Research Trends In Multimodal Critical Discourse Analysis: A Bibliometric Analysis

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Abstract
This research aims to understand the evolution and development of Critical Discourse Analysis (CDA) research with a focus on multimodality. CDA is an interdisciplinary approach that explores the use of Language and discourse in reproducing, reinforcing, and being closely linked to social relations, power, and ideology. From the initial understanding introduced by Norman Fairclough in the 1980s, CDA has become an essential tool for analysing power structures and social constructions in various contexts, including media, politics, education, and popular culture. CDA has undergone significant transformations along with complex changes in the social and political world. This research aims to map the latest trends and developments in CDA studies, with a particular focus on aspects of multimodality. The data collection process is carried out by data mining process in Scopus using keywords and search limitations per category Subject area, Doc. type, Pub. stage, Source type, and Language. The document data collected were 303 Scopus-indexed documents. By involving bibliometric methods through the Vosviewer tool, the data was visualized and analysed. The results of the study found that the development of CDA research in the aspect of multimodality has increased every year. The study of CDA in terms of multimodality began in 1993 and began to experience an increase in the number of studies from 2013 to 2023. The scope of keywords that emerged was six clusters. Each cluster of keywords reflects special attention to the scope of the study of critical discourse analysis and multimodality, including the diversity of research themes, the intersection of media and social aspects, the importance of visual and multimodal analysis, the connection with the local context, and the application of critical theories and concepts.

Keywords: CDA; Multimodal; Research trend; Vosviewer; Bibliometric.

INTRODUCTION

Critical Discourse Analysis (CDA) is an interdisciplinary research that develops from different theoretical and methodological approaches to the study of language (Johnson & McLean, 2020). CDA studies focus on revealing and understanding how language and discourse are used to reproduce, reinforce, and are closely related to social relations, power, and ideology (Masitoh, 2020). Since Norman Fairclough first introduced it in the 1980s, CDA has developed into an invaluable tool in unraveling power structures and social constructions in various contexts, such as media, politics, education, and popular culture.
Over the past decade, CDA has undergone a significant transformation along with complex changes in the social and political world. Technological developments, global political changes, shifts in cultural norms, and social challenges have influenced the way language is used and analysed in CDA. Therefore, research in the discipline has followed various exciting trends, and these changes create a dynamic research landscape.

Critical discourse analysis is a theory for conducting empirical studies on the relationships between discourse and socio-cultural developments that explore perspectives and perspectives in interpreting social reality. (Humaira, 2018) Social practices in critical discourse analysis are related to the events of reality and social structure. (Cenderamata & Darmayanti, 2019)

The purpose of critical discourse analysis is to reveal the relations between hidden power and ideological processes that appear in spoken or written texts. (Santoso, 2008) The discourse practices that are the focus of this critical study mainly include texts or discourses that develop in society, especially narratives that appear in mass media and social media.

The growing research on critical studies includes discussing how narratives are formed in a text until a specific ideology emerges (see: (Forchtner, 2021) (Catalano & Waugh, 2020) (Subagyo, 2010) that is trying to be built for specific political purposes or even opinion-mongering (Rembulan & Hizbullah) that supports who is in power or the ruler. From the review that has been done, CDA research is entering the second decade of the 21st century, and a review is needed to reflect on the evolution and map future developments (Xiao & Li, 2021). In this regard, various CDA analyses have developed into the realm of bibliometric analysis in various objects of study. (see: (Wang et al., 2022); (Xiao & Li, 2021); (Qian et al., 2018); (Peng & Hu, 2022))

Based on research mapping conducted by Xiao & Li (2021), CDA studies have primarily evolved to implement new theories and techniques in cognitive linguistics, corpus linguistics, and multimodal discourse analysis (Xiao & Li, 2021). According to (Feng & Wang, 2024), Xiao & Li (2001), (Lennon & Kilby, 2020), this multimodal analysis provides more options to hide symbolic power and a more comprehensive research horizon for CDA. In this regard, much research has yet to be based on mapping CDA and multimodal studies. Therefore, this research aims to map the development of CDA studied in multimodality.

Although critical discourse analysis (CDA) has advanced by integrating cognitive linguistics, corpus linguistics, and multimodal discourse analysis, more comprehensive research is still needed to examine the progress and application of CDA within multimodal studies. Although multimodal analysis is acknowledged as a helpful method for revealing symbolic power and expanding the research scope of Critical Discourse Analysis (CDA), there needs to be more investigation and systematic mapping of CDA using multimodality. This study intends to fill this void by concentrating on advancing critical discourse analysis (CDA) about multimodality.

METHOD

The objective of the bibliometric analysis in this study is to ascertain the progress of research publications, define the trajectory of scientific notions, and chart the network of CDA and Multimodality using keyword co-occurrence and author collaboration (co-authorship).

Phase 1: Identification of Keywords and Conducting a Database Search

1. Key terms:
The search used the primary keywords: cda OR "critical discourse analysis" AND multimodal*. The utilization of OR and AND operators guaranteed that the search encompassed publications containing either "CDA" or the complete phrase "critical discourse analysis" in combination with any term commencing with "multimodal."

2. Database:

The Scopus database was selected for its extensive coverage of scholarly literature in diverse fields.

3. Field of Study and Type of Document:

a) Subject Areas: The search was narrowed to encompass only papers categorized under 'Social Sciences' and 'Arts and Humanities' to guarantee relevance to the study's focal point.

b) Document Types: Only articles that have undergone peer review and have been published were included to ensure the inclusion of reliable and authoritative sources.

c) Language: The search was restricted to English documents to ensure linguistic uniformity and facilitate analysis.

4. Criteria for inclusion:

a) Time Frame: The search encompassed papers published to date, without a specified starting point, to thoroughly capture historical and contemporary trends.

b) The analysis rejected documents that did not fall within the defined subject areas, were not finished or published papers, or were published in languages other than English.

5. Data retrieval and preliminary findings:

Three hundred three papers were obtained from the Scopus database using the supplied search terms and parameters.

**Phase 2: Data Processing and Visualisation**

1. Data Export:

   The obtained document data was exported to the VOSviewer software for in-depth study and visualization.

2. Data extraction and visualization:

   The data were exported to Excel to enhance the visualization of network structures and relationships within bibliometric data.

3. Categories of Visualisation:

   a) Network Visualisation: This tool displays the intensity and existence of connections or associations among study terms.

   b) The Overlay Visualization displays historical traces of the research, organized by the year of publication.

   c) Density Visualisation: This feature visually represents the concentration or prominence of specific study groups.
Specific Analyses:

a) Co-authorship analysis is a method for identifying and examining cooperation between writers. It provides information about the authors’ identities, their affiliations with organizations, and the countries they come from.

b) The purpose of co-occurrence analysis is to visually represent the bibliometric network of keywords, offering insights into the thematic relationships within the research field. This co-occurrence analysis aims to display the bibliometric network between keywords in a visual form. (Zakiyyaha et al., 2022).

The stages above are more clearly depicted in the visualization below:

Capabilities and Limitations of the VOSviewer Tool

- Capabilities of VOSviewer:
  1) Network Visualization:
     VOSviewer is proficient in generating network visualizations depicting connections between various entities, such as authors, keywords, or institutions. This enables a lucid and comprehensive depiction of the relationships within the data, making it easier to identify networks of collaboration and clusters based on themes.
  2) Overlay Visualization:
     The application provides overlay visualizations that offer temporal insights by superimposing extra data (such as the year of publication) onto the network visualization. This facilitates comprehension of the progression and transformation of research subjects over time.
  3) Density Visualization:
VOSviewer can create density visualizations emphasizing regions with many data points, such as commonly appearing keywords or very productive writers. This facilitates the identification of fundamental research areas and influential contributors in a specific field.

4) Bibliometric analysis:
VOSViewer facilitates various bibliometric analyses, such as co-authorship, co-occurrence, and citation analyses. These studies are crucial for delineating research patterns, comprehending the influence of particular works or authors, and discerning emergent subjects.

5) Intuitive User Interface:
The tool features an intuitive and user-friendly interface, allowing researchers with different technical expertise to access it easily. It facilitates the effortless importation of data from widely used bibliographic databases like Scopus and Web of Science.

6) Data import flexibility:
VOSviewer can process many data formats, such as CSV, RIS, and plain text files, which enhances its adaptability to varied bibliometric data types.

7) Interactive functionalities:
Users can thoroughly examine the data by utilizing the visualizations' interactive features, such as zooming in on specific clusters or accessing comprehensive information on individual nodes and edges.

• Limitations of VOSviewer:
1) Dependency on the data source:
The quality of the incoming data greatly influences the visualizations' effectiveness and thoroughness. Visualizations can be distorted or erroneous if bibliographic databases provide incomplete or biased data.

2) Restricted text analysis capabilities:
Although VOSviewer is highly effective in displaying bibliometric networks, its ability to perform text mining is comparatively restricted compared to dedicated text analysis tools. This can pose a disadvantage for researchers that require thorough content analysis.

3) The intricacy of large datasets:
Managing extremely large datasets can present significant challenges. The tool may encounter performance challenges or generate excessively intricate visualizations that are arduous to grasp.

4) Direct your attention to the field of bibliometrics:
VOSviewer is primarily optimized for bibliometric analysis and may be limited in its effectiveness when applied to other forms of data analysis, such as qualitative data or full-text analysis.

5) Customization Limitations:
The level of customization available for visualizations is very restricted compared to other sophisticated data visualization tools. Users may encounter challenges when attempting to customize visualizations to meet specific aesthetic or analytical requirements.

Static visualizations refer to visual representations of data that do not change or update dynamically. These visualizations provide a fixed snapshot of information at a specific point in time.

Although the tool allows for dynamic visualizations to facilitate exploratory study, converting these visualizations into static formats (such as for publication) may diminish their interaction and limit the depth of insights they communicate.

6) Learning Curve:
Although VOSviewer has a user-friendly interface, it still requires time to fully comprehend and properly utilize all of its features. Novice users may require a period of acclimation to attain proficiency in its utilization. VOSviewer is a robust tool for bibliometric analysis and network visualization. It provides extensive capabilities for mapping and investigating research landscapes. Nevertheless, researchers should consider several constraints, namely, the quality of data, the process of extracting information from text, and the management of extensive datasets. By acknowledging these advantages and constraints, researchers can make well-informed choices regarding using VOSviewer in their studies.

This bibliometric study on Critical Discourse Analysis (CDA) and multimodality carefully considered important ethical implications.

1) Data privacy and confidentiality:
The study employed publicly accessible bibliometric data from the Scopus database, guaranteeing the non-access or disclosure of personal or sensitive information about specific authors or topics. The commitment to data privacy principles ensures the confidentiality of the information utilized in the analysis.

2) Data integrity and accuracy:
The data obtained from Scopus underwent thorough scrutiny and validation to ensure the analysis was free from any distortion or mistakes. The dedication to ensuring data accuracy maintains the dependability of the research results.

3) Citation:
The research adhered rigorously to academic rules for citation and referencing, ensuring proper attribution to the original authors and upholding academic integrity.

4) Prevention of Plagiarism:
The study rigorously adhered to ethical standards by ensuring that all content, including interpretations and debates, was either original or adequately referenced to avoid plagiarism. This practice is consistent with the ethical norms of academic writing and research.

5) Methodological Transparency:
The research approach, which encompassed selecting keywords, establishing inclusion criteria, and implementing data processing procedures, was clearly and openly documented. The study's transparency enables other researchers to replicate and critically assess it, enhancing its overall credibility.

6) Conflict of interest:
All possible conflicts of interest were revealed to uphold transparency and foster confidence. It was crucial to prioritize the verification of any hidden financial or personal interests that could have impacted the research findings.

7) Adherence to Intellectual Property Rights:
The research adhered to intellectual property rights by refraining from using or replicating content without appropriate authorization or acknowledgment. This ethical position safeguards the entitlements of the authors of creative content.

8) Ensuring the ethical utilization of tools:
VOSviewer and other analytical tools were used in compliance with their respective terms of use and ethical guidelines. This adherence guarantees that the tools were used appropriately and ethically.
FINDINGS AND DISCUSSIONS

Based on the data obtained, to map research trends in CDA and multimodal, analysis is carried out based on the number of documents per year, the country of origin of authors who study CDA and multimodal, and research trends through co-occurrence identification through network visualization and overlay visualization from the VOSViewer tool.

Documents by Year

Data on the number of documents per year can be seen in the figure below:

Figure 1: Document by year:

Based on the data visualization above, the study of CDA and multimodal began in 1993. From 1993 to 2012, the number of studies on these studies was relatively stable, with a small number of 1-2 studies on average. However, from 2013 to 2023, there was a significant increase. The year 2022 has the highest position for the number of studies on CDA and multimodal. The number of studies in each year can be seen in the table below:

Table 1: Details document by year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Documents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>47</td>
<td>15.5</td>
</tr>
<tr>
<td>2022</td>
<td>48</td>
<td>15.8</td>
</tr>
</tbody>
</table>
From the data above, the increasing number of studies on CDA and multimodal can show that the multimodal approach to CDA has a rich study. The complexity of human communication involves more than just the written or spoken word. Multimodal research integrates the analysis of different modes of communication, such as images, sounds, and gestures, to gain a more complete understanding (Darmawan, 2019).

**Documents by Country or Territory**

This CDA and multimodal studies data by country or territory can be seen in the figure below:
Figure 3: Documents by country or territory.

The data above shows that the top 10 countries studying CDA and multimodal are Sweden, the UK, the US, Australia, Spain, China, Canada, South Africa, Indonesia, and Italy. Sweden is ranked the highest. Indonesia alone occupies the ninth position of the top 10 countries. Details can be seen in the figure below:

Table 2: Details documents by country or territory.

<table>
<thead>
<tr>
<th>Country</th>
<th>Documents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>47</td>
<td>16%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>44</td>
<td>15%</td>
</tr>
<tr>
<td>United States</td>
<td>43</td>
<td>14%</td>
</tr>
<tr>
<td>Australia</td>
<td>19</td>
<td>6%</td>
</tr>
<tr>
<td>Spain</td>
<td>19</td>
<td>6%</td>
</tr>
<tr>
<td>China</td>
<td>17</td>
<td>7%</td>
</tr>
<tr>
<td>Canada</td>
<td>16</td>
<td>5%</td>
</tr>
<tr>
<td>South Africa</td>
<td>13</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Indonesia</strong></td>
<td><strong>10</strong></td>
<td><strong>3%</strong></td>
</tr>
</tbody>
</table>
Sweden has 47 documents that study CDA and multimodal, which is about 16%. In Indonesia, CDA and multimodal research still account for around 3% of 10 documents. This shows that there are still few studies on the theme. On the one hand, Indonesia's tenth position reflects that Indonesia has a good position in the world for research in the CDA and multimodal. This is an excellent opportunity for researchers in Indonesia to study CDA and multimodal.

Research Trend

It was analyzed to map the research trends in CDA and multimodal studies based on the co-occurrence visualization. See the image below:

Figure 4: Co-Occurrence Network Visualization.

The figure above shows some of the central nodes of the retrieved data, namely multimodal critical discourse, critical discourse analysis, and multimodality. The large nodes show the frequency of occurrence of the keywords and the focus of the study under study. From the visualization above, there are 6 keyword clusters. The first cluster marked in red has 6 keywords: COVID-19, internet memes, Nigeria, representation, social actors, and visual grammar. These keywords provide an overview of the focus and scope of COVID-19 research, representation, and disclosure of social actors' role in the Nigerian state. Multimodal objects themselves can be viewed from the use of memes and visual elements or visual grammar. This is pertinent to the subject matter addressed in the article (Vásquez & Aslan, 2021). Guo et al. (2017) The visual grammar theory proposed by Kress and Van Leeuwen in 1996 explained that the 'semiotic system has the ability to project the social relations between the receivers and the speakers' (Guo et al., 2017). Thus, one of these multimodal domains not only looks at the use of words in a text but also emphasizes the power of visuals that reflect the social relationship between the recipient of information and the conveyer.
The second cluster marked in green has the keywords advertisements, food packaging, gender, marketing, multimodal critical discourse, and social semiotics. This first research cluster combines elements from CDA, multimodality, and social semiotics to understand how language and multimodality are used in advertising, marketing, and visual communication, with particular consideration of gender. This shows that CDA and multimodal studies can be applied to marketing and advertising.

The third cluster, marked in blue, has 6 keywords: humor, media representation, racism, Roma, social media, and television news. From the breakdown of these keywords, it can be seen that the scope of the study involves a critical analysis of media representations, particularly in the context of humor, related to the issue of racism and the Roma community. In addition, we can critically understand how the media, emphasizing elements of humor, portrays issues of racism and the Roma community through various channels, including social media and television news.

The fourth cluster, marked in yellow, has 5 keywords: critical discourse analysis, ideology, media discourse, multimodality, and semiotics. This indicates that this research may primarily focus on a critical understanding of language and media representations. Integrating concepts and methods from CDA, ideology, media discourse, multimodality, and semiotics to provide a critical understanding of how language and media representations interact in creating meaning in society.

The fifth cluster, marked in purple, has 4 keywords: advertising, China, human, and neoliberalism. The keywords in this cluster focus on critically analyzing language and media representations, especially in the context of advertising related to China. Combining elements of CDA and multimodal to explore how advertising in China represents human aspects while considering the impact of neoliberalism in that context.

The sixth cluster marked in Tosca has two keywords: legitimation, multimodal analysis, and recontextualization. From the mapping of keywords in this sixth cluster, it can be explored how language and media representations can provide legitimacy to a concept or action while considering how texts are recontextualized to influence understanding and interpretation. A multimodal approach can also be used to understand how visual, text, and sound elements contribute to the process.

Mapping the trend of CDA and other Multimodal studies can be seen from the co-occurrence overlay visualization. From the overlay visualization, we can see the trend of research from year to year. It can be seen from the picture below:
From the figure, it can be seen that the light color identifies recent research. The brighter the color visualization, the more recent the research. The range of years appears to be 5, from 2017 to 2021. There is a dark color on keywords with large nodes, namely critical discourse analysis, multimodality, legitimation, and recontextualization. Nodes with a slightly greenish yellow color with large nodes, namely multimodal critical discourse, while the bright yellow color positions in 2021 studies in social media, COVID-19, and media representation. Topics related to COVID-19 became a trend in 2021 due to the pandemic. This pandemic has become a trend in CDA and multimodal research related to social media and media representation. It pertains to the ongoing discourse in (Adebomi, 2022). From this, it can be the basis for determining the next research steps.

CONCLUSION

Based on the analysis that has been done, it can be concluded that the study of CDA from the multimodal side has experienced significant development from year to year. From the beginning of its emergence in 1993, the number of studies has significantly increased in the years starting from 2013 to 2023. This indicates that multimodal approaches in CDA studies have become more dominant and received greater attention in that period. The growth of multimodal CDA research from year to year reflects this approach's increased understanding and application in involving visual and multimodal aspects in critical discourse analysis. Regarding the country of origin of the researchers, Indonesia ranked ninth. This shows that few researchers in Indonesia are still studying CDA research associated with multimodal. This is an opportunity for researchers in Indonesia to be able to publish their work in internationally reputable journals through CDA and multimodal studies.
Related to the scope of CDA, multimodal research consists of six clusters. The scope of each cluster of research trends shows a variety of themes and research focuses in CDA and multimodal studies. Each keyword cluster reflects special attention to certain aspects of critical discourse analysis and multimodality.

From the visualization, it can be concluded that:

1. Diversity of Research Themes: The clusters reflect the diversity of themes raised in CDA and multimodal studies. From representations of COVID-19 and internet memes to issues such as gender, racism, and neoliberalism, each cluster shows researchers' attention to specific contexts and issues.

2. Intersection of Media and Social Aspects: The clusters reflect intersections between media, social, and linguistic aspects. For example, clusters highlighting advertising, food packaging, and gender indicate that research incorporates language analysis and multimodality in the context of marketing and gender representation.

3. The Importance of Visual and Multimodal Analysis: The existence of clusters that emphasize multimodality, such as visual grammar, multimodal critical discourse, and multimodal analysis and recontextualization, reflects an awareness of the importance of visual elements and how different modes of communication interact in shaping meaning.

4. Relevance to Local Contexts: Clusters highlighting keywords such as Nigeria and Roma show that some research focuses more on specific local or cultural contexts, demonstrating relevance and attention to emerging issues at a regional or specific level.

5. Application of Critical Theories and Concepts: Clusters highlighting keywords such as ideology, critical discourse analysis, and semiotics reflect the application of critical theories and concepts in discourse analysis. This shows that the research not only identifies patterns of representation but also analyzes the power, ideology, and meaning contained in the discourse.

Overall, the visualization highlights the diversity of approaches and research focuses in CDA and multimodal studies and the importance of understanding the complexity of discourse in different contexts.

Concrete suggestions for future research

Given the findings and analysis offered in this study, we can propose some specific recommendations for future research to further progress the area of Critical Discourse Analysis (CDA) with a particular emphasis on multimodality:

- Geographical Expansion and Cultural Backgrounds:
  Future research should prioritize the expansion of multimodal Critical Discourse Analysis (CDA) studies in locations currently underrepresented, such as Indonesia and other non-Western countries. By examining these regions' distinct cultural and social circumstances, researchers can
enhance the worldwide understanding of CDA. Engaging in partnerships with local academics and organizations can enrich the comprehensiveness and applicability of these research endeavors.

- **Topics of interest and ongoing news:**
  Perform comprehensive assessments of developing themes discovered in this study, such as the portrayal of COVID-19, online memes, and social media discussions. These subjects are highly pertinent in the present socio-political milieu and demand additional investigation. Conducting longitudinal research to observe the progression of these themes throughout time would yield significant insights into their growth and influence.

- **Comparative Media Studies:**
  Perform comparative research that examines multimodal communication across several media platforms, including conventional news media, social media, digital advertising, and emerging media formats such as virtual and augmented reality. Examining the variations in discourse strategies across these platforms can offer a thorough understanding of the impact of diverse communication methods.

- **Interdisciplinary Approaches:**
  Promote interdisciplinary methodologies integrating perspectives from linguistics, communication studies, sociology, and media studies. By incorporating viewpoints from many fields, academics can cultivate a comprehensive comprehension of multimodal Critical Discourse Analysis (CDA) and its practical implementations.

- **Direct your attention towards localized and particular circumstances:**
  Highlight research that prioritizes local and unique circumstances, especially in underexplored cultural settings. Studying the functioning of multimodal conversation within specific cultural contexts can offer a more comprehensive and subtle understanding of global discourse practices. This can encompass research on local media, community narratives, and regional political discourse.

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