Implementing Collaborative Learning to Promote Inference-Making in a Reading Strategy Course in English

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Abstract
This article reports on the findings of a research project intended to promote collaborative learning and inference-making among students from majors other than English at the University of Costa Rica. First, a diagnosis was carried out to know the students’ previous knowledge about inferences. Second, a strategy consisting of various stages was implemented for students to have a better understanding of inference-making and have collaborative practice to make inferences. The results indicate that many students fail to see the difference between paraphrasing and making inferences even though they can clearly define what an inference is. After the implementation of the strategy, most students concurred that they feel more confident about making inferences in English and saw the value of the instruction given.

Key words: reading comprehension, reading strategies, inferences, English as a foreign language, collaborative learning

Resumen
Este artículo reporta los resultados de una investigación orientada a promover el trabajo colaborativo y el desarrollo de inferencias en
estudiantes de inglés para otras carreras de la Universidad de Costa Rica. Primeramente, se efectuó un diagnóstico para entender el conocimiento previo de los estudiantes acerca de las inferencias. Como segunda parte, se puso en práctica una estrategia para ayudar a los estudiantes a comprender mejor cómo se hacen las inferencias y a trabajar de manera colaborativa para desarrollarlas. Los resultados indican que muchos estudiantes no logran ver la diferencia entre la paráfrasis y las inferencias, aunque pueden definir claramente qué es una inferencia. Después de la puesta en práctica de la estrategia, la mayoría de los estudiantes indicó que se sienten más seguros a la hora de desarrollar inferencias en inglés y ven la utilidad en la instrucción que se les brindó.

**Palabras claves:** comprensión de lectura, estrategias de lectura, inferencias, inglés como lengua extranjera, aprendizaje colaborativo

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**Introduction**

The reading comprehension courses taught at the School of Modern Languages at the University of Costa Rica are oriented towards helping students from various majors develop their strategies to read in English. In these courses, students are instructed to demonstrate understanding of and implement strategies that allow them to read texts in English more efficiently and rapidly. Among these strategies, making inferences about what one is reading is crucial. Still, this reading strategy is difficult to develop, and based on the authors’ previous experiences teaching reading strategies, students have trouble articulating what an inference is and, more importantly, making inferences while reading.

Commonly, to teach this topic, teachers explain the theory provided in the course reader by means of presentations, which may include images, definitions, and some inferences based on sample texts. After that, students are told to do the exercises provided in the reader, which are mainly intended for the students to identify inferences but not to make them. A few exercises are about inferring main ideas and others about making inferences based on short texts or images, though. Nonetheless, this is not enough given that many students do not understand the process needed to make a logical inference. Seeking to find a solution for the problem mentioned previously, the following research objectives were established:

1. Assess the students’ previous knowledge about inferences,
2. Instruct the students about a recommendable process to make inferences,
3. Assess the effectiveness of the instruction that the students were provided with by means of a didactic strategy, and
4. Assess the effectiveness of the didactic strategy applied.
Literature Review

Teaching Critical Reading Comprehension Skills to University Students

Learning to read critically is a demanding task since as put by Nation (2009, p. 3), in the teaching of reading comprehension in a native language, “[t]he techniques used to teach reading are largely meaning-focused,” which means that the reading process is focused mainly on the explicit realm of the text. In this sense, Basaraba, Yovanoff, Alonzo, and Tindal (2012) argued that

[b]ecause literal comprehension tasks typically require only that a student locate information that is explicitly stated in the text (sometimes even using the same phrasing or wording that appeared in the text), the cognitive processing demands for proficient readers may be fairly minimal. Although literal comprehension is undoubtedly important (without surface-level understanding of a text, deeper interactions with the text are not possible). (p. 353)

In consequence, to read critically, a reader needs to go beyond what is stated openly in a text; making inferences can thus be considered a necessary skill for critical reading, especially among university students.

Still, making inferences in one’s native language may be quite difficult in itself considering that the previous training to do so could be limited or non-existent. Native language reading and foreign language reading are different processes, and this may turn out to be confusing for some. Bernhardt (2011, p. 7) contended that this “misconception of ‘it’s all the same’ has undermined research progress in the area, belittled the challenge of reading in a second language, and has impeded assistance to teachers.” Indeed, reading comprehension strategy transfer from the native to the foreign language may not happen (Birch, 2002).

Consequently, reading critically in a foreign language could be a far greater task as a foreign language student is in the process of learning a new linguistic system and making sense of the messages expressed in it, not to mention the skills necessary to make inferences. This may be a great challenge for foreign language students of all ages. In the authors’ experience, even university students find it difficult to make sound inferences based on a text for several reasons (i.e., not having good reading habits, lacking training to make inferences, and relying exclusively on word-for-word translation). Therefore, explicit strategy instruction is necessary (Birch, 2002, p. 29) to allow these students to become proficient readers capable of making good inferences.

Teaching Inference-Making to Students

Before going any further, it is important to consider what should be understood as making an inference. McNamara and Kendeou (2011, p. 35) defined it as “the process of connecting information within the text or within the text and one’s knowledge base, and drawing a conclusion that is not explicitly stated in the text.” Many good reasons come to mind when one thinks
about the importance of teaching inference-making to students. As stated by Chikalanga (1992, p. 697), “[a] text is never totally explicit. Many of the things a reader needs to know to comprehend a text are not explicitly stated.” Indeed, it is possible to list various reasons why certain ideas are left unsaid explicitly, namely, style, humor, and political repression. Sometimes the fact that something was implied by a writer could even be an unconscious intention. Therefore, an efficient reader should be able to read between the lines of a text to find its underlying meaning. This, of course, is a highly demanding cognitive task, for reading comprehension requires knowledge about discourse structure and reading comprehension strategies (Irrazábal & Saux, 2005), and for this, students need training.

Explicit strategy instruction for making inferences has proven successful. Such early work as that of Yuill and Oakhill (1988) demonstrated that inference training was successful at improving the comprehension of texts of children with poor reading skills. More recently, Cane and Oakhill (1999) conducted a research project with children to determine what affected their inference-making ability the most, and they found that the main factor was the children's differences in reading strategy use. These empirical findings support the determining role of explicit instruction to make inferences, and even though these results were obtained with children, this does not mean that inference training cannot be attempted with university students as in the case of the participants of this research. In relation to this, Attaprechakul (2013) carried out a study with university students to assess what inference strategies are necessary to read journal articles. Attaprechakul’s findings overall showed that students were able to infer main ideas but failed to infer the underlying arguments of the articles, which “confirmed needs for training in use of strategies when reading a challenging text for graduate students” (2013, p.89).

Students need to be taught how to make inferences because “even the simplest of texts require inferencing” [sic] (Davoudi, 2005, p. 107). A good reader is always able to transcend the explicitness of a text to find its deeper meaning; this may be done with explicit inference training: “When individuals are made aware of these processes that often occur naturally, they seem to be more able to apply the processes to situations where it is more difficult to make inferences, such as in reading” (Nokes, 2008, p. 541). In consequence, it is possible to argue that allowing the students to become aware of the necessary processes to make an inference and the importance of making inferences while reading may empower them to work towards being more proficient readers.

Types of Inferences

Although several authors have described different taxonomies to classify inferences in numerous types (Chikalanga, 1992; Montanero, 2002; Escudero, León, & Morera, 2013; Ramos, 2006), Flemming (2011) has aptly proposed two ways in which inferences may be classified, logical and illogical inferences. According
to Flemming (2011, p. 353), logical inferences are “firmly based on statements in the paragraph. They do not contradict or undermine what the author actually says, and they keep the reader in touch with the author’s intended meaning,” while illogical inferences are “based more on the reader’s personal experience or common sense than on the author’s words. They are likely to ignore or contradict what the author actually says.” In this regard, a reader can verify an inference he or she has made by going back to the text used to make it, rereading the text, and comparing it with the inference to see if it is consistent or inconsistent with the text. Nonetheless, however appropriate Flemming’s distinction (2011) may be, it fails to account for those inferences that go beyond what is implied in a text. These not-implied inferences are so specific that they cannot be verified by referring back to the premises found in a text. Chikalanga (1992) referred to this type of inferences as “pragmatic inferences” and stated that they may be “plausible... [but] not necessarily true” (p. 699). Having said this, it would be convenient to use a threefold taxonomy to classify inferences: logical inferences, illogical inferences, and not implied or pragmatic inferences.

Common Problems Faced While Making Inferences

Inferences may be multiple, yet not all inferences are logical, and more importantly, not everything that is called an inference really is one. As a result, reading students generally face some common problems. A reader’s ability to make inferences can be influenced by his or her language proficiency, working memory capacity, lack of background knowledge, and failure to identify the goal of a reading task (Basaraba, Yovanoff, Alonzo, & Tindal, 2012). Aside from this, when students do inference-making activities, it is common for them to come up with inferences that cannot be considered as such and cannot be classified using any of the existing taxonomies. According to León, Solari, Olmos, and Escudero (2011), these non-inferences may include paraphrases, repetitions, judgements, empathy, and acknowledgements of comprehension problems. Specifically, in foreign language reading, students tend to translate sentences into their native language, and they believe they are making an inference because the changed the language in which the information is written. Indeed, as considered by Montanero (2002), students need to go beyond the literality of the text to achieve a deep understanding of it. Consequently, when teaching students to make inferences, the teacher should make them aware of the problem of literality so that they can monitor their inference-making processes and make the necessary corrections.

Implementing Collaborative Learning in Reading Activities

The effect of using collaborative as opposed to traditional learning has been widely demonstrated (Bölükbas, Keskin, & Polat, 2011; Khan & Ahmad, 2014; Zarei, 2012). In fact, resorting to collaboration in the foreign language reading classroom seems to be a very pragmatic decision to make because
of various reasons. As emphasized by Johnson and Johnson (2014, p. 841), teaching students to cooperate with one another provides them with tools to meet four 21st century challenges:

1. A rapidly increasing global interdependence that will result in local diversity as well as more frequent and intense conflicts
2. The increasing number of democracies throughout the world
3. The need for creative entrepreneurs
4. The growing importance of interpersonal relationships

These indeed should be challenges to be dealt with in most (if not all) classrooms if teachers want to train productive, successful citizens; students need to be helped to be critical, especially in reading courses.

Also, reading is, in most cases, an individual activity, which may prevent students from socializing and collaborating with one another in reading classes, and this in turn makes students feel that the classes are dull and monotonous. Implementing collaborative tasks in the reading classroom can be a way to tackle this situation and make the teaching/learning experience more dynamic. In this particular aspect, research has shown that students are receptive to collaborative activities for reading comprehension (Farzaneh & Nejadansari, 2014). Not much thinking is necessary to understand why students would prefer collaborative learning over traditional methods in the reading class since collaborative learning entails more movement and interaction. Still, there may be other ulterior benefits of using collaboration in the reading class. Commonly, teachers in reading classes have to deal with students with different proficiency levels, so the use of collaborative activities allows these students to interact with each other and negotiate meaning, which is especially beneficial for the weaker students. Particularly, making inferences is a demanding cognitive process that may benefit greatly from negotiation of meaning.

**Methodology**

**Context and Participants**

This research project was put into practice during a session of three 50-minute lessons with three groups of students (two groups during the first semester and one group during the second semester) taking LM-1030, a reading comprehension course for students from majors other than English or English Teaching at the University of Costa Rica. A total of 52 students participated in the implementation of the project and its data collection process (among these 52 students, there were two university faculty taking the course to improve their English proficiency level).

**Design of the Strategy: Stages**

**Diagnosis**

The first stage of the research served a diagnostic purpose. It was intended to determine how much the students knew about inferences. Here the students were given a three-section questionnaire. This questionnaire which had instructions
in Spanish to make sure the students could answer it confidently. In the first part, the students had to provide a definition for the concept of inference. In the second part, the students had to analyze a series of statements based on an authentic article taken from a popular American newspaper, which they were provided with as well. Then, the students had to identify these statements as being inferences or not. In the third part, the students were requested to make two additional inferences based on the text and that were different from the ones found in the previous part of the instrument.

**Warm-up**

After completing the first questionnaire, the students watched a video, in which a famous group of comedians tells a story only using gestures. Then, the students were told to get in groups and make inferences about the story told in the video. After that, a discussion with the whole group was held, and students were welcome to share what they thought the story was about. Finally, a theoretical introduction to the topic of inferences was given. It included a definition of the concept of inference and a series of images that the students could use to make inferences by using the explicit graphic content of the images.

**Implementation of the Didactic Strategy**

In this stage of the research, the students were told to get in groups of three or four (expert groups). In each group, each student was provided with an authentic seven-paragraph article taken from the online version of a well-known American magazine. Then, the students were told to do the reading individually. Then, each group was given a handout to write six different inferences about the article. This handout had instructions in Spanish to make sure the students knew that they had to do in it. The students were told that they had to come to an agreement about the six inferences that they would write in the handout. After that, each group of students was provided with a second handout for them to transcribe their inferences and exchange them with another group. This handout also had instructions in Spanish and had a space for the students from the other group to mark whether the sentences written were inferences or not. The students were also told to write the inferences that they were most unsure about on the board to be analyzed with the whole class afterwards. Later, the students were instructed to get together in new groups. Each new group had to include at least one or two students from the group that wrote the inferences and at least one or two students from the group that analyzed the inferences. The idea behind this was that the students discussed the discrepancies they had while analyzing the inferences written by the other group, contrasted their opinions, and clarified basic concepts, such as explicit and implicit information in a text. Finally, a discussion with the whole group was held to analyze the inferences that were previously written on the board to determine if they were inferences or not. The professor acted as a mediator to allow the students to notice that just the mere act of summarizing or paraphrasing information that appears explicitly in a text cannot be considered an inference.
Assessment of the Didactic Strategy

Two assessment instruments were used by the researchers while putting the didactic strategy into practice. The first instrument was used during the warm-up stage of the strategy (See Appendix A). It was an observation instrument comprised of a checklist to record information about the students’ performance in the activity based on the video projection. The second assessment instrument used by the professors was also an observational checklist to record information about the students’ performance during the development of the didactic strategy (See Appendix B). Also, an assessment instrument was given to the students after the implementation of the didactic strategy (See Appendix C). It was a questionnaire in Spanish with closed and open-ended items for the students to assess the instruction and the materials given during the activity, assess their own performance during the activities, and offer suggestions for improvement.

Data Analysis

All the answers and inferences collected with the instruments were analyzed and classified, and percentages were obtained in a quasi-statistical fashion for further analysis. Also, the information recorded by the researchers using the observation instrument was analyzed and classified for further description.

Ethical Considerations

All the information collected for the research was anonymous, so the students were not required to write their names in any of the documents used. Also, participating in the research did not imply any rewards for the students, such as extra points. The only benefit that the students got was the instruction and practice given.

Results and Discussion

Students’ Notions about Inferences

In regard to the first stage of the strategy, the diagnostic stage, the majority of students have a basic but correct idea of what an inference is. Forty-three students were able to provide a definition of inference close to the one mentioned above in this article. This corresponds to an 82.6 % of the total of students. In addition, thirty-two students out of these 43 included in their definition words such as “deduce” and “draw a conclusion.” This corresponds to a 61.5 % of the total of students. Only 9 students out of 52, 17.3 %, provided an incorrect or unclear definition for the word “inference.”

Students’ Recognition of the Provided Inferences

In the second part of the diagnostic instrument, the students had to identify the correct inferences in a group of 10 sentences generated based on the reading provided. There were 6 inferences that were correct and 4 inferences that were incorrect. The latter were explicit ideas or paraphrases from the reading. The majority of students, 28 out of 52, had around 4 to 6 correct answers. This represents 53.8 % out of the total of students. Twenty students out of 52 had more than 6 correct answers; this is 38.4 % of the
total. In addition, only 4 students out of 52 had less than 4 correct answers. This represents 7.6% of the total of students, 52. Only one student had all the answers correct. This means that the majority of the students have an average ability to identify logical inferences.

Students’ First Inference-Making Attempt

In the third part of the diagnostic instrument, students were asked to write two more inferences from the reading which had to be different from the ones in the second part. Fifteen students had both inferences correct. This represents only 28.8% of the total. Twenty students had one correct inference. This represents 38.4% of the total, and 17 students had no correct inferences at all. This stands for 32.6% of the total. It is important to point out that 16 out of the 17 students that were not able to draw any inferences actually wrote an explicit idea from the text.

The diagnostic stage indicated what was initially expected. Most students have a clear idea of what an inference is, but they have a difficulty when having to make an inference on their own. Many students confuse logical inferences with explicit, paraphrased, or summarized ideas from the text when trying to draw an inference.

Observations during the Warm-up Stage

During warm-up stage (video projection), there was an observation instrument in which the teachers had to keep track of students work and analyze the interaction of the students (See appendix A). From this instrument, it is important to notice that even though some groups missed certain specific parts from the main story shown in the video, all students collaborated to reconstruct it. In fact, most of the groups referred to the main story but neglected to acknowledge the secondary story that took place among the comedians.

Furthermore, as mentioned before, during the development of the didactic strategy, there was a second assessment instrument used by the professors to record information about the students’ performance (See Appendix B). From this observational checklist, it is important to mention that among the members of each group the discussion was dynamic and most students were very concentrated during the activity. In fact, many students realized that the inferences they were writing were mere transcriptions of explicit information from the given text. One of the researchers noticed also that the groups in which at least one member was older than the rest (e.g. those who were university faculty) had less difficulty drawing logical inferences. This indicates that it is possible that for drawing correct inferences, a certain level of (intellectual) maturity is required. It is also possible that older students just have more experience in using the strategy.

Students’ Assessment of the Didactic Strategy

A total of 48 students completed the instrument to assess the strategy at the end. They were first asked about the impact of the instruction provided by the professor. According to 28 out of 48, the instruction was considered useful; this represents a 58.3% of the
total. Additionally, 19 students (39.5\%) considered it very useful. Only one student (2.08\%) considered it somewhat useful.

In regard to the materials used during the strategy, 29 students out of the 48 said they were useful (60.4\%), and 19 said they were very useful (39.5\%). No students considered the materials somewhat useful or not useful at all.

In addition, students had to assess their general performance in the activities that comprised the strategy. In this aspect, 22 out of 48 described it as good. This represents 45.8\% of the total. Fourteen students evaluated their performance as very good (29.1\%), and five students said it was excellent (10.4\%). Only seven students stated it was regular (14.5\%). Most of the additional comments in this part pointed out that more practice was needed to be able to identify inferences more accurately in the future. This was expected by the researchers since they observed students were having difficulty drawing inferences before the strategy was applied.

Furthermore, students were asked to state the most helpful part of the instruction in their opinion. Most students pointed out being able to differentiate between a paraphrase from an inference, the group discussion, and the initial presentation from the teachers as the most helpful parts. Students were also asked to describe their capacity of drawing inferences after the strategy compared with their capacity before it. Most students said it had improved.

Finally, the participants were asked to mention one aspect that they will improve about the strategy. Some of the most frequent comments were that more time should be allotted for each part of the strategy, students should demonstrate more commitment to participate, and that the professor should give more extra practice. It is important to mention that the second one is out of the control of the professor. Students can be motivated to participate, but it is their decision whether to do it actively or not.

**Conclusion**

With the implementation of the strategy described above, it was clear for the researchers that it was successful and that it is advisable to continue using it since it provides students with a broader view of their ability to draw inferences, which is undoubtedly a fundamental reading strategy. One of the main goals of using this strategy was to show students a procedure for drawing inferences and to show them the difference between logical inferences and paraphrases, summaries, and explicit information. From the researchers’ point of view, this was accomplished. An entire class is needed to apply the strategy completely, but if this is accomplished, the strategy provides students with an opportunity to improve their conceptual and working knowledge for drawing inferences. The moments in which students had to work in group and discuss their ideas were indeed very helpful since students were able to build their knowledge in a more critical and objective way. They had the chance of clarifying the inferences that they originally made and review the process and theory to make
inferences provided by the researchers. This is an accomplishment that might have been more difficult to achieve in a traditional teacher-fronted class in which students might not be welcome to discuss their ideas as much.

Limitations

One of the most important limitations in this research was the short time allotted for doing all the activities. It is important to have exact time for each activity and monitor students closely to ensure that all the activities are performed in the indicated time. Another limitation was trying to have all students participate in all the activities. A small number of students did not participate orally in the discussion part of the didactic strategy. Finally, it is important to point out that out of the 52 students who participated in this research, 48 completed the last instrument because the left before the lesson ended, so this loss of information, however relevant, was out of the researchers’ control.

Note

1. This article is a revised version of a paper presented at “V Congreso Internacional de Lenguas Modernas” in Costa Rica.

Bibliography


Appendices

Appendix A

Observation Instrument: Video Projection

**Instructions:** After projecting the video, tell students to get in small groups and comment on the video they just saw and try to reconstruct the story that was told in the video. Then, record students’ work using the following instrument.

<table>
<thead>
<tr>
<th>The Students…</th>
<th>Yes</th>
<th>No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrated understanding of the events portrayed in the video.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gave feedback to one another to negotiate for the interpretation of the events portrayed in the video.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were able to distinguish the presence of two different stories in the video.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could organize the events portrayed in the video logically according to the story they belong to.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recommendations:
Appendix B

Observation Instrument: Implementation of Inference Activities

**Instructions:** Monitor your students’ group work during the inference activities and record their performance in the following instrument.

<table>
<thead>
<tr>
<th>During the activities, the students ....</th>
<th>Yes</th>
<th>No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussed ideas that go beyond what is explicitly stated in the reading.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiated meaning to reach their inferences.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drew real inferences based on evidence found in the reading.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were able to tell which of their classmates inferences were real.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided strong arguments to demonstrate which inferences were real and which were not.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were able to explain what does not constitute an inference.</td>
<td></td>
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</table>

**Recommendations:**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Appendix C

Instrumento de Valoración Para la Instrucción Brindada

Instrucciones: El presente instrumento pretende recolectar información sobre su valoración con respecto a la instrucción que se le brindó para realizar inferencias. Toda la información recolectada en este instrumento será confidencial. Por favor, complete los diferentes ítems de manera que reflejen lo mejor posible su opinión acerca de la instrucción (explicaciones y ejercicios) que se le brindaron para realizar inferencias.

I. Impacto de la Instrucción:

En su opinión, ¿Qué tan útil fue la instrucción brindada por el/la profesor/a para realizar inferencias? Marque con una equis (X).

a) Muy útil  b) Útil  c) Poco útil  d) No fue útil

Comentarios: __________________________________________________________

II. Materiales:

En su opinión, ¿Qué tan útiles fueron los materiales usados en el ejercicio sobre inferencias? Marque con una equis (X).

a) Muy útiles  b) Útiles  c) Poco útiles  d) No fueron útiles

Comentarios: __________________________________________________________

III. Sobre el Estudiante:

¿Cómo describiría su desempeño general en las actividades para extraer inferencias realizadas en clase? Marque con una equis (X).

a) Excelente  b) Muy bueno  c) Bueno  d) Regular

Comentarios: __________________________________________________________
Complete los siguientes enunciados de manera que reflejen su opinión sobre la instrucción que se le brindó para realizar inferencias:

La parte más valiosa de la instrucción fue ________________________
________________________________________________________________________
________________________________________________________________________

Después de la instrucción brindada, mi capacidad para realizar inferencias es _______________________
________________________________________________________________________
________________________________________________________________________

Algo que se debería mejorar en las actividades en el futuro es __________
________________________________________________________________________