Today and Future of Culturally Responsive Teaching (CRT) : Indonesia Needs It

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Abstract: This study aims to describe the future of Culturally Responsive Teaching (CRT) research and publication by looking at trends, countries, institutions, authors, and hotspots in education. This research method uses a literature review with a flow of gathering, filtering, bibliometric, mapping, and reviewing data sources from the Scopus index database amounting to 222 documents. This study uses data analysis based on the Vosviewer software. The study's findings showed that the trend of Culturally Responsive Teaching (CRT) research continues to grow. Globalization and the advancement of communication technology encourage teachers to develop teaching skills using CRT-oriented pedagogics. The concept and implementation of CRT in learning are still dominated by the most productive countries, organizations, and figures in the United States. This is a challenge for any country, especially Indonesia, which is multicultural. To increase research and publications in the field of CRT, the increase in teachers' awareness of cultural, ethnic, and racial diversity, Mastery of various multimodal teaching, and taking teaching resources from the local cultural context require serious attention together. The hotspots that can be done for future CRT research are directed at terms or variables that have not been explored much, such as pre-service teacher, self-efficacy, CRT practice, impact, STEM, class, instruction, disability, work, equity, implementation, and technology.

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Introduction

Humans grow based on the culture that exists in their environment. Differences in human ability to respond to culture show different responses and outcomes. (Maynard & Chaudhary, 2021). The ability of humans to adapt to culture shows the flexibility and resilience of the human system. Humans continue to change and adapt to environmental changes from birth to adulthood. (Cheng et al., 2021). Humans innovate, migrate, and change their habits and perspectives based on input from various cultural information in their environment. (Maynard & Chaudhary, 2021). Differences in human ability to adapt to culture and competition between cultures are a source of conflict. (Diab et al., 2022; Ruly & Morganna, 2023), so solutions are needed, among others, through strengthening multiculturalism (Regus, 2023). Schools' multiculturalism is strengthened through a new pedagogical approach, CRT, or culturally responsive teaching. (Ernawati et al., 2024; Hutchison & McAlister-Shields, 2020; Idrus et al., 2023; Rahmawati, Ridwan, Cahyana, et al., 2020). Through CRT, teachers are in charge of making students aware of adapting to culture, respecting different cultures, and learning contextually with culture. (Kramarczuk et al., 2023; Mahali, 2022; Xin et al., 2023). Culture-based learning is essential because

students' lives cannot be separated from their cultural environment. (Patras, Juliani, et al., 2023)The educational process in schools has not optimally used culture, so there is still a gap between expectations and reality in the context of academic outcomes.

Culturally Responsive Teaching (CRT) is one of the options for teaching in a diverse classroom in students' cultures and backgrounds. (Ladson-Billings, 2005; Subasi Singh & Akar, 2021; Tjipto & Bernardo, 2019). Through the CRT approach, teachers use the cultural characteristics, experiences, and perspectives of diverse students' ethnicities to teach more than just learning and maintaining the cultural background of students in the classroom; it can also produce encouraging, contextual, and collaborative learning. (Cheng et al., 2021; Idrus et al., 2023; Kramarczuk et al., 2023; Malo-juvera et al., 2018). According to Gay (2015), CRT is a pedagogical concept that can be implemented anywhere as long as teachers have a cultural understanding as a basis for decision-making for effective teaching for diverse students, schools, and communities (Gay, 2015). Therefore, teachers need to understand the local contextuality and the plurality of teaching methods based on various configurations of students and societies from different cultures (Gay, 2010, 2013, 2015). Rahmawati (2020) explained that CRT is a learning approach carried out by teachers by integrating various cultural knowledge, experiences, and student performance accompanied by encouragement so that students can think critically, maintain their cultural identity, and explore other different cultures so that content is created that is contextual, meaningful, respectful, and empathetic to other people's cultures (Rahmawati et al., 2023; Rahmawati, Ridwan, Cahyana, et al., 2020). CRT refers to the teacher's teaching behavior that brings students' cultural identity and life experiences into the classroom as a tool for teaching so that students are more active and effective (Meléndez-Luces & Couto-Cantero, 2021).

The concept of CRT has been around for a long time, but the term CRT started to gain more attention in the 1990s (Kramarczuk et al., 2023; Wallace et al., 2022). Since the 2000s, the CRT approach in learning has been widely implemented and proven effective in achieving learning goals. (Portes et al., 2018)The use of culture in learning is intended to achieve learning goals and maintain students' cultural identity so that it continues to be maintained and sustainable. (Rahmawati et al., 2023). The use of cultural approaches is to improve the learning outcomes of social sciences and sciences such as chemistry. (Rahmawati, Ridwan, Cahyana, et al., 2020; Rahmawati, Ridwan, Faustine, Syarah, et al., 2020). CRT can also be developed into CRTT (*Culturally Responsive Transformative Teaching*), and the CRT approach has also been proven to improve student learning outcomes (Najid et al., 2021; Rahmawati et al., 2023; Rahmawati, Ridwan, & Agustin, 2020; Rahmawati, Ridwan, Faustine, & Mawarni, 2020)However, using CRT can be optimal if policies, curriculum, school regulations, student numbers, parental expectations, and teaching reform support it. (S. L. Yang et al., 2014). In addition, the implementation of CRT can be carried out optimally when teachers have good technological skills. (Chuang et al., 2020). The use of CRT in learning is widely carried out, including improving mathematics. (Register et al., 2022), multicultural Education (Chahar Mahali & Sevigny, 2022), and improved English learning outcomes (Idrus et al., 2023).

So far, the CRT approach to improving learning outcomes continues to grow. All nations hope their culture is maintained and sustainable, but learning outcomes are also achieved optimally. This hope can be realized through CRT, but the implementation of CRT in Indonesia, in particular, is still low. (Patras, Hidayat, et al., 2023; Patras, Juliani, et al., 2023). So far, there have been no publications that have explored CRT comprehensively. The novelty of this study is the bibliography analysis using Vosviewer, which seeks to answer important questions about CRT. This study aims to describe the future of CRT research and

publication by looking at CRT trends, countries, institutions, authors, and hotspots in education.

Research Method

This study uses the VOSviewer software for data analysis. (Dubyna et al., 2022; Finandhita et al., 2022; Oyewola & Dada, 2022). This data visualization software is widely used in research to build and visualize bibliometric networks. With this device, the researcher described the general overview of CRT publications, CRT publication trends, the interconnectedness of the authors, institutional cooperation, co-occurrence, keywords, and the evolution path of hotspots on the theme studied. (Ageel, 2022; Oyewola & Dada, 2022; Putri et al., 2021). Through the Vosviewer software, researchers can track the progress of research in the field of CRT over some time researchers can identify collaborations between researchers in the field of CRT researchers can determine the keywords they use in the field of CRT; researchers can find new research topics that have not been widely researched related to CRT; and researchers can create a literature map that shows the relationship between publications, author, or keywords in the CRT field (Sampaleng, 2023; van Eck & Waltman, 2017; Vittori et al., 2022; N. Wang et al., 2021).

The data for the publication of scientific articles on CRT comes from the Scopus International Indexer Database from 2002 to 2024. The article search uses the keyword "Culturally Responsive Teaching (CRT)" in the title. The search for CRT document data was carried out on June 4, 2024, West Indonesia time. The search results found 222 documents titled CRT. This number is then used in bibliographic analysis using VOSviewer software. VOSviewer is a valuable software tool for creating and visualizing bibliometric networks. (Huang et al., 2022; Kurniati et al., 2022; Luckyardi et al., 2022). The network includes journals, researchers, institutions, and even countries. Networks within VOSviewer can be built on citations, bibliographic couplings, co-citations, or co-authorship relationships. (Nurdin et al., 2021; van Eck & Waltman, 2017)VOSviewer also offers text mining functionality (hotspots) that can be used to build and visualize co-occurrence networks of important terms extracted from scientific literature. (Y. Wang et al., 2022; Y. Yang et al., 2022; Zhang et al., 2022). The CRT research process's flow chart is shown in Figure 1 below.
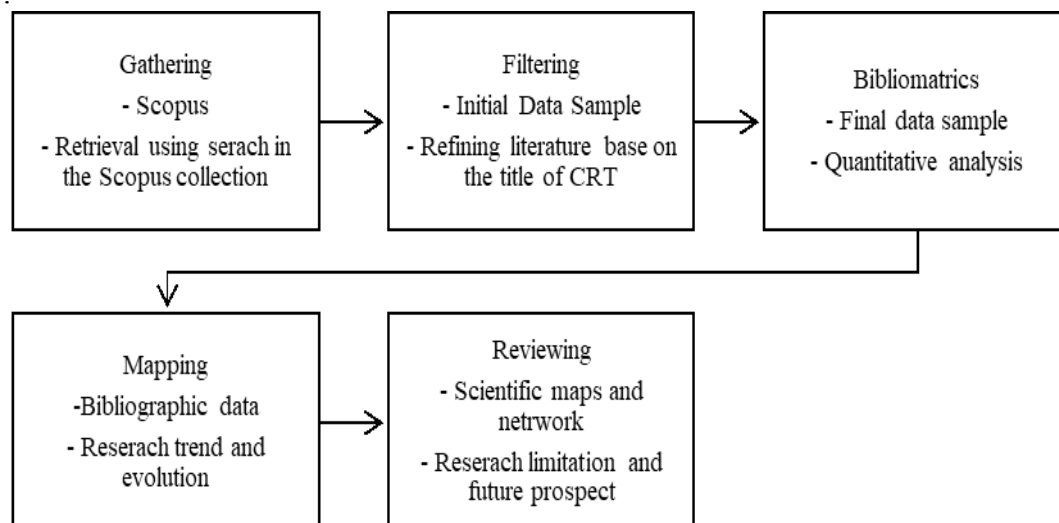

Figure 1. CRT Research Process Flow Chart

Results and Discussion

Publications with the title Culturally Responsive Teaching (CRT) on the Scopus indexing institution obtained through the keyword "Culturally Responsive Teaching," which was carried out on June 4, 2024, obtained as many as 222 documents. This search is limited by article titles with "Culturally Responsive Teaching," later abbreviated to CRT. Based on this number, an analysis was then carried out using Vosviewer, which produced, among others, CRT research trends, productive authors, regions/countries that publish CRT themes, organizations and sources, and keywords that were most commonly associated with CRT publications.

The first publication using CRT titles was included in the Scopus indexer in 2002 with 2 article titles. Furthermore, publications with the title CRT have increased with a trend that fluctuates yearly. The author looks at the trend of publications with CRT titles by sorting the productive year of publications into five rankings. 2019 is the year when titles with CRT themes have increased, although, until 2023, the increase has not touched the figure of 35 articles per year. The first rank or the most productive year is 2021 (33 articles), second in 2023 (29 articles), third in 2022 (27 articles), fourth in 2024 (24 articles), and fifth in 2020 (18 articles). Publications with the title CRT in the form of articles on the Scopus indexing institution are classified as receiving attention from researchers worldwide, including Indonesia. This situation is indicated by the data on the number of CRT article publications from year to year, which generally increases. (see Figure 2).
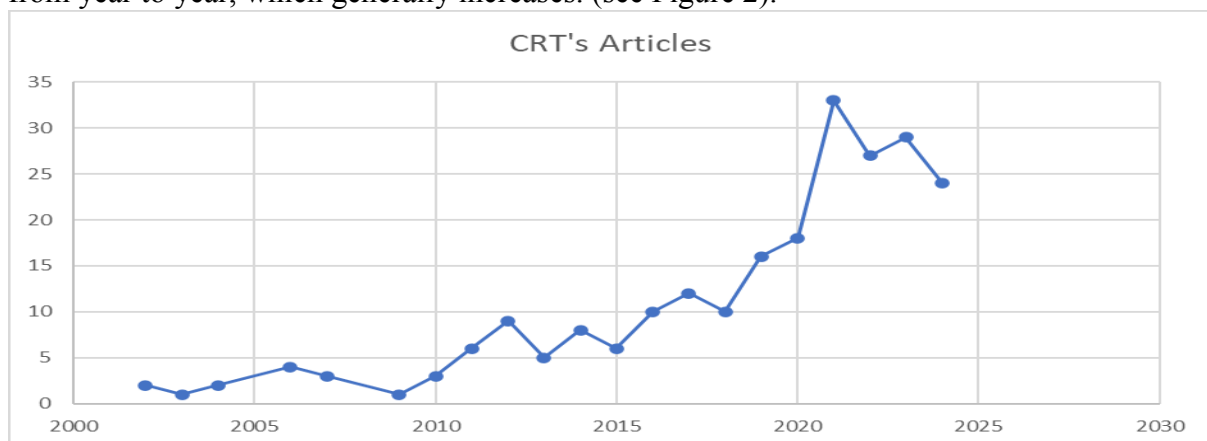

Figure 2. Year of Publication of CRT Articles

Based on the analysis of network visualization on the type of analysis in Co-authorship with authors, using the minimum number of documents of an author 3, the authors who wrote the most were three people they were: Gay G. (5 documents, 1848 citations); Jackson N.H (3 documents, three citations), and Williams Y. (5 documents, 0 citations). Of the three authors, based on the analysis of the overlay visualization, Jackson N.H. is a newcomer; he has only been active in the 2020s. Still, in analyzing network visualization on the type of analysis in co-authorship with authors, the minimum number of documents of author two was obtained by the author named Siwatu K.O (2 documents, 381 citations). Moreover, if the minimum number of documents of an author is 1, then there is one author, namely Ware F. (1 document, 248 citations).

Based on the analysis of network visualization on the type of analysis in Co-authorship with organizations, using the minimum number of documents of an organization 3, it was found that there were 333 organizations, but only 4 met the threshold, namely: University of Central Arkansas, United States (3 documents, two citations); University of South Florida, United States (4 documents, 22 citations); University of Washington, Seattle,

United States (3 documents, 254 citations); and West Chester University, United States (6 documents, 98 citations). Based on the overlay visualization analysis, it was found that CRT development at the University of South Florida, United States is still relatively new between 2020-2025. Still using network visualization analysis in the type of analysis in Co-authorship with organizations, using the minimum number of documents of an organization 1, found from the Department of Education, Spelman College, Atlanta, GA, United States from 1 article cited as many as 248, found from the Department of Educational Psychology and Leadership, College of Educational, Texas, United States from one article cited as many as 286.

Based on the network visualization analysis on the type of analysis in Co-authorship with countries, using the minimum number of documents of a country 5, it was found that there were 36 countries, but only 7 met the threshold, namely: United States (154 documents, 4211 citations); Taiwan (13 documents, 83 citations); China (6 documents, 17 citations); Indonesia (7 documents, 39 citations); Turkey (6 documents, 16 citations); Malaysia (5 documents, six citations); and Canada (5 documents, 15 citations);. From these countries, based on the analysis of overlay visualization, there are two large clusters where CRT develops. The First Cluster is the United States, Taiwan, and Turkey. The second cluster is China and Malaysia. Still, based on the overlay visualization, the CRT theme is included in the new category developed in the China and Malaysia clusters between 2021 and 2022. It is still using network visualization analysis on the type of analysis in Co-authorship with countries, using the minimum number of documents of a country 4, obtaining countries that fall into the requirements, namely: United Kingdom (4 documents, 37 citations); New Zealand (4 documents, 39 citations); and South Africa (4 documents, five citations).

Figure 3. Countries with the Most Productive CRT Publications

Based on network visualization analysis of the type of analysis in co-occurrence with all keywords, using the minimum number of occurrences of keywords 5, there were 629 keywords. However, only 23 keywords met the threshold, as shown in the following table.

Table 1. Keywords Connected CRT

No.	Keyword	Occurrences	Total link strength
1	cultural diversity	9	33
2	cultural responsiveness	6	9
3	culturally responsive teaching	94	95
4	culturally responsive teaching	10	22
5	culture	5	5
6	curricula	5	12

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7	diversity	13	30
8	education	6	22
9	human	9	33
10	humans	5	24
11	inclusion	6	12
12	multicultural education	10	22
13	preservice teachers	6	10
14	professional development	8	14
15	self-efficacy	8	14
16	social justice	8	10
17	students	9	22
18	teacher beliefs	5	12
19	teacher education	12	16
20	teacher preparation	5	6
21	teachers	6	10
22	teaching	14	46
23	urban education	7	17

From these keywords, based on the results of the visualization overlay analysis, it was found that the most common keywords are used simultaneously with CRT, namely *CRT, teaching, teacher education, and diversity*. Still, based on the overlay visualization, it was found that keywords that are still classified as the minimum threshold of threshold 5, so that these keywords will continue to develop in the next period, including teacher beliefs, teacher preparation, humans, curricula, and culture. Visually, keywords that are still new based on the year are yellow, as shown in Figure 4 below.
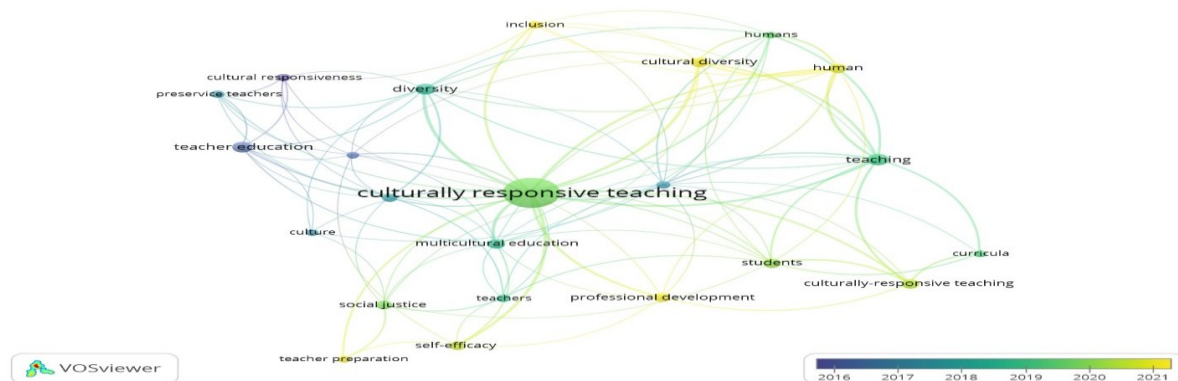

Figure 4. Latest Keywords Connected to CRT

Based on the analysis of network visualization on the type of analysis in the Citation with sources, using the minimum number of documents of a source 5, 5 sources were found, namely: *Education and Urban Society* (5 documents, 149 citations); *Education Sciences* (6 documents, 49 citations); *Research Anthology on Culturally Responsive Teaching and Learning* (10 documents, 1 citation); *Teaching and Teacher* Education (5 documents, 428 citations); and Urban Education (8 documents, 580 citations). If viewed based on the analysis of the most recent citation visualization overlay (2020-2022), the five sources occurred in the Education Sciences and Research Anthology on Culturally Responsive Teaching and Learning journal. Based on the type of analysis using Cites with authors, using the minimum number of documents of an author 3, 3 authors were found, namely: Gay G (5 documents,

1848 citations); Jackson N.H. (3 documents, two citations); William Y.(5 documents, 0 citations). Based on the type of analysis using Citation with Countries through the minimum number of documents of a Country 5, 7 countries were found, namely: Canada (5 documents, 15 citations); China (6 documents, 16 citations); Indonesia (7 documents, 39 citations), Malaysia (5 documents, six citations); Taiwan (13 documents, 83 citations); Turkey (6 documents, 16 citations); and the United States (144 documents, 4211 citations). Based on the analysis using Overlay Visualization, it was found that CRT research is still relatively new in China and Malaysia (the period 2020 until now continues to grow in these two countries). For the case in Indonesia, the existence of CRT is still being improved in terms of the number and quality of publications.

Excavation of the data text based on the title and abstract data files, using the minimum of occurrences of a term ten, and the calculation using an entire counting system produces 127 terms connected to the CRT. Of the 127, 76 are included in CRT's most relevant terms. The terms are then grouped into 7 clusters. Cluster 1 contains 21 items, cluster 2 contains 17 items, cluster 3 contains ten items, cluster 4 contains eight items, cluster 5 contains seven items, cluster 6 contains seven items, and cluster 7. contains six items.
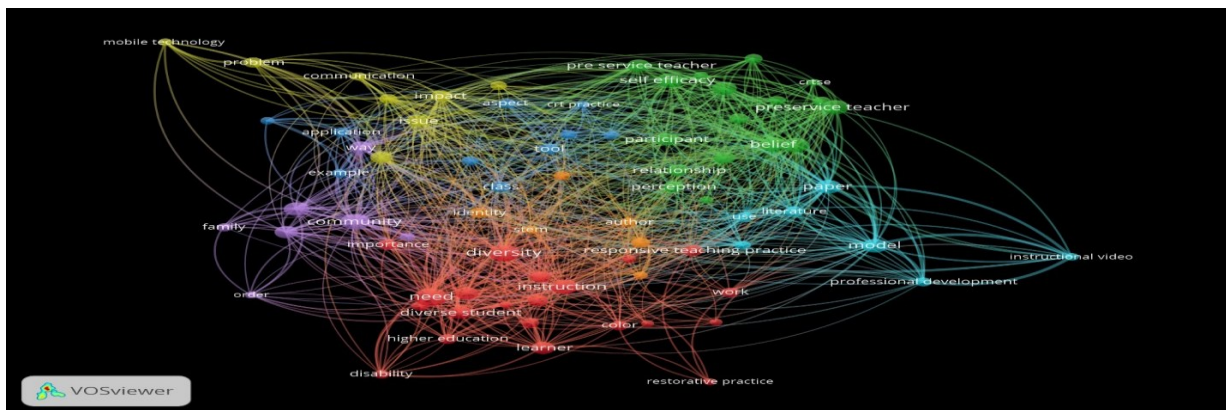

Figure 5. Terms Most Connected CRT

Based on the text data from the title and abstract data files with the Scopus data source with the theme of CRT, the researcher used several new terms. The image in yellow is a new term or hotspot that researchers use when connecting to CRTs. This new term is drawn from the overlay visualization from Vosviewer. The new terms or CRT hotspots include *pre-service teacher, self-efficacy, CRT practice, impact, STEM, class, instruction, disability, work, equity, implementation, and technology*.
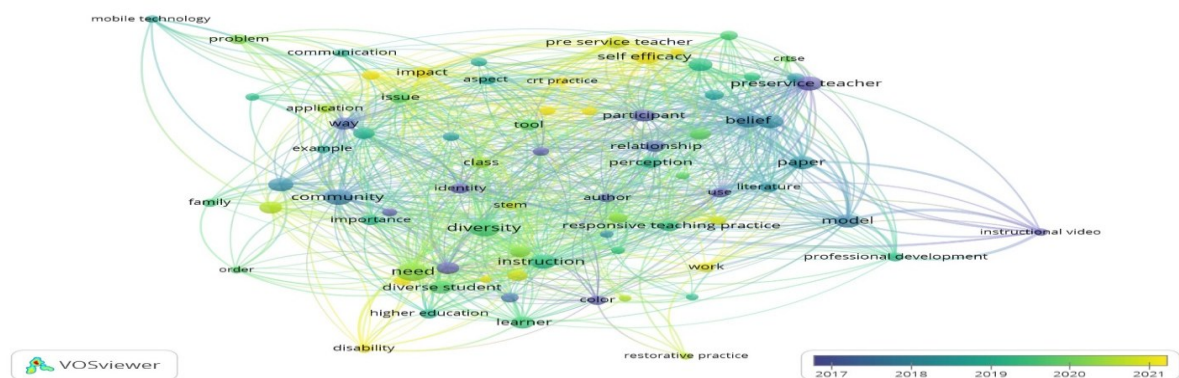

Figure 6. Hotspots for the Future of CRT Researchers

Discussion

Publications with the title CRT on the Scopus index institution from year to year have experienced an increasing trend, even though there have been ups and downs from year to year. Since the first CRT articles were published in Scopus in 2002, at least two and 33 articles have been published. The CRT theme has ups and downs yearly, with fewer than 35 articles per year. This fact shows that the title of the CRT-themed article still needs improvement. Why will CRT themes continue to grow? This is in line with the need for a new approach to learning. Teachers face challenges due to the cultural diversity that exists in schools. (Androsov & Zhang, 2023)Future learning needs CRT, and teachers need CRT skills to improve learning outcomes in both the social and sciences. (Anyichie et al., 2023; Berlian & Huda, 2022; Subasi Singh & Akar, 2021). Teachers must be more courageous in implementing CRT with a more transformative CRT approach so that it succeeds more effectively in learning. (Caingcoy et al., 2022; Rahmawati, Ridwan, Cahyana, et al., 2020).

The publication CRT shows that the most cited authors are Gay G. (5 documents, 1848 citations), Siwatu K.O. (2 documents, 381 citations), and Ware F. (1 document, 248 citations). This data shows that Gay G. is the most influential writer in the CRT theme. Gay (2010) concludes that education will never be the best without culturally responsive teaching, as it should be for students who are not part of the majority and mainstream. (Gay, 2002)Gay (2010) stated that teacher education for diversity, which includes understanding racial, cultural, and ethnic differences, is the ideological foundation for teachers' decision-making. Teaching behavior is the main target of education reform. (Gay, 2010). In 2013, Gay provided the concept and implementation of CRT in the classroom. CRT must be preceded by teachers' attitudes and beliefs about cultural, ethnic, and racial diversity and building culturally responsive pedagogical relationships in learning. (Gay, 2013). In 2015, Gay stated that the implementation of CRT requires teacher decisions and actions that adhere to the principles of local contextuality, the plurality of teaching methods, and methods based on various configurations of students and society. (Gay, 2015)The outline of Gay thinking in CRT constantly evolves. Researchers continue to multiply new things not explored in CRT, including CRT, which is associated with chemistry lessons. (Najid et al., 2021; Rahmawati, Ridwan, Faustine, Syarah, et al., 2020); mathematics (Register et al., 2022); Multicultural Education (Mahali & Sevigny, 2022); and English (Idrus et al., 2023).

The analysis of publications in the Scopus indexing institution based on countries and sources found that the country that published the most CRT themes was the United States (154 documents, 4211 citations). The publication of the CRT theme from Indonesia is seven documents and 39 citations. Sources on CRT are also dominated by publishers based in the United States. The United States strives to maintain hegemony with a strategy that continues to be maintained and built, among others, by promoting American patriotism. (Ikenberry & Ikenberry, 2014). This data shows that serious efforts are needed from all countries to continue multiplying and improving the quality of CRT publications. As a country with multi-ethnicity and multi-language, Indonesia needs the implementation and approach of CRT published in reputable journals. (Al As Anuas et al., 2023; Ernawati et al., 2024; Rahmawati, Ridwan, Cahyana, et al., 2020).

Based on CRT hotspots, the study found that future research and publications will focus more on two domains. The first dominant is in new terms connected to CRT. The latest terms include preservice teacher, self-efficacy, CRT practice, impact, STEM, class, instruction, disability, work, equity, implementation, and technology. The second is the domain of the research process or method. In the second domain, the publication of CRT themes can be deepened through more comprehensive and in-depth research methods such as

the mixed-method approach (qualitative-quantitative or vice versa), updating research instruments and questionnaires, and data processing quality using artificial intelligence.

Based on the discussion above, this study recommends a conceptual and practical framework for CRT in the education and research process. The conceptual and practical framework for using CRT in education includes Examining how prospective teachers at various levels of education can understand and apply CRT in their teaching practices; Exploring how teacher efficacy in their ability to apply CRT principles affects the impact of their teaching on students; Examining how CRT can be applied in STEM fields to improve inclusion and equity; Seeing how CRT can affect classroom dynamics, instructional methods, and interactions between students and teachers; Examining the application of CRT in the education of students with disabilities and special needs; Developing specific instruments and questionnaires to accurately evaluate CRT practices and impacts; Developing technology that supports CRT teaching, such as learning platforms that integrate CRT concepts; and providing recommendations for policymakers in implementing CRT to improve equity in Education.

Conclusion

Research and publications in CRT continue to grow due to the environment moving towards diversity. Globalization and the advancement of communication technology encourage teachers to develop teaching skills using CRT-oriented pedagogics. The concept and implementation of CRT in learning are still dominated by the most productive countries, organizations, and figures in the United States. This is a challenge for any country, especially Indonesia, which is multicultural. To increase research and publications in the field of CRT, the increase in teachers' awareness of cultural, ethnic, and racial diversity, Mastery of various multimodal teaching, and taking teaching resources from the local cultural context require serious attention together. The hotspots that can be done for future CRT research are directed at terms or variables that have not been explored much, such as pre-service teacher, self-efficacy, CRT practice, impact, STEM, class, instruction, disability, work, equity, implementation, and technology.

Recommendation

Based on the above conclusions, this study provides recommendations in the education process and research as follows: debriefing prospective teachers at various levels of education can understand and apply CRT well; Review of the use of CRT in STEM fields; CRT research in classroom dynamics, instruction methods, and interactions between students and teachers; Research on the application of CRT in students with disabilities and special needs; Development of instruments to evaluate CRT practices and impacts; development of technologies that support CRT teaching; and policymakers are expected to make rules to implement CRT in Education.

Acknowledgments

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