

Analysis of the Content of the Chemistry Book for the Third Grade is Average according to Controversial Issues

NaghamHadi Abdul Amir¹, Hanan Abdul Sayed Faisal²

^{1,2}Department of Chemistry, College of Education Pure Sciences / Ibn AL-Haitham,
University of Baghdad, Baghdad, Iraq
albadytammstfy29@gmail.com & nag_alamir123@yahoo.com

Abstract

The aim of the research to analyze the content of the chemistry book for the third grade is medium according to the controversial issues of the academic year (2020 -2021), to achieve this goal a list of controversial issues was prepared to analyze the content of the chemistry book for the third-grade medium, named the tool of analysis, consisted of (6) major issues emerging from (54) sub-issues, after referencing to educational literature, the opinions of competent arbitrators and some chemistry teachers, and the chemistry book was analyzed according to the analysis tool and showed the results using repetitions and percentages

The third-grade chemistry book averaged 107 repeats, and about the inclusion of key controversial issues, the chemistry book for the third-grade average included five major issues ranging from (66.36% to 1.87%) Except for the issue of chemical weapons, the chemistry book did not include the middle third grade, and the percentage was(0%) percent,It has been found that most of the sub-issues were not included in the content of the chemistry book for the third-grade medium, which included in the list of controversial issues prepared, and the researcher believes that these issues can be included in the content of the chemistry book for the third-grade average as contemporary and important issues in how they suit the size of these issues taking into account integration, sequence and balance, and in light of the findings of the study, a set of conclusions, recommendations and proposals were presented, including:

1-Inclusion of topics and controversial issues in the content of the chemistry book for the third grade is average.

2-Recommend to researchers to conduct further studies on controversial issues and use the experimental curriculum and use them with different variables such as achievement, study skills and life in students and different stages of study .

3-Directing the attention of specialists in the reform of science curricula, especially the curriculum of chemistry, to the importance of including controversial issues as it is one of the modern trends of scientific education.

Keywords: Content Analysis, Controversial Issues.

Research Problem:

The insouciance of the world we live in this era and the desire to develop what was not known led to the emergence of several problems and the crisis of the relationship between science on the one hand and morals, society, environment, and religion on the other, to the extent that science contributed to solving the problems of individuals and societies, resulting in a lot of damage and risks to the environment and human life, and floated several controversial issues on the scene driven by opinions between health and error Between

rejection and acceptance, these revolutions and scientific innovations have become addressed by ordinary non-specialists, which necessitates science books, in general, to address some of these controversial issues because of their profound impact on the lives of students, including the report of the National Association of (Science Teachers of America).

The issue of energy shortages, the issue of war technology, the issue of nuclear reactors, the issue of air quality and atmosphere, and other key and sub-issues. (Zaytoun, 2000:48), and in fact chemistry curricula still need further development and depth, because they still focus on the amount of information and scientific knowledge and lack diversification, suspense and excitement, and most teachers are committed to teaching the book curriculum only while modern trends focus on a new concept of science teacher in general and chemistry teacher in particular depends on organizing students' education for science by guiding them to how to think and how do they come to know themselves and how to employ them in life, so it became necessary to include these approaches to issues that arouse enthusiasm, discussion, excitement and excitement, and because the development of the Iraqi curriculum became an urgent necessity to keep up with the requirements of the times and fill the gap between it and the developed countries in the field of science, so it was necessary to limit some of these controversial issues in the book of chemistry for the third grade average in Iraq in order for students to acquire new skills in thinking and dialogue based on the moral, social and cultural framework prevailing in society During their discussion of the global and local dialectic issues contained in the science books in their various branches, the researcher reinforced the problem of research with a survey questionnaire presented and discussed with a number of chemistry teachers with at least 10 years of experience.

By informing the researcher about literature and previous studies in the field of methods of studying science, the researcher did not find a study on controversial issues to teach chemistry locally and Arabiya (as far as the researcher learned) despite the existence of local and Arab studies and researches on controversial issues in life sciences, biology, physics and various middle, secondary and university stages such as study (Farih, 2010), (Bain Salman, 2008), and (Al-Khaza'ala), 2019), and others, this reinforced the problem of research in the researcher and hence the problem of research was born and crystallized and formed a strong motivation in the researcher The search problem can be represented by answering the following question:

.What are the controversial issues involved in the content of the third-grade chemistry book average in Iraq?

Research Article:

is highlighted in the fields (theoretical and applied) and as follows

Theoretical importance:

1-Content analysis is a research method aimed at describing the content objectively, structured, and quantitatively, as strengths are detected, supported, and weaknesses to work to remove or modify them, all of which are in the direction of curriculum development.

2-This study is the first in Iraq (as far as the researcher knows), which dealt with the analysis of the content of the chemistry book for the third-grade average according to controversial issues.

3-The importance of middle school as an important age in the student's life determines his inclinations and desires, which is a transition from childhood to adolescence and then into adulthood.

4-The importance of the textbook, which represents the most important sources of learning for the student on the one hand, and the most effective and efficient means in helping the teacher and facilitating his mission and thus achieving educational goals on the other

5-Highlights the importance of chemistry and its active role in various areas of contemporary life.

6-The importance of introducing a new method added to teaching methods and methods, which is the style of controversial issues that can be used by teachers, students, and even researchers.

7-The current research contributes to highlighting the moral and social aspects as well as the cognitive aspect of the student's personality, which may have been neglected previously.

Applied importance

1-Develop students' learning and thinking skills and improve communication skills between them.

2-Establishing the concept of dialogue in learning to become a skill practiced by the learner in different life situations.

3-The use of controversial issues helps students research, investigate and investigate and return them to understand many social problems and helps them make decisions and deal with events intelligently and objectively.

4-The use of controversial issues helps students develop the skill of discussion as well as discuss controversial issues that raise previous knowledge and establish new knowledge, in which they provoke the effective mental activity of students, develop their attention and confirm their independent thinking.

5-This study is a response to global educational trends that urge the need to be informed by the science teacher about the new scientific topics and issues affecting the lives of individuals, arousing their thinking and testing their values.

6-Identify the content of the chemistry book for the third grade is average in terms of its inclusion of controversial issues.

7-It may urge those who develop and reform the chemistry curriculum in the middle or secondary stage, the need to keep up with scientific and technological progress through the introduction of vital innovations and global scientific issues.

8-This study can benefit both teachers and chemistry supervisors, providing them with a reference framework for global and local dialectic speakers and issues, as well as providing them with a suggested vision of how to discuss them in special chemistry lessons.

The aim of study:

The research aims to: analyze the content of the chemistry book for the middle third grade according to controversial issues

To achieve the goal of the research, the following question is formulated:

What are the controversial issues involved in the content of the chemistry book for the middle third grade in Iraq?

search limitations :Re

The current search is limited to:

1-Cognitive and scientific boundaries: Chemistry Book for the third-grade medium / ninth edition / for 2019.

Time Limits: School Year (2020-2021).2-

3-A list of controversial issues involved, which specialists consider important to include in chemistry books for the middle third grade in Iraq.

Determination of terms:

1-Content Analysis: "A collection of technical methods and procedures designed to interpret and classify the subject, including written texts, drawings, images and ideas contained in the book."

(Zwini, Others, 2013: 106)

The researcher's procedural definition: the process of quantitatively describing the content of the chemistry book for the third grade is medium according to controversial issues, by adopting the explicit idea and the implicit idea as a unit of analysis, and repetition as a census unit, to see the availability of these issues in the content of the chemistry course for the third grade medium for the academic year (2020 / 2021).

2-Chemistry Book: Scientific Chemistry for the Third Grade Medium issued by the Ministry of Education/ Directorate of Public Curricula in Iraq for the academic year (2020 / 2021).(Abd al-Rida, 2016: 15) Chemistry Book for the third grade is average: The researcher procedurally defines this term as:

3-It is the book that includes the scientific subject of chemistry scheduled by the Ministry of Education/Directorate of Iraqi General Curriculum, which is taught to students who have completed the second-grade average successfully and enrolled in the third grade average for the academic year (2020-2021),.

4-**Controversial issues:** "They are issues with an open end, on which there is no consensus by specialists, scientists, and the general public, which resulted in the overlap between scientific concepts, technological applications, issues, and social problems." (Al-Zuabi, 2016:429) (

"These scientific issues are intended to be addressed by which there is no agreement on how to deal with them or their legitimacy because they are linked to value systems and behavioral standards that vary from society to society and from the environment to another." (Al-Khaza'a, 2019: 8)

Procedural definition of controversial issues

A set of scientific issues and innovations that are scientifically, morally, and socially controversial or open-ended, contained in the book chemistry for the third middle grade using the idea in its explicit and implicit parts, and the controversial issues in this research were identified by the list of the main controversial issues of (energy and fuel, food and nutrition and food industry, medicines and misuse, chemical pollutants, chemical weapons, environment and pollution, issues of chemistry and scientific research.

- Theoretical background:

.Content analysis:1

-Content Analysis Concept: Content analysis consists of two terms : (analysis) and another term is (content), analysis is fragmentation or detailing all into parts or vocabulary and linking it to its main elements, and content is the communication material addressed by the researcher for analysis. (Razki, 2016: 14).

-Content analysis objectives: One of the most important objectives but the main goal of analyzing the content of textbooks and educational materials is to improve their quality, and here are the most important objectives of the analysis.Textbooks:

1-Determine the adequacy of the textbook in addressing the topics it deals with.

2-Balancing the content with the needs, inclinations, and needs of students.

3-Reveal the objectives pursued by the author through the content he submits.

4-Works to solve the problem in question as it is a research method for quantitative studies (numerical or relative quantity) with an objective tool

5-Uncovering issues of interest to people. (Asiri, 2018: 52)

Content analysis rules and foundations:

Read the subject fully, well, and generally..1

2-Read the page that contains the idea and record iterations,

Find out what kind of idea is explicit or implicit..3-

The idea should be classified in light of the classification used.4

5-Unload the results of content analysis in a form where one repetition is given when any rating value appears. (Tamimi, 2009: 250)

Controversial issues:2

" Scientific issues raise discussions and views of their performance in terms of acceptance or rejection without reaching final decisions depending on the nature and philosophy of society." (Al-Assadi, 2017: 312).

The importance of controversial issues:

Teaching controversial issues can be difficult because it can lead to conflicting values among students and arouse strong feelings for them, yet it is important to teach these issues to students where students can gain a deeper understanding and develop skills such as critical thinking and communication skill and can become more emotionally aware and research suggests that learning about controversial issues helps prepare students for civic and political participation. (McCully, 2007 Barton, 8)

To teach controversial issues is of great importance, including:

1-This teaching method is indirect education, direct preaching is useless while putting forward scientific aspects as part of the teaching of the subject that will affect students.

2-Discussing controversial topics that develop many skills in the student, such as the culture of discussion, listening, and accepting criticism. (Zahir, 2019: 12)

adds (CCEA, 2015), the following points:

3-Develop to understand the feelings of students and the feelings of others.

Learn to work collectively and develop student communication skill4-

5-Students become more able to manage their emotions and emotional responses, learn to respect the opinions of others, develop their ability to think morally and morally and become more enlightened and more willing to make a positive contribution to society. (CCEA, 2015: 11).

Areas of controversial issues:

Controversial issues can be divided into several areas, mentioned by Abu Al Nasr, 2008, Al-Jubouri, 2017) as stated in (Zahir, 2019)(

1-The field of social dialectic issues: the social is full of controversial issues and is in constant change and change, so opinions vary and ideas vary, and the most prominent social controversial issues: racial discrimination, and sectarianism.

2-The field of political dialectic issues: Several controversial issues arise under politics, most notably democracy, namely the effort to establish order and justice and the primary of the common good and social interests in the face of the pressures of factional interests, a tool to move societies owned by a group of intellectuals or leaders to achieve the goals of society.

3-Economic issues: Infield of economics, there are several areas of study and research and the focus of intellectual jurisprudence on how to manage the state economy from equal opportunities, issues of globalization, family planning, single employment, and other issues.

4-Field of religious issues: Islamic education books in particular and textbooks in a general move away from engaging in religious controversial issues so as not to explain that they have become books to teach comparative religions and social education books may be the most appropriate books to address such issues, including drugs, secularism, religious parties.

5-Field of scientific issues: There are many scientific issues still controversial among its recipients, in the field of sciences for example physics and biology contain a lot of controversial issues that have provoked wide controversy, including, the use of atomic energy,

hydrogen bomb, nuclear experiments, and other issues in physics, but in biology, there have been many scientific and technological bio-achievements that have been classified as dialectic issues such as Biotechnology, genetic engineering, cloning, gene map, and many other issues. (Zahir, 2019: 16-17).

The researcher believes that there are scientific dialectic issues in chemistry that may be common to the rest of the sciences (physics and biology) but they are important and will be considered from the chemical side.

Standards for teaching controversial issues: There are criteria for teachers to follow when choosing controversial issues, including:

The controversial issue represents value systems on opposite sides.-1

2-Reliable sources dealing with the discussion or interpretation of the controversial issue should be available.

The controversial issue is related to curriculum3-

4-The controversial issue should be in line with the beliefs of the local environment of the learner.

5-The issue should suit the student's maturity and age(Smith, Makela,1996:211)

Elements of scientific controversy

Stephen Toulmin presented a structure of scientific controversy in 1958 known as the Toulmin Model of Argument, consisting of the following elements.

1-Data: The information is in its initial form used by the parties to support the prosecution.

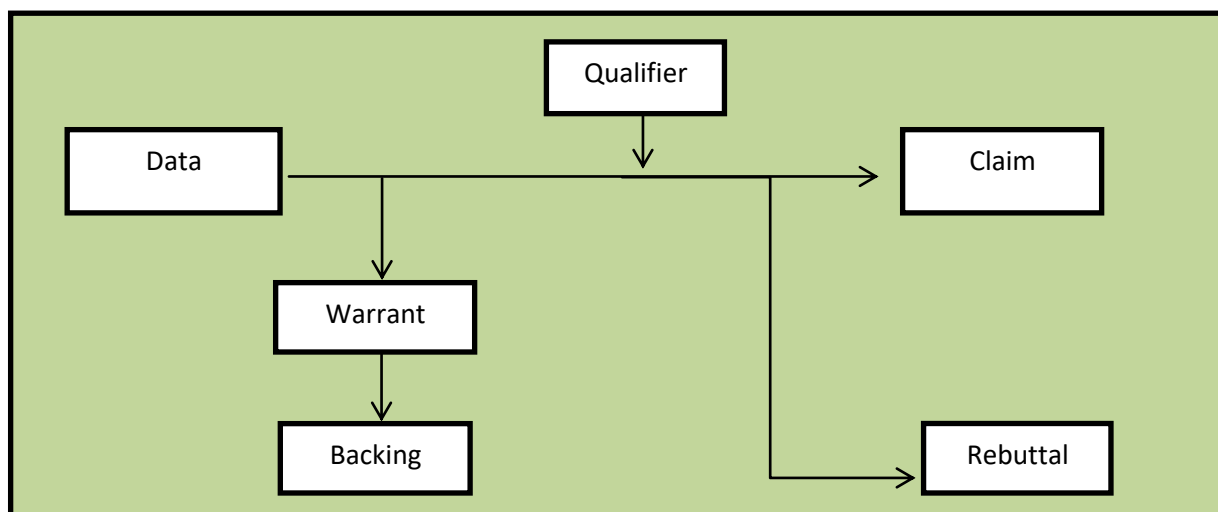
Claim: The conclusion or conclusion to be circulated and different.2-

3-Relationships (Warrant): Logical relationships that justify linking data with allegations.4.

Backing: Additional explanations and justifications that support the claim.

In addition to the above elements, Tolmin added two other elements used at the higher levels of arguments, namely: Qualification: These are the circumstances in which the prosecution is proven to be true and qualifies for the rank of scientific truth.2. Rebuttal: Counter-evidence that opposes and invalidates the claim.

(Simon, Eduran, & Osborne, 2006: 240) and chart (1) below represents a summary of the elements of the model and its relationships.



Scheme (1) Toulmin Model of Argument

McNeil and Krajik (2011) presented a framework as stated in Al-Shafei, Zahrani, 2019, to teach scientific controversy called CER framework, consisting of three elements, each of which symbolizes one of its elements:

Clime Claim: The case is in dispute.1-

Evidence Guide: Is the data that supports the validity of the claim..2-

3-Reasoning Inference: This is the logical link and causal relationship between the prosecution and the evidence.

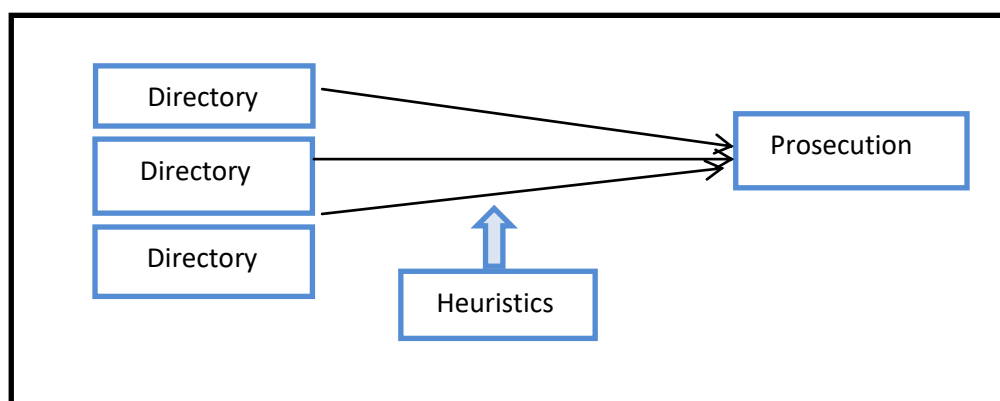


Chart (2) McNeil and Krajik model (as Rod in Shafi'i, Zahrani, 2011: 77)

According to the researcher, the elements of McNeil and Krajik are closer to the current study, so they adopt them as elements to teach controversial issues .

Research methodology and procedures:

Research approach:1-

The researcher adopted the descriptive (analytical) approach as a method of analyzing the content of the chemistry book for the third-grade medium based on the controversial

issues to suit the nature of this research, a method used in various research areas to describe the content of the phenomenon and the explicit content of the material or content to be analyzed and facilitate or deconstruct its complexities. (Resolution, 2009: 110)

Search procedures: The search procedures included the following:

Search procedures: The search procedures included the following:

-1-Research community: Society is a set of documents (or people) specific and the researcher is interested in studying them and circulating the results of the research to them, and in light of this society is determined by the nature and purpose of the research. (Al-Zuhairi, 2017: 139) the research community is a chemistry book for the middle third grade.

-2-Research sample: sample matching the research community itself, table (2)

Table (2) Chemistry Book for the third grade average for the academic year (2020/2021)

Number of classes	Number of pages excluded	Number of pages analyzed	Year of printing	Edition	Title of the Book	sequencing
nine seasons	49	111	2019	Th9	Chemistry for the middle third grade	1

-Search tool: "It is the set of different methods, methods, and methods on which it depends in obtaining the information and data needed to complete the research." (Geyder, 2015: 28).

Controversial issues are contemporary issues, and studies related to the analysis of these issues are few in the Arab environment, as well as that no tool has been found to analyze these issues, a special tool has been built and developed to implement this study and following the scientific procedures followed, and the tool has been built and verified for its sincerity.

Table (3) Major and sub-controversial issues and percentage

Percentage%	Branch issues	Key issues	
11.11%	6	Energy and fuel	1
22.22%	12	Food, nutrition, and food industries	2
18.52%	10	Medicines and misuse	3
20.37%	11	Environmental and chemical pollutants	4
14.82%	8	Chemical weapons	5
12.96%	7	Issues in chemistry and scientific research	6
100%	54	Total	

Determining spoken percentages:

To compare the results of the analysis and for its judgment, the researcher presented the main and subsidiary controversial issues to several arbitrators in the field of chemistry, curricula,

study, and teaching methods and asked them to determine the percentages to include them in the chemistry book for the third-grade medium. As in table (4)

Table (4)

Percentages were spoken by competent arbitrators

Chemistry Book for middle third grade												
Average percentages specified by arbitrators	10 %	9%	8%	7 %	6 %	5%	4 %	3%	2 %	1 %	Arbitrators	
22.042%	20	25	30	20	20	17.70	30	19.72	18	20	Issues	
17.674%	20	20	10	20	20	16.66	25	14.08	14	17	Energy and fuel	1
17.071%	20	20	20	15	20	15.63	10	14.08	18	18	Food, nutrition, and food industries	2
17.071%	20	20	20	15	20	15.63	10	14.08	18	18	Medicines and misuse	3
%19.929	20	20	20	15	20	18.75	25	22.54	18	20	Environmental and chemical pollutants	4
11.008%	10	0	20	15	5	15.63	5	8.45	18	13	Chemical weapons	5
12.276%	10	15	0	15	15	15.63	5	21.31	14	12	Issues in chemistry and scientific research	6
100%	Total											

Analysis stability:

The results of the analysis are stable if the analysis is reapplied under the same circumstances, although the analyst and time differ. (Tiger, 2008: 76) There are many ways to calculate the stability of analysis, including

..Stability with time1-

We mean that the researcher analyzes the same material twice, and in two spaced periods, in which case the time element is used to measure the stability of the analysis. (Ta'aima, 2004: 225). The researcher then re-analyzed the content of the chemistry book for the third-grade medium according to controversial issues after (4) weeks of its first analysis

and the value of stability calculated using the equation (G-Copper) was (93.45%) And it's a high percentage.

::Stability among analysts-2

According to(Tamimi, 2011), the same material analyzes two researchers, applied to a small sample of the subject matter in the study where the researchers analyze independently (individually) and compare the results between the first analyst and the researcher and between the second analyst and the researcher and between the analysts together. (Tamimi, 2011: 278).

The sample represented is not required to be very large but is determined by the researcher relative to the goal and nature of the research and the analyzed content, where the minimum sample is 20 percent. If the indigenous community is small, i.e. about a few hundred (500-1000) and this percentage decreases to 5 percent. in very large societies. (Return, Hebron, 1988: 178).

The researcher, along with analysts with a specialty in teaching methods, analyzed the contents of the chemistry book for the middle third grade and calculated the coefficient of the agreement between the two analyses by adopting the equation (G-Copper) and the consistency of the researcher with the first analyst (91.17%), and the stability factor with the second analyst (83.56%), and the consistency factor between the analysts together is (84.93%), which is consistent with the first analyst as in.

Table(5)

Type of analysis	Type of analysts	Analysis ratio
Stability with time	The researcher with herself.	93.45%
Stability with analysts	Between the researcher and the first analyst	91.17%
	Between the researcher and the second analyst.	83.56%
	Between the first analyst and the second analyst.	84.93%

Statistical means: The appropriate statistical means of the nature of the research were used:

1. Repetitions and percentages, to describe the analysis quantitatively.

(Part/All $\times$ 100).

(Lentils, 2013: 16)

2-Equation (G-Copper) to find the stability of analysis between analysts and stability over time. (Al-Qaisi, 2017: 90)

)Stability factor = number of times agreement/number of times of agreement + number of times of disagreement $\times$ 100(

3-The researcher used the computational medium to extract the spoken ratio

Computational medium = total values/number of values). (Al-Zuhairi, 2017: 264)

The chemistry book for the third grade is average:

The number of pages analyzed by the researcher from the chemistry book for the third grade was an average (111) pages after excluding (41) pages that included the introduction of the book, the titles and objectives of the chapters, the questions at the end of each chapter as well as the indexes and

tables at the end of the book, and table (6) showing the results of the analysis:

Table (6) Repetitions and percentages of key issues in the chemistry book for the middle third grade

Rank	Percentage	Number of repetitions	Key issues
First	66.36%	71	Issues in chemistry and scientific research
Second	12.14%	31	Food, nutrition, and food industry
Third	10.28%	11	Medicines and misuse
Fourth	9.35%	10	Environmental and chemical pollutants
Fifth	1.87%	2	Energy and fuel
Sixth	0%	0	Chemical weapons
	100%	107	Total

Table 6 shows that the number of repetitions obtained by the chemistry book for the third grade is average (107) repeatedly distributed to (6) major controversial issues: the issue (issues in chemistry and scientific research) was ranked first in terms of repetition (71) and percentage (66.36%), Followed by the issue (food, nutrition and food industries) where she received second place in terms of repetition (13) and percentage (12.14%), followed by the issue (medicines and misuse) where she received the third rank in terms of repetition (11) and percentage (10.28%) Followed by the issue (environmental and chemical pollutants) where it received the fourth rank in terms of repetition (10) and percentage (9.35%), followed by the issue (energy and fuel) where it received the fifth rank in terms of repetition (2) and percentage (1,87%), and the issue (chemical weapons received the sixth and final rank as it did not get any repetition and thus the percentage (0%).

Figure 1 shows the percentage of key issues and compares them with the proportion of experts and arbitrators in the chemistry book for the middle third grade

*The blue color indicates the percentage of analysis and the red color indicates the proportion of the judges.

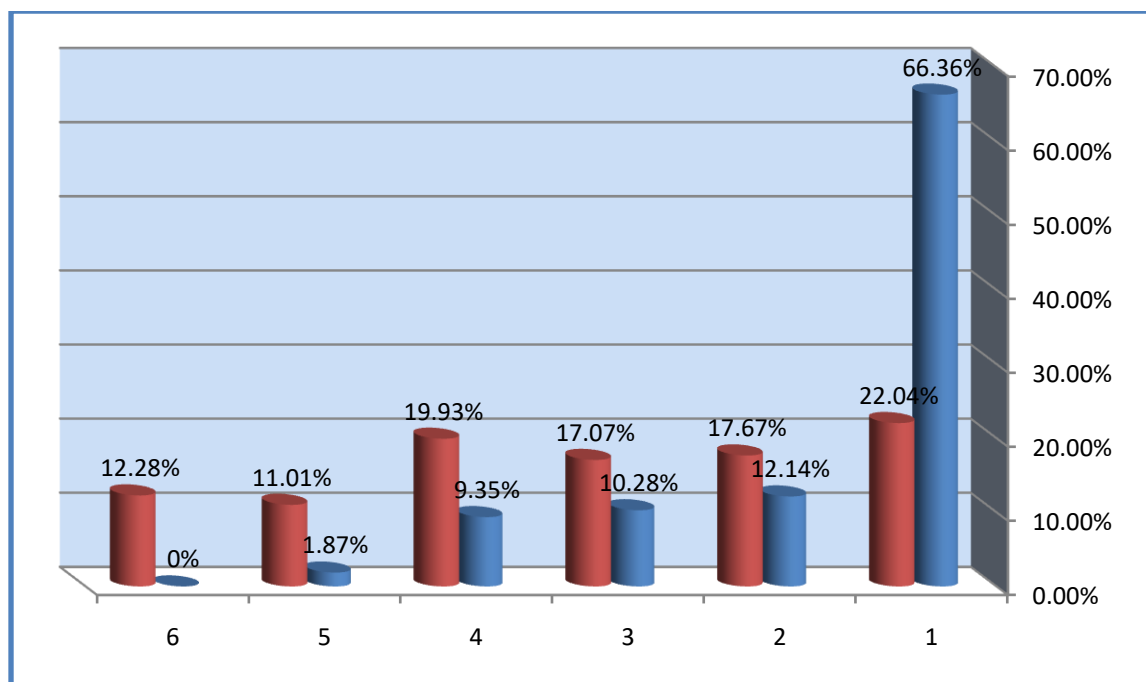


Figure (1) the percentage of key issues and compares them with the proportion of experts and arbitrators in the chemistry book for the middle third grade

Conclusions:

In the light of the findings in this research, the following can be summarized and concluded.

1. There are key controversial issues included in the chemistry books for the middle third grade, which are in order by the higher to lower percentages (issues in chemistry and scientific research, food and nutrition and food industries, medicines and misuse, environmental and chemical pollutants, energy and fuel), where the percentages ranged from (66.36% to 1.87%), and the main controversial issue (chemical weapons) did not get any repetition in the chemistry book for the middle third grade and therefore its percentage is zero.

2. The percentages of key issues in the chemistry book for the middle third grade are not good when compared to the spoken adopted by the researcher based on the opinions of experts and table arbitrators (4), except for the issue (issues in chemistry and scientific research) higher than the spoken percentage.

3. Most of the controversial issue contained in the chemistry books for the third grade of the middle grade was received as enriching information in the content of these books to draw the attention of students to the impact of chemistry in the life of the individual and society, without being within the academic content and this may reduce the interest in them by the teacher and the student.

Recommendations and proposals:

1-Inclusion of topics and controversial issues in the content of the chemistry book for the third-grade average.

2-Recommend to researchers to conduct further studies on controversial issues and use the experimental curriculum and use them with different variables such as achievement, study skills and life in students and different stages of study.

3. Directing the attention of specialists in the reform of science curricula, especially the curriculum of chemistry, to the importance of including controversial issues as it is one of the modern trends of scientific education.

Sources:

1. -Abdul Reza, Muwaffaq Abdul Zahra (2016): "Analysis of middle-level chemistry books on science, technology, society and the environment (S.T.S.E.) "A published non-master's letter, Faculty of Pure Science Education Ibn al-Haitham, University of Baghdad, Baghdad.
2. -Adams, Abdul Rahman, (2013): Principles of Statistics in Education and Psychology, I1, Think Tank, Amman.
3. -Al-Farah, Zakaria Ali Abdel Haq, (2010): "Controversial ethical issues in high school physics books in the UNITED Arab Emirates and their presentation and evaluation contexts", Unpublished Master's Letter, Faculty of Education, Yarmouk University, Irbid, Jordan.
4. -Al-Khaza'a, MiladFalahKhalaf (2019): "The level of knowledge of science teachers at the higher basic stage of the nature of science and its relationship to their level of understanding of controversial scientific issues", unpublished letter, Al-Bayt University, Kasbah Al-Mafraq, Jordan.
5. -Al-Qaisi, Amina Mohammed Ahmed Hazaa, (2017): "Analysis of the content of middle-level chemistry books according to the habits of reason in the reform project", unpublished Master's Letter, University of Baghdad, Faculty of Education for Pure Sciences, Baghdad, Iraq.
6. -Al-Qur'an, Ahmed Odeh, (2009): Teaching design practical vision, i1, Dar Al Shorouk, Amman, Jordan.
7. -Al-Shafei, Jehan Ahmed, Siham Mahdi al-Zahrani, (2019): "The level of teaching practices supporting the skills of scientific controversy within the middle school sciences .from the point of view of middle school teachers in the Eastern Region" Journal of Arab Studies in Education and Psychology, Issue (111), p. 71-94, Eastern.
8. -Al-Zoubi, Abdullah (2016): "Following the use of controversial issues in teaching biology in the achievement of ninth-grade primary students", Journal of Educational Science Studies, Pedagogical Sciences Volume (2), Issue (43): 427-436.
9. -Al-Zuhairi, Haidar Abdul Karim Mohsen, (2017): Educational Research Curriculum, I1, Dibono Think Tank, Amman.
10. -Al-Zweini, Ibtisam Sahib, Zia Al-Arnousi, and Haidar Hatem (2013): Curriculum and Book Analysis, I1, Safa Publishing, and Distribution House, Amman.
11. -Asiri, Abdul Aziz bin Mansour bin Amer (2018): Enough mathematics Olympics in textbooks, Abycan Publishing and Distribution, Riyadh.
12. -Bani Salman, Hassan Mahmoud (2008): "Controversial ethical issues in life science books in the higher and secondary primary stages in Jordan, unpublished Doctoral thesis, Amman Arab University of Graduate Studies, Jordan.
13. -Barton, K.C. &McCully, A. W., (2007): Teaching controversial issues ..where controversial issues matter' in Teaching History, The Historical Association, 127, available at www.procon.org.

14. -CCEA, (2015): Teaching Controversial Issues at key stage3, available at www.nicurriculum.org.uk.
15. -Gender, Matthew, (2015): Research methodology, translation, white queen, novice researcher guide.
16. -Kazem, Ali Hattab, and Youssef Yaacoub Shahada (2015): Secondary Education Management and Supervision, I1, House of Books and Documents, Baghdad.
17. -Odeh, Ahmed Suleiman, and Khalil Yousef Al Khalili, (1988): Statistics for researchers in education and humanities, Dar al-Fikr, Amman, Jordan.
18. -Racki, And Sun Mohan Mohsen, (2016): "Analysis of science books in primary school according to the dimensions of sustainable development", unpublished Master's Letter, Faculty of Education for Pure Sciences Ibn al-Haitham, University of Baghdad, Baghdad.
19. -Smith, Di., Makela, L. & Makela, H. (1996): "Considering Controversial Issues in the Classroom and Beyond". In Ohio Council for the Social Studies Review.
20. -Ta'aima, Rushdie Ahmed, (2004): Analysis of content in the humanities concept - its foundations - its uses, i2, Arabic mushrooms, Cairo, Egypt.
21. -Tamimi, AwadJassim(2011): Curriculum and Book Analysis, I2, Dar Hawra, Baghdad, Iraq.
22. -Tamimi, AwadJassim Mohammed, (2009): Curriculum and Book Analysis, I1, Dar Hawra, Baghdad.
23. -Tiger, Essam, (2008): Measurement and calendar in special education, i1, Dar al-Bazouri, Amman, Jordan.
24. -Zahir, SuadHilal (2019): "Following the teaching of life sciences using scientific controversial issues in the real-time and deferred achievement of students in the 10th grade" unpublished master's letter, Faculty of Educational Sciences, Mafraq, Jordan.
25. -Zaytoun, Kamal Abdel Hamid (2000): Teaching science from a structural perspective, Scientific Office for Publishing and Distribution, - Alexandria.