Educators of the Information Society: Information Literacy Instruction in Canadian Informational Cities

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ABSTRACT

As information literacy is a key competence of the information society, information literacy instruction in public as well as academic libraries is crucial. Today, librarians do not only act as providers of information but also as educators of the information society's citizens. The rapid development of information and communications technologies is constantly changing the way we interact with information, making it difficult to keep up to date with instructional trends. This study aims to assess the perceived quality of information literacy instruction in libraries of Canada's informational cities: Montreal, Toronto and Vancouver. Therefore, librarians were interviewed by means of a questionnaire inspired by the SERVQUAL diagnostic tool. The questionnaire comprises of two parts: The first part consists of questions regarding information literacy instruction, in the second part the focus is on the seven competence areas of information literacy. Based on the difference between the librarians' "Expectation" and "Experience", gap scores for all questionnaire items were calculated and are now being presented and discussed.

Keywords: information literacy, library instruction, Canada, Toronto, Montreal, Vancouver, informational city.

1. INTRODUCTION

The most significant aspect of the information society is not only the availability and rapid development of information and communications technologies (ICTs) but the people utilizing those and the movement of information between them. It is the information literate individual who creates and uses information to convey knowledge, who stimulates innovation [1][2]. In a modern society, knowledge is essential for progress and economic success [3]. But organisational knowledge cannot exist without the knowledge of individuals who form ideas, who "share and develop knowledge" [4]. Creation of knowledge in turn is only possible through the information flow between individuals, communities and organisations. Since information influences every economic sector, affects every individual in all stages of life [1], there is no doubt that information literacy is one of the key competencies of the information society [5]. Information literacy is not only defined as an essential skill set for every individual living in the information society, but also as a tool of empowerment and a catalyst for equality. But how does one acquire information literacy skills?

Today, libraries all over the world contribute to promoting information literacy among the people. Librarians take the role of the "experienced, focused guides" supporting individuals at becoming "a more intelligent consumer in this supermarket of information" [6], acting as educators of the information society. This has not always been an objective of the library: "Librarians have a long tradition of offering bibliographic instruction but more recently have expanded their instructional repertoire to include more generalizable information literacy skills" [7]. As the information and knowledge-based economy evolves and technology advances, librarians need to address the changes laid out before them, reposition themselves as well as their institutions [8], and transition from "transmitter[s] of knowledge to (…) facilitator[s] of learning" [9]. It is now our goal to investigate how far and well this transition has progressed, by taking a closer look at information literacy instruction in libraries. Within the scope of the project "Informational World Cities" of Heinrich-Heine Universität in Düsseldorf, Germany, 31 informational world cities have been identified and investigated. Among other research, Mainka et al. [10] evaluated core services of public libraries in all of the 31 informational world cities, resulting in a cumulative ranking. Of particular note are the very high rankings of Canada's public libraries. In Canada, there are three cities currently being acknowledged as informational world cities by Mainka et al.: Montreal, Toronto and Vancouver. As "prototypical cities of the knowledge society" [11] informational cities pose a particularly interesting object of investigation for our research.

	No.	Topic
Part I: Information Literacy Instruction	1	Qualification and continuing training of library staff.
	2	Assessment of instruction outcomes.
	3	Focus of instruction: Beginners
	4	Focus of instruction: Advanced Learners
	5	Importance of technical-spatial infrastructure.
	6	Instruction method: Face-to-face courses
	7	Instruction method: eLearning
	8	Instruction method: Problem-oriented support
	9	Contents of instruction: Specialised databases
	10	Contents of instruction: Online safety
	11	Contents of instruction: Information technology
Part II: Information Literacy Skills	12	Realising and phrasing an information demand.
	13	Locating and exploiting information that is needed.
	14	Critically evaluating information and its sources.
	15	Using information efficiently and constructively.
	16	Managing and organising information.
	17	Generating, quoting and presenting information.
	18	Considering the rights and obligations regarding the use and distribution of information.

Table 1: Questionnaire Content and Segmentation

Our approach is to interview librarians personally, to gain insight into their current practices and challenges of information literacy instruction. The general questions of this survey are: What do librarians of Canadian informational cities expect regarding information literacy instruction? Are their expectations being fulfilled at their own institutions? And if not, what are the reasons? Our priority is to get an overview of the instructional trends in libraries of Canadian informational cities and to identify the greatest deficits in instructional education.

In this article, the methods of this survey and the used survey instrument will be described. After presentation of the quantitative results, findings and limitations will be discussed. In the conclusion we will summarise the most important points.

2. METHODS

We approached academic and public libraries in Montreal, Toronto and Vancouver to find participants for our study focused on information literacy instruction and programs in libraries of informational cities of Canada. We directed our enquiry to individuals in charge of library programs and information literacy instruction at those libraries to ensure that interviewees had the background and insight necessary for our research. The interviews were conducted in March and April 2014. We visited both academic (n=7) and public (n=6) facilities personally, to conduct the interviews and initiate discussions on their current situation and work regarding information literacy instruction The interview procedure was mainly defined by the questionnaire we created beforehand. The questionnaire was added to the interviews to generate quantitative data, enabling a data-based evaluation. Its structure was derived from the SERVQUAL diagnostic tool [12]. We wanted to apply the SERVQUAL tool to the library setting and used a modified version as an instrument to measure the quality of information literacy instruction based on what librarians themselves value as important. The objective of this survey was a juxtaposition of the participant's "Expectation" and "Perception" (here: "Experience"), as presented in the concept of Parasuraman et al. – inspired by their work, we introduced a questionnaire with 18 pairs of questions specifically composed for our interest. Items are numbered from

1 to 18 and always consist of two questions – one for the "Expectation" column (left side) and one for the "Experience" column (right side) of the questionnaire. All questions are formulated in the same manner: "How important do you consider _____, in general?" and "What value does _____ have at your library?" are the templates for all items. All items were to be rated by a seven-point Likert-type scale [13] ranging from "Not at all important" (1) to "Extremely important" (7) [14]. Participants were allowed to rate their own expectation and experience, according to these importance levels, by marking the corresponding number below each question.

The questionnaire comprises of two parts: Part I (items 1-11) consists of questions regarding information literacy instruction, in Part II (items 12-18) the seven competence areas of information literacy are being thematised directly (see Table 1). The first part of the questionnaire includes 11 items, focusing on seven different topics connected to library instruction. More precisely, it covers the following topics: qualification and continuing training of library staff (item 1), assessment of instruction outcomes (item 2), focus of instruction (i.e. beginners or advanced learners, items 3 and 4), contents of instruction (i.e. databases, information technology, online safety, items 9-11), importance of technical-spatial infrastructure (item 5) and methods of instruction for information literacy (items 6-8). The second part of the questionnaire is based on Beutelspacher's [15] seven competence areas of information literacy. Beutelspacher evaluated contemporary definitions, models and standards of information literacy to develop a generic list of 62 indicators. The aim of this work was to define a set of abilities individuals should have to assert themselves in the knowledge society. The information literacy indicators are partitioned into seven competence areas which we furthermore centralised into seven ability descriptions (Table 1). Question pairs 12-18 of the questionnaire match these descriptions. This way, librarians are to rate the importance and also their experience of instructing each information literacy competence area separately. This part was designed to determine whether library instruction in libraries of Canada emphasises different aspects of information literacy and if certain competences are deemed more important than others in general. High expectation scores reflect high
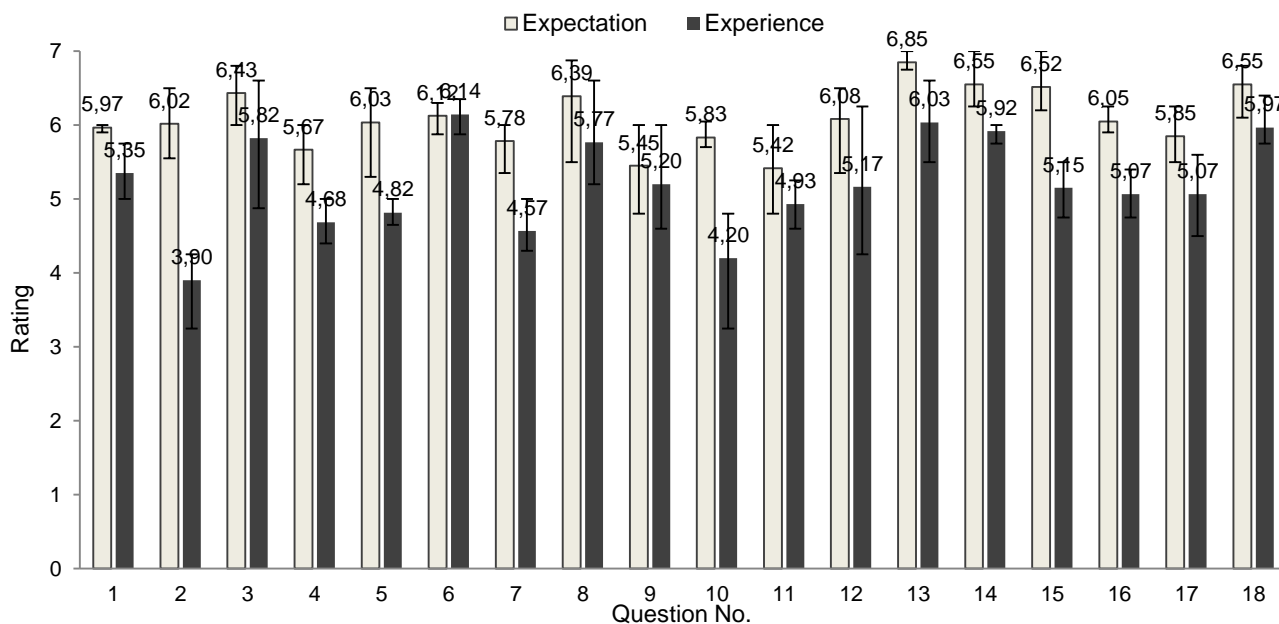

Figure 1: Overall Expectation and Experience Results

expectations of the participants, while a corresponding low expectation score will result in an equally high gap score, indicating deficits in that respective area. Based on the difference between *Expectation score* (E_1) and *Experience score* (E_2), the *gap* score (G) could be calculated ($G = E_2 - E_1$). The gap score G describes the discrepancy between expectation and experience of the current situation as it is perceived by librarians. We use the gap scores to identify deficits in library instruction. Cronbach's alpha [16] was calculated in order to test the internal consistency of the survey instrument. The absolute and standard deviations as well as the variance between data set and gap score mean will give insight on how far the item's ratings are spread out, which is an indicator for the divergence of opinions. Significance of the recorded gaps and of the difference between academic and public participants was verified using the t-test [17]. Results were rounded to two decimal places.

3. RESULTS

The Cronbach's alpha coefficient was calculated to test internal consistency of the questionnaire as proposed by Lee J. Cronbach [16]. Alpha (α) for all 18 items of the survey instrument was $\alpha = 0.73$, which is an "acceptable" value for the reliability coefficient [18].

Figure 1 shows the overall expectation and experience scores for all surveyed libraries in Canada. Expectation scores ranged from 5.42 (question 11) to 6.85 (question 13) with an average expectation score of 6.09. In comparison, experience scores ranged from 3.9 (question 2) to 6.14 (question 6) with an average experience score of 5.21, resulting in an average difference of 0.88 (absolute value of the average gap score). The absolute deviation of ratings per item is shown in Figure 1 as well. It ranges from 0.1 to 1.38 for expectation values and from 0.25 to 2.0 for experience values on the municipal level. The overall gap scores for all surveyed libraries are shown in Figure 2. Gap scores ranged from 0.02 (question 6) to -2.12 (question 2) with an average gap score of -0.88. The top three deficits recorded are the assessment of instruction outcomes as examined by question 2, online safety awareness ($G_{10} = -1.63$; question 10) and promotion of the ability to use information efficiently and constructively
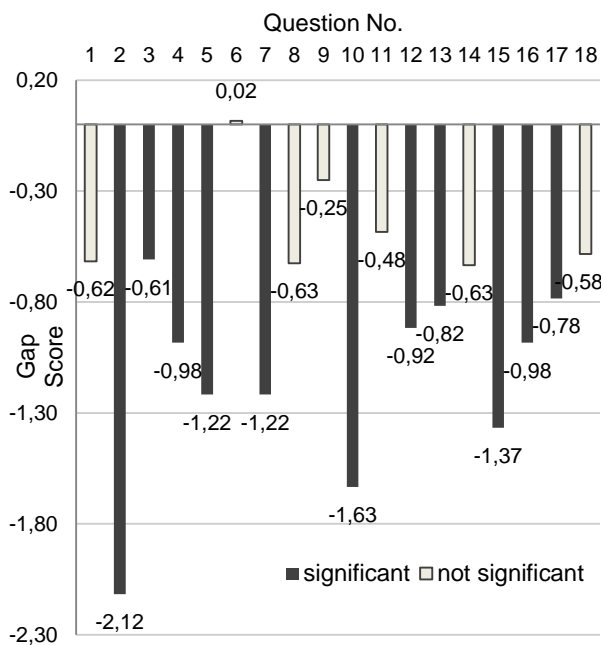
($G_{15} = -1.37$; question 15). Significance of gap scores could be verified in 11 of 18 cases (see Figure 2 as well) – but not for questions 1, 6, 8, 9, 11, 14 and 18. Figure 3 shows the cumulative gap scores for libraries in Montreal. Gap scores ranged from 0.02 (question 6) to -2.12 (question 2) with an average gap score of -0.68. The cumulative gap scores for libraries in Toronto are shown in Figure 4. Here, gap scores ranged from 0 (questions 6 and 9) to -3.25 (question 2) with an average gap score of -1.21. Figure 5 shows the cumulative gap scores for libraries in Vancouver. Gap scores ranged from 0.15 (question 6) to -1.65 (question 5) with an average gap score of -0.74.

4. DISCUSSION

The results of this study indicated, that the majority of librarians surveyed have high expectations of the library services and information literacy instructions which were discussed throughout this survey. Average expectation scores for all topics covered in the SERVQUAL questionnaire were higher than 5, meaning they were considered above "moderately important". Furthermore, eleven out of 18 items were considered to be "very important" or more. Expectations were not always fulfilled, resulting in the origination of gaps. Negative gap scores, indicating deficits ranging from moderate to large were calculated in units where significance could be verified (see Figure 2). Out of these units, ten are to be rated as moderate deficits ($Q_3 - Q_5$, Q_7, Q_{10}, Q_{12}, Q_{13}, $Q_{15} - Q_{17}$) and one as a large deficit (Q_2). Therefore we can assume that library instruction of the institutions surveyed, in its current state, still leaves room for improvement.

According to our results, librarians were concerned about the assessment of instruction outcomes the most. Although the value of information gained through assessing learning outcomes is being understood, most libraries were still lacking the necessary methods or resources to implement this procedure. Research findings of other parties confirm this concern. Julien and Boon [19] found that "little evaluation of instructional outcomes is apparent", in Canadian academic libraries. In their study, librarians remarked having the impression that instruction evaluation was ineffective or not useful enough. In a more recent
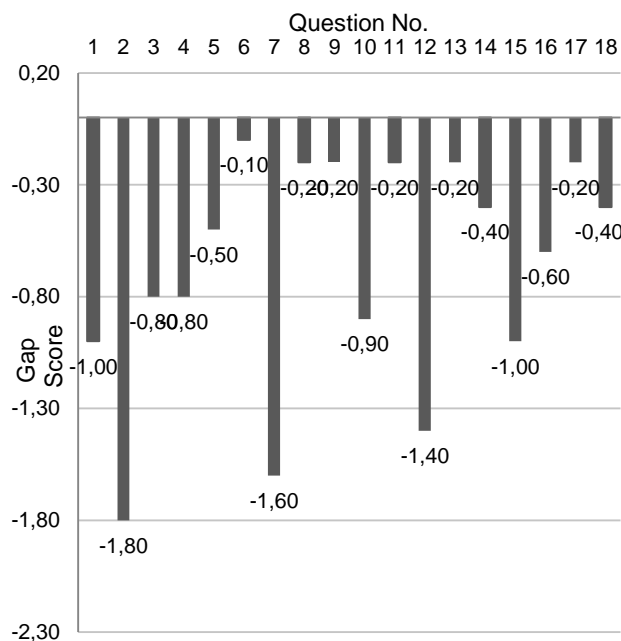

Figure 2: Overall Gap Scores for Canada
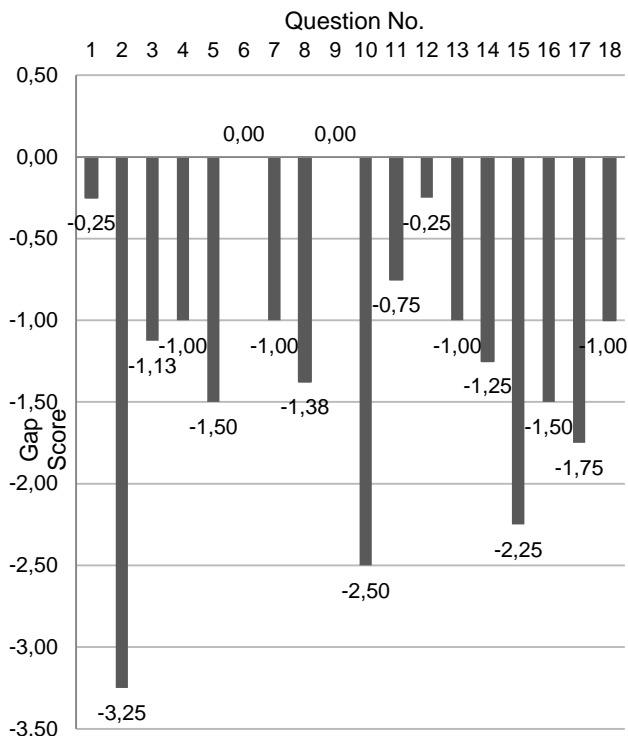

Figure 3: Montreal Gap Scores

Figure 4: Toronto Gap Scores

study, they noted that "evaluation or quantitative measures of institutionally significant outcomes of information literacy instruction" were not available at any institution they visited [20]. Hovde [21] reasons that, „unlike education or psychology, the library profession lacks standardized test instruments and the associated body of accrued statistical data for comparative analysis." She further explains that it is difficult to create these test instruments, due to the fast-paced changes library work is remarkably influenced by:

> Library instruction is also subject to a more accelerated evolution of purpose and design than equivalent instruction in the standard academic disciplines. Where change is speedy and reactive (responding, for example, to the acquisition of new computer platforms or products), it is more difficult to build in evaluation measures (…). [21]

Not only change but also the „hybrid nature" and the „multi-faceted" content of library instruction [21] make it considerably more difficult for librarians to properly assess instruction outcomes. Apart from the fact, that the assessment of instruction outcomes is difficult, it is clearly an important issue that has to be taken care of in the near future:

> A professional approach to instruction, as to any activity, requires that the allocation of resources to that activity is justified by evaluating its outcomes. Evaluation may be qualitative and/or quantitative, but must be done in a systematic, reliable, and valid manner, to ensure that intentions are matched by results. Specific advice on evaluation abounds; it is incumbent on instructors to apply it. [19]

Another gap resulted from the question about online safety and security instruction (question 10). While some librarians were planning to implement "e-safety" elements in the future, many participants did not consider this as a task for libraries at all. Indeed, information on e-safety instruction in libraries is scarce. But as new technologies are being developed and "used increasingly in teaching and learning contexts", e-safety becomes

more and more important [22]. The list of possible risks and dangers is endless: "commercial exploitation", cyber-bullying, "e xposure to age-inappropriate material", "exposure to inaccurate or misleading information", "exposure to illegal material", "disclosure of personal information", "physical danger" and "[computer] viruses" are just a few of them [23] [24] [25]. The majority of studies concerning online safety and security are focused on the protection of children and students – but awareness should be raised among members of every target group. Age does not protect from internet scams, spam mails or accidental copyright violation. We hereby address the need for online safety and security education in libraries of the information society and hope to find more efforts towards this issue in the coming years.

We questioned librarians about their institution's technical-spatial infrastructure. The facilities provided were experienced as not sufficient, resulting in an average gap score of -1.22. Also, a national survey in 2005 found, that only a "minority of respondents" from public libraries had "physical space dedicated to [information literacy] training" available in their institutions [26]. Although the quantity of institutions with this problem seems to have declined [27], it is nevertheless an issue, as indicated by the results of this survey. Not only space for instruction, but also for recreational activities, social gatherings and other purposes is necessary in a modern library [28].

Library instruction is heading into the direction of e-learning and new technologies as we speak. While librarians were confident in their face-to-face courses and workshops, they experienced a gap regarding e-learning services. Most institutions were still working at establishing online courses and tutorials, videos and other e-learning elements at their library. E-learning was recognised as an important instructional tool of the future. Apart from the "cost-effectiveness" of new media and technologies, Reeves [29] praised their "many other advantages in terms of repeatability, transportability, and increased equity of access." Julien and Genuis [30] also found, that "the focus, tools and methods of teaching [in libraries]" are being influenced by "the impact of changing technology". One of their participants said:

> The increased use of technology has made the work an ongoing learning experience, challenging and fun. I'm always learning new technology. Wonderful but sometimes exhausting. [30]
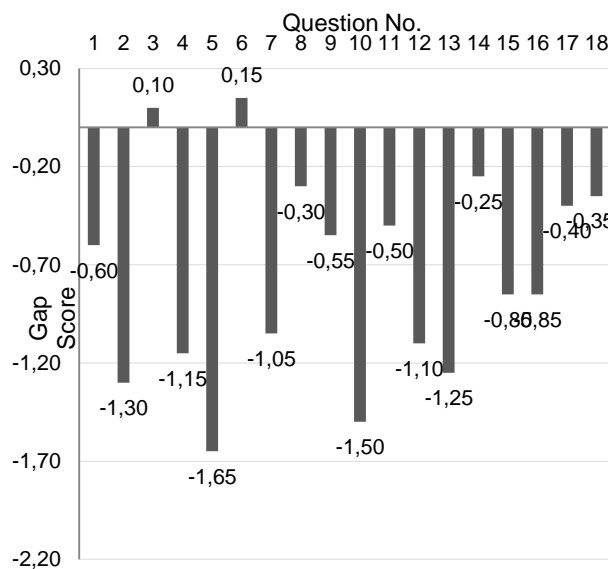

Figure 1: Vancouver Gap Scores

Librarians are not only blessed by the advantages of new technologies, but also feel challenged by the high expectations and "the sheer size of the information universe and its complexity" [30]. In this context, it is necessary to, again, point out the important aspect of life-long learning for librarians. New technologies are placing "increased demands on teachers' own information literacy skills, their ability to facilitate learning, their capacity to teach critical thinking and inquiry, their determination to empower students to be responsible for their own learning, and their own technological skills" [31]. The readiness to embrace technological change and to continually learn, will be of great benefit for the modern librarian – for information literacy instruction online and offline, as well as the assistance at the point of need. Assistance at the point of need was still considered to be a reliable and valued service of the library. Some participants preferred to teach information literacy at those occasions, some were convinced that library users just want a quick answer. In the end, many details – be it the decision between teaching the way and just returning the solution, or tackling the never-ending task of continuous training – often depend on the individual librarian.

At the beginning of this study, the question aroused as to whether information literacy instruction should focus on beginners or rather on advanced learners. The results of the questionnaire indicate that beginners are the target group deemed to be slightly more important. According to Hanke et al. [32] programs are not to be restricted to just one target group. Instruction should be equally available for beginners and advanced learners. Against the background of funding issues, budget cuts and the lack of resources, it is understandable that libraries focus on beginner instruction rather than advanced courses – yet we hope that the gap scores for both target groups will decrease with the growing awareness for the importance of information literacy instruction. Participants from both public and academic libraries understood the value of the information literacy competence areas. The highest cumulative gap score for this part of the questionnaire was recorded for the promotion of an efficient and constructive use of information. Librarians put their highest expectations into the promotion of the ability to locate and exploit needed information. For the Montreal libraries, the largest deficit was recognised in the promotion of the ability to realise and phrase an information demand while locating and exploiting needed information appeared to be the problem for libraries in Vancouver.

5. LIMITATIONS

The survey instrument was rated to be of acceptable consistency ($\alpha = 0.73$), not all items yielded reliable and, above all, significant results (see Figure 2) – but significance might improve with an increasing number of participants. Instrument items have been defined in wide terms, to get an outline of the librarian's work and opinions. This holds the advantage that a lot of information could be collected through each item. The disadvantage is that ratings are clearly not as precise as possible for each item respectively. In our quantitative results, we exclusively rely on the participants' assessment of the optimal and current situation in Canadian libraries. Experience and expectation ratings were not determined by substantive evidence but on the basis of the interviewees' belief. There is no valid evidence for these insufficiencies brought to light in the form of gap scores. Yet we place a great degree of trust in the opinion of the information professionals we spoke to and feel confirmed in that due to the occurrence of agreement between most interview participants. As we preferred to conduct interviews personally, we were able to

answer questions and clarify any ambiguities directly. However, the validity of results rendered by Likert-type scales can be compromised due to social desirability bias [33]. The absolute deviations on the institutional level were high. This originates from the fact that public and academic libraries had different priorities regarding information literacy instruction. However, on the municipal level, deviations decrease considerably.

6. CONCLUSION

Educating citizens of the information society has become a very important duty of public and academic libraries. By providing access to information and offering instruction, librarians can support us in becoming empowered, successful, information literate individuals despite the rapid change of technology around us. To get a better understanding of the current instruction practices in libraries we interviewed librarians of 13 institutions in the three Canadian informational cities: Montreal, Toronto and Vancouver. We investigated different aspects regarding information literacy instruction and the value of the seven information literacy competence areas (Table 1). Inspired by the SERVQUAL diagnostic tool [12], a questionnaire consisting of 18 question pairs was used. In the interviews, participants rated their own expectation and experience according to seven importance levels allowing us to calculate a gap score for each topic respectively. Librarians had high expectations for information literacy instruction in their institutions which were not always met. The largest deficits, indicated by high gap scores, were found in the assessment of instruction outcomes, online safety instruction and the promotion of the ability to use information efficiently and constructively. Gap score ranges differed in the three informational cities as well as where librarians saw the largest deficits. We tried to get an overview of the issues concerning library instruction in public and academic libraries, but the topics mentioned here have not been examined in detail yet. The next steps are to get a deeper insight into the matters relevant to improve the situation, and to find sustainable solutions for the problems stated. We need to further raise awareness of the challenges librarians are confronted with, in their mission to provide instruction whereas limited resources and further budget cuts complicate the process significantly. The importance and beneficial impact of information literacy instruction for the information society has to be recognised.

7. ACKNOWLEDGMENTS

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