Exploring the Critical Thinking Skills of Analysis and Evaluation in 9\textsuperscript{th} Graders Through the Use of Authentic Materials and the Socratic Method

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This research aimed at exploring the interactive role of critical thinking skills and authentic materials in a group of male ninth graders at a private school in Bogotá. These students were observed in order to determine how their written production and oral interaction was shaped when being in contact with a set of teaching units designed from authentic materials such as newspapers and TV broadcasts. These materials were designed after considering the results of a survey in which the participants were asked which topics they would like to work on during the application of this project. The outcomes of the study show that participants analysed and judged topics using internal evidence and external criteria. These two features of thinking match the stages of human knowledge development initially proposed by Bloom (1974), and lightly modified by Facione (1998). The study also reveals that the quality and quantity of teacher feedback highly affects the quality of learner’s production. Teachers’ permanent reflection and refinement of techniques such as the Socratic questioning are key factors for obtaining more elaborate responses from EFL learners.

\textit{Key words:} Critical Thinking, Socratic Questioning, Authentic Materials, Internal Evidence, External Criteria

Esta investigación buscó a explorar el papel de la interacción del pensamiento crítico y los materiales auténticos en un grupo masculino de noveno grado de un colegio privado en Bogotá. Ellos fueron observados para determinar cómo se manifestaban su interacción oral y producción escrita en contacto con unidades didácticas diseñadas con base en materiales auténticos como periódicos y programas de televisión. Esos materiales se diseñaron a partir de una encuesta en la que los participantes mencionaron los temas que les gustaría tratar durante la aplicación del proyecto. Los resultados muestran que ellos analizaron y juzgaron los temas usando evidencia interna y criterios externos. Estas características de pensamiento coinciden con las etapas del desarrollo del conocimiento humano propuestas por Bloom (1974), ligeramente modificadas por Facione (1998). Adicionalmente, el estudio revela que la retroalimentación del profesor determina significativamente la calidad de la producción de los estudiantes. La reflexión permanente por parte del docente, así como el perfeccionamiento de técnicas como la pregunta Socrática, constituyen factores claves para obtener respuestas más elaboradas de los estudiantes de inglés como lengua extranjera.

\textit{Palabras claves:} Pensamiento Crítico, Pregunta Socrática, Materiales Auténticos, Evidencia Interna, Criterios Externos
Nowadays, young people are constantly exposed to large amounts of information, mainly through the Internet. In some way, compared to what happened to the previous generations (including ours), this is positive, because the tools are there, available for people to take advantage of them, in order to be well informed about current events. However, there is not much control over the information youngsters are exposed to, and it is necessary to provide them with useful convenient beneficial tools.

**Literature review**

The concept of Critical Thinking has appeared in recent years among a number of theorists as a relevant and necessary issue for people nowadays. In fact, Pithers & Soden (2000) affirm that there seems to be a consensus that contemporary education curricula should help students to think well and to think for themselves.

Thinking well can be considered to be that type of thinking which is purposeful and reflective, and which can lead the person to consider multiple perspectives of the same issue. It also consists of reflecting upon one's own thinking process, going beyond the facts, analysing the arguments in any idea, and considering multiple possibilities in the process of facing a given issue. Additionally, this way of thinking may help people to state a position, and find possible solutions to a problem.

In that sense, we as educators should be aware of the fact that what present day society really needs is to count on critical and autonomous citizens; people who are able to analyse reality, and eventually, propose ideas for its improvement; people who are able to cope with the challenges proposed by society today.

Construction of knowledge is at the heart of education. Every learner who attends classes approaches knowledge in a number of different ways depending on factors such as the curriculum studied, the teacher's beliefs and assumptions about pedagogy, and the type of texts used.

Vygotsky (1978) argues that the social environment plays a crucial role in the construction of knowledge. According to him, social activity influences cognition through its instruments, its language, and its social institutions. In this sense, since social activity takes place in the classroom, it is one of the relevant components of education. This activity occurs when students interact among themselves and with the teacher. When learners work together, it is possible to use social interaction pedagogically.

As previously mentioned, critical thinking should play a key role in current education because of the high level skills that our future citizens are expected to have. Facione (1998) defines critical thinking as thinking with a purpose (proving a point, interpreting what something means, solving a problem), and it can be a collaborative, non-competitive endeavour.
Bloom (1974), and later Facione (1998) proposed that human knowledge is formed by six defined components. The names assigned to such components by the two authors and the ways they interrelate among each other vary, but basically, there is much similarity in the two proposed models.

Bloom (1974) proposed a list of six levels of human knowledge arranged in a rigid hierarchy: knowledge, comprehension, application, analysis, synthesis, and evaluation. These levels constitute the cognitive domain of what he called “the taxonomy of educational objectives”, which is an educational-logical-psychological classification system formed at an informal meeting of college examiners attending the 1948 American Psychological Association Convention in Boston.

He defined such levels as follows: The first, knowledge, implies the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting. Its objectives emphasize most the psychological processes of remembering. In the second, comprehension, the person knows what is being communicated and is able to use that idea without relating it to other material. The third, application, is described as the use of abstractions in particular and concrete situations and can be manifested as general concepts, rules of procedures, or generalized methods. The fourth, analysis, is considered as the breaking down of a communicated message into its components so that the relative hierarchy of ideas is made clear and/or the relations between the ideas expressed are made explicit.

Facione (1998) proposes six core critical thinking skills which, contrasted with Bloom’s rigid taxonomy, may appear at any stage through the right stimulation process: Interpretation, analysis, evaluation, inference, explanation, and self-regulation.

Interpretation is the comprehension and expression of the meaning of a large variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures, or criteria.

Analysis is described as the identification of the real relationships among statements, questions, concepts, descriptions, or other forms of representation that express belief, judgment, experiences, reasons, information, or opinions.

Evaluation, the third element, refers to the assessment of the credibility of statements produced by someone’s perception, experience, situation, judgment, belief, or opinion; and assessing the logical power of the real or intended inferential relationships among statements, descriptions, questions or other forms of representation.

Inference means the identification and securing of the necessary components to reach reasonable conclusions; to form conjectures and hypotheses; to take into account important data and to deduce the meaning of data, statements, principles,
evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or different ways of representation.

Explanation, is defined as stating the results of one’s reasoning, justifying it in terms of the evidence, concepts, methodology, criteria, and context on which one’s results were based; and to display one’s reasoning as cogent arguments.

Finally, self-regulation is considered the most relevant of all due to the fact that it permits critical thinkers to improve their own thinking. This concept has been called metacognition by other theoreticians. It self-consciously monitors one’s cognitive processes, the components involved in those activities, and the outcomes inferred. This occurs through the use of analytical and evaluative skills when one is making inferential judgments. It supports questioning, confirming, validating, or correcting one’s reasoning or results.

Both Bloom’s and Facione’s taxonomies have valuable elements which describe how knowledge is built up. I agree with Facione in the sense that the right stimulation process may make the different stages appear indistinct during someone’s process of knowledge construction. Nowadays, this concept has evolved into what is now known as critical thinking, which is accepted by many educators to be an important element to incorporate in the classroom in order to prepare learners to become autonomous and reflective thinkers.

Another key concept in this study was Socratic questioning which is considered as one of the most widely accepted ways to foster Critical Thinking, especially in the classroom. This is achieved by promoting classroom discussion, helping students evaluate their own thinking, comparing it to that of their peers, and proposing consideration of multiple ideas and their interrelationships (Ryder & Graves, 1998).

According to Thoms (2003), the Socratic questioning method has become usable by teachers through a set of identifiable categories of questions established by Paul et al. (as cited by Thoms, 2003). These categories are as follows:

- Questions of clarification: Asking for verification, additional information, or clarification of one point or main idea, with students expounding on an opinion, rephrasing the content, or explaining a particular statement, e.g. “What do you mean by...?”, “What is your main point?”.
- Questions that probe assumptions: Asking for clarification, verification, explanation, or reliability, e.g. “What are you assuming?”.
- Questions that probe reasons and evidence: Requesting additional examples, evidence, reasons for making statements, adequacy of reasons, processes which
lead to this belief, and/or anything which might change the student’s mind, for instance: “What would be an example?”, “Why do you say that?”

- Questions about viewpoints or perspectives: Searching for alternatives to a particular viewpoint, how others might respond to questions, or a comparison of similarities and differences between and among viewpoints, e.g. “What would someone who disagrees say?”, “What is an alternative?”
- Questions that probe implications and consequences: Describing and discussing implications of what is said, results, alternatives, or cause-and-effect of an action, e.g. “But if that happened, what else would also happen as a result? Why?”
- Questions about the question: Breaking the question into mini-questions and single concepts or determining whether an evaluation is necessary, e.g. “Is this the same issue as...?”, or, “Does this question ask us to evaluate something?”

In general terms, the Socratic Method has been used in teaching settings, in order to determine how beneficial it is at helping both teachers and students in the teaching-learning process, making it eventually quicker and easier.

One of the key aspects of this project was to give students the opportunity to interact through the teaching units I designed while performing critical thinking-oriented tasks. Thus, it is pertinent to point out the role of classroom interaction, by which, for the purposes of this study, I mean the oral and written interchange that takes place between the teacher and students in the classroom. This is a key concept since it is through interaction between teacher and students that the Socratic Method is implemented.

Tsui (1998) defines interaction as the language used by the teacher and the learners including structures and patterns. She asserts that numerous studies have been carried out on learner participation. They have focused on the amount, the negotiation of meaning between learners and their relation to second language acquisition. The assumption seems to be that the more learners participate orally and the more they engage in the negotiation of meaning, the better they will acquire the language.

Besides being based on critical thinking, and Socratic questioning, this project was also based on the use of authentic materials (those taken from non-academic sources) to carry out a number of activities in the classroom. The purpose was to present the students with a series of tasks related to social and political issues. These tasks were based on and designed from newspaper and magazine articles, as well as TV news broadcasts. The purpose was to explore and analyse the students’ oral and written production in relation to such materials and some features of critical thinking.
According to Little (as cited by Guariento & Morley, 2001), an authentic text is one “created to fulfil some social purpose in the language community in which it was produced” (p. 347). In the ELT context, authentic materials can be defined as any written, audio, or audiovisual material in English that was not originally created for teaching-learning purposes.

Guariento & Morley (2001) argue that, nowadays, there is a general consensus in language teaching in which the use of authentic materials is considered to be beneficial to the learning process, although they notice that there is less agreement in relation to the most appropriate point at which these materials should be introduced into the classroom. They advise teachers to be careful when selecting such materials if they are to be introduced at lower levels, especially regarding the lexical and syntactic complexity.

Newspapers and T.V. news are two of the most common examples of authentic materials that can be used for teaching. Meriño & Massi (1998) believe that the classroom should be an extension of the learners’ world, in which they are exposed to mass media daily. In this sense, they propose that the same procedure should be implemented in the classroom. They argue that these materials provide creative and original ideas for making effective use of real life English.

Research design

A set of tasks was designed from a number of authentic texts such as newspapers, magazine articles as well as TV news broadcasts. These authentic texts were chosen based on the results of a survey that aimed to identify the topics the participants wanted to focus on during the project.

Research questions

This research project had two main questions, which were answered through data analysis. They were the following:

- How do students approach the processes of analysis and evaluation through the use of authentic materials?
- How does the Socratic questioning technique built around authentic materials affect students’ oral and written production?

Setting and participants

The study took place at a large private co-educational (up to 6th grade) school located in the north of Bogotá, Colombia. The school uses the Eclectic Approach.
to teaching English, which according to Tuck (1998) consists of choosing, from the many EFL methodologies of the past, the most academically accepted theories of language and language learning and selecting from a mosaic of ideas, materials and activities that which is most relevant to the particular needs of the learners.

The forty-one male participants who took part in this study were selected at random from three 9th grade groups. These students were between 13 and 16 years old, most of them belonging to the middle class. Their parents are professionals such as doctors, lawyers, engineers, who are either employed or own small companies. Some of these students have had the opportunity to travel abroad and, as a whole, their proficiency in English could be rated as lower-intermediate.

**Instruments and data collection**

- **Field notes:** They were collected through an Observation Scheme Form (OSF) I designed, which was divided into two columns, one for comments on on-the-spot observations (raw notes), and one for comments and insights about them (cooked notes).

- **Video and audio recordings:** The sessions were videotaped with the camera placed in a corner of one of the classrooms. Each of the twelve sessions during the fourteen week period was also audio taped.

- **Students’ written assignments:** Students’ opinions and reflections about the topics presented were determined through a set of questions, either for pair work or group work discussion, and then answered on the same piece of paper.

**Data analysis**

All data was collected during the twelve, 60 minute sessions during the second semester of 2003 using the four previously mentioned methods of data collection. Field notes, video and audio recordings, and students’ written assignments allowed me to compare and contrast the information collected. It was a form of triangulation that attempted to ensure the validity of the study. The use of four instruments allowed me to confirm the findings of the data analysis.

**Categorization**

1. **Sources of Analysis and Judgment: Internal Evidence and External Criteria**

This category concerns the first research question: “How do students approach the processes of analysis and evaluation through the use of authentic materials?”

In my project there were several attempts to analyse the issues proposed in the units worked on, as well as attempts to state one’s positions. One of the critical
thinking skills proposed by Facione (1998) is analysis. It refers to the connections a person can make among all the things he or she knows, in order to establish relations and conclusions. This skill is also used to set and justify a position about a topic based on the different connections made.

Bloom (1974) proposed evaluation as the highest level in this taxonomy which consists of “judgments about the value of material and methods for given purposes” (p. 207). In general terms, it is related to judgments people make about a given issue, which can be based on internal or external criteria. In other words, individuals usually make judgments in terms of internal evidence (logical accuracy, consistency), and external evidence (evaluation of material with reference to selected or remembered criteria).

1.1 Internal evidence and moral-ethical concepts as a resource for analysis and judgement

This sub-category refers to personal beliefs, best models, logical considerations, error-free or ideal concepts that are used when justifying a position or viewpoint. When we talk about internal criteria we can also refer to what Brown & Kelley (2001) call value conflicts. They influence the reasons provided by individuals for ethical or prescriptive arguments, and therefore, their conclusions.

This example belongs to the transcription of the twelfth session (Killing Pablo, CNN video) about how the Colombian drug dealer was hunted down and killed by the authorities. In this case, a group of participants discussed some questions about the video.

In this case I wrote the following introduction and question: ”There are lots of poor people in Medellín who love Pablo Escobar because he helped them. There are also lots of people who hate him because they or their families were affected by his terrorist attacks. Taking this into account, how would you judge Escobar’s life?”

This is one participant’s answer:

S23: You say that but in the past the principal idea of the guerrilla is help the poor people but the guerrilla of Colombia now doesn’t have that ideales because also doesn’t help the town. He kill them he put bombs and a lot of things.

(Source: Audio tape session 12, October 23rd, 2003)

We can observe that this student bases his judgment (comparing Escobar’s actions with those of the guerrilla) on his own concept of what a rebel group should be doing (helping poor people). He is using his internal criteria based on his perso-
nal beliefs to judge the rebel groups. He also emphasizes the fact that the guerrilla does not follow those ideals anymore. Then, he moves to his judgment of Escobar by appealing to his external criteria (in this case the laws established by society), to censure what he used to do (killing people, planting bombs), which is penalized by law, and considered as both murder and terrorism by most governments around the world, especially after the World Trade Centre and Pentagon attacks on September 11th, 2001.

1.2 External criteria, commonly shared knowledge and personal experience as resources for analysis and judgement

External criteria refer to the evaluation of any material in relation to selected or remembered criteria. In other words, it has to do with the concepts, rules, laws, and collective ideas previously established by society (Bloom, 1974). Students in my project frequently drew upon external sources to analyse and judge.

Two factors that determine external criteria are: “what everybody knows”, that is to say, knowledge which is commonly shared by all members of any society, and “personal experience”, which refers to all knowledge that is set in an individual’s mind because of having lived a given situation or event. Vygotsky (1978) affirms that people’s learning process is conditioned by the historical, social, and cultural context in which individuals grow up. In that sense, it can be expected that an individual’s viewpoint is the result of all the experiences lived by him/her in his/her own setting.

One example of students using external criteria for supporting arguments corresponds to the field notes of the sixth session, based on the CNN video Violent Teens that shows troubled teenagers in the USA, and seeks to find the causes of this violence.

I start asking students for individual answers. Those I ask, think T.V. is a very relevant factor in teenage violence, also parents because, if a child sees his parents arguing all the time, he will become violent.

(Source: Field notes session 6, August 21st, 2003)

In this case, after students were asked to what extent they believed that parents, media, and friends were the cause of teenage violence, several students responded that parental violence was a relevant factor because violent parents produce violent children. This can be assumed as external criteria because the participants assessed the nature of a human behaviour regarding the fact that, as psychology affirms, parents are models for children, who imitate what they do.
2. Teacher’s reflection on questions as an optimiser of students’ responses

Two sub-categories emerged as an answer to the second question: “How does the Socratic questioning technique built around authentic materials affect students’ oral and written production?”. The first refers to a personal reflection and analysis about the way I, as a teacher-researcher, was using the Socratic questioning technique during the early stages of data collection, whereas the second one relates to the participants’ answers to the questions I posed during the second part of the process.

2.1 Monitoring one’s questioning technique

Before analysing the students’ oral and written production, it was necessary to examine first what I was doing in the classroom. I began to notice that the answers the participants were providing did not fulfil my expectations. Later on, analysing the questions I was asking them, I realised that I was not following the guidelines of the Socratic questioning technique correctly and, as a consequence, the participants’ answers were lacking in depth. Even though I had questions prepared, I was not used to the technique, and the different topics, or students’ answers somehow led me to ask different types of questions.

This example corresponds to the second session of the project during which I was introducing students to basic concepts related to thinking critically such as inductive and deductive reasoning, and reasoning by analogy. The specific topic here was deductive reasoning.

Then, I show them a marker, asking them what colour it is. All of them say blue. So, I ask them how they know it is that colour.

To that question, a student answered: “Because the teacher teach me that when I was a child”.

(Source: Field notes session 2, July 22nd, 2003)

In this case, the question about the colour of the marker was too easy to answer. The second question was unusual because people are not used to answering questions about things that are taken for granted. The second question was intended for participants to explore their reasons for believing something that, at first sight, is obvious. However, this participant did not consider, for instance, the fact that what his eyes perceive as blue, may or may not be the same that others do, and he is merely establishing a connection between what he perceives and the word blue. I could have elaborated on his first answer, but I did not. Consequently, the result was a very simplistic answer.
2.2 Triggering reasoning with Socratic questioning

During the second part of the project, being aware that the answers provided by the participants were not deep enough, I refined my questioning technique focusing more on asking Socratic questions. As a result, I started getting richer responses in terms of reflections and justifications of the students' positions regarding different topics.

According to Facione (1998), a critical thinker is able to understand and express the meaning of many things. He or she is also able to analyse issues examining ideas, comparing and contrasting them. Additionally, a critical thinker evaluates the acceptability of claims by judging reasonable or fallacious inferences.

The following example comes from the video transcription of the 6th session. It is an example of my first attempts to elaborate more on the questions. My aim was to initiate controversy and to invite students to listen to each others' ideas so that they could assess the validity of their arguments. The topic was violent teens in USA and the possible causes of that problem. In this case students were asked about the degree of responsibility of parents, the mass media and friends in teenage violence.

From 1 (minimum) to 5 (maximum), how would you rate the role of the following elements in teenage violence, explaining your reasons:

a. Media
b. Parents
c. Friends
...

S8: I think that 5, because people do what happens on T.V.
T: Do you think S8's reasons are adequate?
S9: I agree because is the media most popular and most of the persons try to imitate what they see on T.V.
T: How about you S10. Do you think those reasons are adequate?
S10: I think people is dominated by what they see and what they hear. T.V. try to show an image and people is dominated by that. So I give 4.

(Source: Video tape session 6, August 21\*, 2003)

In this excerpt student 8 assigns high responsibility to the mass media in causing teenage violence, and he briefly explains his reasons. Then, I try to involve all the class in the analysis of this answer by asking them a Socratic question related to adequacy of reasons that probe reasons and evidence. As a consequence, the class
got more involved in the questioning, providing richer, more elaborate and better supported reasons to the initial claim.

In response to S8’s opinion, S9 and S10 evidenced features of Evaluation, one of the critical thinking skills stated by Facione (1990). These two participants assessed the credibility of the previous statement which was an account of S8’s judgment, by means of supporting that idea with their knowledge of the mass media and its effect on the population.

Specifically, student 9 justified his position saying that the popularity of mass media, such as TV, strongly influences people and makes them imitate models. S10 went further, saying that people are strongly influenced by what they see and what they hear, connecting that concept to what TV does.

Findings, implications and applications

Regarding the first category, one of the findings indicated that the students analysed and judged topics by using internal evidence and external criteria. For me, it implied that all my students have something valuable to contribute in my EFL classroom; something directly related to their own lives and life experiences. In the broader sense, this situation implies that we as EFL teachers must be aware that our learners, even if they are young children, come to the classroom with background knowledge. Such previous experience is highly valuable in the construction of knowledge.

In parallel, my participants attempted several times to analyse the items put forward in the units they had been presented. What I mean by analysis concurs with what Facione (1998) proposed as the connections a person can make among all the things he or she knows, in order to establish relations, conclusions, etc.

The results of this project indicate that teenagers are able to establish connections in their minds to analyse different issues. The degree of participation and enthusiasm observed among my participants may suggest that giving learners the chance to analyse different situations constitutes an additional motivating factor for them to learn. This implies that giving learners the chance to analyse and state their viewpoints as a constant pedagogical tool, may result in significant benefits for their attention and engagement in the activities, and, in general, for their learning process.

Regarding the second research question related to the use of the Socratic Method of questioning, the findings indicated that the teacher’s feedback greatly affects the quality of learners’ production. In that sense, the teacher has to become what Young (as cited by Pineda, 2003) calls “a scaffold of debate”, which is someone who
encourages the students’ productions by means of inviting them to question, explain, critique, and giving them a solid basis to develop criticism. This finding implies that we, as language teachers, should make an extra effort in the kind of feedback we give to our learners, if we want them to produce more in the academic, intellectual and even affective sense.

For the EFL context it also implies that despite the individual differences among every class group a teacher has, it is mostly the teacher’s work that determines the students’ production. So we, as EFL teachers, should be aware of that, in order to pay more attention to the way we are addressing our students’ needs, answering their questions and praising their efforts.

The use of the Socratic Method allowed my students to assess the credibility of given statements, which is part of Evaluation, one of the core critical thinking skills stated by Facione (1998). Recurrent use of Socratic questions also allowed my participants to be able to assess the acceptability of others’ reasons, which also matches Facione’s definition and reach of Evaluation.

These findings regarding the connections made by students between current topics and previous knowledge imply that students are not empty vessels to be filled with knowledge. Freire (1970) examined the authoritarian educational system, labelling its practice as ‘banking education’. In this model, the teacher is the subject of the learning process, and the learners are its objects; the role of the teacher is to deposit contents in the mind of the learner, as if it were an empty vessel to be filled with information. Hence, the teacher is considered as knowledgeable and the student as ignorant.

There is a latent potential that we as teachers need to explore. It implies a change of attitude from the EFL teacher’s point of view. It implies, more specifically, not seeing the students as beings who just memorize a set of mechanical rules, which means that language cannot be looked at as a set of fragments. On the contrary, it implies students using the language to talk about reality, meaningfully transforming their experiences.

With regard to the use of authentic materials, it is pertinent to consider the following pedagogical application. Using authentic materials such as TV news and newspaper articles in the EFL classroom influences learners profoundly. In this particular scenario, the fact of having used authentic materials rather than a traditional textbook provided additional motivation for students’ participation. This can be inferred when comparing the less positive students’ attitude towards the curriculum class activities with their high level of commitment during the project.

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Final considerations

Having used the Socratic questioning technique in the classroom was a positive factor for getting students more engaged in the activities they were presented with. Additionally, the continuous use of this technique helped in keeping participants' attention during most of every single session. However, from this experience I found that the Socratic questioning technique takes a lot of concentration and preparation on the part of the teacher to apply it effectively.

In general terms, this project has fostered in me a reflective attitude in terms of what I am actually doing in the classroom, paying attention to the dynamics of teacher-student interaction. It may be a set of experiences that might be useful for other researchers to start their own projects.

References


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