

## Analysis of the book of Chemistry for the middle third grade according to the skills of pivotal thinking

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### Abstract

The goal of this research is an analysis of the chemistry book for second-grade average, according to the thinking skills and axial and the goal of the search Formula Asia following : **What are the key thinking skills included in the middle third-grade chemistry book?** The researcher prepared a list of skills of pivotal thinking familiarized her with the literature and studies that dealt with the skills of pivotal thinking, as it was reached a list of skills as a preliminary form consisting of (8) main skills branching out from (21) qualitative skill, presented to a group of arbitrators and specialists in the teaching of chemistry, curricula and teaching methods and some. The researcher then analyzed the book of Chemistry for the third grade intermediate for the academic year (2020-2021) in the light of the list that was prepared and adopted the ideal unit for the analysis of both types (explicit and implicit) and repetition unit for multiplicity, and the stability of the analysis was calculated in agreement with external analysts and with the researcher herself, and the: 1-order thinking skills axial chair in chemistry book for second grade expected in descending order (ticket - collecting information - analysis newborn - development-coding - integration - calendar) achieved this task by varying what several skills calendar unrealized. 2-the repetitions of the central thinking skills in the book of Chemistry for the middle third grade (1,160). 3-skill (remembering ) ranks first in the chemistry book for third-grade intermediate. In light of the findings of the study, the researcher came up with several recommendations and proposals, including 1-balance in the proportions of including axial thinking skills in the chemistry book for the third-grade intermediate so that the skill does not cover the rest of the axial thinking skills. 2-work to include the skills of the neglected boss in the chemistry book for the third grade intermediate.

**Keywords:** Chemistry book, intermediate, education

### Introduction

Learning to think about a necessity of modern life where is the tool in which the individual variables age, and repeated his beliefs and inclinations and his surroundings and the environment, it has become the teaching of thinking skills in response to an urgent need the requirements and meets the challenges of globalization in various aspects of life through the researcher's research on the reality of education in Iraq, including (Abdul Redha, 2016) and (Al-Gharbawi, 2015), which indicated that there is a decline in the scientific level in chemistry, and through the researcher's visit to several schools belonging to the General Directorate of education in Anbar province and interviews with teachers of Science and chemistry for the middleThis showed the need to analyze the book chemistry for the third intermediate to identify the shortcomings in the skills of pivotal thinking and determine the problem of research on the following question

What are the pivotal thinking skills included in the chemistry book for the middle third grade?

### Research importance-

- 1-current research may help build a chemistry curriculum according to your thinking skills.
- 2-the research provides curriculum developers with a list of the most important key thinking skills and definitions to include in the content of the chemistry book, where they can address the weaknesses of the current content, and strengthen and maintain the strengths.
- 3-current research offers researchers pivotal thinking skills and definitions, which may help researchers and those interested in studies for other research.
- 4-the current research is interested in this stage, which is an age stage that can be the beginning in building the personality of the student and qualifying him to start to the university stage with confidence.

**Goal search:-**

-What are the key thinking skills included in the chemistry book for the middle third grade.

**Search limits:**

Physical limits include - 1

The content of the book chemistry for second-grade medium approved by the Iraqi Ministry of education for the academic year (2020-2021)

time limits of the:-2-

The researcher analyzing the book approved by the Iraqi Ministry of education for the academic year (2020-2021).

Theoretical limits:

- includes the skills of axial thinking namely (focus-information collection – recall – Organization-analysis – obstetrics-integration-calendar) and derives.

**Definition of terms:-****Content analysis**

defined it (Taima 2004) as "a method of research applied to arrive at a quantitative and qualitative description in a way that is purposeful and structured for the content of a study subject and relies on systematic iterative monitoring of the selected unit of analysis to make a judgment on the compatibility of courses with certain criteria"(Taima,65:2004).

**2-Chemistry book:**

Are the scriptures for the average issued by the Ministry of education in Iraq for the academic year (2020-2021), which contains material chemistry (Abdul satisfaction, 15:2016).

**Pivotal thinking skills:3-**

-1-Noufel al-Rimawi (2010) as: "special mental processes used uniformly to achieve a specific goal, which includes a list of twenty-one basic skills classified into eight main categories and these skills and their classifications provide us with a way that students need to organize special thinking skills to become good thinkers "(Noufel al-Rimawi, 33:2010).

**Theoretical background and previous studies-****The first axis: content analysis**

The content is one of the most important components of the textbook where the set of knowledge and skills is organized in a certain way through this helps to achieve the planned goals, so the analysis of the content is defined as a set of technical methods and procedures designed to interpret and classify the study material, including written texts, drawings, images and ideas (Song et al., 106:2013).

**Content analysis goals:**

1-aims to know what the content is and its components of ideas, concepts principles, laws, trends, and skills.

2-reveal the strengths and weaknesses of textbooks and educational materials and provide a basis for their review and improvement. Mohammed warm.

**The second theme: the textbook-**

The textbook is the most important educational resource in educational institutions, because it contains as much of the curriculum as possible, provides high levels of educational experience geared towards achieving the educational goals to be achieved, and is generally described as the most accessible educational resource available in educational environments (Attia, 315:2013)

**Pivotal thinking skills:-**

Axial thinking skills consist of (8) main skills and these skills include (21) sub-skills shown as follows:I. focusing skills

This skill indicates that it requires sophisticated and not random mental work, contributes to building the learner's perceptions when faced with a problem to achieve the goal, and has two sub-skills namely:

**1-problems defining skill:**

This skill illustrates the rather confusing situation and involves answering questions that help determine the problem, such as what the problem is, who has the problem, when it should be solved (catamaran, 57:2007).

**2- Setting goals skill**

This skill refers to determining the educational outcomes that a learner is expected to achieve after the learning experience(Ibrahim, 199:2011).

## **Second: information gathering skill-**

It means awareness of relevant information and data and includes the ability to collect information, events, and facts:

### **1-the skill of observation**

It involves obtaining information from a community by employing one or more of the human senses and that the human senses are its windows to the outside world (Saada, 49:2006).

### **2- Question formulation skill**

Include clarification of meanings and issues through survey the excellent questions draw attention to important information (ataifah and El Sarh

## **Third-Remembering skills:**

It includes a set of strategies and activities that learners store, retain and return information to long-term memory when neededIt includes two sub-skills.

### **-Coding skill 1-**

Is the process of attaching small pieces of information and retaining them in memory long

### **2- Organizing skill :**

Is the process also allows the retrieval process loopback organization and storage where information is so easily retrievable (happy, 294:2009)?

## **Fourth - Organizing skills**

This skill involves arranging information to understand it so that this information becomes more effective in the process of the organization. She has several sub-skills and she:

### **comparison skill1-**

The skill of comparison involves identifying similarities and differences between two or more things, and the comparison helps in a deep and structured understanding of things to make the right decision or demystify (Novell Frial: 51, 2010).

### **Classifying skill2-**

It means that it is a mental process used to collect objects based on their characteristics or qualities within groups (Omar, 333:2019).

### **ordering skill3-**

This skill aims at subjecting vocabulary and stimuli to organization according to a certain standard, this skill is a special case of classification skills and is also very relevant to classification skills

## **4-Arrangementskill**

This skill indicates that the learner can make a shape change information coming to him from the external environment by forming relationships between specific elements or can give a problem or oral information

)Abu jadu and Muhammad, 88: 2007-93(

## **Fifth: Analysis skills**

Are mental processes that require the ability to fragment complex and complex information and know the relationships between them

(Marei and Mohammed, 293:2006) the skill of analysis includes four sub-skills

### **.Identifying attributes and components1-**

Used to identify the inner characteristics or qualities of objects, ideas, concepts, or subjects, i.e. the process of accurately describing these things (Abu jadu, 96:2007).

### **.The skill of identifying key ideas2-**

This skill is used to identify and derive the main idea from the reading text or cognitive content

### **.skill to identify relationships and patterns 3-**

Used to determine relationships between different events, relationships can be a cause-or-effect relationship.

### **.error identification skill 4-**

This skill is based on detecting learning errors in students during the logical presentation of knowledge and information.

## **Sixth: obstetric skill**

This skill is based on generating new ideas that do not already exist and modifying information to reach new solutions

.Inferring skill1-

The deductive proof is the ability of an individual to define an existing principle in a logical way

.forecasting skill2-

This skill is used to visualize or anticipate results based on situations, and these results may be future events

Elaborating skill3-

This skill is used on the learner's ability to give more information related to previous knowledge to improve the understanding process in students.

#### **Seventh: integration skills**

This skill is used when there are relationships between the information and the experiences analyzed and the separate parts (Katami, 271:2004)

)skill summary (Summarizing skill1-

Do the learner to draw out the main topics in a text

.reconstructing skill2-

Is the ability of the teacher to modify, expand or re-organize in the water which offers learners

#### **Eighth: evaluation skills**

This skill refers to the quality of thoughts and the ability to judge a situation.

#### **Establishing criteria1-**

The skill of building standards is to develop a set of tests to judge the value and quality of ideas.

- **Verification2-**

This skill is used in the ability to ascertain to the learner the accuracy and authenticity of the claims objectively.

#### **Second, previous studies:**

-Study (Fayyad, 2016): the study aimed to identify the skills of axial thinking and Visual Thinking Skills included in the physics books and the extent of the acquisition of students in Iraq, the researcher used the descriptive analytical curriculum, the research sample was formed from physics books for the secondary level, the researcher prepared a list of skills of axial thinking and analyzed the current research with the previous study on:

1-the descriptive and analytical approach to content analysis has been used as a research approach.

-Content Analysis tool, which includes a list of pivotal thinking skills. 2-

3-in the proportions of the inclusion of axial thinking skills in varying proportions

#### **Research approach and procedures:-**

##### **First: Research approach**

The descriptive-analytical approach has been used because it relies on the study of the phenomenon as it exists and is described by a time description or expressed as a Kyiv (Assaf /2006, 236)

##### **Second: the Research community and its sample**

The research sample represents the same research community as the book of chemistry scheduled by the Iraqi Ministry of education for the third intermediate grade of the academic year (2020-2021) third edition.

##### **Third: search tool**

To prepare the analysis tool and determine the categories of analysis, the following procedures were followed:

A) Identification of the analysis tool:

The list for analysis includes the categories of analysis represented by the skills of Central thinking and sub-skills, as the list contains (8) main skills and (21) sub-skills of them as comes:

)Table (4

main skill	T
Concentration	1
Data collection	2
Memory	3
Organization	4

Analysis	5
Obstetrics	6
Integration	7
Calendar	8

#### B) the authenticity of the analysis tool:

To ascertain the genuineness of control has been shown to the Download List above, several lawyers and you got a deal more than (80%) than the lawyers, then the analysis module random of the book has been shown inclusive of this unit thinking skills axial bringing back tool suitable for the conversion process.

#### C) analysis procedures:

1-Identify the goal of the analysis: it is detected thinking skills axial contained in the book chemistry for second grade expected taught to students in the academic year 2020-2021.

sample identification analysis2-

The analysis sample, which is the content of the chemistry book, was determined after excluding the end of the chapter questions, the introduction of the chapters, the review of the lesson, and the questions of critical thinking.

determination of the unit of analysis3-

The module of the idea was used to suit the nature of the analysis of the content of the chemistry book scheduled for the middle third grade, and the idea may be explicit or implicit.

census unit identification4-

Repetition was relied upon as a unit of counting

to prepare an analysis card5-

This is to monitor the results of the analysis of the content topics of the book, which include key thinking skills, analysis units, page, repetition, and percentages

analysis process steps6-

The analysis was done in the following steps:

-Reading the content of the chemistry book is a good read to illustrate the picture in the analyst's mind.

-Start analyzing the subject after reading it again, and draw the skill that was used in the analysis form prepared for it.

-The results of the analysis were unloaded and classified in the list prepared for monitoring the results

-Convert results into repetitions and percentages

#### Fourth:the validity of the analysis

A sample of the analysis sample was presented to a group of arbitrators, and they agreed on the validity of the analysis process and thus verify the sincerity of the analysis

#### Five: stability of the analysis

Consistency is meant to be the same if the analysis is repeated even if the analyzer and time differ (growth, 2008, 77). There are two ways to find the stability factor are the stability of the analysis through time, i.e. re-analysis after some time and the stability of the analysis among individuals, and the use of two researchers to analyze a sample of the content of the book according to the instructions that were directed to them regarding the analysis mechanism, and the method that was followed to monitor the results of the analysis for the analysts, and thus the percentage of agreement in the two methods was more than (89%), and the good stability coefficient is (70%) or more (Al-Sudani and Abbas, 2011, 123)

#### Sixth: statistical means

Appropriate statistical means were used for this research

percentage and duplicates as a calculation method.1-

2-equation (G-copper) extraction stability analysis between two analyzers and stability over time.

#### Copper equation

Constant coefficient(compact number times)/(compact number Times+compact number Times) =  $\times$  100 (qisi, 2017: 20)

Chapter IV / presentation and interpretation of search results

# First: view the results

After analyzing the content of the chemistry book according to the axial thinking skills, the repetitions and percentages of the third-grade third-grade average were calculated as well as the ranking depending on the percentage and the following tables show the results of the research:

Table(11)

Inclusion ratios of Central thinking skills for middle third grade

T	main skill	Repetition	percentage	Rank
1	concentration	47	4.05	6
2	collect information	88	7,59	5
3	memory	360	54,31	1
4	Organization	92	7,93	4
5	Analysis	169	14,57	2
6	obstetrics	104	8,97	3
7	Kemal	27	2,33	7
8	Calendar	3	0.25	8
Total		1,160	100	

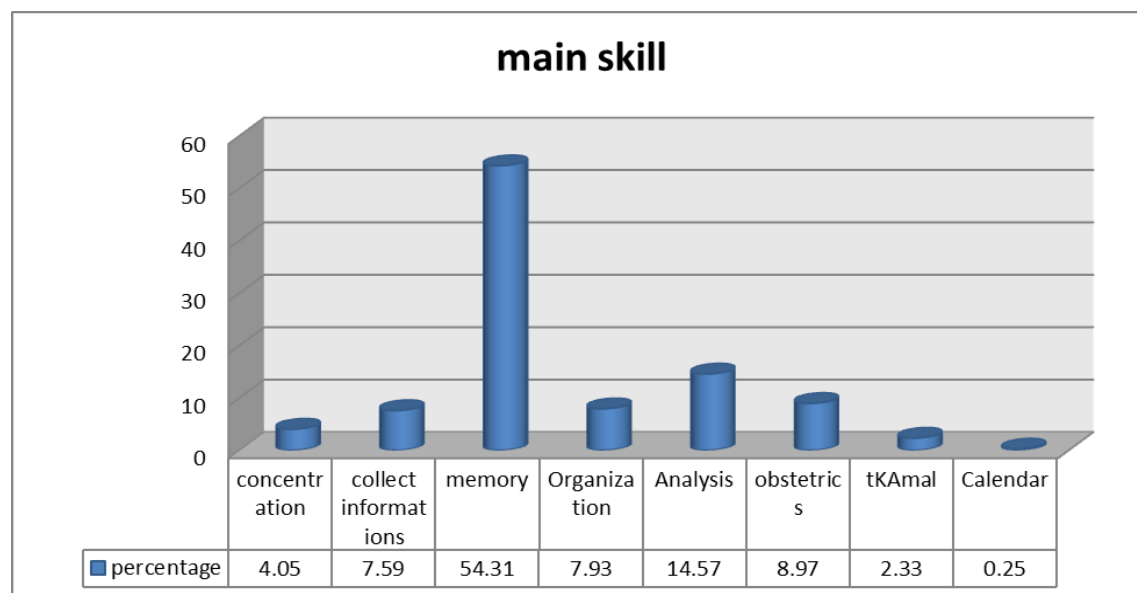


Figure (5)

Distribution of pivotal thinking skills according to the percentages of inclusion for the third-grade average

The results of the analysis and content of the book of Chemistry for the third grade showed the average distribution of the main thinking skills and came in varying proportions, it has received (1,160) repetitions of what was mentioned in the skills questionnaire and distributed to (8) main skills as follows:

Memory skills got the highest frequency by (630) and a percentage (54.31)that is, this skill got the first place among the rest of the other skills followed by analysis skills got (169) repetitions and a percentage (14.57) i.e. got the second place for other skills the skills of generation got (104) repetitions in percentage (8.97) the skills of organization and information collection on the fourth and fifth place respectively, The skills of concentration were obtained on repetition (47) and by a percentage (4.05) and the skill of integration was obtained repetition (27) and by a percentage (2.33) and ranked seventh, and the skill of the calendar, which was ranked eighth and last by repetition (3) and by a percentage (0.25)

## Recommendations:

1-balance in the proportions of including axial thinking skills in the chemistry book for middle school so that the skill does not overwhelm the rest of the axial thinking skills

2-include the main skills, including neglected sub-skills and work to include them in the book of Chemistry for the third-grade intermediate

.proposals3-

1-conducting an analytical study of the books of Chemistry for the preparatory stage according to the skills of Central thinking

2-A Comparative Study between the content of Science and chemistry books in Iraq for the middle stage and another Arab state for the same trip according to the skills of pivotal thinking

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