Usability of XML Query Languages
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Introduction

XML Query Languages have a large overlap in functionality, but differ in many syntactical aspects. These differences and the assumed results of these differences on ease of use and on learnability are fiercely debated in the XML community.

Problem

Research Questions:
- What is the usability of most important XML Query Language Candidates (XQuery, XSLT, SQL/XML)?
- What are the reasons for differences in usability between these languages, if any? Influences on performance mentioned in literature: user experience, XML document type, syntactical aspects

Usability:
- Effectiveness, i.e. correctness
- Efficiency, i.e. time / number of actions (see model)
- Satisfaction

Query Solving Process

Method

Exploring the model
- Think aloud experiment with 6 subjects, 5 query tasks
- Global check for the correctness of our assumptions
- Detect possible unknown issues (!!!)

Validate results
- 74 subjects, 5 query tasks
- Both overall effectiveness and efficiency with query languages as well as focus on specific language aspects
- Test hypotheses with two types of tasks: natural queries and directed queries

Explain results
- 33 subjects and 64 query tasks
- Influence of query language aspects, user experience, and XML document type are tested
- A large set of different tasks that are not further manipulated are included

Results

1. No clear indications for the influence of XML document type on performance
2. User performance with XQuery is higher than with XSLT
3. User satisfaction of XQuery is higher than XSLT
4. Reasons for performance and satisfaction differences:
   1. XSLT is more verbose than XQuery, e.g. more characters are used for similar language expressions
   2. XQuery has a better, more explicit selection mechanism than XSLT
5. User performance is also strongly influenced by user programming experience and task complexity