smutek)	- five star rating (pol. 5 gwiazdek)	
- three star rating (pol. 3 gwiazdki)	- happy books (pol. książki wywołujące radość)							
- four star rating (pol. 4 gwiazdki)	- sad books (pol. książki wywołujące smutek)							
- five star rating (pol. 5 gwiazdek)								
4.	Age of a reader (pol. wiek odbiorcy)	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">- three to five (pol. 3-5 lat)</td> <td style="width: 50%; border: none;">- ten to thirteen (10-13 lat)</td> </tr> <tr> <td style="border: none;">- six to nine (pol. 6-9 lat)</td> <td style="border: none;"></td> </tr> </table>	- three to five (pol. 3-5 lat)	- ten to thirteen (10-13 lat)	- six to nine (pol. 6-9 lat)			
- three to five (pol. 3-5 lat)	- ten to thirteen (10-13 lat)							
- six to nine (pol. 6-9 lat)								

Source: own study based on (Simple Search ICDL, n.d.)

Advanced search

The advanced search interface includes most of the search options from the simple search interface with the suggestion that it is dedicated for older children or even adult users. Graphic search icons were removed and replaced by standard text labels (illustration 4). At the beginning of the functioning of ICDL, a similar hierarchic search system with text labels and icons was available on the simple search interface but the research showed that children could not use it effectively (Hutchinson et al., 2005). The search box and dropdown list of languages are placed at the top of the advanced search interface. In the middle of the screen the user can find options of narrowing search results by specific book attributes.

The advanced search options were divided into five main groups of book attributes: audience (pol. potencjalni odbiorcy), appearance (pol. wygląd zewnętrzny książki), content (pol. zawartość treściowa), type (pol. typ książki) and subject (pol. charakterystyka przedmiotowa). Each group of attributes includes a more detailed classification at the second and third level. A detailed list of all attributes is presented in table 4. The attributes which are not available in the simple search options are underlined in table 4. Special attention should be paid to the search option by



II. 4. Advanced search interface in the ICDL. Source: (Advanced Search ICDL, n.d.)

subject. Users can choose books about culture and society, entertainment, history, people and relationships, places, science and nature, tools and machines, as well as animals. It is important to note that the subject categories are not disjunctive; for example the category “science and nature” includes the subcategory of “animals”, although there already is a separate category of “animals”. Some subcategories from the categories of “content” and “subject” are also covered. What is more, labels of categories definitely reflect children’s interests instead of a standard library classification. It is easy to notice for example in the “content” category, a category where children can select a type of story, which plot is set “underwater” or in “imaginary places”.

Location search

The ICDL offers the possibility of searching by a certain index of geographical terms (Location Search ICDL, n.d.). To begin searching one must choose a continent from an animated planet Earth or from simple list of all the continents. After that, the search result interface is shown. It includes a presentation of books originating from the selected continent, books about the continent or books whose plot is set on that continent. There is also an option of narrowing search results to a specific country in the selected continent.

Keyword search

The search box which is used to input keywords is available both in the simple search interface and the advanced search interface. The ICDL interface also includes a separate option of a keyword search (Keyword Search ICDL, n.d.). The user can choose a language of a keyword from a dropdown

Table 4. Analysis of search-information scheme in advanced search options in the ICDL

Group of attributes (pol. grupy cech)	Subgroups (pol. podgrupy)	Particular classification (pol. szczegółowy podział wewnątrz podgrup)
I	II	III
Audiences (pol. publiczność, odbiorcy)	Age (pol. wiek)	- three to five (pol. 3-5 lat) - ten to thirteen (pol. 10-13 lat) - six to nine (pol. 6-9 lat)
	Language (pol. język)	59 language versions (pol. 59 wersji językowych)
	Publication date (pol. data publikacji)	- 1500s - 1950-1969 - 1600s - 1970s - 1700s - 1980s - 1800s - 1990s - 1900-1929 - 2000s - 1930-1949
	Date added to library (pol. data wpływu książki do biblioteki)	- particular months from November 2002 to January 2012 (pol. podział na miesiące (od listopada 2002 r. do stycznia 2012 r.))
	Collections (pol. kolekcje)	- Main Collection - Google Books Collection - Baldwin Collection - Jordan Collection - CLRC Collection - NCLC Collection
Appearance (pol. wygląd zewnętrzny)	Cover colors (pol. kolor okładki)	- rainbow (pol. tęczy) - purple (pol. fioletowy) - red (pol. czerwony) - pink (pol. różowy) - orange (pol. pomarańczowy) - black (pol. czarny) - yellow (pol. żółty) - white (pol. biały) - green (pol. zielony) - gray (pol. szary) - blue (pol. niebieski) - brown (pol. brązowy)
	Format (pol. forma)	- chapter books (pol. książki z rozdziałami) - plays (pol. sztuki teatralne) - short stories (pol. krótkie historyjki) - picture books (pol. książki z obrazkami) - series (pol. serie) - comic books (pol. komiksy)
	Length (pol. objętość)	- short books (pol. książki krótkie) - long books (pol. książki długie) - medium books (pol. książki średniej długości)
	Shape (pol. kształt)	- rectangle (pol. prostokątne) - irregular (pol. nieregularny kształt) - square (pol. kwadratowe) - tiny (pol. małe) - wide (pol. szerokie) - narrow (pol. wąskie)

I	II	III
Content (pol. zawartość)	My tags (pol. własne tagi)	Option available only for logged in users (pol. opcja dostępna tylko dla zalogowanych użytkowników)
	Continents pol. kontynenty)	- Africa (pol. Afryka) - Asia and Middle East (pol. Azja i Środkowy Wschód) - Oceania / Australia (pol. Oceania i Australia) - Europe (pol. Europa)
	Countries (pol. kraje)	65 countries (i.a. Argentina, Brazil, Denmark, Greece, India, Lithuania, Nepal, Palestine, Rwanda, Sri Lanka, Yugoslavia) (pol. 65 dostępnych krajów (m.in. Argentyna, Brazylia, Dania, Grecja, Indie, Litwa, Nepal, Palestyna, Rwanda, Sri Lanka i Jugosławia)
	Other places (pol. inne miejsca)	- Africa (pol. Afryka) - Europe (pol. Europa) - Asia and Middle East (pol. Azja i Środkowy Wschód) - Oceania / Australia (pol. Oceania i Australia) - North America and Central America (pol. Ameryka Północna i Centralna) - South America (pol. Ameryka Południowa)
	Characters (pol. postacie)	- adults (pol. dorośli) - kid characters (pol. dzieci)
	Time periods (when) (pol. czas akcji)	- prehistoryk (pol. prehistoria) - ancient history (pol. historia starożytna) - 500-1500
Type (pol. typ książki)	True vs Make Believe (pol. sposób przedstawienia świata)	- make believe books (pol. historie fantastyczne (nierealistyczne) - true books (pol. historie rzeczywiste (realistyczne)
	Genre (different kinds) (pol. gatunek)	- fairy tales and folk tales (pol. baśnie i bajki) - action / adventure (pol. książki przygodowe) - mystery (pol. kryminały) - funny / humorous (pol. książki humorystyczne) - Science Fiction / fantasy (pol. Science Fiction / fantastyka) - scary / horror (pol. horrory)
	Feelings (pol. uczucia)	- happy (pol. szczęście) - sad (pol. smutek)
	Rating (pol. ocena)	- three, four or five star rating (pol. 3, 4 lub 5 gwiazdek)
		- North America and Central America (pol. Ameryka Północna i Środkowa) - South America (pol. Ameryka Południowa)
	- oceans (pol. oceany) - imaginary places (pol. wymyślone miejsca) - school (pol. szkoła) - buildings (pol. budynki) - space (pol. przestrzeń kosmiczna) - underwater (pol. pod wodą)	
	- real animal characters (pol. prawdziwe postacie zwierzęce) - imaginary creature characters (pol. postacie fantastyczne)	
	- 1501-1900 - 1901+ - the future (pol. przyszłość)	
	- learning books (pol. podręczniki) - plays (pol. sztuki teatralne) - poems / songs / rymes (pol. wiersze, piosenki, rymowanki) - short story collections (pol. krótkie historyjki) - award winning books (pol. książki nagrodzone)	
	- scared (pol. przerażenie) - funny (pol. radość)	

I	II	III
Subject (pol. tematyka)	Culture and society (how people live) (pol. kultura i społeczeństwo (jak żyją ludzie))	<ul style="list-style-type: none"> - customs (pol. obyczaje, tradycje) - mythology / folk tales (pol. mitologia i baśnie ludowe) - religion and beliefs (pol. religia i wierzenia) - arts (pol. sztuka) - school and education (pol. szkoła i edukacja)
	Entertainment (pol. rozrywka)	<ul style="list-style-type: none"> - painting and sculpture (pol. malarstwo i rzeźba) - music (pol. muzyka) - dance (pol. taniec) - sports (pol. sport) - games (pol. gry)
	History (pol. historia)	<ul style="list-style-type: none"> - prehistory (pol. prehistoria) - ancient history (pol. historia starożytna) - 500-1500
	People and relationship (pol. ludzie i relacje międzyludzkie)	<ul style="list-style-type: none"> - children and growing up (pol. dzieci i dorastanie) - family (pol. rodzina)
	Places (pol. miejsca (geografia))	<ul style="list-style-type: none"> - lots of places (pol. kilka miejsc) - Africa (pol. Afryka) - Europe (pol. Europa) - Asia and Middle East (pol. Azja i Środkowy Wschód) - Oceania / Australia (pol. Oceania i Australia)
	Science and nature (pol. nauka i natura)	<ul style="list-style-type: none"> - animals (pol. zwierzęta) - plants (pol. rośliny) - fossils and rocks (pol. skamieniałości i skały) - land and water (pol. ląd i woda)
	Tools and machines (pol. narzędzia i maszyny)	<ul style="list-style-type: none"> - computers (pol. komputery) - land vehicles (pol. maszyny lądowe)
	Animals (pol. zwierzęta)	<ul style="list-style-type: none"> - lots of animals (pol. różne zwierzęta) - amphibians (pol. płazy) - birds (pol. ptaki) - bugs, worms, spiders (pol. robaki, owady, pająki)

Source: own study based on (Simple Search ICDL, n.d.)

list of languages. No indication of the existence of a keyword index or any other information about how the process of keyword adding is organised was found on the ICDL website.

Browsing of the ICDL resources

Besides complex search options, the ICDL offers their users six different ways to browse digitalized books. The first of these is browsing by a list of all the books available in the library. The full book list can be sorted by title, language, name of author or illustrator and publication date (Full Book List, n.d.). There is also the possibility of adjusting the way a book is presented by simply showing its cover to a list of bibliographic descriptions with a short summary of the plot. The second browsing option is access to the list of authors and book illustrators in alphabetical order divided by language (Author and Illustrator List, n.d.). The third way to browse books is by means of a list of books recently added to the library (Recently Added Books, n.d.). The library also includes a list of books which have received a range of different awards, for example awards for illustrations. Currently, the list has 425 award-winning books (Award Winning Books, n.d.). The sorting options of the award-winning books list are the same as the complete book list. The advanced search option lets users to narrow down search results to books derived from specific collections such as: the Main Collection, the Baldwin Collection, The Children's Literature Research Collections, the Google Books Collection, the Jordan Collection and The Northeast Children's Literature Collection (Collections, n.d.). There is also a "Special Collections" label on the collections list, but during the analysis it was out of order. Collections' names are usually related to their respective donor names. An especially interesting way of browsing is the access to six different collections of themes called "exhibitions" (Exhibitions, n.d.). Exhibitions are small collections of related books and syllabuses with tasks and activities for children. Among such exhibitions one can find; 'Celebrating Differences' (pol. Celebrowanie Różnic), 'Clearing the Hurdle!' (pol. Likwidacja przeszkód), 'Everyone Needs Water and Water Needs Everyone' (pol. Każdy Potrzebuje Wody, a Woda Potrzebuje Wszystkich, 'Forever Friendship' (pol. Wieczna Przyjaźń), 'Seasons of Change' (pol. Zmiany Pór Roku), 'Strong Women and Girls Help Make the World Go Round' (pol. Silne Kobiety i Dziewczynki Pomagają Ziemi się Kręcić). The mere titles of the exhibitions indicate that the books included in them introduce young users to important issues and problems, making them an educational asset.

Analysis of information architecture on search interface for ICDL

According to work of Morville and Rosenfeld information architecture is composed by four main systems: organization, labeling, navigation and search systems (Morville, Rosenfeld, 2006, p. 49). Organization systems include organization schemes and organization structures (Morville, Rosenfeld, 2006, p. 58). Information architecture of simple search inter-

face for ICDL, as well as advanced search interface, contains ambiguous organizations scheme. Resources in the ICDL were organized by topic (for example books about animals, science, nature or machines) and by audience (books are divided into users age groups). Organization by subject and audience is a part of a hybrid organization scheme. Simple search interface was designed as a flat organization structure, which can simplify the search process for young library users, whereas advanced search interface includes hierarchical, wide and two-levels structure. Organization structure in advanced search interface is not disjunctive. Another element of information architecture is labeling system. Morville and Rosenfeld claimed that labeling system should be representative, differentiate and definitely user-centric (Morville, Rosenfeld, 2006, p. 85). The user can find both iconic and textual labels in simple search interface for the ICDL. The authors said that iconic labels "can work well for less text-oriented audience, like children" (Morville, Rosenfeld, 2006, p. 97). Advanced search interface which is dedicated for older children and adults includes just textual labels. One of ways to design a good information architecture system is conducting a study with real users of a website (Morville, Rosenfeld, 2006, p. 106). Designers of the ICDL included children into designing process, and that joint effort of adult and children definitely had impact on usability and accessibility of the interface. Third important part of information architecture is navigation system. Only the contextual navigation system which is characteristic for only separate page was analysed in this study. The access path (breadcrumbs) is visible at every page, so users can easily recognize what is they location on a website. An extra menu bar at the bottom of simple and advanced search pages is a tool which could be used by user for an easy access to other search and browsing options. Search system in the ICDL includes simple and advanced search options and complex set of browsing options. The standard search box is placed in both simple and advanced search interface. The box lets users search by keywords. Wide possibilities of narrowing search results (for example choosing specific book cover color) are the stand-out qualities of search options of the ICDL. Morville and Rosenfeld underlined that well designed information architecture should integrate searching and browsing options (Morville, Rosenfeld, 2006, p. 188). The ICDL has been offering four search tools to its users; a simple search option, an advanced search option, a location search option and a keyword search option. Users can also browse library resources in six different ways. The variety of search and browsing options means that both adult and young users of the library can find options most suitable for them. Content, users and context have impact on every element of information architecture (Morville, Rosenfeld, 2006, p. 98), so the analysis of all these aspects is particularly important during the process of design. The user interface of the ICDL and the search information system

were designed based on the research undertaken with the participation of children. As a result both the interface and the system meet the needs of the user. As discussed, the Polish version of the user interface requires verification due to several translation mistakes. It would be welcomed if a new and amended translation was to take children's opinion into consideration. The information and search options structure contains a set of formal and content book attributes and does not resemble a standard library classification. The ICDL's search options reflect the needs of young users. The ICDL's information and search options structure could be successfully implemented into traditional libraries and reading rooms for children. It is suggested that further research should be conducted into the information children behaviors during the use of the ICDL.

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Paulina Motylińska

***The Information Architecture of the Search Interface
in the International Children's Digital Library***

Abstract

The International Children's Digital Library set up in 2002 as an effect of interdisciplinary research team cooperation with children. Information architecture and user interface structure of the ICDL reflect the youngest digital library users' needs. The article presents the results of a search-information scheme analysis and how a scheme is designed based on classification of the library books' collection. The scheme was visualized in tables. The ICDL offers its users four main search tools: simple search, advanced search, location search and keyword search. In addition, it is possible to browse books by six different ways: by Full Book List, Author and Illustrator List, Recently Added Books list, Award Winning Books list, Collections and by name of Exhibitions.

Key words: International Children's Digital Library, ICDL, information architecture, user interface, information searching, children, digital library

Paulina Motylińska

***Architektura informacji w interfejsie wyszukiwawczym
do International Children's Digital Library***

Summary

International Children's Digital Library powstała w 2002 r. jako efekt współpracy interdyscyplinarnego zespołu badawczego i dzieci. Architektura informacyjna i budowa interfejsu użytkownika do ICDL odzwierciedlają potrzeby najmłodszych użytkowników biblioteki cyfrowej. W artykule zanalizowano schemat informacyjno-wyszukiwawczy ICDL oparty na podziale atrybutów zbiorów biblioteki oraz opracowano jego wizualizację w postaci tabel. Strukturę interfejsu wyszukiwawczego porównano z zasadami projektowania

architektury informacji sformułowanymi przez Rosenfelda i Morville'a. Pokazano, że ICDL oferuje swoim użytkownikom cztery główne narzędzia wyszukiwawcze: opcję wyszukiwania prostego, opcję wyszukiwania zaawansowanego, wyszukiwanie przez nazwę geograficzną oraz wyszukiwanie za pomocą słów kluczowych. Pozwalają one na przeglądanie dostępnych książek na sześć różnych sposobów: według pełnej listy książek, listy autorów i ilustratorów, listy ostatnio dodanych do biblioteki książek, listy książek, które otrzymały nagrody, kolekcji i wystaw tematycznych.

Słowa kluczowe: International Children's Digital Library, ICDL, architektura informacji, interfejs wyszukiwawczy, dzieci, biblioteka cyfrowa

