Making Thinking Visible in Learning Arabic
L2 Oral Tasks: A Cognitive Approach

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Abstract: This study explains the effect of the Cognitive Apprenticeship (CA) approach on the teachability and learnability of Arabic as a second language (Arabic L2) [1]. The study provides a short introduction to the CA approach, including a brief comparison between the traditional apprenticeship and the CA and a discussion of previous attempts to implement this approach in teaching a second language.

Key words: Cognitive Apprenticeship · Arabic L2 Acquisition · Oral Tasks Learning · Arabic L2 Teaching

INTRODUCTION

As stated by [2: 42] Cognitive Apprenticeship (CA) is a theory of learning that originated in North America in the late 1980s and which emphasizes cognitive engagement and authenticity in learning tasks. According to [3], “the cognitive apprenticeship model specifies four dimensions for designing powerful environments, namely: content, method, sequence and sociology”. [1] suggested that cognitive apprenticeship is a natural development of what is called traditional apprenticeship. In traditional apprenticeship “the process of carrying out a task to be learned is usually easily observable. In cognitive apprenticeship, one needs to deliberately bring the thinking to the surface, to make it visible, whether it is in thinking to the surface, to make it visible, whether it is in activities starting with the basic skills of copying and reading, writing, or problem solving” [1: 3]. The teachers’ and learners’ thought must be made visible to each other [1: 3].

One important concept worth emphasizing here is the visibility of thinking[4], or “what was going on inside the brain” [5: 2], where learners follow specific processes identified as brain activities when a task is carried out by watching, copying, practicing and producing the required task which in this case is speaking. [6: 1] stated that in cognitive models, learners experience a sequence of procedures. They: (a) consciously select and organize information, (b) link the information to previous knowledge (c) retain what is important for them, (d) use it in suitable contexts and (e) reflect on their own success in learning. Traditional apprenticeship, on the other hand, includes four procedures: (a) modeling, (b) scaffolding, (c) fading and (d) coaching [1: 2]. During the four procedures, learners are taught tasks as they rise in the actual word. Unlike cognitive apprenticeship the school curriculum tends to provide less authentic contexts. Furthermore, in cognitive apprenticeship, learners are taught to generalize the skills to be learned, to determine if the skills are applicable and to transfer the skills independently when faced with novel situations [1: 3]. According to [7], “it is this dual focus [(conceptual and factual knowledge)] on expert processes and situated learning that we expect to help solve the educational problems of brittle skills and inert knowledge”. It is therefore the teacher’s responsibility to guide learners through a sequence of activities starting with the basic skills of copying and ending with the complex skills of critical thinking and creativity, in which they “work in teams on projects or problems with close scaffolding of the instructor” [5].

Learners are encouraged to discover relevant procedures to handle a complex problem solving activities in a situated teaching. The ultimate aim then is to lead learners to behave like an expert [8: 6]. To do so, one needs to “understand the nature of expert practice and to devise methods that are appropriate to learning that practice” [1: 2]. As stated by [9], in cognitive apprenticeship, “learners learn from more experienced person by way of cognitive and metacognitive skills and process”. Hence, CA, is achieved throughout six teaching methods involved in a situated learning environment: (1) modeling, (2) coaching, (3) scaffolding, (4) articulation, (5)
reflection and (6) exploration. According to [1: 13-14],
modeling, coaching and scaffolding are “designed to
help learners acquire an integrated set of skills
through processes of observation and guided practice.”
They watch an expert performing a task, build a
case conceptual model of the processes to accomplish the task
(modeling), receive feedback and reminders to bring their
performance closer to expert performance (coaching),
receive support to help them carry out the task
(scaffolding), gradually become independent in carrying
out the task (fading), focus their observations of expert
problem solving and consciously access (and control)
their own problem-solving strategies (articulation and
reflection) and finally define or formulate the problems to
be solved (exploration).

At this stage, independence implies the ability to
think in a similar way to an expert [10]. In that sense,
cognitive apprenticeship is perceived as “instructional paradigm for teaching” [1: 17]. Moving from central to
peripheral abilities is one concept that cognitive
linguistics share with CA. They also share the notion of
characterizing the task as it is used and understood in real
life [11]. CA approach has attracted research in various
fields including maths, writing, reading, higher education
and science [1, 4, 6, 8, 12-16]. [9] divided CA’s application
to educational research into three-path focus studies: (1)
studies that investigate holistic approaches such as; Seel
and Schenk’s study on multimedia-based system to
support model-based learning, in which they concluded
that, “CA may be effective as a guide for the design of
multimedia learning environment” [Seel and Schenk, 2003
of a Web-based CA learning environment in preservice
teaching education in which they found that, “compared
with a traditional classroom approach, the Web-based CA
approach resulted in better performance and attitudes
toward instructional planning”.

(2) studies that investigate portions of the process,
such as mentoring or scaffolding. For example, in formal
workplace mentoring program, training mentors to use
guided learning strategies such as questioning, modeling
and coaching helped them to engage mentees in everyday
work, which in turn has a great influence on mentee’s
development [Billet 2000 cited in 9]. In another study
focusing on the use of prompts to scaffold the reflection
process of middle-school students, Davis [2003 cited in 9]
found that, “learners who received generic prompts were
more likely to develop a coherent understanding of the
overall project in which they were participating than those
who received the more heavily scaffolded or controlled
direct prompts and (3) studies that investigate cognitive
apprenticeship activities within communities of practice,
such as research on cognitive apprenticeship and
newcomer adjustment, research on identity development
and research on community interactions [9]. [1] reported
a study conducted by Schoenfeld on a method that was
“based on a new analysis of the knowledge and process
required for expertise, where expertise is understood
as the ability to carry out complex problem-solving task”
[1: 45]. The method “incorporates the basic elements of a
cognitive apprenticeship, using the methods of modeling,
coaching, scaffolding, and articulation” [1: 45].

Research by [14], discussed the effect of technical
writing activities on the traditional science education in
high school. In his study, [14] focused on “high school
students whose weak writing skills were undermining their
performance in science” [14: 346]. Girill exemplified [17]
CA’s key features in terms of observation, coaching,
successive approximation and embedding, with special
attention paid to externalize the implicit writing process
in an expert mind, which Girill transferred into a guideline
for writing good instructions and good descriptions.
Girill argued that, “using overt guidelines creates a
reference framework for the apprentice students” [14: 348],
which according to him imposed “visible gains in both
writing quality and writing activity” over participants
including those with minimal nonfiction skills, who
become able to draft adequate instructions [14: 352].
Furthermore, Girill’s findings revealed that even though
general language problems “may persist, they do not
prevent skill development”. He argued that, “these
technical-writing activities leave students betterly
prepared for life after high school” [14: 352].

In summary, cognitive apprenticeship is a new
generation of traditional apprenticeship that brings on
board the internal procedures that an expert applies in
problem solving. Empirical studies have confirmed that
cognitive apprenticeship is a reflection of how learning
occurs naturally as part of everyday life and social
interactions and could be designed into more formal
learning contexts with positive effect [9]. Most
importantly for the current study, CA approach was also
recognized by L2 teaching research. More details about
the application of CA to L2 teaching are provided in the
following section.

Cognitive Apprenticeship and Second Language (L2)
Teaching: [6: 2] argued that, “A cognitive theory of L2
an acquisition examines the mechanisms that underlie
comprehension and production and the means by which
L2 competence develops in the mind of a learner”. However, in cognitive apprenticeship it is essential that teacher not only be aware of L2 development in the mind of the learner, but also the thinking process of an expert (e.g., native or native like, could be the teacher) in reading, listening, speaking or writing. This is a task shared by both the teacher and the learner.

Evidence showed that CA approach was recently used in L2 teaching. For example, Hosenfeld, Cavour and Bonk [1996, cited in 6: 4] “have adapted the framework of reciprocal teaching for beginning L2 learners”. In Reciprocal Teaching (RT), the teacher externalizes the process of learning (reading in Hosenfeld, Cavour and Bonk study). He or she presents their thoughts aloud showing learners the questions they ask, the summaries they make and the notes they take.

[19], tested the effect of CA on the process of college English L2 teaching of listening to Chinese learners. [19] found that the natural situation is needed for meaningful learning. [19] also found that, “knowledge from a special situation is more powerful and useful than that from a general case and the memory lasts longer” [19].

[18] used CA’s six processes to develop a web-based reciprocal peer review system to support college students’ writing in English. [18] found that the “system served as an extensive and reciprocal learning environment for students to demonstrate their writing process and improve their texts by practicing peer review” [18: 698]. The system provides an opportunity for the entire internal writing process to be externally presented for both students and teachers to observe. This according to [18] worked effectively on students’ writing improvement. However, according to [6: 4] “although more experimental studies on the application of cognitive apprenticeship on language teaching are needed, cognitive apprenticeship appears well suited for situated learning environments and may hold potential for L2 teaching”.

**Current Study:** Research on Arabic within the cognitive linguistics mainstream is rare [20], let alone CA research. The current study seeks to examine the CA effects on learning Arabic L2 one-way, non-interactive oral tasks. This might not be an easy task for reasons “related to theoretical orientation to the nature of language and language acquisition” [21: 50]. One important reason may be the nature of oral tasks. Unlike writing or reading, most oral tasks are real time actions. According to [22: 169], “language processing [(speaking)] is autonomous due to the high speed at which it takes place”. However, speakers of L2 still need to think of what they say before they say it. They also need to encode grammatical information about parts of the sentence they produced in their short time memory.

**Methods:** According to [1: 3] in cognitive apprenticeship, teachers need to (1) identify the processes of the task and make it visible to students, (2) situate abstract tasks in an authentic context and (3) vary the diversity of situations and articulate the common aspects. Based on these methods, the researcher designed speaking tasks that provide learners with vocabulary relevant to the chosen topics.

The researcher then identified eleven-general processes model to produce an oral task and made them available for learners to follow: (1) to identify the topic, (2) list and organize the main ideas, (3) select the needed and appropriate vocabulary, (4) identify and apply syntactic and phonetic rules, (5) produce the first sample, (6) check the first sample against the syntactic and phonetic rules (that they have learnt and practiced), (7) fix the sample accordingly, (8) produce the first sample of native like sentences, (9) produce more sentences following the same procedures from one to eight, (10) put the sentences together using the proper connectors to produce one paragraph or more and finally (11) produce the speaking task. These processes worked as a guideline that shows learners the thinking of an expert while producing an oral task. Learners received a three-week awareness session starting from week two of the semester. The activities focused on the eleven processes. The topics for speaking tasks were determined by the institute for level three students as provided in the study plan.

**Sample and Data Collection:** Participants were from Level Three students who were studying Modern Standard Arabic (MSA) at the University of Jordan during the year 2011. They were divided into two groups (regular group (RG) and subject area group (SG). The RG followed the traditional practice in teaching, speaking and was instructed by a teacher assigned by the institution and used the established curriculum approach, while the SG followed the suggested approach and was instructed by the researcher. Each group consisted of randomly selected nine participants. Participants’ ages ranged between 18 and 32 in both groups. They came from six different backgrounds. Both groups studied the same topics following the same course of study as stated in the course guidebook. Research aims and processes were explained to all participants and written consent was
obtained from each of them. Each participant in each group performed two speaking tasks, one taken at the start of the semester (first week) and before the treatment and another at the conclusion of the semester (one week before the final exams) and after the treatment. The researcher carried out 36 interviews during semester two of the academic year 2010/11 with eighteen participants in the two groups. Interviews average length was five minutes with a total recording of 105.3 minutes for the RG and 97.3 minutes for the SG. All interviews were subsequently transcribed and analysed.

RESULTS

The current study applied carefully designed criteria to rate learners’ speaking. To acquire the rating plate, the researcher benefited from several scales designed by institutions to test oral tasks, i.e., (1) Massachusetts Department of Education Assessment of Basic Skills, Speaking Assessment Rating, (2) Fairfax County, Virginia Public Schools and (3) Illinois Township High School, District 214. The rating criterion consisted of four main categories including 21 points. Table 1 below shows the main categories and their related items.

Students’ recordings were rated against each of the items in Table 1. Each item was rated out of five; participants were rated based on the best and poorest performance among the group itself (i.e. The best performance receives full marks (5) and the poorest one receives nothing). For example, if a participant recorded six mistakes in the item “Grammar” and that was the lowest number of mistakes made by all members in the group, the participant then received the full mark (5), on the other hand if the mistakes were 60 and that was the highest number of mistakes made by all members of the group, the participant then received the mark zero. Other participants were marked based on a special formula that takes into account the number of mistakes between the full mark (six mistakes) and the zero mark (sixty mistakes).

This rating method takes into account learners’ administrative level, including the level’s objectives and standards and their level in comparison with other learners in the class. Wherever this formula cannot be applied, such as in the item “Fluency”, a pair rating was implemented: first by the researcher and then by another examiner, when differences found, the average was considered.

Results are provided in Table 2 (RG) above and Table 3 (SG) below. The first row of each table shows the time in which the recording was conducted (Time One ‘T1’ and Time Two ‘T2’). The second row includes the participants (P1 to P9 where is “P” stands for participant). The rest of rows present the actual mark that each participant was given by the examiners for the items. The first column on the left hand side includes the categories and the items that were considered by the researcher to rate participants’ performance in speaking. The table also shows the participants’ average (Avrg) mark for each category and each item in the column that comes right after participant 9 (P9) for each time (T1 and T2). The last row shows each participant’s average for all categories and items. It also shows all participants’ average for all categories and items.

Looking at the RG’s results, Table 2 shows that the averages for participants’ performance in the categories and items for the two times (T1 and T2) are too close. Figure 1 shows the two performance lines (for T1 and T2) have almost merged. Figure 1 also shows a slight improvement in nine items for RG’s participants, i.e. clarity, organization-general, order, fluency, structure, use of other languages, use of Arabic dialect, self-correction, researcher help. On average, the nine items show an improvement of 0.36 degrees out of five (7.3%). The highest improvement among the nine items recorded for “researcher help” by 20.9%. As for RG participants’ general performance, Figure 2 shows that four out of nine participants recorded an average improvement of 0.33 degrees (6.7%) in T2, the other five

<table>
<thead>
<tr>
<th>Table 1: Main categories and their related items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Items in each category</td>
</tr>
<tr>
<td>Vocal Expression—Expressiveness</td>
</tr>
<tr>
<td>Vocal Expression—Clarity</td>
</tr>
<tr>
<td>Vocal Expression—Audibility</td>
</tr>
<tr>
<td>Pauses</td>
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<td></td>
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</table>

92
### Table 2: Regular Group results

<table>
<thead>
<tr>
<th>Time</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
<th>P7</th>
<th>P8</th>
<th>P9</th>
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<th>P2</th>
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<th>P4</th>
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<th>P8</th>
<th>P9</th>
<th>Avg</th>
</tr>
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<tr>
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<td>2.5</td>
<td>3</td>
<td>1.5</td>
<td>3</td>
<td>2.5</td>
<td>2.5</td>
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<td>2.5</td>
<td>1.5</td>
<td>2.33</td>
<td></td>
</tr>
<tr>
<td>Vocal Expression</td>
<td>4</td>
<td>2.5</td>
<td>3.5</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2.5</td>
<td>1.5</td>
<td>3</td>
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<td>2</td>
<td>2.5</td>
<td>1.5</td>
<td>2.83</td>
<td></td>
</tr>
<tr>
<td>Clarity Audibility</td>
<td>1.6</td>
<td>2.2</td>
<td>0.3</td>
<td>3.48</td>
<td>2.3</td>
<td>3.49</td>
<td>4.17</td>
<td>3.33</td>
<td>4.77</td>
<td>1.27</td>
<td>3.9</td>
<td>0</td>
<td>2.53</td>
<td>4.67</td>
<td>4.73</td>
<td>5</td>
<td>4.07</td>
<td>3.63</td>
<td>4.9</td>
<td>2.14</td>
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<tr>
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<td>4</td>
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<td>2.5</td>
<td>3.5</td>
<td>2</td>
<td>2.5</td>
<td>3</td>
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<td>3.17</td>
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<td>2</td>
<td>2.5</td>
<td>1.5</td>
<td>3.17</td>
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<tr>
<td>Organization</td>
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<td>4.22</td>
<td>4.41</td>
<td>4.69</td>
<td>3.93</td>
<td>5</td>
<td>3.32</td>
<td>4.41</td>
<td>0</td>
<td>4.39</td>
<td>4.4</td>
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<td>4.21</td>
<td>4.71</td>
<td>6</td>
<td>4.4</td>
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<tr>
<td>Language</td>
<td>3.5</td>
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<td>3.5</td>
<td>2</td>
<td>2.5</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Other criteria</td>
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<td>2</td>
<td>2</td>
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<td>2</td>
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<td>3.5</td>
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<td>2.5</td>
<td>1.5</td>
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### Table 3: Study Group results

<table>
<thead>
<tr>
<th>Time</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Vocal Expression</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Clarity Audibility</td>
<td>4.43</td>
<td>4.1</td>
</tr>
<tr>
<td>Pauses</td>
<td>3.21</td>
<td>0.86</td>
</tr>
<tr>
<td>Organization</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Language</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Other criteria</td>
<td>3</td>
<td>3.5</td>
</tr>
</tbody>
</table>

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93
recorded an average decline of 0.12 degrees (2.5%). In general, RG participants recorded a slight decline of 0.01 degrees (0.3%).

On the other hand, looking at the SG’s results, Table 3 shows that one item recorded the same result in T1 and T2 (i.e., use of other languages), five items (i.e., clarity, grammar, structure, self-correction and use of Arabic dialect) recorded an average decline of 0.62 (12.5%), while the rest of items (15 items) recorded an average improvement of 0.64 (12.7%). Figure 3 shows T2 performance line is higher than T1 performance line for the most of the time. As for SG participants’ results, Figure 4 shows seven participants out of nine recorded an average improvement of 0.82 (16.5%), the highest of recorded improvement by 48.4% (P6) and the lowest of recorded improvement by 2.85%. While the other two participants
OUT OF NINE, RECORDED AN AVERAGE DECLINE OF 0.16 (3.17%). IN GENERAL, SG’S RESULTS SHOWED AN AVERAGE IMPROVEMENT BY 7% IN ALL ITEMS.

DISCUSSION AND CONCLUSION

The data presented in Table 2 and Table 3 for the RG and the SG respectively, show a better performance by the SG in T2. In T1, the average performance of both groups was too close (2.9 for the RG and 3 for the SG), which indicates that the initial state for both groups was too close. Length of recordings is also close for both groups (105 minutes for the RG and 97 minutes for the SG). Yet, the SG results show an improvement of around 7% in T2, while the RG results show a decline by 0.3% (-0.3%). As indicated in Figure 4, a performance decline was recorded for two participants (out of nine) in the SG in T2 (i.e. P1 and P5) while the rest of the participants showed a performance improvement in T2. It is worth mentioning here that, apart from P4, participants who showed poor performances (less than 3 out of 5) in T1 (2.38, 1.44, 2.84 and 2.49 for P3, P6, P8 and P9 respectively), recorded more improvements in T2 than those who performed well (over 3). Looking at participants’ records, P4 (recorded an improvement by 4.4%) had missed 55% of the speaking classes during the semester. P6 (recorded an improvement by 48%) on the other hand had attended 94% of the speaking classes. Missing classes, did not only affect participant’s chances to practice the speaking, learn and implement the rules and check their performances against others in the group, but also affected their chances to become familiar with the suggested approach. Participants’ results show that those who maintained a high percentage of attendance recorded an improvement in their performances in T2. A similar conclusion about the effects of CA on poor performing learners was reported by [1] study in which poor performing learners in reading recorded an improvement by 70% (from 15% to 85%).

On the other hand, two participants (P2 and P7) recorded an improvement by 2.85% and 7.12% respectively, which if compared with the improvements recorded by the other participants in the SG might look small. However, their results in T1 indicate that they performed well (3.64 and 3.1 for P2 and P7 respectively). It appears that some learners developed their own learning strategies which helped them to successfully solve problems and conduct new tasks. In such a case, they would most likely choose to apply those strategies (metacognitive strategies), which they had already tried and trusted, to the new learning situation first [23]. Thus, P2 and P7 either chose to keep the thinking and learning strategies that they had already developed, or tried the CA approach as suggested by the current study. But because they were already doing well in speaking (as recorded in T1), the improvement in T2 was small. Which of the two situations applied to P2 and P7’s learning behavior, is a question for future research to answer.

Another noteworthy observation at this stage might be CA’s distinct effects on the oral skills tested by the current study. Apparently, skills related to the organization and confidence are more influenced by the CA approach. Figure 3 shows that the items related to organization, vocal expressions and confidence such as expressiveness, audibility, order, focus, reasoning and researcher help, recorded notable improvements in T2. As stated by Wright [cited in 14], one way in which weak performers benefit from following clear guidelines might be that they gain confidence to become active. This in turn provides learners with opportunities for better planning and identity development [9, 10].

If compared with other studies such as [1, 12, 15, 19] which in some cases show improvements by 70%, the improvements reported by the current study for the SG performance appears to be quite small (7%) to be considered as significant. Nonetheless if compared with the results of the RG performance which show a decline by 0.3% (-0.3%), the SG’s results in T2 may be seen as a reasonable improvement. Thus, the current study suggests that further research to investigate experts’ strategies to produce oral tasks in Arabic L2 are needed. The closer to authentic skills (natural or real life situations) the strategies are, the better outcomes we expect from CA to improve learners’ conduct of oral tasks [9].

In conclusion, the current investigation on CA’s effects on Arabic L2 oral task acquisition reports a slight improvement in the Study Group performance. The results however indicate that CA is notably effective with poor performers. It is also reported that CA increases learners’ confidence and improves their organizational skills. However, the influence of learners’ own strategy (particularly high grade performance) intervention is not discussed in the current survey. It is thus urged that future research, investigate the overlap between learners’ own strategies and CA processes.

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