World Journal of Environmental Research

Volume 11, Issue 1, (2021) 01-19

www.wjer.eu

Climate change: A discourse of our contemporary world

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Suggested Citation:
Coskun, M. & Gbadeyanka, G. E. (2021). Climate change: A discourse of our contemporary world. *World Journal of Environmental Research*. *11*(1), 01-19. https://doi.org/10.18844/wjer.v11i1.5414

Received from February 21, 2021; revised from April 25, 2021; accepted from May 11, 2021;
Selection and peer-review under responsibility of Murat Sonmez, Middle East Technical University, Northern Cyprus Campus, Cyprus

Abstract

The academic community has been contentious in the discourse regarding climate change. This study aims to conduct an in-depth investigation and assessment of the past years' articles with a crystal focus on how often climate change is mentioned in our sampled articles. The statistical data originated from Taylor & Francis's publications focused and limited yearly. Vital literature review and citations are equally considered with 211 articles. The evaluation showed no notable change in the number of articles published in the context of research. Instead, it revealed the articles that believe and denied the phenomenon of climate change, climate change education and strategies, and people's knowledge and attitude towards climate change. The articles assessing quantitative and qualitative or mixed research were significantly valued through detailed calculation and critical discussion. There is a need to collaborate ideas from different fields of life to unify climate change ideas into educational science networks.

Keywords: Academic community; Climate change; Knowledge; Strategies; Thinking bank.

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1. Introduction

Various countries of the world had reached a global consensus through an international forum with the news of the outcome appraisal released on the certainty of the earth's climatic entity. Glaring proofs that people in all works of life are the primarily leading force or cause of climatic alteration. These proofing facts have full scientific backing and rigorous research of over ninety-seven percent support. The global outreach research depicted populace activities on the earth are the primary cause of climatic alteration - as dangerous contending and trivial issues in our world. Thus, it is exciting to know the real force behind the misconception regarding the science/research claims the earth's populace is the leading agent of climatic alteration (Sezen-Barrie, Shea & Borman, 2019).

Contemporary researchers of this millennium era have been working tirelessly by articulating practical proofs to positively change human understanding and belief. They ensured to convince humanity that humans, with their various activities, are the leading genesis of climate change. However, the lack of knowledge and misconception rising in people's minds in our various societies has given much room for disbelief notions or conceptual frameworks disseminated beyond proportion regarding natural weather conditions alteration. These attributed to insufficient campaigns and people's enlightenment regarding the human cause of climatic alteration. Even failure on the part of the government of various countries of the world to agree on the reality of climatic change and find a common/diverse adaptable strategy to combat it; corporate, private ventures, Non-Governmental Firms, Government regulatory bodies relating to environmental affairs and professionals in like passion for the Environment – were all found wanting in reinforcing societal enlightenment on climatic alteration (Sezen-Barrie, Shea & Borman, 2019).

On the contrary, there are diverse circumstances that tend to determine the idea of nature regarding the contentious issue of global warming. Nevertheless, there is definite proof of facts by science-based knowledge that the earth's populace is the primary genesis of climatic variation. This opinion triggers affect many opinions and knowledge regarding climatic alteration. A significant number of studies have been carried out globally in different nations of the world. All attested remarkably to the strong contention that erupted from the forum of climatic experts that people probably are not the real genesis of climatic variation. People's views are not related to worship/divinity and the connotation of worship. It merely signified the act of rating the agreement and non-agreement level of the respondents relating to climatic variation (Cook & Jacobs, 2014).

However, they acknowledged that people on the face of the earth are the principal caustic agent of climatic change. Much detailed assessment and re-appraisal work of research carried out since. All the scholarly works and a global summit on climate change followed the direction that people are the fundamental forces triggering climatic change. None of the conceptual frameworks articulated together by the Global Summit on climate alteration were outrageously denied by the science-based knowledge articles published since the year 1993 to 2002. Also, the research works by Geo experts revealed that publications by climatic experts are majorly on changes in weather conditions of the earth. Approximately ninety-seven percent of their publications concurred that people are the primary catalyst behind the increase in climatic variation (Cook & Jacobs, 2014).

Furthermore, the vision of teaching and learning as it influences the character display of the people are well-considered and formulated into the tactics usually used by most nature advocators. Means to reduce carbon expulsions per headcount consume more natural farm produces, and discard the conventional farm produces; calling for societal reform on social amenities, and equity practice in a liberal democratic system that is environmentally conscious. Maximum conservation of tropical vegetation, controlling urban transport congestion, cutting, and rationing household energy consumption by using less energy consumption electric devices/gadgets, waste minimization through efficient waste re-use, waste separation, and waste recycling (Kenis & Mathijs, 2012).

1.1. Conceptual background

Globally, there is a fast-growing interest in the teaching of climatic alteration due to full financial backing and efficient management in the teaching schemes. As aforementioned, agitations and aspirations, the quest and demand from scholars worldwide initiate the move on climatic alteration training and strategy. Thus, from the year 1990 to 2015 aggregately – a ground total of One Thousand Four Hundred and Eighty-Nine research papers were published in an educational journal with a subject focus on climatic alteration and training. Despite these large volumes of research, the gross number of teachers still proves the difficulty involved in explaining the climatic alteration. Moreover, there is no concrete arrangement of practical approaches to educating people on climatic alteration (Monroe, Plate, Adams & Wojcik, 2015).

It is imperative in this conjunction to state the objectives of the study appropriately to give focus to the ongoing research as follows: to ascertain the percentage of articles relating to knowledge and attitude regarding climate change from the period 2012 to 2018 on Taylor and Francis Online Publication; to appraise the articles that mentioned climate change theory as a subject of discourse; to analyze the articles that focused on those who believe and do not believe in climate change issues; to assess critically the articles that focus on climate change strategies; to reveal the articles that concentrated on the education aspect of climate change and to evaluate the extent of research in quantitative, qualitative and mixed methods.

Fundamentally, this research calls for more collaboration and cooperation among world leaders, captains of industries, profit-oriented and non-profit organizations, communities, environmental mediators, professionals, teachers, and individuals. It works actively with these notions that are ascribed – that collaboration with weather conditions defense schemes can only work if collaboration is accepted by everybody in our global community (Mann, Briant & Gibin, 2014). Thus, upon this premise, the following research questions were formulated as the subject of discourse in research:

1. How often is climate change mentioned as a subject of discourse in the seven years of article publications?
2. To what extent are the articles theoretically and practically focused on those who believe and do not believe in climate change issues?
3. To what extent are the articles focused on climate change strategies?
4. To what extent are the articles concentrated on the education aspect of climate change?
5. To what extent are the articles relating to knowledge and attitude on climate change?
6. To what extent is research carried out the quantitative, qualitative, and mixed method in all the research topics?

1.2. Purpose of study

This current study was piloted based on content analysis concerning climate change education, strategies, knowledge, attitude, and how often climate change is mentioned in articles publication coverage of seven years (2012 to 2018) and the methodological approach of the selected articles. The focus of this empirical research was to evaluate the extent of seven years of publication in Taylor and Francis on the issues of climate change education and strategies as concurrent details above.

1.3. Significance of the Study

This study discovered a vast opening vacuum for content analysis regarding climate change in Taylor and Francis Environmental Education Research journal publications. Thus, the researcher intends to close this gap and add to the body of knowledge on climate change education strategies, knowledge, and attitude. Climate change has been a severe controversial issue that transcends beyond the scope of rational environmental philosophies that environmental experts and scientists usually handle.

Politicians, Lawmakers, Government decision executives, Corporate organizations, Non-Governmental/Non-profit organizations, press industries, schools, and Local and Urban Communities are highly involved in climate change. Despite the enormous and unrelenting efforts of the Kyoto Protocol and Global communities committee on climate change summit, many nations of the world both advanced and developing counterparts. Even the corporate business world remains non-compliance and equally politicized the outcomes of such a summit at the expense of our invaluable Environment. The researcher aims to unify all the 211 articles by labeling them in terms of theme, abstract, introduction, literature review, and scientific procedure. This particular method of content analysis is uniquely contrary to the conventional technique usually used by scholars or researchers to express climate change according to the context of this study. Most studies are usually carried out based on the available information to a researcher within the specified scope and sample size. Thus, other searches tend to consider some issues that affect people's views, understanding, and conduct about climate (Carmichael & Brulle, 2017); but this is an extension and overall appraisal of such articles from 2012 to 2018. This study's uniqueness lies in different ideas expressed and articulated by different authors and sources as provided by Taylor and Francis platform. This platform creates a diversified view, context, and reflection concerning the theme of "climate change" (Capstick et al., 2015).

2. Materials and Methods

2.1. Data Collection and Classification

In every field of research, a stage-by-stage tactical re-assessment is carried out before actualizing the projected outcomes. This ideology derived from the field of medical science; implies that tactical re-assessment is an inevitable matter. It invariably implies creating the possibility to search, study, collect and develop the proofs of study for public reading (Monroe et al., 2019). This approach was adopted in this research on content analysis regarding climate change. Kerlinger 1973 shed light on the concept of content analysis. He described the content analysis as a technique of surveillance used by scholars to have an edge of advantage regarding the information on a particular subject of discourse. We briefed all the content of the selected articles comprehensively without deviating from the original information (Boykoff & Boykoff, 2007). We chose a renowned research journal that promotes broad academic knowledge known as Taylor & Francis and the bulk of information banks in various studies. The availability of articles on online electronic resources through Taylor and Francis advance exploration deferred in respect of the University accessing capability in terms of subscription and internet efficiency. All our data searches were conveniently done with full accessibility in Taylor and Francis's platform dated to December 2018; precisely 211 articles were electronically selected under the subject of Education and Environmental Education Research as publishing a journal from 2012 to 2018.

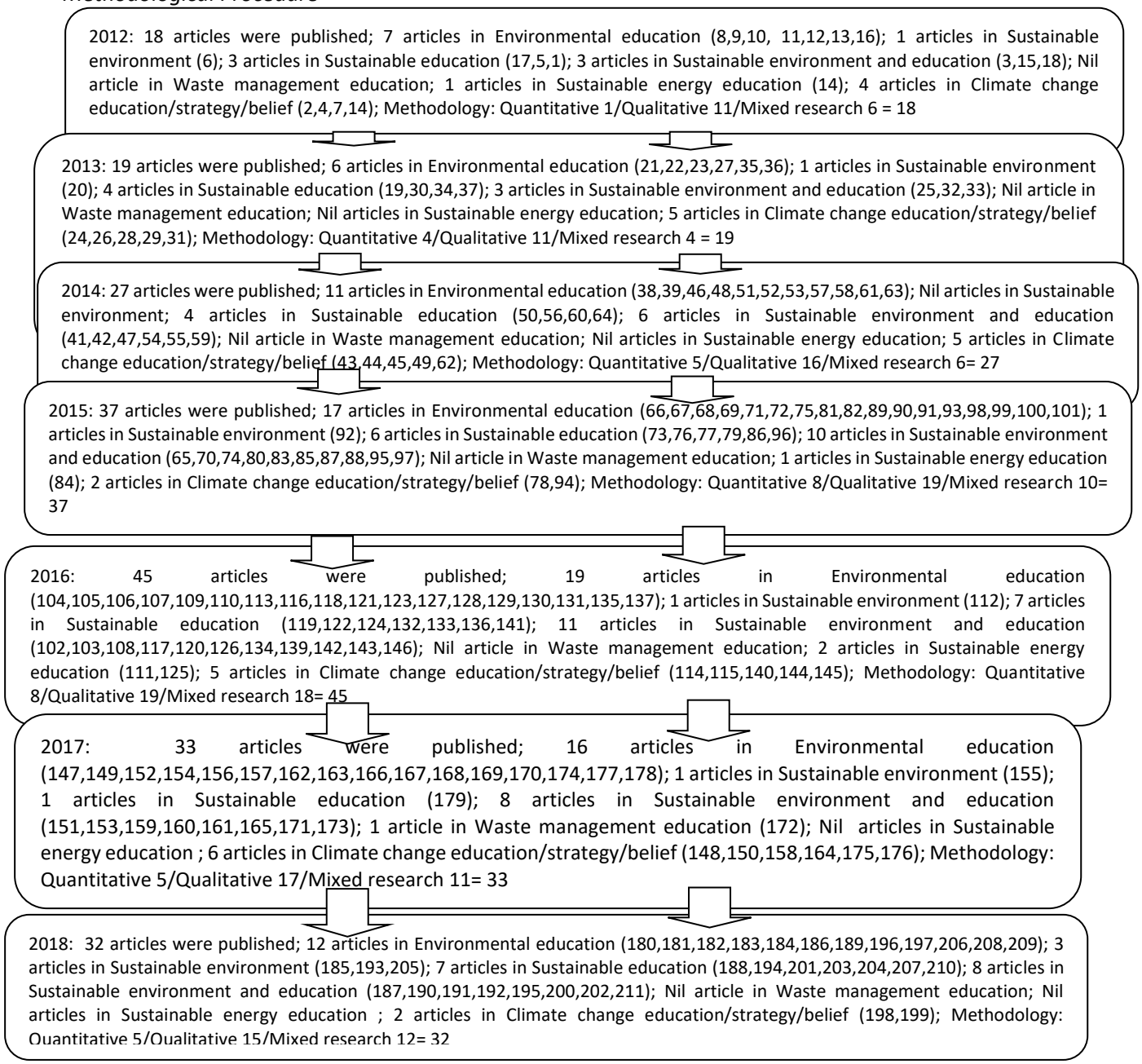
2.2. Analysis

The research uses inductive content analyses because there was no adequate information on the original context of our research. Besides, the available information was too scanty to be reliable. We thus decided to efficiently manage the quantitative and qualitative data being available to us from the bulk of 211 articles to attain the objective of our study and provide answerable proofs to the proposed research questions. We moved further to simplify for clarity and understanding sake the procedures of inductive content analysis. It entails manual coding of articles from the oldest to newest in years (2012 – 2018) 1 to 211, categorization of the 211 articles according to the message in the topic, abstract, introduction, literature review, and methodology procedures. These subjects are Environmental education, Sustainable Environment, Sustainable Education, Sustainable Environment, and education. Waste management education, Sustainable energy education, Climate change education/strategy/knowledge/attitude, and Methodology; quantitative/qualitative/mixed research (See details of illustration in Figure 1 below). The stage in content analysis begins by deciding on the component of the data assessment through a subject/topic classification. All these are explicitly done

to reflect the whole context of the 211 selected articles and enhance the efficiency of our data analysis from a descriptive perspective with visible graphs illustration. It also concurred with Barnard 1991 that programming and categorization of subject topics was independently formulated at this research point (Elo et al., 2014).

Figure 1

Categorization of Articles According to Theme, Abstract, Background of Study, Literature Review, And Methodological Procedure



comparison, and analysis of related and non-related articles on climate change. Instead, we focused on articles based on aims and objectives regarding climate change in education, strategies, beliefs, knowledge, attitudes, and how often climate change is mentioned in the selected 211 articles for content analysis study. We selected articles circulated in the English language and knew full well the consequences of our decision due to other local languages that are well-spoken in the world. However, these could be cumbersome to access.

All proposed research questions are limited by the availability of articles related to the course of our findings. Most of the articles discovered during collation generally deviated from the context of our findings. Often time-related to sustainable education, waste, Environment, and energy education. The significant impact of this research is to advance the knowledge of climate change in the areas of education, strategy, belief, knowledge, and attitude. It will, in turn, lunch in an adaptable approach, both institutional and legal frameworks that will promote climate change work effectively and efficiently.

3. Results

This study is to appraise 211 articles derived from Taylor and Francis online. Different calculated figures were used in data analysis and presentation. We manually counted the number of articles accurately as they appeared serially from 1 to 211, articles coded mathematically. Then, the researchers worked out all the percentages of our proposed research questions with graphical illustrations in different categories (See details in Figure 1). According to the principle of inductive analysis that we adopted in this research, the assessment procedure is categorized into three platforms such as planning, unifying, and commentary. The assessment of statistics has no specific regulations in the content analysis; large volumes of data are organized in different classes (Elo et al., 2014). All those mentioned above were carefully considered at every stage of our calculations. This research, therefore, focused on analyzing the outcomes of our proposed research questions critically as thus:

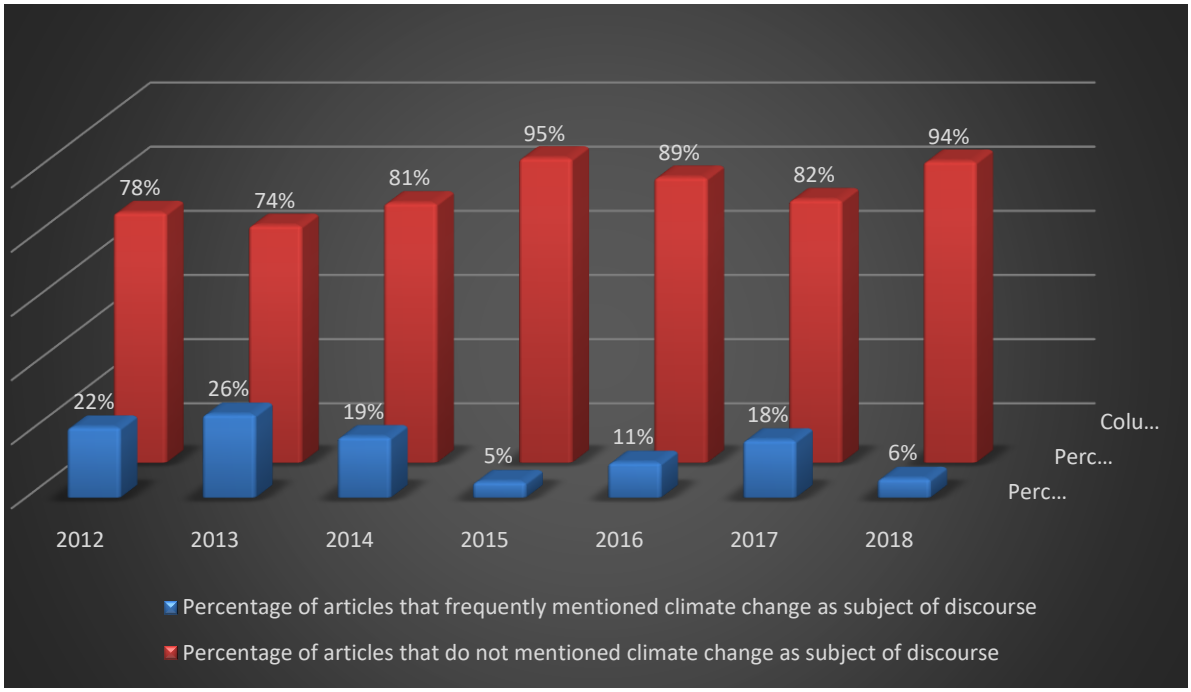
3.1. How often was Climate change mentioned as a subject of discourse in the seven years article publication

As indicated in Figure 2 exhibited below, the rate at which climate change is mentioned in the coverage of seven years of article publications in Taylor and Francis. It was low compared to the consistent publications of the volume of articles in other related environmental education and sustainability studies. Such a high-profile journal (Environmental Education Research) has a low rate of publication on climate change-related issues. The issue of climate change took a downward trend from 2012 to 2018 22%, 26%, 19%, 5%, 11%, 18% to 6% concurrently.; while the other figures relating to environmental education, sustainable education, sustainable Environment, sustainable Environment and education, waste management education and sustainable energy education. It followed a significant variability growth rate that ranges from 78% 2012, 74% 2013, 81% 2014, 95% 2015, 88.9% 2016, 82% 2017 to 94% 2018. To buttress further, 14 articles in 2012, 14 articles in 2013, 22 articles in 2014, 35 articles in 2015, 40 articles in 2016, 27 articles in 2017, and 32 articles in 2018. The reverse is the case in the articles on climate change which range as low as four articles in 2012, 5 articles in 2013, 5 articles in 2014, 2 articles in 2015, 5 articles in 2016, 6 articles in 2017, and 2 articles in 2018. Therefore, the growth trends in climate change-related issues are considered very low and call for more attention and research to fill these gaps.

Climatic alteration as a subject of discussion critically examined back to the early 1970s, until the middle of 1990, when more attention shifted globally to address this threatening issue. As a result, there are growing studies on the sustainable ecosystem, both quantitative and qualitative (Jaworska, 2018). While studies on content analysis are frequently carried out on most platforms of sustainable environmental journals.

Figure 2

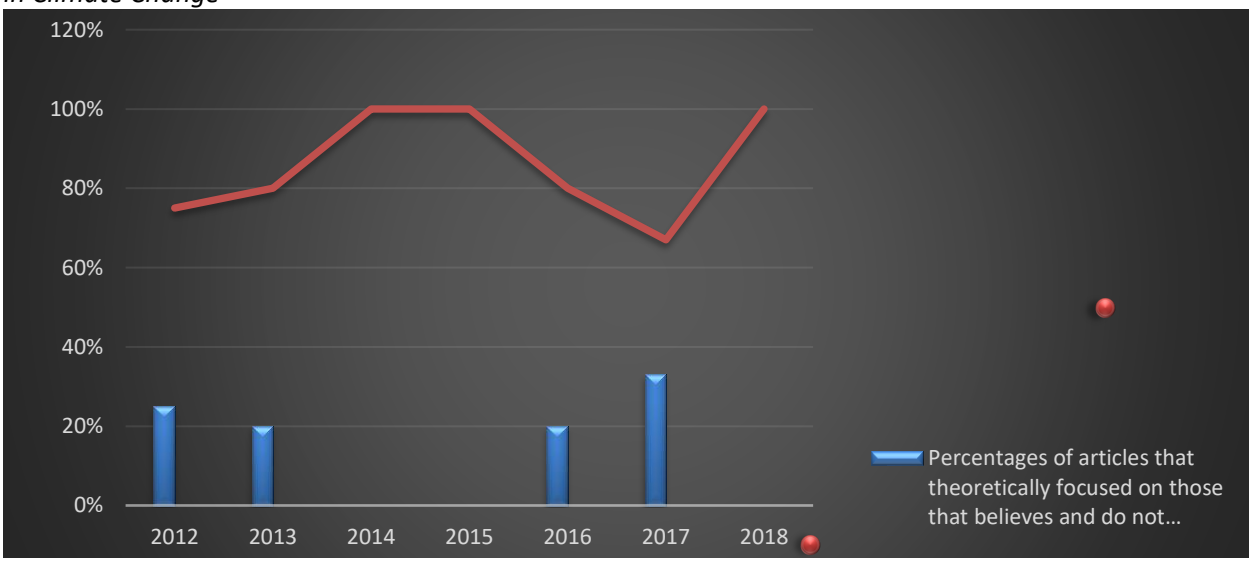
Frequency Distribution of Climate Change mentioned as a Subject of Discourse in the Six Years of article Publication



3.2. Assessment of Articles that theoretically focused on those who believe and do not believe in climate

Figure 3

Percentage rating of the Articles that theoretically focused on those who believe and do not believe in Climate Change



It depicted a low parallel growth in Environmental Education Research journal with 25% (one article serially listed in number 4). In 2012, 20% (one article serially listed in number 27) 2013, 0% 2014, 0% 2015, 20% (one article serially listed in number 140) 2016 and 33% (two articles serially listed in number 164 and 176) 2017. it recorded zero percent in the year 2018 (198 and 1999) – compared with the article's publication that theoretically focused not on those that believe or do not believe. It experienced a steady growth of 75% from 2012 to 2013 repeatedly – it soared high in 2014 to 2015 by 100% respectively. From 2016 to 2018, the publication was waveringly low from 25%, 33% to zero percent in 2016 to 2018, respectively.

In summary, the contexts of those articles theoretically and practically were quite different in the way they applied climate change activities and people in the environment; for instance, article Number 2, 7 and 14 in the year 2012 deals with creating more involvement through interactive forum among students regarding climate change, using botanical garden scene to promote climate change learning and learning among pupils on domestic energy saving so as to minimize carbon expulsions that stimulate climate variation; article Number 24,26,28 and 31 in the year 2013 related with issues on collaboration of renewable resources advancement with climate change, assessment of student knowledge regarding climate phenomenon, public awareness on climate change and dissemination of climate change knowledge; the year 2014 article Number 43, 44, 45, 49 and 64 discussed issues relating to correction of climate change misunderstanding, reinforcement of students awareness, creating effective tools for climate change learning, relating climate change to people's well-being and effective learning for climate change; the year 2015 article Number 78 and 94 focused more on minimizing carbon expulsions per head and learning about climate change through redefined school academic syllabus; the year 2016 article Number 114, 115, 144 and 145 centred on the idea about atmospheric carbon impact, climate change awareness, education and mitigation aspects of climate change and assessing knowledge of climate change among college students; the year 2017 article Number 148,150,158 and 175 concurrently deal with using substance behaviour in science as a specimen to interpret atmospheric carbon impact, assessing students' knowledge and idea about climate change, redefining climate change message and selecting strong tools in relating climate change tactics to people; lastly in the year 2018 article Number (180, 181,182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210 and 211) were noted to be related to other environmental issues in the society.

In article Number 4 (2012), a renowned scientist named Svante Arrhenius attested to the belief on climate change by explaining the influence of accumulation of carbon dioxide and carbon substances in the determination of atmospheric weather conditions. Even the UN Section on climatic change concurred with the scientists by releasing scientific-analytical information and studies on climate alteration (Niebert & Gropengiesser, 2013). Article Number 29 (2013) revealed that knowledge regarding the human cause of climate change had been widely spread and accepted by the masses and tertiary institutions embodiment (Clayton et al., 2014) . Article Number 140 (2016) released a contentious survey on the USA populace that roughly 66.6% of aged people believed that the atmospheric heating is increasing. Fifty percent believed that people factor-stimulated the heating of the earth (Bentley, Petcovic & Cassidy, 2019) . The global weather condition is experiencing severe transformation, and people are the major forces behind the climatic alteration (Sezen-Barrie, Shea & Borman, 2019). An empirical survey revealed that awareness and opinions about climatic alteration would impact young generations' notions. The people factor acted as the central stimulus of climatic alteration by an environmentally friendly driven passion (Li & Monroe, 2019).

Thus, more publication of articles is expected and should be promoted in the academic Environment – to clear and enlighten the people on the denial of climate change issues. Reinforcement of research in the direction of climate change would possibly change people's beliefs within a given timeframe that emphasizes climate change. However, the low publication of climatic alteration issues invariably implies that the matter might disregard (Swim et al., 2009).

3.3. Articles that focus on climate change strategies

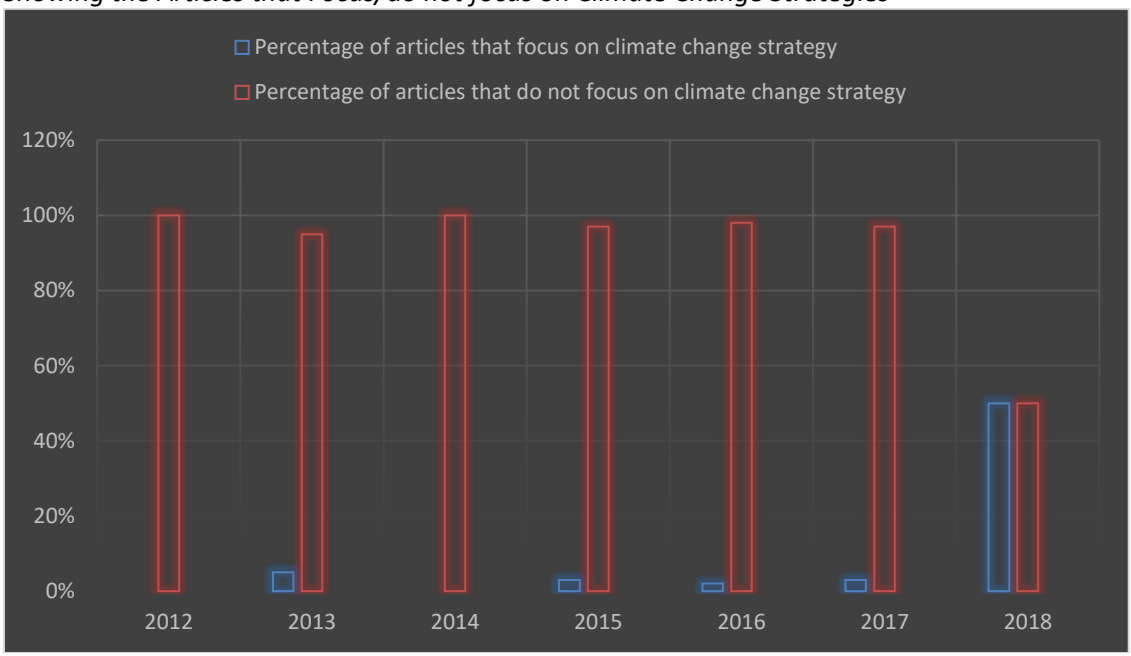
The articles that are unconnected with climate change strategies have remarkably overshadowed the growing glimpse and tendency of articles focusing on climate change strategies. The gap is too broad, which triggers so much concern among environmental journals (find details in Figure 4). Solutions, efforts, and more collaboration from many people, both governmental and non-governmental, are needed to fine-tune strategies to alleviate climate change in different works of life. Thus, more findings are required and should be encouraged vigorously in that direction. It remains very high from ranges

of 0% in 2012, 5% in 2013, 0% in 2014, 3% in 2015, 2% in 2016 and 3% in 2017 in correspondence with other article publications as follows – 100% in 2012, 95% in 2013, 100% in 2014, 97% in 2015, 98% in 2016, 97% in 2017 and 50% in 2018 (See details in figure 4 below and as well relate Figure 1 above).

Therefore, article Number (24, 78, 114, 175 and 198 in 2013, 2015, 2016, 2017 and 2018 respectively), supported theoretically and practically the following notions on climate change strategies: there are cogent demand and necessity to efficiently control climatic alteration by involving workable frameworks of alleviation and plans which were widely accepted in inquiry and scheme relating to ecological learning and schooling for renewable advancement (Blum et al., 2013); it has been emphasised by Kollmuss & Agyeman (2002) being aware of crucial matters and its working plans/schemes and having a clear understanding of such schemes – could be connected to the willingness to work supportively with nature (Lin, 2016); control of motor vehicles mobility were visible strategy that enhanced minimisation of carbon expulsions (Frappart et al., 2018) ; formulation and execution of schemes/plans regarding climatic alteration demands reinforcement of awareness and in-depth consideration of the impact of societal philosophy on the basis of understanding and education (Monroe et al., 2019).

Figure 4

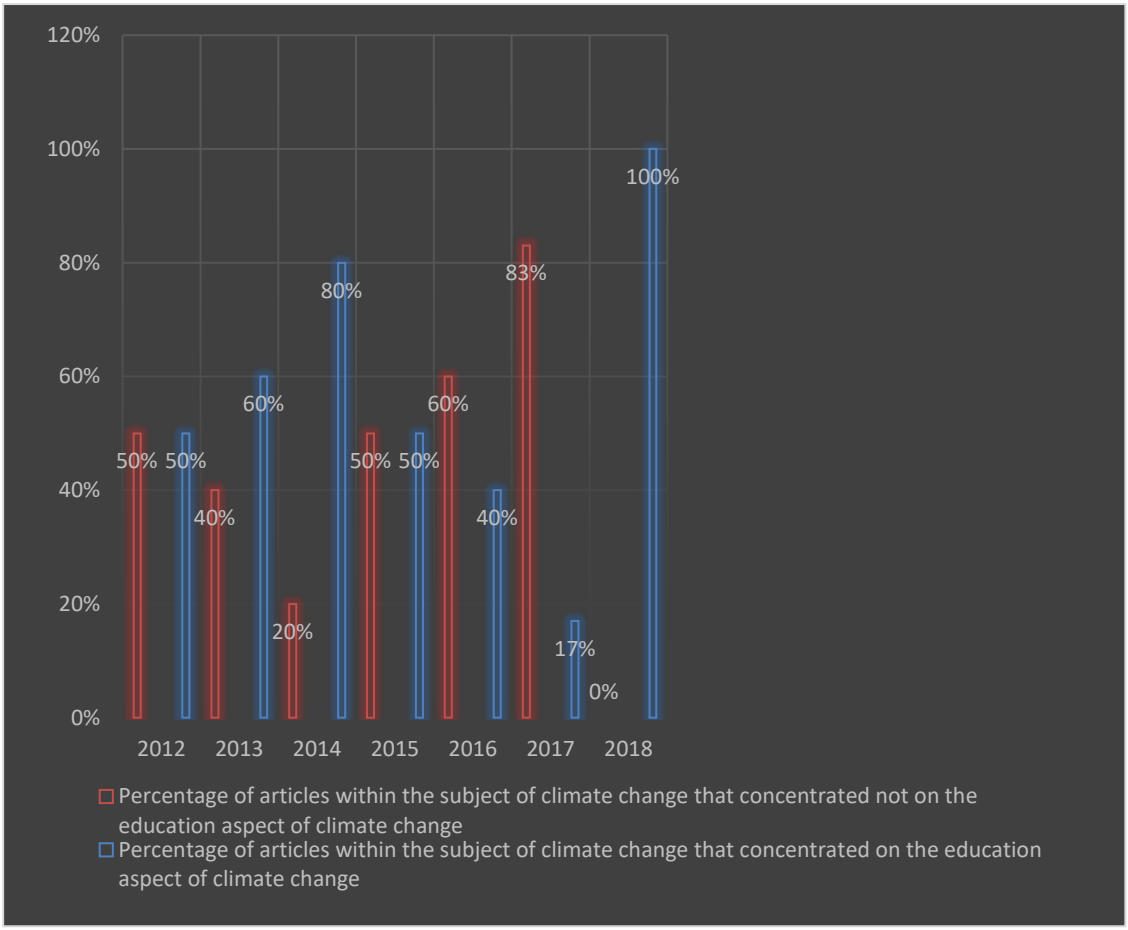
Showing the Articles that Focus/do not focus on Climate Change Strategies



3.4. Articles that concentrated on the education aspect of climate change

Figure 5

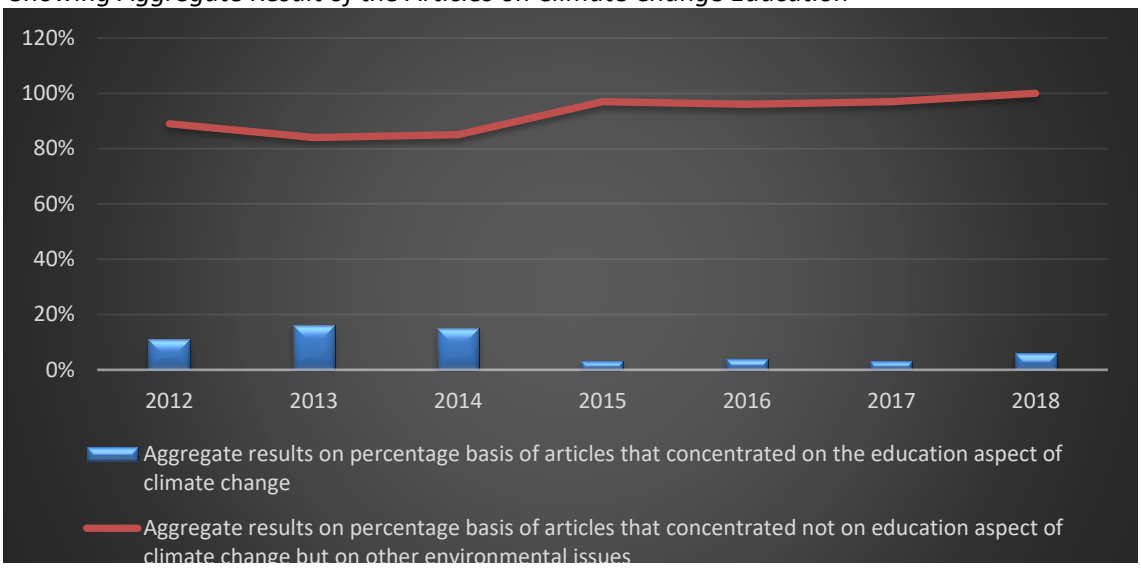
Showing the Articles that Concentrate/do not concentrate on the Education aspect of Climate Change



The trend of article publications on climate change education and non-related climate change education started competitively with an equal rate of 50% in 2012. The year 2013 to 2014 and 2018 (2 articles, Number 7 and 14) it ascended from 60% to 80% and 100% (3 articles, Number 28,29 and 31; 4 articles Number 43,44,49 and 62; 2 articles with Number 198 and 199). Later dropped gradually from 50% to 40% and 17% (1 article Number 94; 2 articles Number 115 and 144; 1 article Number 175) 2015, 2016 and 2017, respectively.; while article publications that are not related to climate change education but the subject of climate change. It started coequally (Figure 5 50% 2012 and dropped remarkably 40% to 20% and 0 the % year 2013, 2014 and 2018 concurrently) spring up in the years from 50% to 60%,83 the % year 2015 to 2016 and 2017 accordingly. The number of articles in the publication from 2012 to 2018 regarding climate change education is too limited (12 articles). According to our theme, the number of articles published relating to Environmental Education, Sustainable Education, Sustainable Environment and Education, Waste management education, and Sustainable energy management.

Figure 6

Showing Aggregate Result of the Articles on Climate Change Education



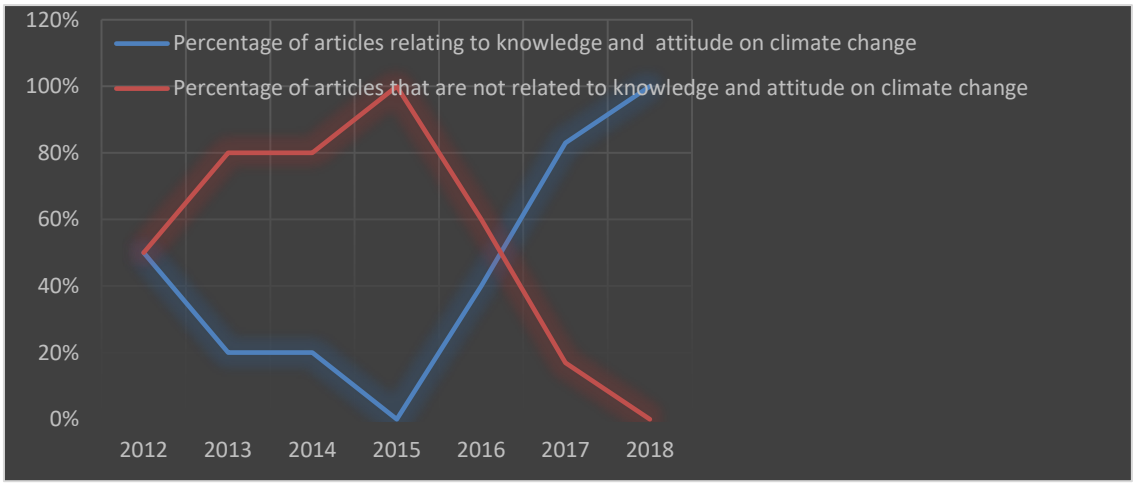
The charts diagram above showed the overall results on a percentage basis relating to climate change education. Moreover, other articles that are not related to climate change as being detailed in Figure 6. It showed an aggregate result of articles on climate change education with a downward trend of 11% with just two articles in 2012, 16% (three articles) in 2013, 15% (four articles) in 2014, 3% (1 article) 2015, 4% (two articles) 2016, 3% with 1 article in 2017 and 2 articles in 2018. Relatively, high growth rate was recorded for other articles that not related to climate change education; their percentage ranges from 89% (26 articles) to 84% (16 articles), 85% (23 articles), 97% (36 articles), 96% (43), 97% (32 articles) and 94% (30 articles) from 2012 to 2013, 2014, 2015, 2016, 2017 and 2018 respectively. This analysis on the part of the society indicated low research on climate change education both theoretically and practically signified low awareness level, low level of understanding, low patronage of pro-environmental activities, more offenses, and negative actions toward the Environment.

Moreover, these are views both practically and theoretically that promote climate change education: climatic alteration could be taught in an academic environment, many of these teachings are centred on learners' views or notions regarding weather alteration and such views could possibly be influenced by effective teaching (Sellmann & Bogner, 2013); people should not be too dependable and refers to teaching as transit of skills/understanding in respect of matters from the angle of instructor to learners – but still teaching activities are being planned by involving and emphasising on real societal issues to form a habit of learners with extensive understanding that are visible in views and manners in line with minimising power consumption and carbon expulsions (Lee et al., 2013); accordingly, the real difficulty lies with the way to promote awareness and programs relating to climatic alteration which emphasises the vital position of teaching and learning (George, Tan & Clewett, 2016); learning manuals are valuable learner resources usually being utilised during the teaching of climatic alteration (Román & Busch, 2016) ; instructor showed anxiety in the way learners' and guardians turn up to the issues relating to climatic alteration, they seem to lose confidence while instructing students in respect of climatic alteration, they were also afraid of losing respect and social activeness in the neighbourhood where they belonged, thus they ignored the discussion on climatic alteration, other instructors complained of inexperience and short of sufficient information to teach climatic alteration (Monroe et al., 2019).

3.5. Articles relating to knowledge and attitude on climate change.

Figure 7

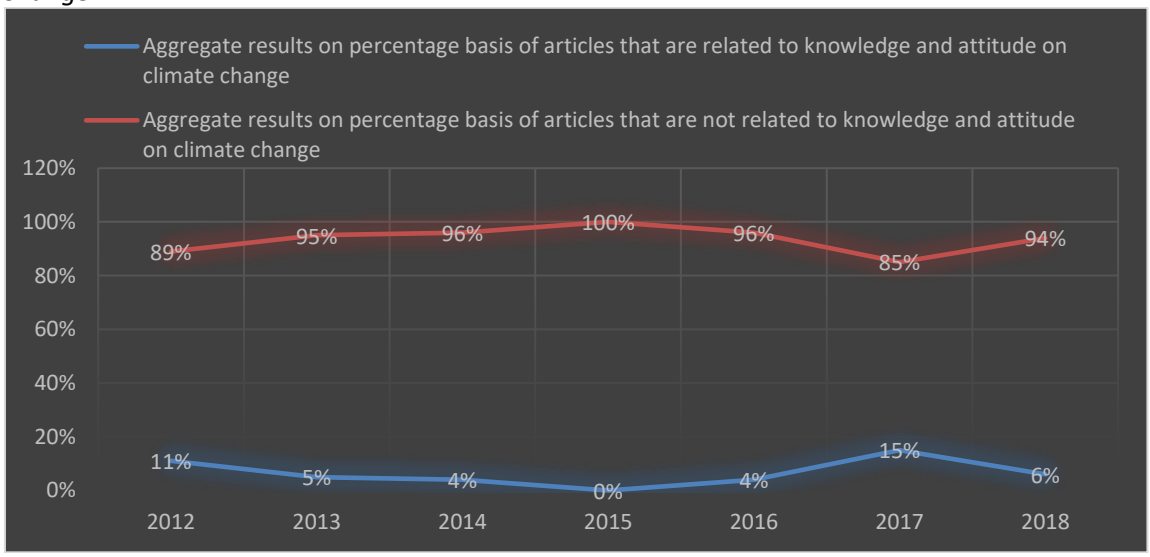
Showing Articles relating to Knowledge and Attitudes on Climate Change



The unrelated articles to knowledge and attitude on change climate emerged 50% with 2 articles (article Number 7 and 14) to 80% (article Number 24, 28, 29 and 31), 80% (article Number in 43, 44, 49 and 62), 100% (article Number 78 and 94), 60% (article Number 114, 115 and 144), 17% (article Number 175) and 0% (Nil article) year 2012 through 2018 respectively. It dropped significantly articles related to knowledge and attitude on climate change for three years. Gradually rose to stabilise in the two years according to the following statistics from 50% (article Number 2 and 4) to 20% (article Number 26), 20% (article Number 45), 0%, 40% (article Number 140 and 145), 83% (article Number 148, 150,158, 164 and 176) and 100% (article Number 198 and 199) in the year 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively.

Figure 8

Showing the Aggregate Result of the Articles relating to the Knowledge and Attitudes on Climate Change



Now, presenting the results from a broader perspective regarding Figure 8 that aggregately compared articles related to knowledge and attitude on climate change to other non-related articles in

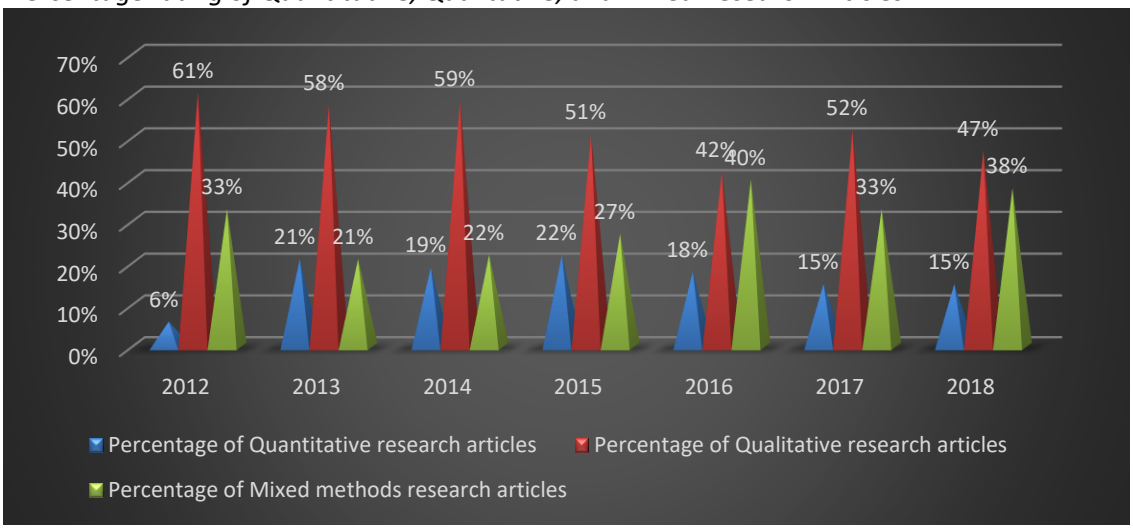
environmental education, sustainable Environment, sustainable education, sustainable Environment and education, waste management education, and sustainable development energy education. The margins being created from the graph configured statistics are wide gap of landmarks with significant concern for publishers and researchers; the aggregate results run parallel to each as thus 11% (2 articles) against 89% (16 articles) in 2012, 5% (1 article) against 95% (18 articles) in 2013, 4% (1 article) against 96% (26 articles) in 2014, 0% in 2015 against 100% (37 articles) in 2015, 4% (2 articles) against 96% (43 articles) in 2016, 15% (5 articles) against 85% (28 articles) in 2017, and 6% against 94% in 2018 accordingly.

These are notions that propagate better knowledge and attitude toward climate change: fundamentally, renewable nature learning is mainly built on ecological perception/view in terms of decision making, learning manual materials and related literature materials upon a philosophy that values better ecological practice which may originate from better perception of nature (Öhman & Öhman, 2013); on the basis of study, it has been emphasised that more ecological understanding relates with your active/action support for nature, advancement in the creation of better awareness about nature promotes a workable sustainability toward nature practitioners/partnership (Shepardson et al., 2014) ; agriculturalists will preferably not relate with the groups that have contradicting knowledge about climatic alteration (Monroe et al., 2015); people assessment rate in the USA about the knowledge of climatic alteration had experienced an increment of eleven per cent to thirty-three per cent in 1992 and 2014 respectively (Saad, 2014): although, education appraisals were required as understanding triggers the passion for climatic alteration, in spite of beliefs orderliness (Shi, Visschers, Siegrist & Arvai, 2016). Therefore, it is pertinent to affirm that more research works facilitated knowledge and attitude regarding climate change.

3.6. The extent of research toward quantitative, qualitative, and mixed methods on 211 sampled articles

Figure 9

Percentage rating of Quantitative, Qualitative, and Mixed Research Articles



After a thorough counting, sorting, calculation and chart plotting, it was finally revealed according to Figure 9 that qualitative research articles is taken the lead from 2012 inception to 2018 closing year with remarkable growing fluctuation rate but slightly stable that ranges from 61% (article Number 1, 2, 3, 4, 5, 10, 11, 12, 15, 17and 18), 58% (article Number 19, 20, 23, 24, 25, 26, 27, 28, 30, 33, and 37), 59% (article Number 38, 39, 40, 41, 46, 48, 49, 50, 51, 52, 54, 55, 56, 57, 58, 60 and 64), 51% (article Number 65, 66, 67, 68, 69, 70, 71, 74, 75, 76, 77, 79, 84, 86, 92, 93, 94, and 97), 42% (article Number 102, 103, 104, 106, 107, 110, 112, 113, 116, 117, 120, 122, 124, 132, 138, 139, 142, and 143), 52%

(article Number 149, 151, 152, 153, 157, 159, 162, 163, 165, 166, 169, 170, 171, 172, 173, 174 and 175) and 47% (articles Number 180, 181, 183, 185, 192, 195, 196, 199, 201, 202, 205, 207, 209, 210 and 211) respectively; the mixed takes the second lead aggregately from the year 2012 to 2017 with slightly varies rate of 33% (article Number 6, 8, 9, 13, 14 and 16), 21% (article Number 21, 29, 35, and 36), 22% (article Number 42, 43, 47, 53 and 62), 27% (article Number 72, 80, 83, 85, 88, 91, 95, 96, 98 and 100), 42% (article Number 105, 111, 118, 123, 125, 126, 127, 128, 130, 131, 133, 134, 136, 140, 141, 145 and 146), 33% (article Number 148, 156, 160, 161, 164, 167, 168, 177, 178 and 179) and 37% (182, 184, 186, 187, 188, 189, 190, 194, 197, 198, 206 and 208) correspondingly; while quantitative research method witnessed a low patronage from researchers and that signified low application of such method in research works, the variation in the growing trend stand a bit competitive in the year 2013 and 2014 with mixed method but the competition is not extensive as it varies in the year 2012 to 2017 with the following figures – 6% (article Number 1 only), 21% (article Number 22, 31, 32 and 34), 19% (article Number 44, 45, 59, 61, and 63), 22% (article Number 73, 78, 81, 82, 87, 89, 90, 99 and 101, 18% (article Number 108, 109, 114, 115, 119, 121, 129, 137 and 144), 15% (article Number 147, 150, 154, 155, 158 and 176) and 16% (article Number 191, 193, 200 and 203) harmoniously.

Despite the low trend of usage in the quantitative research method, its application with the qualitative method has been so significant in their growth trend. The combination of quantitative and qualitative has gained more thought in this modern-day research (Creswell & Clark, 2017); the quantitative method also proves to be a strong study tool that deals with broad coverage of the study and could be used for minor coverage survey (Cohen, Manion & Morrison, 2013); about what has been carried out in this on-going research, qualitative involves the manual process of investigation, jotting of vital points in the scene of study and interrogations, duplication of documents of study, noting with writing material to categorize variables, categorization, and separation of variables and writing of evaluation reports (Denzin & Lincoln, 2000).

4. Discussion

This study considered and assessed 211 articles critically from Taylor and Francis online publication with a theme search on content analysis of climate change – specifically all the articles sourced from Environmental Education Research journal with a subject emphasis on education. This study worked on various articles on climate change, environmental education, sustainable education, sustainable Environment, sustainable Environment and education, waste management education, and sustainable energy education. Even the procedural approach used in all the topics relating to the seven categorized themes was appraised comprehensively. A diagram model was formulated based on the number of articles published. They were labelling 211 articles to facilitate data assessment procedures in terms of the arrangement, calculation, correlation, and analysis (See details in Figure 1).

The outcome of the first research question revealed an unimaginable low trend in how often climate change was mentioned; the result showed variation in the percentage rating from 22% in 2012 to 26% in 2013, 19% in 2014, 5% in 2015, 11% in 2016, 18% in 2017 and 6% in 2018. In the overall comparison, the analysis exhibited a remarkable flat growth rate with other articles in environmental education, sustainable Environment, sustainable education, sustainable Environment and education, waste management education, and sustainable energy education. The high growth rate varies significantly from 78% in 2012 to 74% in 2013, 81% in 2014, 95% in 2015, 88.9% in 2016 to 82% in 2017 and 94% in 2018. Thus, there is a need to reinforce resources and research on climate change issues (See details chart in Figure 2). This subject of study should be regular to enhance clear understanding among people, addressing by digging into fundamental facts (both theoretical and practical). It redirects research into critical analyses, necessities, and perceptions regarding climate change (Pollach, 2018).

Also, the results on the second research question revealed based on theory those who believe and do not believe in climate change issues. It represented a low growth rate that varies from 25% to 20%,

0%, 0%, 20%, 33% and 0% in 2012, 2013, 2014, 2015, 2016 2017 and 2018 respectively. However, the articles that do not theoretically focus on those who believe and do not believe in climate issues soared very high with 75%, 75%, 100%, 100%, 85%, 67%, and 94% in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 separately. Thus, presumption emerged to transform the approach to practically oriented study. Besides, there is no pragmatism without appropriate theoretical application (Eden & Ackermann, 2018).

The third research question based on content analysis focused on climate change strategies. The study revealed low articles publication varied significantly 0% 2012 to 5% 2013, 0% 2014, 3% 2015, 2% 2016, 3% 2017 and 50% 2018. Other environmental issues differ 100% 2012, 95% 2013, 100% 2014, 97% 2015, 98% 2016 97% 2017 and 50% 2018 (See details in Figure 4 and 5). So, therefore, more studies should be carried out and directed toward issues of a climate change strategy. With the rising trend in global awareness of climatic variation, tactics and expectations focused on climatic alteration easing have changed and risen drastically in this millennium age (Baer & Singer, 2018; LIacobuta et al., 2018).

The outcome of the content analysis on research question four showed competitive ratings. They later declined gradually toward the closing year of 2018 on climate change education and other articles unrelated to climate change education. The result varies 50% 2012 to 60% 2013, 80% 2014, 50% 2015, 40% 2016, 17% 2017 and 100% 2018. Comparatively, other articles that focus on a different aspect of climate change, their result ranges from 50% 2012 to 40% 2013, 20% 2014, 50% 2015, 60% 2016, 83% 2017 and 94% 2018. While the reverse is the case in general comparisons with other articles in environmental studies, the aggregate differences in rating were highly remarkable (See details chart in Figure 6). Efficient climatic teaching depends exclusively on people's knowledge of principles, behaviors, views, and conduct. The teaching precisely reinforces the fundamental principles, perceptions, opinions, information charts, and educational schemes of the people (Pike, Doppelt & Herr, 2010; Brownlee, Powell & Hallo, 2013).

Also, the result of the research question five focused on articles relating to knowledge and attitude on climate change; the result revealed a variation trend that ranges 50% 2012 to 80% 2013, 80% 2014, 100% 2015, 60% 2016, 17% 2017 and 0% nil article 2018; while in comparison with articles that focused basically on climate change issues, the result varies from 50% 2012 to 20% 2013, 20% 2014, 0% 2015, 40% 2016, 83% 2017 and 100% 2018. The result implies that articles on knowledge and attitude regarding climate change take the lead from 2013 to 2016 and eventually declined in 2017 and 2018. People need enlightenment in terms of having the right understanding and conduct concerning the effects of their actions on climatic alteration. Their actions could stimulate the world temperature rising; people's understanding and conduct go a long way in creating more passion to combat climate alteration. Understanding has remarkable effects on people's conduct. People must regularly tutor how the ecological unit functions as a component segment of their daily survival and how consequential their activities could impact the biosphere (Marquart-Pyatt, et al., 2011; Karpudewan & Abdullah, 2015).

Research question six unfolds according to Figure 9 that qualitative research articles are taken the lead from 2012 commencement to 2018 closing year with a significant upward variation rate. The combination of two or more research techniques gives room for complete knowledge. Nevertheless, several determinant factors eventually create more outcomes, authenticity, precision, prediction, regularity, and constancy, making research open for generalization and acceptance (Gunnell & Gunnell, 2016).

Most of the practices and information gathered reveal an incredible increase in the temperature of the biosphere weather conditions. In today's world, people's involvement with climatic alteration and carbon expulsions has been gaining serious momentum at the grassroots, provincial, central, and global levels. Ecological activists and mediators think of strategies and lasting solutions to combat

climate change through waste cutting. At the same time, others channeled their activities to minimize every human threat to the ecological endowment (Bofferding & Kloser, 2015).

However, the idea and awareness of climatic variation empowered learners to be well enlightened on what triggers climatic alteration. It is equipped with adequate information that will invariably influence their possible activities and attitudes on nature conservation. Educating people regarding world temperature rising and climatic variation is vital for building dynamic and vibrant learners. It outruns the misconception and ignorance surrounding the concept of weather study and its academic syllabus, which eventually creates a way for learners to think about the natural occurrences affecting the earth. Although, the challenges facing the biosphere like atmospheric carbon expulsion effects and climatic alteration were already initiated into the nature-related studies academic syllabus across all nations of the world. It accelerates the advancement of nature-related and machinery studies toward creating ecologically and technically informed people (Karpudewan & Mohd Ali Khan, 2017).

Finally, many researchers have contentiously postulated that educators' level of understanding and attitudes is a vital instrument. It indicated a prerequisite that determines the way and manner training messages pass on to the students. For example, nineteen Geography instructors revealed that the targeted respondents find it difficult to explain clearly some terminologies relating to renewable growth topics. The instructors' level of understanding and relatively awareness is crucial because learning institutions are valuable in getting news and ideas relating to topics like climatic change (Özdem et al., 2014). Thus, an educator's attitude is a significant determinant factor that influences the educators' policy action in the training of students. The matter of climatic alteration is highly contending. It is mental and sociological reasoning, divinity or worship, attitude, governmental ideology, and understanding of technology (Seow & Ho, 2016).

5. Conclusion

Many research works have been carried out so far concerning climate change issues. These research articles have been too scientific and even professionally ambiguous for people to comprehend and believe. It has resulted in several denials and politicization of issues adversely affecting our world. The assessment described no remarkable variation in the number of articles available. The articles assessing quantitative and qualitative or mixed research – were significantly valued through detailed calculation and critical discussion. There is a need for the teamwork of ideas from different fields of life to unite ideas of climate change together into informative science. It will generate linkages or structures toward the frequent spreading of news regarding the reality of climate change, climate change education, and strategies.

Hence, academics should explore various research procedures. However, people and most nations of the world acknowledged that if the strategies are adopted and executed. It will eventually reduce the commerce and financial growth of any nation. Thus, making policy to combat climatic alteration, individually or state-wise, must be holistically based on societal, monetary, and ecological costs. It practically evidenced that prompt implementation of any acceptable scheme might minimize expenditures in the long run. However, several theoretical and practical works revealed that people misunderstood the approach taken to alleviate climatic alteration and the implications.

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