Understanding the Field of Critical Information Literacy: A Descriptive Analysis of Scientific Articles

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Abstract. The purpose of this paper is to contribute to the understanding of critical perspectives in information literacy whose importance has been recognized by a number of authors in the field. This paper is a preliminary report on a research project that aims to describe the field of critical information literacy (CIL) based on a comprehensive descriptive statistical analysis of the qualities of CIL literature. The analysis was undertaken on a sample of 102 full-text scientific and professional articles. The sample was created based on a preliminary analysis of Google Scholar, SCOPUS and WOS databases. The authors present findings on the established authorship, publication and research patterns in the field.

Keywords: Critical information literacy · Qualitative · Quantitative · Literature analysis · Scientific articles · Preliminary report

1 Introduction

The concept of critical information literacy (CIL) achieved a status of a distinctive theoretical contribution to the body of knowledge that deals with information literacy (IL). Many authors [1–5], as this paper will also show, have pointed out the importance of critical perspectives in IL. CIL insights propose a major reorientation in the conceptual basis of IL. CIL emphasizes the importance of relational, reflective and transformative approaches to IL education [1, 4, 5]. CIL has mainly been understood as an external conceptual contribution of critical theory and pedagogy to IL so herein we research it as a subfield of IL. Its importance is seen if we consider that the critiques offered partly stimulated the revision of the influential American College and Research Library Association's (ACRL) *Information literacy competency standards for higher education.* The calls for the integration of critical perspectives and for remodeling of IL programs are many, but assessment of their reach is still unavailable and the true influence and nature of this rising subfield has not been thoroughly researched. This paper presents findings of a statistical descriptive literature analysis that attempts to reveal the established author, publication and research patterns in the CIL subfield. This

study is a part of a larger research project and presents an analysis of core scientific and professional articles in the subfield.

In this study we wish to see how the core of the CIL subfield has developed until today to see the consistency of publishing. The activity in the field explains how the interest in the field has developed and whether a maintained interest was established [6].

Authorship patterns are of particular interest since they will show how large the field really is, and which countries and institutions contribute the most to it. The structure of the field may also be revealed by looking at the types of work published. Certain fields are heavily research based, others, like information literacy, originated as a need of professional communities. The kind of research undertaken in this study can reveal whether the articles about CIL pertain predominantly to libraries as an organizational setting.

As the field of IL, as an educational concept, depends on the practical application of its theories, CIL stands before a task to prove its applicability. Critical approaches to IL could too quickly be dismissed as inapplicable, so it is one of our research goals to show how many contributions concretely offer methodical solutions.

Finally, descriptive insights into how the problems that CIL elicited have been approached and studied present a basis for a systematic evaluation of the field and the advances it proposes. In addition, it could also reveal the gaps and opportunities for its further development.

2   Methodology

A comprehensive analysis intended in our research project is being achieved by combining the quantitative and qualitative methods for literature assessment. More precisely, this means that we combine bibliometric analyses on one hand, and deductive content analyses on the other. "By considering all the documents published in an area of research it is possible to determine how they are distributed according to different variables" [6]. Our research project began in March 2015 when we created the sample. Sample creation was the main way of ensuring a comprehensive account of the literature qualities. The bibliographic data was retrieved from three different databases, namely, Google Scholar (GS), Scopus[1] and WOS (Web of Science). The data was retrieved using the same search input for all textual fields in all three databases with a non-defined temporal span:

"critical information literacy" OR "critical library instruction".

In the scope of the research project, we are interested in contributions that mention similar concepts in combination like "critical pedagogy" and "critical literacy", but for this study we limited the scope, because this allowed us to ensure that all retrieved contributions referred to and recognized the conceptual contribution of critical theory and pedagogy to IL. As a contribution of this kind we recognize critical information

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[1] The basis for analysis was GS data because it encompassed all WOS and the majority of Scopus search entries. Added entries from Scopus make up for 4.6 % of the analyzed search entries.

literacy and critical library instruction as two phrases referring to a closely related theoretical standpoint.

We retrieved 805 search result entries which had to be treated to remove duplicate entries, bad links and non-article[2] contributions since using GS as a basis for literature analysis comes with certain limitations [7]. The GS data was retrieved using the "Harzing's Publish or Perish" [7] software which connects with the GS database and presents the data in an approachable and exportable form.

Based on a preliminary analysis of the retrieved data we employed a complex scheme of exclusion and inclusion criteria in three phases. In the first phase we excluded 66.34 % of duplicates, non-article contribution types, retrieved search entries that did not mention the researched concepts, contributions that mentioned the concepts only in their references as well as those where the phrases appear in citing articles and those where the word "critical" was used to emphasize importance and did not refer to a specific type of judgment or analysis. In the second phase we excluded 11.55 % of non-English articles[3] and those that we could not access. In the third phase we arrived at a number of 178 (22.11 %) scientific and professional articles from which we excluded those mentioning the phrases with the frequency less than three to limit the analysis to core CIL articles. Articles were automatically included if they mention the researched concepts in their titles, abstracts or keywords or if the researched phrases frequency was equal or greater than three. To those articles we added 22 relevant book chapters[4] that were included in the retrieved database data arriving at a final number of 102 (12.67 %) analyzed retrieved searched entries. The measure of splitting these articles in two sets (those with frequency less than three and frequency equal or greater than three 3) was introduced because we recognized a qualitative difference in those two sets which will be analyzed in later phases of the research project, along with a third set of articles that mention the researched phrases only in their references. This decision constitutes the findings presented here as a preliminary report.

Data analyses were carried out from March to June 2015 using MS Excel and MAXQDA, a software for qualitative data analysis.

The quantitative part of the study employs a bibliometrical approach which was done by applying statistical and mathematical calculations, graphically represented to show the basic output trends. This analysis revealed:

- a temporal evolution of published articles
- the most published authors in the field and author productivity
- the institutions and countries with the most author contributions
- journal productivity patterns

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[2] GS data consisted of different types of documents like editorials, tag archives, bibliographies, biltens, blogs, etc. Our study focuses on scientific and proffesional articles published in journals or as book chapters.

[3] The language criterion was introduced later in the study, as the last measure of exclusion, since 92.42 % of search results were in English. Only 3.6 % non-English articles were excluded based on language criteria, while the rest was excluded based on other criteria.

[4] Published in Accardi, Drabinski, Kumbier (eds.): *Critical library instruction - Theories and Methods*, and Gregory, Higgins (eds.): *Information literacy and social justice - Radical Proffesional Praxis*.

- the prevalence of contribution types (conference papers, journal articles or book chapters)

A qualitative analysis of the sample was done by attributing relevant categories to each analyzed article which resulted in:

- an analysis of the most prevalent article categories (original scientific article, scientific review, preliminary report, professional article, professional review)
- a classification of articles based on the Reference Services Review[5] contribution taxonomy (viewpoint, conceptual paper, research paper, case study, general review, literature review, technical paper)
- a keyword analysis
- a deductive content analysis that uses categories previously established for such research in the field of Library and Information Sciences (LIS) [8] to investigate the social level the articles refer to, the investigation type they undertake (empirical or non-empirical), applied research strategies, as well as whether contributions employ a qualitative or a quantitative approach and are practice or theory oriented.

2.1   Referring to CIL as a Subfield of IL

By refering to CIL as a subfield of IL we express our hypothesis that it functions as a distinctive theoretical contribution of critical theory and pedagogy to IL. This report will contribute to the understanding of which methodological approach is suitable to research the relationship of CIL and IL. There is no real data available, but this hypothesis has been made by looking at the number of search results retrieved from researched databases. About 40 % of the search results in GS on IL mention the word "critical". More reliable sources like SCOPUS (31 %) and even WoS (10 %), which has a very small coverage of CIL, has a relevant number of contributions refering to the critical in IL, not just from a critical pedagogy perspective, but others like psychology and different subject areas in social and computer sciences. This made us conclude that IL always had an inherent criticality and that these critical perspectives have not yet been thoroughly researched while the need for this endeavour is also being highlighted by the influence of CIL articles.

3   Findings

In this chapter we present findings of quantitative and qualitative analyses in the same order as stated above.

With a non-defined temporal span retrieved articles span over 20 years, with the first recognized article by Gene Burdenuk in 1997 called *Living and learning in the global village.* [2] We present the development of the two recognized sets of documents, and a summative line to cover the whole publication output trend. A steady

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[5] Reference Services Review was chosen as one of the most productive journals in the IL field.

growth in the number of articles can be observed, although the interest in the field was not constant. In 2001 a first spike in publication is followed by a discrepancy between the analyzed sets. After 2004 an indication of exponential growth appears. This trend is interrupted after 2006, when James Elmborg wrote his highly cited article [1] which became a common point of departure in CIL debates and analyses. In the next four years, another discrepancy between the sets appears. We believe that this can be explained by the impact of Elmborg's article, because the number of articles that mention the phrases only once or twice rose rapidly, while the core of the field maintained its steady growth. In years 2010 and 2013 we can see two moments where a high influx of articles was made by publication of two editorial books that primarily deal with CIL themes. The sharp decline at the end of the graphs is expected, since our analysis was done in March 2015 and does not cover the whole year (Fig.1).
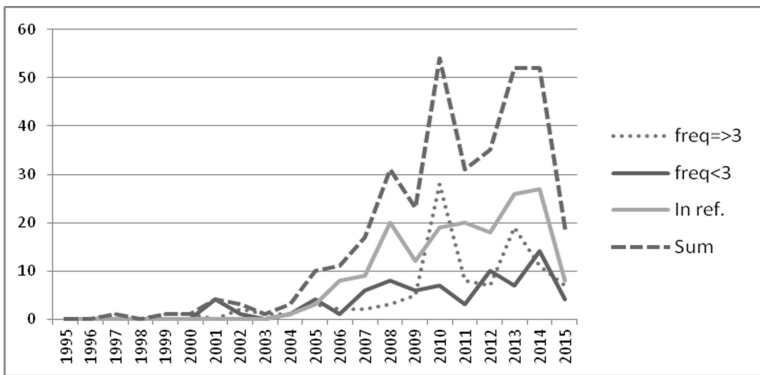

Fig. 1. Temporal evolution of articles in the CIL subfield

3.1   Authorship Patterns

There are 109 unique authors in the researched set of articles. One author published the highest number of six articles (Heidi Jacobs), while two authors each published four articles (Alison Hicks, Troy Swanson). On the other hand, 17.43 % of authors published two articles, while 79.82 % published only one article.

3.2   Institutions and Countries

In the analyzed set 69 institutions were associated with 109 unique authors. The highest number of articles come from American universities, which is also reflected in the domination of English speaking countries (Table 1).

Table 1. Prevalence of top universities and countries

University	%	Country	N	%
State University of New York	8.27	USA	75	73.53
California State University	3.67	Canada	13	12.75
City University of New York	3.67	UK	6	5.88
Simmons College	3.67	Australia	5	4.90
University of Windsor	3.67	Bosnia and Herzegovina	1	0.98
El Centro College	2.75	Croatia	1	0.98
New York City College of Technology	2.75	New Zealand	1	0.98
University of Alaska Southeast	2.75			
University of Colorado	2.75			
N = 69		Total	102	100.00

3.3   Journal Productivity and Other Sources of Contributions

Half of the journals produced only one article which points to a low productivity in the field. An interesting finding is that along with *The Journal of Academic Librarianship*, as one of the most important journals in IL and LIS, we find the highest productivity in the journal *Behavioral & Social Sciences Librarian* which is the highest contributor of research papers (mainly case studies) in the analyzed set.

Book chapters mainly come from the editorial book by Accardi, Drabinski and Kumbier: *Critical library instruction - Theories and methods*. A third of the analyzed set of articles is a book chapter by type which shows that the productivity is not entirely journal based (Table 2).

The article production does not fit the normal distribution according to the Bradford's law since the number of articles in the second and the third recognized zones does not achieve expected values as shown in Fig. 2.

3.4   Qualitative Analyses

To introduce a distinction between scientific and professional papers we first distributed the articles according to the established classification of contributions in science (Table 3).

Half of the analyzed set (54.9 %) were professional papers or reviews which shows there is an even amount of scientific and professional contributions. There were 11.76 % original scientific papers that present new findings, are reproducible and explain the applied research methodology. We recognized 33.33 % of scientific reviews which are mostly conceptual papers based on a literature review. Comparatively, Reference Services Review classification[6] reserves the category of the Literature review for those papers that provide selective or comprehensive reviews with annotations or insights from main contributors, while the conceptual paper also develops

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[6] Definitions for each type of contributions are available online.

Table 2. Journal productivity and contribution type prevalence

| Journal name	N	%	Contribution type	N	%
Behavioral & Social Sciences Librarian	5	8.47	Journal article	59	57.84
The Journal of Academic Librarianship	5	8.47	Book chapter	31	30.39
Communications in Information Literacy	3	5.08	Conference paper	12	11.76
Library Philosophy and Practice	3	5.08			
Portal: Libraries and the Academy	3	5.08			
Urban Library Journal	3	5.08			
Community College Journal of Research and Practice	2	3.39			
In the Library with the Lead Pipe	2	3.39			
Library Trends	2	3.39			
Others (N of articles = 1)	31	52.54			
Total		100.00	Total	102	100.00
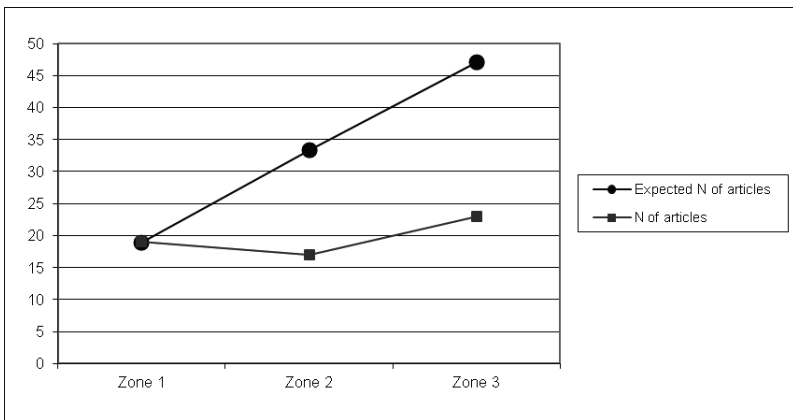
Fig. 2. Discrepancy between expected and the real N of articles

hypotheses, covers philosophical discussions and comparative studies of other's work and thinking. Since this is an overlap in definitions we treated the category of Literature review as referring to those articles who employ a reproducible methodology for literature assessment, although no such studies were found. All the other papers that offer selective literature reviews for the purpose of their conceptual analyses were distributed in the Conceptual paper and General review categories (Table 4).

Keyword density analysis shows expected concepts as the most prevalent ones. Most of them pertain to education, but there are also high counts of the words *social*,

Table 3. Article classification by two different criteria

Article classification	N	%	Ref. Serv. Rev. classification	N	%
Original scientific paper	12	11.76	Conceptual paper	39	38.24
Scientific review	34	33.33	General review	34	33.33
Preliminary report	0	0.00	Case study	17	16.67
Professional paper	51	50.00	Research paper	9	8.82
Professional review	5	4.90	Viewpoint	3	2.94
			Technical paper	0	0.00
			Literature review	0	0.00
Total	102	100.00	Total	102	100.00

Table 4. Density of keywords with highest word-occurrence values

All papers		Papers with auth. kw.		Density of auth. kw.	
Word	%	Word	%	Word	%
Information	2.61	Information	2.85	Information	11.90
Literacy	1.46	Literacy	1.31	Literacy	11.25
Students	1.05	Students	1.01	Critical	9.65
Critical	0.87	Critical	0.96	Learning	2.89
Library	0.81	Library	0.88	Pedagogy	2.89
Research	0.67	Research	0.60	Instruction	2.57
Learning	0.49	Learning	0.54	Theory	1.61
Education	0.49	Social	0.50	Political	1.61
Social	0.45	Education	0.47	Librarianship	0.97
Librarians	0.42	Librarians	0.42	Library	0.97
Knowledge	0.38	Libraries	0.36	Thinking	0.97
Libraries	0.36	Political	0.36	Google	0.97
Instruction	0.28	Theory	0.34	Open	0.97
Academic	0.27	Academic	0.32	Science	0.97
Work	0.26	Faculty	0.32	Social	0.97
N = 34807		N = 16238		N = 141	

critical and *political*. Only 27.45 % of articles had author-assigned keywords. In comparison we observe that there is a high consistency between keywords in those papers, word-occurrences in author-assigned keywords and in all analyzed articles.

Deductive Content Analyses. Our findings show that 84.31 % of articles come from the LIS subject area, while there is 15.69 % non-LIS articles that mainly come from areas of Education or Politics.

Toumaala et al. [8] presented an interesting analysis of the social level to which the articles refer. We adopted this analysis and found that in the analyzed set 88.24 % of

articles pertain to the *organizational* social level, while a smaller number refers to the *societal* (7.84 %) and *individual* levels (3.92 %).

Only 12.75 % of contributions are empirical, and all of them employ descriptive qualitative analyses using surveys, content or discourse analysis as their research strategies. The rest of non-empirical articles are mostly conceptual (56.18 %) while 25.84 % give methodical insights and 17.98 % report on current theoretical understandings in the field.

4 Discussion

From the data we can see that the consistency of publication fluctuates between low and high periods of productivity, while the general productivity of the field is lower than it is common according to calculations of the expected number of articles. The bulk of the activity in the field is a result of a high number of articles that refer to the concept, which poses the question whether this recognition of the concept's value corresponds with actual engagement in CIL research and practice. Furthermore, there is a small number of constant contributors to the field and indications that the field is growing rather slowly. Although it has been 20 years the subfield has not achieved the state of exponential growth. These issues might be addressed if interested authors would gather around a place of publication, like an international peer-reviewed journal thematically oriented exclusively on CIL. Although journals with similar scope exist, the data shows their influence on the CIL field has still not been established. In addition to that, a smaller number of conference papers in the analyzed set points to the opportunity to organize more events that would stimulate engagement and the communication of knowledge and experiences from CIL based research and practice, but that could also create a space where the criterion of applicability would not inhibit public presentation and reporting on theoretical issues in (C)IL.

Articles are mostly published by a single American author and most of them contribute with only one article to the field. This dominance implies that more reports are needed that come from diverse (for example European, Asian) educational and socio-political contexts.

On a similar note about diversity we point out that 88.24 % of articles pertain to an organizational setting (mainly libraries) and 84.31 % of articles come from LIS. Furthermore, several variations of keywords referring to libraries exist in the top 15 of analyzed word-occurrences and professional papers are the most common type of contributions in the subfield. In his recent book, Whitworth [9] has pointed out the need to go beyond the library (and library instruction) to investigate different outlooks on (C)IL issues. As Whitworth has warned, we agree that authors writing in the CIL subfield should be aware not to contribute to the "institutionalisation of a monologic view of the subject" [9].

The last point of our discussion refers to practice oriented contributions in the analyzed set. Although there is only a moderate count of methodical papers it is necessary to consider that conceptual papers also give suggestions with regard to applying CIL in practice. The prevalence of research papers and case studies shows that

the subfield would benefit from more such studies which test the developed hypotheses in conceptual papers.

5   Conclusion

A growing number of CIL contributions appeared after the year 2006 when James Elmborg published his nowadays highly cited article on the implications of critical perspectives for IL instructional practices. Even though the number of CIL contributions has grown with the passage of time we have shown that the general author and journal productivity on CIL is lower than expected. The data also points to a twofold issue of diversity in the field. On one hand, there is a lack of non-American contributors and perspectives on CIL theory, research and practice. On the other, most of the analyzed articles are focused on libraries and library instruction which points to the need to consider different outlooks on CIL. The current data shows that CIL functions more like a subset of contributions then a coherent subfield of IL. Still, further research is needed to understand the nature of IL's criticality and in what ways it has been intertwined with critical theory and pedagogy over the years starting from the 1970s when the concept was formed. Inductive thematic analysis of both CIL and other variations of understanding IL's criticality are needed because they will show their theoretical origin, since *being critical* (of information, society, reality; a reflective type of judgement or analysis) is not a novelty in IL conceptualizations.

For some time, IL literature has been showing an inclination to become a theory of education and the data shows it is time to move out of the safe-zone of librarianship. A theoretical appreciation of such an IL will move the theory towards its adulthood and give it strength through self-awareness to impose its centrality in educational policy. We believe that the next big issue in (C)IL has to be the resolution whether to treat IL as a critical theory of education is a pretence or its future.

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