Analysis of correlation and agreement between chapters and their summaries in Life and Earth Science Moroccan college textbooks

Lalla Khaddouj Yousfi, Fatiha Kaddari, Elachqar Abdelrhani and Faouzi Errachidi
Laboratory of didactics, teaching and curricular innovation
Faculty of Sciences Dhar-Elmahraz- Sidi Mohamed Ben Abdellah University, Fez, 30000, Morocco

Abstract

Our research is focused on quantitative and qualitative study of Life and Earth Science (LES) secondary high school. In quantitative study, we are particularly interested in how to balance between the textbooks' chapters and their corresponding textual and cartographic summaries.

In this respect, we initially tried to evaluate the correlation and agreement between chapters and their summaries; and then, we tried to specify the kinds of knowledge maps used in the summaries and comparing them to concept maps and mind maps methods.

Our study has shown that there is no correlation for 50% of LES in high school textbooks, and a correlation ranging between 0.21 and 0.93 for those that demonstrated a positive correlation.

In mixed study (quantitative and qualitative), we have also identified, through information unit (IU) evaluation, that there is a mismatch between the content of the summaries and their corresponding chapters.

Agreement between textual summaries and related chapters is located by 54% and 68%. Agreement of cartographic summaries varies between 49% and 72% in 60% of the studied corpus. This study has also shown that 22% of the summaries are textual, 34% are cartographic and 45% are both textual and cartographic.

Keywords : *Textbook, Textual and Cartographic Summary, knowledge mapping, Correlation, Agreement.*

1. Introduction

According to Morin [1], textbook is a key component of the educational operation. It fulfils an institutional function by embodying the state educational philosophy and serves as pedagogical function by gathering and presenting knowledge for students during their schooling. The textbook is a tool that helps accompanying the learning and teaching process [2].

The basic idea of textbook design requires skilful and experienced authors and illustrators collaborating closely with editors and the body in charge of curriculum. In Morocco, as the production of textbook is liberalized, textbook designers are selected by the editors themselves.

However, a suggested textbook will only be approved by the "assessment and approval committee" of the ministry of education if it does respect the pedagogical, technical, aesthetic, and linguistic criteria. Textbook quality has to be demonstrated through a well-written text, accompanied by suggestive, obvious, precise, and informative illustrations that are pedagogically appropriate and that remain in accordance with curriculum aims of each discipline [3]. It is worth mentioning that some experiences have shown that imperfections in some textbooks, as a didactic resource, may take a considerable part in the failure of the school reform. Moreover, besides the fact that it is an efficient educational tool stimulating the work and perseverance for students, a good textbook can also be very helpful of teachers lacking appropriate pedagogical trainings [4].

Among the textbook components, the summary is a primordial tool that helps to fulfill the structural and organizational functions of learning. In fact, the memorization of the full chapter content requires numerous of skills and an abstraction ability of synthesis which the majority of pupils and students are lacking. The authors introduce a summary in which they specify key concepts, as well as the general and the essential lesson ideas supposed to be remembered by learners. The summary for LES is even more required given that this subject area is characterized by the multitude of unit information related to different topic areas.

Despite researchers conviction about summaries' importance for an efficient and relevant learning [5], we have noticed a shortage of publications concerning that subject. This fact has been corroborated by Golaz and his collaborators who assert that the summary literature is almost very rare [6]. In this perspective, this paper is focused on summary's problem and the textbook's quality. We raised questions about whether the Moroccan textbooks designers respect the specifications [7] concerning summaries, Whether the summary is adequately used in our "Sciences de la Vie et de la Terre (SVT)" i.e. Life and Earth Science (LES) textbooks where the numbers of unit's information are so high?

The summary and more particularly those of scientific text which can be textual and/or cartographical form (draw, scheme, figure, diagram, picture, conceptual chart and mind map). The conceptual and mind maps has proved to be an efficient pedagogical tool for the teacher, a learning facilitator and efficient help for metacognition and memorizing for learners. In fact the conceptual maps display and set up the logical links between ideas (concepts) [8], [9]. The mind map, gives proof of creation and imagination. It is a diagram illustrating the provisional and arbitrary hierarchical links between data according to an arborescent architecture [10], [11]. Aware of the immense pedagogical potential that may be given by knowledge mapping, authors resort more to those tools in order to summarize the chapters' contents. So many questions arise: are those knowledge maps adequately and accurately used, do they take up all the required information and the concepts to acquire by learners?

We have noticed that the general and specific Moroccan specification [7] concerning Life and Earth Sciences LES textbooks does not include any specific indication concerning chapter's summaries. This justifies our research topic choice about summary in Moroccan secondary schools LES textbooks.

II- Methodology

Corpus studied

In order to provide answers for questions asked above, we have proceeded in qualitative and quantitative analysis of a corpus forming the six 'LES' textbooks intended for pupils of 7th form (Al Moufid and Al Wadih editions), the 8th form (Al Moufid and Al Masar editions) and 9th form (Al Moufid and Al Masar editions) of secondary schools. This amount of 880 pages (about 1292 documents in the form of pictures, photos, charts and diagrams) represents the "population" of the didactic sets authorized in Morocco to teach 'LES' between 2003 and 2014.

Correlational study between chapters and theirs summaries.

In the first part of this research, we are interested in the relation between chapters and their corresponding summaries. In the second part, the research is devoted to the analysis and study of the summary as an entity in itself. Indeed, the aim of this first inquiry is to highlight the type of correlation (if it exists) between chapters and their summaries. In order to do so, we have firstly resorted to a quantitative analysis in which we calculate the respective standard weight-age variables [12]. Those variables allow to define respectively the representativeness (and implicitly the relative importance) of a chapter within the whole textbook and the summary

representativeness as to all summaries included in the textbook. The weight-age variables have been calculated according to those mathematic formulas:

Equation 1:

$$SWAC = \frac{NPC * 100}{TNPT}$$

SWAC : Standard Weight-age of chapter
NPC : Number of pages chapter
TNPT : Total number of pages in Textbook

Equation 2:

$$SWAS = \frac{NPS * 100}{TNPS}$$

SWAC : Standard Weight-age of summary
NPS : Number pages summary
TNPT : Total number pages of summaries

Then we have deduced the correlation coefficient by using the Pearson test.

Concordance of chapters with their summaries

If, by definition, the document summary should be brief, efficient and including it's essential, that a scientific textbook should include all the concepts to acquire in each school level. To verify if the summaries in the textbooks analyzed respect this aspect, we have conducted a qualitative and quantitative analysis referring to the notion of Information Unit (IU) as it is defined by Leary [13]. It is a measure unity which is useful to divide the document content which can be an idea, a topic or a thematic, and which is categorized and then assessed. The IU seize is variable; it can be one word or a group of words, a sentence, a paragraph, or, but rarely, a document [13]. Thus, at the beginning, we have preceded to the identification of information units within component chapters of LES textbooks; then, we have looked for those information units in the summaries corresponding to those chapters. The difference between information units in chapters and of summaries exhibits the fraction of information units omitted or missed in summaries. The relation of IU in summary with IU in the original text multiplied with 100 reflects the representation percentage of the chapter's ideas in the summary. This ratio is calculated according to the formula below representing the concordance between the chapter and its summary:

Equation 3:

$$CS = \frac{NUIS * 100}{NUIC}$$

CS : Concordance of summary
NUIS : Number of unit information in the summary
TNPT : Number of unit information in the chapter

Systematic study of summaries

In the third part of this study, we are interested to identify the nature of summaries. Our first step is the specification of the textual, cartographical forms or mixed ones

privileged on the different textbooks analyzed. We mean by cartographical form any non-textual form which uses graphics (figures, diagrams and pictures), a conceptual or a Mind maps. The second step focuses mainly on the form of conceptual or heuristic charts.

Statistical analysis

Pearson product moment correlation coefficient

Quantitative research on the two variables standard weight-age (SWA) of chapters and summaries prompted us to call the Pearson correlation method well adapted to our context. This statistical method indicates at the same time the meaning and weight of the relationship between two quantitative variables studied.

One way ANOVA analysis

In this work, we are asked to compare the averages of several standard weight-age variables of chapters and summaries. In our case, the variable of interest (standard weight-age) is a quantitative continuous type which follows a normal distribution. In this study, we have treated the case of analysis of variance controlled factor and for two types of data.

III- Results and Discussion

III-1 Quantitative study of chapters' summaries in Moroccan LES secondary textbooks

As we have noticed above, the correlation between chapters and the corresponding summaries is calculated on the basis of the standard weight-age variable. The collected data are included in tables 1, 2 and 3, respectively corresponding to 7th, 8th and 9th forms. It must be mentioned that we have two accredited editions per level.

III.1.1) Correlational study between chapters and theirs corresponding summaries in 'LES' textbooks of the 7th form

For the 7th year, the two accredited editions are: Al Moufid and Al Wadih which handle two thematics through 9 chapters. The first thematic "Relationship between living organisms and their interaction with the environment" is covered in 5 chapters, while the second thematic "external geological phenomena" is treated in 4 chapters.

Table 1 shows that the standard weight-age of chapters changes for the two editions; whereas for standard weight-age of summary, the same value is found, which is 11.11 for the whole chapters of Al Wadih, and for 7 chapters of Al Moufid (for chapters 7 and 9, this value is about 22.22). The summary size depends obviously on that of the text to summarize but the difference is not estimated or visible, in terms of pages, unless the difference of size oversteps a given specific level, which is the case of chapters 7 and 9 of Al Moufid where the standard weight-age is clearly higher than the other standard weight-age.

The comparison of the two standard weight-age parameter averages, in terms of chapters and their summaries shows that they are different in Al Moufid edition (they are respectively 11.11 and 13.58); however, they are the same in Al Wadih edition. This shows that Al Moufid editor take into consideration the ratio of chapter and summary size embodied by a positive correlation of about 0.78 according to Pearson test. As to Al Wadih edition, the summary is independent (the correlation is absent). This result brings us to ask this question: Is it the case that the constant size of summaries does affect the number of unit information?

Table 1: Analysis of the correlation between standard weight-age (SWA) of chapters and standard weight-age (SWA) of their summaries in 'LES' textbooks of the 7th form.

Editions		Al moufid LES 7		Al wadih LES 7	
Thematic	Chapter	SWA of chapters	SWA of summaries	SWA of chapters	SWA of summaries
Relationship between living Organisms and their interaction with the environment	1	9.35	11.11	9.02	11.11
	2	11.21	11.11	10.66	11.11
	3	11.21	11.11	13.11	11.11
	4	7.48	11.11	9.02	11.11
	5	12.15	11.11	14.75	11.11
external geological phenomena	6	7.48	11.11	9.02	11.11
	7	14.02	22.22	13.11	11.11
	8	11.21	11.11	9.84	11.11
	9	15.89	22.22	11.48	11.11
Average		11.11	13.58	11.11	11.11
S.D		2.78	4.90	2.13	0.00
Variance		7,73	24	4.54	0
Pearson test		0.78		nd*	

SWA: standard weight-age ; S.D: standard deviation
nd : not determined (value found by calculation is 0/0 (indeterminate form), however, the coefficient (r) Pearson must be between -1 and 1, and consequently there is no correlation between the chapters and summaries in Al Wadih LES 7 edition).

It is also to be pointed out that the constancy of averages (11.11) in what concerns the chapters standard weight- age (Al Moufid and Al Wadih 'LES' 7) and the summaries standard weight-age (Al Moufid 'LES' 7) give rise to the existence of mathematical equation which confirm number of tools which could be used in the assessment of textbooks, such as the correlation between chapters and summaries standard weight-age parameters.

To explain the correlation between chapters and summaries with the redundancy of standard weight-age values, we applied the ANOVA1 analysis of standard weight-age Variables of chapters and summaries in LES 7 Al Moufid and LES 7 Al Wadih editions. From Table 1, we see that the variance of the standard weight for age variables in Al Moufid LES 7 edition is higher than that estimated in Al Wadih LES edition. Although the averages are identical (11.11) the variances are not equal. This agrees with the values of the correlation coefficient evaluated by the method of Pearson 0.78 for Al Moufid edition and the absence of any sort of correlation between the chapters and summaries in the textbook LES 7 of Al Wadih edition.

III.1.2) Correlational study between chapters and theirs corresponding summaries in 'LES' textbooks of the 8th form

In the 8th form, the two textbook editions adopted (Al Moufid and Al Massar 'LES' 8) deal with two thematic areas in 11 and 12 chapters, respectively: Intra geological phenomena in 6 chapters for the tow editions and reproduction of living creatures in 4 chapters in Al Moufid edition and 5 chapters in Al Massar edition.

Table 2 shows that Al Moufid edition presents a variation of chapter's standard weight-age in the two thematic areas constituting the syllabus and constancy of summaries standard weight-age in the first topic area and its variation in a significant way in the second. Concerning Al Massar edition, we notice a variation of the chapter standard weight-age parameter and a constancy of summaries standard weight-age in the two treated topic areas.

The comparison of the two analyzed parameters averages shows their sameness in the two editions with the value 10 for Al Moufid edition and 9.09 for Al Massar edition. This decrease can be attributed to the addition of one chapter in the second edition (Al Massar). The Pearson test shows an absence of correlation for Al Massar edition and a positive correlation (0.93) between the two criteria for Al Moufid edition which exhibits once again the relation between the chapter and the summary size. The averages constancy of weight-age chapters and summaries (10 for Al Moufid LES8 Edition and Al Massar LES 8 Edition) confirms, once again, the observations previously mentioned.

Table 2 : Analysis of correlation between standard weight-age of chapters and standard weight-age of summaries in 'LES' textbooks of the 8th form.

Editions		Al moufid LES 8		Al Massar LES 8	
Thematic	Chapter	SWA of chapters	SWA of summaries	SWA of chapters	SWA of summaries
Internal geological phenomena	1	8.26	6.67	6.82	9.09
	2	9.92	6.67	7.58	9.09
	3	8.26	6.67	9.09	9.09
	4	8.26	6.67	7.58	9.09
	5	6.61	6.67	10.61	9.09
	6	7.44	6.67	8.33	9.09
Reproduction in living organisms	7	13.22	13.33	8.33	9.09
	8	11.57	13.33	7.58	9.09
	9	14.88	20.00	10.61	9.09
	10	11.57	13.33	11.36	9.09
	11	-	-	12.12	9.09
Average		10.00	10.00	9.09	9.09
S.D		2.71	4.71	1.79	0.00
Variance		7,36	22,2	3,21	0
Pearson test		0.93		nd*	

SWA: standard weight-age
S.D: standard deviation
nd* : not determined

III.1.2) Correlational study between chapters and theirs corresponding summaries of in 'LES' textbooks of the 9th form

For the 9th form, the two textbook editions Al Wadih and Fi Rihab 'LES' 9 approached two thematic area in 12 and 11 chapters respectively which are: Functional unity of body in 6 chapters, and health education in 6 chapters in Al Wadih edition and in 5 chapters in Fi Rihab edition.

Table 3 reveals the variation of the chapter's standard weight-age parameter and a constancy of the standard weight-age of summaries of the two treated thematic through Al Wadih edition. However, we notice that there is a variation of these two parameters in the two thematic in Fi Rihab edition.

Table 3: Analysis of correlation between standard weight-age of chapters and standard weight-age of summaries in 'LES' textbooks of the 9th form.

Editions		Al wadih LES 9		Fi Rihab LES 9	
Thematic	Chapter	SWA of chapters	SWA of summaries	SWA of chapters	SWA of summaries
Functional unit of the body	1	7.19	8.33	10.22	9.52
	2	7.19	8.33	8.76	9.52
	3	7.19	8.33	8.76	9.52
	4	10.07	8.33	7.30	9.52
	5	10.07	8.33	11.68	9.52
	6	8.63	8.33	7.30	14.29
Health education	7	7.19	8.33	11.68	9.52
	8	8.63	8.33	7.30	4.76
	9	7.19	8.33	13.14	9.52
	10	7.19	8.33	7.30	9.52
	11	8.63	8.33	6.57	4.76
	12	10.79	8.33	-	-
Average		**8.33**	**8.33**	**9.09**	**9.09**
S.D		**1.35**	**0.00**	**2.25**	**2.57**
Variance		**1.82**	**0**	**5.06**	**6.60**
Pearson test		**nd***		**0.21**	

SWA: standard weight-age
S.D: standard deviation
nd* : not determined.

The comparison of the two analyzed parameters shows their equality in both textbook editions with a value of 9.09 (Fi Rihab) and 8.33 (Al Wadih). This decrease can be the result of the addition of one chapter to the second edition (Al Wadih). The low positive correlation (0.21) between the two variables in Fi Rihab edition shows the manual's tendency to respect chapters and their summaries size, which is not the case as to Al Wadih edition (absence of correlation).

This analysis shows the existence of a progressive reduction of the two analyzed parameters' average through the 'LES' syllabuses in the Moroccan secondary school. So, we can deduce that the editors seem to have taken into consideration the standard weight-age of chapters, but they have neglected the standard weight-age of summaries, for which they have devoted a constant

number of pages without paying attention to the real amount of number information included in every chapter. Moreover, this study proves the importance of the mathematical and statistical methods to control the quality of textbooks content. The same results are obtained for the Pakistanis textbooks [12], where the standard weight-age of collegial chemical textbooks was correlated with the one of assessment textbooks. This correlational analysis has led us to another question related to the degree of conformity of textbooks with their specifications.

III-2 Mixed method study of chapter's summaries in Moroccan LES secondary school textbooks

III-2.1 Concordance Analysis between chapter's summaries and the corresponding chapters.

Table 4 gathers the concordances, on the basis of information unit (IU), between the chapters and their textual and cartographical (if there are any) summaries in the different analyzed 'LES' textbook editions

Table 4 : Concordance of the textual and cartographical summaries with their chapters in 'LES' textbooks.

Editions	Concordance of textual summaries with theirs chapters	Concordance of cartographical summaries with theirs chapters
Al Moufid LES 7	68,44 ± 30,65	Lack of knowledge mapping in 7 chapters
Al Wadih LES 7	46,22 ± 22,91	72,22±26,35
Al Moufid LES 8	56,9 ± 14,25	49,9 ± 7,78
Al Massar LES 8	54,45 ± 23,76	Lack of knowledge mapping in 5 chapters
Al Alwadih LES 9	55.66 ± 16.38	54,83 ± 22,63
Fi Rihab LES 9	59,9 ±14,51	53.59±10,45

We can deduce from this result (table 4) that the maximal concordance (100%) is never reached in any type of textual or cartographical summary. However, we notice that we can reach a closer maximal concordance and even surpass it if the two types of summaries are taken to be complementary.

That result shows the reduction of information units in summaries in relation to the original texts (chapters). This may explain the existence of an imperfection in the summaries which form a rich source for learners to get in and make use of the input knowledge. At this stage of learning in the secondary school, the scientific transposed

knowledge is already limited and simplified, and any IU is therefore not to be omitted when making use the course is getting summarized. This situation arises also the necessity of the two types of summaries (textual and cartographical) taken on complementary instead of the unique form in order to deal with this problem.

III- 2.2 Summaries classification in 'LES' textbooks.

Table 5 shows the results of the summaries classification according to their textual and cartographical (graphic, conceptual, or heuristic) or mixed (textual and cartographical) types.

Table 5 : Distribution of textual, cartographical or mixed summaries in Moroccan 'LES' secondary textbooks.

Editions	Textual summary	Cartographical summary	mixed summary
Al Moufid LES 7	7	0	2
Al Wadih LES 7	0	9	0
Al Moufid LES 8	0	0	10
Al Massar LES 8	5	0	6
Al Wadih LES 9	0	11	1
Fi Rihab LES 9	2	0	9
Total	14	20	28
Percentage (%)	22,6	32,26	45,16

From these results (table 5), we note a maximal cartographical dominance for the edition Al Wadih 'LES' 7 and Al Wadih 'LES' 9 which represents a characteristic of this edition house. Indeed, this edition appeals to the small textual summaries at the end of each activity of chapters where, the general content summary is provided with the cartographical methods of knowledge management. For Al Moufid edition, we note a dominance of textual summaries for 'LES'7 and of mixed ones for 'LES' 8. Al Masar 'LES' 8 edition presents an equilibrium between textual and mixed summaries. In Fi Rihab 'LES'9 edition, the mixed forms are dominant to textual ones. This distribution shows a non homogeneity vis-à-vis the summaries nature for the textbooks editions in question.

The study of the nature of cartographical summaries form in 'LES' textbooks at the three studied levels has led us to subdivide them according to their graphic (draw, schema, diagram, graph, photo...), conceptual chart or mind map nature. The results are represented in the following table (table 6).

Table 6: Cartographical method tendency of summaries used in the 'LES' textbooks.

Trends summaries map	Graphic summary	Conceptual summary	Heuristic summary
Al Moufid LES 7	2	0	0
Al Wadih LES 7	4	5	0
Al Moufid LES 8	10	0	0
Al Massar LES 8	6	0	0
Al Wadih LES 9	10	2	0
Fi Rihab LES 9	8	1	0
Total	40	8	0
Percentage (%)	83,33	16,66	0

From table 6, we note that the classical form of summaries is the most dominant (83.33%); the conceptual tendency follows with 16.66%, whereas the tendency to mind maps is almost absent. This reveals again another kind of shortcoming in what concerns the cartography of knowledge on the studied textbooks. This disposition would require a reorientation of the "specification paper" to stipulate the introduction and the improvement of the cartography of knowledge, particularly 'LES' textbooks. This approach presents an emergency trend to facilitate the learning. In fact, the use of the cartographical knowledge is based on the functioning of the brain. For that, it could be used by the teacher, and the learner as well, a means of knowledge organization in the brain [14].

VI) The comparison between cartographical summaries and textual summaries

In this work, we have identified some cognitive maps summaries and those textual summaries while trying to connect these structures to the mental processes of comprehension and learning.

As an exemple of cognitive knowledge management, the concept map, as defined in the introduction of this article, is hierarchical organization chart information in a text (e.g. chapter) or any domain. The steps to construct a concept map [14], [15] show that only the main ideas of the text and the relationships between them are included in the map. The rules most used include three major steps:

1. Find the main ideas or concepts representing the topic,
2. Hierarchically arrange these ideas or concepts according to their importance and mentor,
3. Connect ideas or concepts by arrows and name these relations.

The concept map, macrostructure of text, is a hierarchical

information structure which refers to most of the text organized into a coherent whole [16]. However, we must recognize the relative nature of the macrostructure of a text. It may stop at the title, subtitle or go further to the main ideas of each paragraph of the text. As in the case of any activity of comprehension, there is no single text for a macrostructure, which requires, once again the compromise of judges in the creation of our conceptual map macrostructures.

Compared to the knowledge map as graphical summary, textual summary represents the essence or the macrostructure of the text. To create a summary of the general rules are [17]:

•Reduce the quarter in general; the authors of school textbooks do not meet

•Identify the main ideas.

•Observe the progression of the text,

•Remain neutral (neither comment nor criticism).

However, the discursive form of textual summary differs from that of the knowledge map. The textual summary represents information in a linear form, while the map is the same information in a hierarchical form [18]. In other words, textual summary consists of whole sentences or linear proposals while the map includes proposals already analyzed graphically predicates and arguments. According to Kintsch and Van Dijk [16], a text, including oral discourse is constructed by proposals expressed in terms of predicates and arguments. The predicate indicates the trial (verb, adjective, logical relationships ...) and argument indicates the object. In the case of the concept map, the arguments most often in geometric shapes (circle, rectangle, square ...) and predicates are represented by arrows, named or unnamed. However, according to the forms of maps, there are many exceptions to this theoretical principle, due to the entrenchment of implied predicates.

What are the potential roles of these different structures in the process of consecutive interpreting?

Denhière [19], and Deschenes [20] suggest that the psychological processes of comprehension, whether written or oral, are all processes of conceptualization. Understanding is not a passive encoding of words or phrases process. It would be an active mental activity in which information from text in linear form are processed for the construction of an "internal semantic structure" [20] or macrostructure [19] existing hypothetically in memory in the form of hierarchical network of concepts related to each other.

Conversely, the process of comprehension, language production requires a linearization process of more or less hierarchical structures stored in memory [19], [21].

In our research, the extent to which cognitive mapping (graphs, concept maps and mind maps) and textual summaries contribute in the process of learning in Moroccan LES textbooks.

Nguyen and Tochon [22] suggest a similarity between the structure of the knowledge map and the hierarchy of concepts in memory, produced by the process of conceptualization. It also shows the similarity between the structure of the summary and the linear target speech. If these two instruments have the same content but not the same information structure, how their influence on the process of understanding and learning they are the same or they differentiate?

The summary, as a part of textbook is an important tool that helps to perform the functions of structuring and organization of learning. In fact, storing the entire contents of the chapter requires a lot of skills and a capacity for abstraction that the majority of pupils and students are lacking. The authors present a summary in which specify the general key concepts and ideas essential lessons meant to be remembered by learners. The summary, particularly in Life end Earth Science (biology and geology), is necessary because this area is characterized by huge mass of informations.

VI- Conclusion

In the educational process, textbook is an indispensable tool in the management of teaching and learning. In this work, where the focus is particularly oriented to the chapter's summaries of Life and Earth Sciences textbooks of (LES), we have performed quantitative and qualitative analysis of summarizing texts of knowledge presented in chapters textbooks.

The conclusions show some imperfections in proportionality (correlation) and concordances between chapters and their summaries. On top of that, there is a total absence of the cartographic summaries forms such as mind and conceptual maps

An effort is also to be done in the form of summaries that are generally textual form.

In fact, now "science in the plural" (neurosciences, computer science, psychology ...) demonstrates the importance of knowledge mapping in the efficiency of learning stimulation and management. However, this does not seem to affect textbooks designers in Morocco.

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