Questioning and Cognitive Skills: Studying their efficiency and complexity

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ABSTRACT

This research article aims at studying questions as a discourse that has distinctive structural and formal linguistic features, and an educational tool that helps developing the skill of reflection and critical thinking among students. To investigate this topic, we adopted a comparative analytical methodology. We also relied on the Bloom's taxonomy to identify the complexity of the educational situations and whether the updated textbook is able to strengthen the students' thinking skills. We concluded that the proposed educational and evaluation situations range from the first level, which is preservation, to the third level (application), and in very rare cases, the fourth level (analysis). We also concluded that the interrogation is not very effective and we referred to some proposals for its improvement.

Keywords: Interrogation; Textbook; Bloom's taxonomy; cognitive skills; French foreign language.

INTRODUCTION

Today's educational curricula tend to promote critical thinking, which, because of the emergence of communication and information media, has become one of the most important skills. In the enclosed document of the Algerian French foreign language (FFL) teacher, reflection or critical thinking are part of the intellectual cross-cutting skills that must be assimilated through integration situations […] supports values such as exchange through participation in a common task. It allows students to develop their critical thinking, to compare their interpretations and their knowledge in the same task (Accompanying document. 'Critical Mind' is indicated in Bold in the document). And to assimilate such a skill, the teacher must accustom his students to encounter intrusive elements (irrelevant data), to develop transversal skills (to develop his critical mind, to do a literature search, to organize his work...).

Among the main pedagogical tools to stimulate critical thinking and reflection mechanisms among student are 'questions', which occupy a large part of teachers and students daily pedagogical practices. Questions makes it possible to open/close communication sequences (acts: initiation and evaluation) and requests to do or say (act: injunction), etc. In the field of language didactics, these acts contribute in organizing the pedagogical communication and facilitate the lesion understanding. According to Maulini, questions show the nature of the relationship between knowledge, the educational institution and training. School activities are often based on questions as they help build constructive teacher-pupil dialogue, namely in the evaluation stage.

Moreover, the act of questioning occupies a central place in the pedagogical manual, and is present in all educational activities. Accordingly, most textbooks are built on questions, as they help to arouse commitment, check understanding, teach and allow situational analysis, recall previous knowledge, create cognitive expectations and stimulate the desire to learn ... All These functions provided by the pedagogical manual correspond according to Frydman and Jambe to three parts: "a user textbook (...), the material (...) and questionnaires allowing the pupil to develop his abilities to seek and process information. » (François-Marie Gerard, 2009, p. 91).

From a discursive point of view, the questions presented in school manual are subject to the same rules of the written didactic discourse; i.e. utterance modalities specific to the interrogative sentence and to the illocutionary act represented in the act of speaking 'to question' or to solicit '...

Hence, we noticed that questioning as an act or a strategy has not been adapted to the new so-called active pedagogies. Besides, the traditional method of questioning (based on direct questions, closed or asking for low-level reflections) in foreign language teaching has become incompatible with modern methodologies led by action, interactivity and problem situations (analysis, criticism). That is why, many studies have attempted to explain the concept of questioning and how it works in the school context. With the advent of modern pedagogical approaches based on reflection critical thinking, it is vital to understand the different question structures and how to ask them in a proper way. Accordingly, Maulini's argues that instead of asking myself who asks such a question, how often and for what reason, I will search on how it is imposed, in real interaction, this or that kind of questioning. Why insist on this move? (Maulini, 2005).

This article aims to study the nature of interrogation used in FFL textbooks as a discursive strategy and a didactic act measured at the Bloom scale. We will also try to answer Maulini's question: how can teachers move from asking specific questions to creating real problematization? (Maulini, 2005).

2. Theoretical Anchoring:

Previous research related questioning is accurate as it makes it possible to prevent the collapse of the intellectual task and to move from questioning as a "didactic custom", or "mechanical execution" (DUFAYS, 1998), without valuable educational content to a real problematization.

The concept of 'interrogation' can be defined in various ways, including the Récanati's definition in which he classified the sentence modality, the declarative modality and the imperative modality, at the forefront of "indicators of illocutionary force" (Récanati, 1982). According to Benvenist, these three modalities do "only reflect the three fundamental behaviors of the man speaking and acting by the discourse on his interlocutor: he wants to transmit an element of knowledge to him, or to obtain information from him, or to give him an order. These are the three interhuman functions of discourse which are imprinted in the three modalities of the unity of sentence, each corresponding to an attitude of the speaker" (Benveniste, 1993).

The concept of utterance modalities is used to designate the different elements which express a certain type of the speaker's attitude in relation to his utterance, that is to say 'the speaker's position in relation to the reality of the

content expressed' (Récanati, 1982), which, in this perspective, fits the question.

From a pragmatic point of view, the question can be defined as "any statement which purports to have the main purpose of obtaining information from its recipient." It expresses a request for information which is expressed in a response. "It corresponds, as a direct speech act, to the act of questioning or interrogation" (Kerbrat-Orecchioni, 1991).

These specificities identify the concept of questioning as a strategy that has its own characteristics and objectives but not sufficiently studied. In this regard, Simard argues: "there is still an important work to be done in education on the formulation of instructions and understanding students" (Simard, 2004). In fact, only few studies have tackled the topic of interrogation, and very few from these studies have addressed textbook issues.

In this context, we will list the types of questions that researchers have been familiar with compared to the rate of the learner's questioning freedom, named by Ricci as 'the didactic freedom'. In his article entitled 'interrogative dialogue or the two sides of a didactic freedom' (Ricci, 1996), Ricci emphasizes the way through which the power of the teacher is expressed in the interrogative dialogue. He also distinguishes the didactic dialogue from which the teacher conducts exchanges and circulates knowledge through questioning. In this regard, he mentions that the questions in the didactic dialogue are of specific form, which according to him put the student in the wrong communication situation. The author also addressed the specificities of questioning in language class by reporting to the different forms of questions through which the teacher addresses the students as well as responding, demonstrating, and supporting evidence of his knowledge or lack of knowledge. In his research works, Ricci calls this concept 'question-summons' (Ricci, 1996).

Closed questions having a declarative knowledge aim, as shown in the following questions: "what is the topic of the text? What is the type of these sentences? What are the verb tenses of the underlined verbs? In this case, it seems that the answer doesn't end of the teacher-student's discussion; instead, the questions have another role of structuring the lesson, organizing and leading the classroom. Hence, Ricci indicates that: "it is not the answer that counts, but the reflection and the logical construction of it (Ricci, 1996). These kinds of questions are also intended to involve the student and stimulate interaction during the session.

As for open questions related to personal subjects (belonging to the pupil) or subjects that depend on personal opinions or experiences, it is difficult to predict their answers; that is why, they can be classified as illegitimate. This kind of questions help encouraging the student to speak and to train him on various communication strategies, such as explanation, justification, or argument ... More importantly, to encourage him to conduct more complex critical reflections in a free and unrestricted manner. The following questions are part of this logic: "When exactly do you wash your hands and why?" Why is a healthy and balanced diet so important? ... "Some questions are closed and personal:" Have you ever had tooth decay? Do you like electric toothbrushes? Does your father still smoke? Do you always use the same soap?"

In language teaching, Nguyen Viet Tien thinks that the question, from a pragmatic point of view, has two roles which make it complex: it is a means of transmission, evaluation and an end in itself. Knowing how to ask a question is also a skill to be acquired. (Nguyen, 2010)

3. Methodology:

First, we listed all the statements ending with a question mark and the questions in the form of declarative sentences. The following three criteria are used for questions classification and analysis: the structure of the questions, the knowledge targeted and the cognitive processes (in Bloom's taxonomy). Since the best questions, in our opinion, are the ones that improve students' critical thinking, we aim to rank them in light of the goals they seek to achieve.

As for the procedural part of the study, we have arbitrarily identified and calculated all the sentences ending with a question mark. We have focused on the questions addressed to the pupils, disregarding other types of questions, namely those mentioned in texts' titles. In addition, we counted the questions: 'Are islands and polar bears in danger? Why?' as two separate questions. In sentences like: What are the types of energy suitable for our nation, Algeria? Explain why, the latter is considered as a question - even if its structure is not interrogative- as it belongs the so-called intonative questions category which carries the same meaning as the question: "why?".

In the second phase, we also modified the direct closed questions in the textbook to make them more problematic; we then analyzed and evaluated the answers obtained to measure the students' mental capacities and their ability to

promote their mental skills to levels higher in Bloom's taxonomy. We recorded the responses and transcribed them verbatim, ignoring the phonemic properties because what matters to us is how we process the information, analyze it and use it in the response.

3. Results:

3.1. Phase 1:

From a quantitative point of view, we noted that the number of questions in the school textbook is 254 questions distributed to projects and sequences as indicated in the table below:

Table 1. Distribution of questions in projects and activities.

	Project I			**Project II**			**Project III**	
Sequences	S1	S2	S3	S1	S2	S3	S1	S2
oral comp / exp	2	1	3	3	3	3	5	5
Written comp/exp	17	15	20	26	20	19	14	13
Grammar	9	4	1	2	1	1	2	1
Vocabulary	1	2	2	2	2	2	1	4
Conjugation	6	2	3	5	5	4	2	3
Spelling	3	2	2	3	2	2	2	2

In language activities, closed-ended questions are generally used to help students give specific answer to the asked question (Côté, 2016). This type of question aims to obtain information and facilitate the assessment process for teachers.

Closed-ended questions are sorted according to three fundamental criteria: the structure, the expected response and the cognitive act. They are listed in the table below as follows:

Table 2. Categorization of questions.

Closed questions		
Compared to	Question Types	Examples
The structure	Propositional questions	Will the task be easy? Does your father still smoke?
	Subject-verb inversion	Are germs dangerous?

	Total query	Are germs dangerous?
		Do the underlined words have the same meaning?
	Partial interrogation	Who is the author of this initiative?
		What causes the water to rise?
		Who is speaking in the text? Who are we talking about?
		What is the cause of the melting of glaciers?
		Why are the coasts of the whole earth at risk?
To expected responses	Multiple choice questions	What does part 1 of the text relate to? -to the explanation - to the conclusion?
Cognitive objectives: Questions focused on	Memory	What are the different types of the sentence?
	Comprehension	What type of sentence is it?

The following table includes a sample of questions and their measurement at the Bloom scale, where we mention the question, Bloom's cognitive processes (from simpler to more complex), then, we either answer with (+) meaning that the question requires such a process , or (-) meaning that the question does not require such a process.

Table 3. Questions on the Bloom scale

Questions	memorize/ restore	Understand	Apply	Analyze	Evaluate	Create
Why is hygiene products used?	-	+	-	-	-	-
Why are germs dangerous?	+	+	-	-	-	-
What other products are used in this place?	+	+	-	-	-	-
What is the common theme of the 3 texts?	-	+	-	-	-	-

School, health, tobacco.					
What phrase refers to the definition of hand washing?	-	+	-	-	-	-
Find the root of the words in the text. What do you notice?	-	+	+	-	-	-
When do you wash your hands every day?	-	+	-	-	-	-
What kind of sentences are these?	-	-	-	+	-	-
Why do you think this food is good for you?	-	+	-	-	+	-

3.2. 2end Phase:

We have proposed a series of open-ended questions aimed at high levels of cognitive skills, in what follows we quote the questions and a sample of the responses obtained.

Why do you have to wash your hands, cover your mouth and nose when you cough or sneeze? This question accepts one answer only 'you must wash your hands, cover your mouth and nose when you cough or sneeze to avoid getting sick and / and making others sick.

Our question is: What do you think should be done to avoid making others sick? This question is open and allows a multitude of answers; the learner is therefore invited to use all the medical, health, linguistic and pragmatic information he has to formulate an answer. In this principle fall the following questions:

- What do you think should be done to avoid making others sick?

- I think that to avoid getting sick and / or infecting others we should wash our hands regularly, cough and sneeze into our elbow and avoid rubbing sick people, so a visit to the doctor is recommended.

- We should use soap.

- Use hydroalcoholic gel.

- Shower regularly.

- 'Apart from doctors, who must inform citizens about the risks epidemic?' Is modified to: 'What role can the student play in raising awareness of the risks of epidemics?

- Pictures.

- Videos.

- The pupil can sensitize those around him using photos, images, texts and talk to them about the risks of epidemics.

- Does your father still smoke? Is modified to: If you want to convince someone to quit smoking what do you say or do?

- I will convince him by showing him the different diseases caused by smoking such as: cancer, cardiovascular diseases and lung diseases.

3. Discussion:

The obtained results show that the vast majority of the asked questions in the manual (approximately 91.33%) are about general knowledge of the French language, 57% are about written comprehension / expression, 10% are related to comprehension / expression of the oral, and 33% focus on language skills (grammar, conjugation, spelling and vocabulary).

The huge gap in the number of questions between school activities is problematic. The high number of comprehension / written expression questions can be justified by the fact that texts are used as the main study object in all the activities. Accordingly, in each sequence, 11 texts are distributed as follows: 3 texts for written comprehension / expression, a text for each topic and a text at the end of the sequence for recreational reading. Each text is followed by comprehension questions.

This method is mainly adopted because of the form of the questions. Some activities are based on questions that are divided into multiple steps,

often in the form of instructions, while other texts are followed by shorter but more diverse questions.

In general, we notice that the school manual of 1AM is part of the didactic 'problem-comprehension-application' logic, which according to Rey: "the school books are carriers of one or the other of these didactic devices which refer to an ordering of the objects of study and a specific acquisition process" (Rey & al., 2005).

In oral comprehension / expression, we assume that the number of questions does not exceed 25 questions (10%) because of the nature of this transversal activity. Therefore the teacher focuses on the objects identification in the proposed photos and the justification of the usefulness and importance of each one, as it is indicated in the teacher's guide: "the asked questions allow the student to identify the products presented in each of the photos and to justify their usefulness and importance in our daily life". It should be noticed here that the rephrasing -which is one of the skills that the student must acquire through questioning- consists of helping the student explain what he has learned from the text in his own style. In other words, teaching the students the linguistic techniques of synthesis. The acts of rephrasing and synthesizing are among the cognitive goals established by Bloom, and are classified among the cognitive processes placed at the top of the creation pyramid.

The written comprehension / expression activity takes place in two main stages: 'I identify different types of texts' and I understand my text '. In the first stage, three texts of different types are proposed: informative and explanatory.

Awakening of interest: by relying on the paratext and the questions, the student must formulate reading hypotheses. The expected answers of the following questions: What is the title of the text? What is this in the text? Can be: the title of the text is "Simple gestures for good personal hygiene". The text is about health.

Therefore, the questions contribute in "exploiting the textual indices of the text - paratext and other elements - in order to bring the pupil to soak up the theme and to position himself as a reader in order to understand the text: it is the stage where he must formulate the reading hypotheses" (Guide du professeur du français: première année moyenne, 2016).

The issue with reading hypotheses: through relevant questions, the student understands the text; the student formulates preliminary reading hypotheses. All the answers are considered as an introduction to reflection work.

As for the questions we came up with, we noticed a lot of interaction with them compared to the questions offered in the manual, but the answers were mostly short and limited to one or two words. However, these short answers express deep thinking and carry ideas that could be developed if we continued questioning and pushed the student to speak more and this was very difficult due to the modest level of students in French.

We concluded that the pupil does not lack cognitive skills but lacks motivation, desire for discovery that problematic questions can arouse in him. Language skills can also be an obstacle in front of the pupil by preventing him from expressing himself.

4. CONCLUSION

In this article, we have analysed the different forms of questions included in the 1AM 2nd generation textbook, and the ones used in each activity because questions are regarded basic strategy in the teaching and learning process. The obtained results show that most of the asked questions are closed, due to the elementary level of the students. We also found that most of the questions are related to reading comprehension due to the textbook's reliance on texts as the main elements of classroom activities. This technique allows students study linguistic phenomena in their real context, and helps them acquire, in addition to the lesson, other context-related skills.

There are other types of questions used in the textbook activities, like open-ended questions of all kinds. However, when measuring them on Bloom's taxonomy, we found out that they do not support complex and deep thinking and only cover the first three levels, and somehow the fourth level (analysis in very limited cases) at most.

Questions have been always used to directly test understanding. Yet, they are extremely ineffective in checking students' understanding and developing them skills, especially in the absence of conditional knowledge integration situations. Therefore, we prefer the following type of wording: "What are the important points that we need to pay attention to? What should we remember? What can we learn from what we have just seen? Etc." Finally, we suggest reformulating and reorganizing the questions so as to give rise to a certain type of successively starting with direct closed questions, then closed multiple-choice questions, open questions... until non-leading questions, to reach a high level of creativity.

5. Bibliography List:

1- Books :

Benveniste, E. (1993). Problèmes de linguistique générale. Paris: Gallimard.

François-Marie Gerard, X. R. (2009). Des manuels scolaires pour apprendre: concevoir, évaluer et utiliser (éd. 2ème). Bruxelles: De Boeck Supérieur.

Kerbrat-Orecchioni, C. (1991). La question. Presses Universitaires de Lyon.

Maulini, O. (2005). Questionner pour enseigner et apprendre. Paris: ESF éditeur.

Simard, D. (2004). Education et herméneutique : contribution à une pédagogie de la culture. Québec: La presse de l'université Laval.

Guide du professeur du français: première année moyenne. (2016). Alger: ENAG.

2- Journal article:

Nguyen, V. T. (2010). L'apport de la pragmatique à la didactique du FLE, Le cas de l'interrogation en français pour un public vietnamien. Synergies Pays riverains du Mékong(02), pp. 141-146.

Récanati, F. (1982). Déclaratif / non déclaratif. Langages(n°67), pp. 23-31.

Ricci, L. (1996). Le dialogue interrogatif ou les deux faces d'une liberté didactique. Carnets de CEDISCOR, La construction interactive des discours de la classe des langues, pp. 131-146.

3- Internet websites:

Côté, D. (2016). Jeunes en santé: techniques et activités pour susciter la refléxion sur son comportement. Consulté le Mars 14, 2020, sur http://www.education.gouv.qc.ca/fileadmin/site_web/documents/dpse/adaptatio n_serv_compl/techniques.pdf

DUFAYS, J.-L. (1998). Quelles compétences attendre et exercer dans la formation des enseignants à la communication écrite et orale. Consulté le juillet 18, 2020, sur:

http://www.enseignement.be/index.php?page=26044&id_fiche=1038&dummy =24885