# Developing EFL Learners' Speaking Fluency with Concept-Mapping and Speech Repetition<sup>1</sup>

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### Abstract

This research explores the role of concept mapping and speech repetition in developing EFL learners' oral fluency. Eighty language learners, after passing an in-house placement test, were randomly assigned into two equal experimental groups. The data analyses demonstrated that both groups' oral fluency significantly improved when they were trained to apply concept mapping and 4/3/2 technique. It was argued that concept mapping helps them take a more active role to effectively organize the concepts, plan their tasks, and monitor their activities. Besides, repetition techniques may lead to linguistic proceduralization and automaticity which results in positive changes in underlying cognitive mechanisms and ultimately contributes to long-term and transferrable effects on speaking fluency. Furthermore, a semi-structured interview was run to triangulate the data. This paper discusses some implications for instructors and educators.

#### Resumen

La presente investigación explora el papel del mapeo de conceptos y la repetición del habla en el desarrollo de la fluidez oral de los estudiantes de inglés como lengua extranjera. Ochenta estudiantes de idiomas, después de tomar un examen de nivel, fueron asignados al azar a uno de dos grupos experimentales iguales. Los análisis de datos demostraron que la fluidez oral de ambos grupos mejoró significativamente cuando fueron entrenados para aplicar el mapeo conceptual y la técnica 4/3/2. Se argumentó que el mapeo de conceptos les ayuda a tomar un papel más activo para organizar eficazmente los conceptos, planificar sus tareas y monitorear sus actividades. Además, las técnicas de repetición pueden conducir a la procesalización lingüística y la automaticidad, lo que da como resultado cambios positivos en los mecanismos cognitivos subyacentes y, en última instancia, contribuye a efectos transferibles a largo plazo sobre la fluidez del habla. Además, se realizó una entrevista semiestructurada para triangular los datos. Este artículo analiza algunas implicaciones para instructores y educadores.

#### Introduction

Improving L2 language learners' ability to fluently speak and accurately interact with interlocutors are some of the objectives of foreign language instruction. Lennon (1990) put forward two definitions of fluency. The general definition corresponds to "cover term for oral proficiency" (p. 389) when a language is used smoothly and effortlessly, while the narrow definition concentrates on the fluidity of speech and is operationalized through temporal measures such as speech rate, hesitations, and pausing. Fluency facilitates communication; disfluent speakers have difficulties in keeping the attention of their interlocutors, which might in turn cause negative influences on communicative success and a failure in the interaction process (Rossiter, 2009). A significant number of L2 learners suffer from difficulties in establishing fluent relationships with their audience (Guillot, 1999). Several factors result in disfluency, namely lack of lexical resources, communicative competence, attention, appropriate speaking skills, and so on. Fluency is not well understood and "is used with confidence, which hardly seems justified given the scarcity of accounts governed by anything other than intuition" (Guillot, 1999, p. vii). The remarkable role that fluency plays in language production and comprehension deserves attention. Concept mapping and 4/3/2 techniques have been identified to help language learners' fluency.

Novak and Cañas (2008) define a concept as "a perceived regularity in events or objects, or records of events or objects, designated by a label" (p. 171). Nesbit and Adescope (2006) described concept map as "a visual representation of individual's knowledge structure on a particular topic as constructed by the learner" (p. 414). Novak and Gowin (1984) proposed concept mapping as a learning technique that represents knowledge and displays the relationships within the knowledge visually to make it meaningful to the learner. The advantages of using concept mapping are: (1) improving learner's achievement as an advanced organizer; (2) permitting learners to profoundly think about concepts and more efficiently remember information; (3) promoting creative thinking and problem-solving abilities; (4) increasing the autonomy and independence of learners; (5) allowing students organize different concepts and visualize the

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relationships between the main concepts in a meaningful way; and, (6) helping students to wholly concentrate on the key concepts and ideas regardless of unnecessary details (Kommers, 2004). A number of researchers have studied the efficacy of concept mapping on organizing and representing knowledge (e.g., Hagemans et al., 2013), cooperative computerized concept mapping on students' learning performance in web-based information-seeking activities (Chu et al., 2014), reducing learners' cognitive load (Hwang et al., 2013b), summarizing information with diagrams (Cornelius-White et al., 2013), and enhancing readers' self-regulation, self-efficacy, and motivation (Chu et al., 2014; Hwang et al., 2013a).

The other technique is task repetition, a kind of pre-task planning that "involves asking learners to repeat a task one or more times" (Ellis, 2015, p. 282). In this way, the first performance of a task can act as a plan for language learners to draw on in the subsequent performance of the task. This can help language learners integrate more resources and can enable them to have more sophisticated and appropriate performance (Ahmadian, 2011). One kind of task repetition is 4/3/2, whose main characteristics are time pressure and speech repetition. Time pressure may motivate learners to express their opinions more rapidly and efficiently, with more concise words, shorter pauses, and more complicated language structures. Speech repetition, as the second feature, result in fluency development due to its merits at several levels. First is the semantic level. Levelts (1989) believes that content is formed and delivered with pauses and hesitation, while for the second and third deliveries, individuals draw upon the previous content and show fewer pauses and hesitation when speaking. Second, at the vocabulary and grammatical structures level, although the lexical and linguistic items generated at the conceptualization stage are not completely recalled at the further deliveries, they are more accessible than others to be used (Bygate & Samuda, 2005).

Despite an increased interest in fluency as an important criterion to assess language learners' speaking ability, in particular in international exams, it is surprising that so little empirical research has been conducted, especially from the perspective of improving and optimizing it through practical techniques (e.g., Hageman et al., 2013; Wood, 2009). Very few studies, however, have focused on investigating concept mapping and 4/3/2 techniques.

Skehan (2009) focused on narrative tasks for increasing EFL learners' oral fluency. However, it seems that the researchers failed to consider the limitations on the capacity to pay attention to all aspects of the content. Skehan's (2009) study, however, was taken into account to assist language learners by manipulating the performance conditions and changing the task features by incorporating task repetition techniques. The experiment, however, intended to fill the gap by exploring the efficacy of pre-task planning conditions by dedicating the same amount of time to both techniques, which reported the positive and significant effects of narrative tasks on learners' speaking fluency.

Finally, there has been little research on developing oral fluency in task-based language teaching during the pre-task phase. The current experimental research investigated the effects of task repetition and concept mapping after directing the learners' attention to both form and content. As such, the present research sought to probe whether concept mapping and task repetition enhanced EFL learners' oral fluency. Also, it intends to explore what EFL learners think of using such tasks and how they perceive the techniques for improving their oral fluency.

## **Review of Literature**

This article is motivated by theoretical and pedagogical considerations to investigate the efficacy of two practical techniques, task repetition and concept mapping, to improve language learners' oral fluency, as have been discussed separately below.

## The 4/3/2 Technique

The 4/3/2 technique is an activity designed to develop oral fluency to produce speech at a relatively fast speed and with few hesitations. For Wood (2009), each language learner talks to a partner on a familiar topic for four minutes, then the listener changes and the same speaker repeats the talk in three minutes. The same procedure is replicated for another listener but in two minutes. The belief behind changing the listeners and interlocutors is that if the listener stayed unchanged, the speaker might sense the obligation to alter the content while talking to the same listener, which would, then, entail finding the appropriate linguistic means to encode the new content again.

Nation (1989) employed the 4/3/2 technique in an EFL context with six adult learners to investigate its effect on speaking. He found that it improved the learners' grammar accuracy, and enhanced their pronunciation between the first and the third delivery of the talks. Furthermore, he suggested that the

requirement to abridge the content under time pressure stimulated the learners to employ more sophisticated words and structures to encode that content. This would include selecting more precise words to avoid circumlocutions and subordinated clauses as an efficient way to relate propositions.

Another study examined the efficacy of planning and repetition conditions on 60 intermediate-level Iranian L2 learners' oral accuracy, complexity, and fluency (Ahmadian & Tavakoli, 2011). The findings showed that careful online planners exceeded pressured online ones in producing error-free clauses and sentences. Moreover, the learners, in careful online planning without task repetition, had more disfluency than the participants in other groups. Similar results were reported by De Jong and Perfetti (2011) in which the 47 higher intermediate language learners, based upon an in-house placement test, were assigned to different experiment groups. In the first condition, the learners were trained to speak about a topic (such as "What do you think about pets?" and "Who is your favorite artist?") 4 minutes, then for 3, and finally for 2 minutes. While, in the second condition the learners repeated three different topics consecutively, and the General linear model (GLM) with repeated measures was used to examine the fluency data of the repetition. The findings showed that the learners who repeated their speeches three times outperformed those learners who repeated three different topics on the posttest in terms of pause length, phonation rate, and mean length of fluent runs. It was, furthermore, found that not only performance fluency, but also, and more importantly, cognitive fluency improved during the treatment, which can be attributed to the proceduralization of linguistic knowledge and a change in their underlying cognitive mechanisms.

Fukuta (2016) explored the effects of task repetition on learners' attention orientation by comparing the effects of the performance of the same task and a new task of the same type. The research was performed on twenty-eight Japanese learners of English, aged 22 to 24 and among undergraduate and postgraduate students, who were at upper-intermediate language proficiency level. As the analyses of the learners' performances (Speech Unit) revealed, the experimental group performed better in syntactic accuracy and lexical variety, while no significant difference was found in terms of complexity and fluency. This result was explained by using Skehan's (1998) limited-resource model positing that L2 learners cannot pay attention simultaneously to all aspect of production such as complexity, accuracy, and fluency because of their limited attentional capacity. The improvement in the range and quality of lexical resources was attributed to the notion that repeating a task for the second time gives learners more time to direct their attention to new vocabulary choice and widen their lexical variety during the second performance. It was also claimed that repetition for the second time directed the learners' attention more to the syntactic items, although they benefitted from the semantic aspect of information. This could suggest that conceptual processes improve when the same task is repeated.

Van de Guchte et al. (2016) investigated the extent to which task repetition leads to writing accurately and speaking fluently regarding the German dative case used after a preposition. The efficacy of the interventions and acquisition of the target structures were examined in the following three ways: Learners' verbalization of the rules about the target structures, their actual knowledge of these rules in a fill-in-the gap exercise, and their ability to use both structures in two meaning-based oral tasks. Considering the two independent variables (i.e., grammar structure and condition), a linear mixed model analysis (LLM) was run to investigate the effects on each of the dependent measures, namely metalinguistic knowledge, written accuracy, oral accuracy, and oral fluency. Concerning written production, as the findings demonstrated, the learners in the repetition group outperformed their counterparts, while no significant differences were identified as to oral accuracy and fluency. This unexpected result was explained by the suggestion that repeating a task once does not contribute to the amount of communicative practice and automatization of the target structures. It was, moreover, stated that learners need more practice to have more control over the knowledge to convert explicit into implicit knowledge.

Amiryousefi (2016) investigated the differential effects of task repetitions (doing the same tasks with the same content) and procedure repetition (doing the same tasks with different content) on the Iranian EFL learners' writing complexity, accuracy, and fluency when performing computer-mediated written narrative tasks. Seventy Iranian lower-intermediate EFL learners with an average age of 23 were invited to participate in the study. The study intended to explore whether the accuracy, fluency and complexity of learners' written productions differ under two different conditions of task versus procedure repetition, and whether any relationship can be found between learners' computer anxiety and their writing ability. A modified version of the Computer Anxiety Rating Scale was used to assess the participants' computer anxiety. The participants in the task repetition group performed a task with the same procedure and the same content five times each, one week apart. The participants in the task repetition group did not know that they would

work with the same picture story on any future occasions. The participants in the procedural repetition group, on the other hand, performed five tasks that followed the same procedure, but were different in content. The results showed that the participants in the procedural repetition group significantly performed better than those in task repetition group in terms of number of words and number of clauses. To discover the causes, a number of Pearson correlations were conducted. The data analysis demonstrated no statistically significant relationship between computer anxiety and the participants' scores on all CAF subdimensions, suggesting that computer anxiety cannot influence low-intermediate EFL learners' computer-mediated L2 written production.

Qiu and Lo (2017) sought to uncover the extent to which L2 learners' oral performance is influenced by content familiarity and task repetition. To this end, sixty L2 learners (35 males and 25 females) based upon a valid C-test were identified at intermediate language proficiency level. Four oral narrative tasks were used for the purposes of the study. Two of them (one based on familiar and the other unfamiliar topics) required the participants to tell a story to the researcher based on a series of six pictures. The other two tasks required them to share personal experiences in an open context without referring to picture. All in all only 21 participants agreed to interview sessions to capture their thoughts and opinion in terms of using content familiarity and task repetition. The data obtained through stimulated recalls were first transcribed and then back-translated to English, and analyzed according to pause time and filled pauses. Besides, the findings showed that the participants were more inclined to talk about unfamiliar topics with fewer rates of self-correction and with fewer attempts at reasoning and elaborations on the topics.

The contribution of task repetition procedure has been explored in interlanguage pragmatics as well. Ahmadi and Ghaemi (2017) measured the effects of two instructional conditions on EFL learners' speech acts production: An output-generation task repetition accompanied by visually enhanced input plus a conscious raising task (ITR condition) vs. an output-generation task repetition accompanied by input plus a metapragmatic information (ETR condition). The findings showed that the participants in both groups improved significantly after receiving the treatment. However, the data analysis demonstrated that the learners in the ETR condition were more successful in enhancing their pragmatic competence in terms of speech acts compared to their counterparts. It was claimed that an output-based task repetition helps learners more explicitly notice the gap and improve their second performance of the task.

Hunter (2018) implemented research to examine the influences of two repetitive pedagogic task sequences (repeating the same task (TR) vs. repeating the task procedure (PR)) on short-term fluency and the extent to which the gains from the repetition can be transferred to other tasks (transfer effect). Sixty-four ESL students were divided into three groups in which the learners performed a narrative task three times (TR) and performed three narrative tasks using the same procedure (PR), and a control group. The data analysis demonstrated that the learners in the TR training sessions were significantly superior to those who received PR training sessions in speech rate, mean length of run, articulation rate, frequency of mid-clause pauses and holistic scores.

In an experiment, Suzuki (2020) compared the effects of task repetition under two different conditions on Japanese EFL learners' fluency development. To do so, a sample of 68 English learners at intermediate level of language proficiency was chosen and placed into two experimental groups. Factors such as mean length of run, phonation/time ratio, articulation rate, mid-clause pause duration, clause-final pause duration, mid-clause pause frequency, clause-final pause frequency, repetition frequency, and repair frequency were considered by trained coders to measure the participants' fluency during the pre- and post-test sessions. In order to compare the fluency changes between blocked and interleaved conditions during the training period, a series of two-way mixed ANCOVAs were conducted for each training day. As the findings indicated, the learners in the blocked practice outperformed the counterpart in the interleaved experimental group in six fluency measures for six (longer mean length of run, faster articulation rate, higher phonation/time ratio, shorter mid-clause pause duration, and shorter clause-final pause duration, the clause-final pause frequency) of the nine fluency measures. It was suggested that blocked practice more effectively contributes to L2 fluency development and proceduralization than interleaved practice.

## Concept mapping

Novak and Cañas (2008) define a concept as "a perceived regularity in events or objects, or records of events or objects, designated by a label" (p. 171). Nesbit and Adescope (2006) described concept map as "a visual representation of individual's knowledge structure on a particular topic as constructed by the learner" (p. 414). Kostovich et al. (2007) attributed the efficacy of concept mapping to the positive points

of synthesizing, organizing, and correlating information and data. They also noted that concept mapping paves the way for language learners to seek interrelationships among different pieces of information that connect them to their previous knowledge and experiences. Individuals use concept maps to "remember, organize, interpret, and understand information in a particular subject area" (Derbentseva et al., 2004, p. 3).

Liu (2011) explored the differences between three types of computerized concept maps namely no-mapping, individual-mapping, and cooperative-mapping on EFL learners' writing performances over a period of nine weeks intervention. A total of ninety-four participants were placed into low-level, middle-level, and high-level groups according to the scores of their baseline writing assignments. At first, concept mapping procedures for writing were explained to the learners and they were asked to follow the same procedures until the end of the intervention. Several mixed design ANOVAs were conducted to investigate the different computerized concept mapping treatments on the writing performance of the learners. The findings showed computerized concept map as a pre-writing planning strategy had distinctly more influence on the writing performance of all levels of learners than did the no-mapping treatment, implying that concept map could be a powerful tool for generating and categorizing ideas in a logical and hierarchical fashion and for helping writers to work with efficiency and effectiveness. The results also indicated that the correlation value between the individual map scores and individual writing scores was very high for all level learners, while the value between the cooperative map scores and cooperative writing scores was much lower, especially for the low-level learners.

In 2018, Garwood et al. examined the effect of concept map on developing students' critical thinking ability. They, additionally, explored the students' perceptions toward using concept map in learning classrooms. Fifty-six nursing students, selected by a convenience sampling procedure, voluntarily participated in the study, among whom 25 were males and 31 females with the average age of 24. The measurement of critical thinking was obtained by the Holistic Critical Thinking Scoring Rubric, which includes six domains of interpretation, analysis, inference, evaluation, self-regulation, and explanation. Another rubric was employed for analyzing a concept map of five areas of propositions or relationships between two concepts, hierarchy or ranking of importance, cross-links to demonstrate the integration of knowledge, relevant examples, and content related to the material that is taught. The findings indicated that the use of concept maps had a positive impact on the critical thinking skills of nursing students. Regarding the second aim, students perceived the use of concept maps to increase critical thinking and facilitate the transfer of theory to the classroom.

Chen and Hwang (2019) integrated concept mapping strategies in flipped learning classes to improve EFL learners' cognitive abilities and linguistics outputs as well as reducing their anxiety in speaking English over a period of 18 weeks. The learners, on average 19 years old, were divided into two experimental (37) and control (35). During the treatment, four types of data, namely listening comprehension tests, speaking tests and the survey questionnaire of the students' critical thinking and speaking anxiety were collected. The analysis of covariance (ANCOVA) indicated that concept map-based learning positively affected the speaking and cognitive abilities of the participants. The significance of the concept mapping-based flipped learning approach was found to be twofold. First, it helped learners improve their EFL proficiency through the listening input in their private time and the speaking output during the in-class discussion in a group space from the flipped learning. Second, this approach directed learners to enhance their critical thinking ability through representing an idea graphically to visualize knowledge from concept mapping.

Morfidi et al. (2018) explored the extent to which two different types of concept mapping approaches, i.e., digital text-based concept mapping vs. multimedia concept mapping, differ in terms of helping children with reading comprehension difficulties to understand expository texts. Thirty children selected from a four schools in Greece were placed in two experimental groups and a control one. A one-way analysis of variance at post-test and Bonferroni post-hoc comparisons indicated that the learners who worked with concept mapping approaches performed better on the final tests. However, the results revealed that the two approaches of concept maps yielded no significant difference in the experimental groups, implying that constructing concept maps based upon learners' needs and teachers' familiarity can produce considerable learning outcomes.

In another work Hwang et al. (2019) introduced concept mapping-based summarization technique to increase Chinese EFL learners' summarization skills, reading motivation, self-efficacy, and their reading comprehension ability. A total of 45 fifth graders were randomly assigned into two experimental and control

groups. The data was obtained using a reading comprehension test, two different scales for measuring reading motivation, and self-efficacy and a Summary Rubric developed for the purposes of the study. The results revealed that the treatment seemed to be effective in enhancing the learners' reading and summarization skill. It was, furthermore, argued that the concept mapping-based summarization strategy genuinely worked, not only in terms of improving students' summarization skills, but also in sustaining students' reading motivation even though the learning tasks were difficult. Furthermore, it was maintained that the concept map-based summarization strategy had better potential for improving students' learning performance as well as their self-efficacy. Ultimately, the positive and significant effects of concept mapping as a learning strategy were attributed to its scaffolding effects on enhancing both reading comprehension and summarization abilities.

This research explored the impact of concept mapping and the 4/3/2 technique on EFL learners' oral fluency. To achieve these goals, the following research questions were raised:

- 1. Is there any improvement in the speaking fluency of language learners who received instructions through the concept mapping technique?
- 2. Is there any improvement in the speaking fluency of language learners who received instructions through the 4/3/2 technique?
- 3. Did the learners who received instructions through the concept mapping outperform those who received instructions through the 4/3/2 technique in the speaking fluency?
- 4. (4) What do language learners think about using the two techniques for their oral fluency?

# Method

The present research utilized a mixed-methods approach in which the data were collected sequentially as there were two sources of data: an experimental treatment and a semi-structured interview. The sequential explanatory strategy was used in which quantitative data collection and analysis were followed by a qualitative one to further explain and interpret the results of the quantitative method through the qualitative method.

# **Participants**

The experiment began with 93 students, 58 females and 35 males, preparing for an international exam (IELTS) in Tehran, Iran, but the number of the participants decreased to 80 because 13 learners left the institute during the course. The participants, ranging from 20 to 25 years old, enrolled in the Speaking Course of one language institute to achieve the IELTS overall band scores required by immigration or their studies abroad. Participants were Persian speakers and were placed at the lower intermediate level (with the speaking band score of 4 to 4.5) based upon the in-house speaking test administered by the officials of the institute. For their purposes abroad, they need to get at least 6 in speaking. They were randomly grouped into the first experimental (40, with the concept mapping technique), and the rest in the second experimental group (40, with 4/3/2 technique).

# Data Collection Instruments

The following materials and instruments were employed. The topics were chosen for the learners' fluency were extracted from past IELTS tests, while the measures for tracing their fluency development and other intervening factors were adapted from Ahmadian (2012), and Yuan and Ellis (2003), respectively.

*<u>Fluency measure</u>*. To make the research more comparable with the previous works, the following measures were used:

(1): Rate A (number of syllables produced per minute of speech): the number of syllables within each narrative, divided by the number of seconds used to complete the task and multiplied by 60. (2): Rate B (number of meaningful syllables per minute of speech): Rate A's procedure was followed again, but all syllables, words, phrases that were repeated, reformulated or replaced excluded (Ahmadian, 2012, p.9).

<u>Test of fluency</u>. The participants were pretested to ensure their equivalence in terms of oral fluency. The fluency pretest was identical to the main task to ensure face and content validity of the test. The participants were allowed to take notes for one to two minutes to give a monologue speech for over two minutes. The results of the pretest analyzed using the above-mentioned fluency measure showed that the participants were equivalent in oral fluency (t = .851; p = .469).

*Test of online processing ability*. Participants' differential online processing ability is a threat to the internal validity. This extraneous variable is claimed to be controlled by participants' homogeneity in terms of the IELTS listening test (Yuan & Ellis, 2003). The independent samples t-test reported no meaningful differences between the two groups (t = .223; p = .883).

<u>Main task.</u> Participants in both groups were required to prepare for answering the oral tasks using cue cards which appear in the second part of the IELTS speaking test, during which the candidate is expected to describe the topic which is given on the cue card. Candidates use the one-minute preparation time. The reason behind using monologic tasks was to make participants familiar with those tasks on the actual test session of IELTS.

<u>Test Sessions.</u> On the post-test day, which was during the tenth session, the learners were asked to talk for no less than two minutes on the given topic. To counterbalance any intervening variables, the question was chosen from the three topics given on the pre-test, and test-takers were not informed of it. The practice effect was automatically resolved because the training period lasted for ten sessions.

<u>Interview.</u> One week after the posttest, eight participants from both groups of concept mapping and task repetition (four individuals from each group) were asked to take part in a semi-structured interview conducted and audio-recorded by the researchers. Most of the participants were university students and were from cities other than those in which the current experiment was done. Most of them came back to their hometowns after the final exam, which coincided with their university final exams, and the researchers did not have access to all of them for the in-person interview. This, consequently, led to the limitation of conducting the qualitative phase with only eight students from both of the two experimental groups. Each interview took around fifteen minutes and questions regarding the perceptions of language learners about the treatments were asked. The interviews were transcribed and linguistically corrected to improve their readability.

# Data coding and analysis

The oral production data of the pretest and posttest were audio-recorded and transcribed by the researchers using CHAT conventions, the CHILDES project (MacWhinney, 2000). To ensure inter-rater reliability, two research assistants were asked to score the elicited data. The Pearson correlation index (r = .88) implied a statistically significant relationship between the researchers and assistants in rating the participants' fluency.

The analysis of the quantitative phase was divided into two sections of checking the normality of the data and a series of paired samples T-test and analyses of covariance (ANCOVA) to control the pre-test effects in order to get a more accurate interpretation of the data. Furthermore, thematic analysis was employed to analyze the responses.

## Data Collection Procedures

The participants were selected using a convenience sampling procedure. Eighty participants who had enrolled in an institute for the summer IELTS speaking semester took an in-house placement test. The certified examiners of the institute rated the applicants through three real IELTS speaking tests. The treatment lasted ten sessions (one hour for each session) for ten weeks. The individuals were pretested to ensure their equivalence in terms of oral fluency and online processing ability. To make a more appropriate comparison between these groups, the same topics were selected for both groups during the entire training sessions. More details about each technique are provided below.

<u>Concept mapping technique</u>. The participants became familiar with the concept mapping technique and the relevant benefits behind using it in the first introductory session. The concept mapping procedure, consisting of seven key points, was adapted from Miller (2009, p. 75), and explained to the learners as follows:

- 1. Decide the title of the given topic and the related bullet points.
- 2. Consider ideas related to the general topic.
- 3. Select the words and phrases that fit in best with the general topic.
- 4. Draw and connect these words or phrases to the main topic with direct or cross lines referring to the relationship.
- 5. Repeat the process of brainstorming and branching for each of the subtopics you have circled until you have enough ideas and information to talk about.
- 6. Use the concept map to organize the ideas and structure the talk.

7. Go back to your concept map often while speaking, as it is a visual representation of the points you wish to make and how they are connected.

The students were given enough time and feedback to practice and master the above-mentioned steps. Five different speaking topics (extracted from Cambridge IELTS Books) were distributed during each session and the students were expected to draw upon concept mapping for note-taking in the preparation time. Then, the teacher asked the learners to describe the topic to the class. The procedure was repeated for the ten sessions.

<u>4/3/2 technique</u>. In the second group, treated by the 4/3/2 technique, the students were formed in ten groups, each consisting of four participants. The students were allowed to take notes for a maximum of two-minute preparation after receiving a cue card. The topics were the same as those used in the concept mapping experimental group. Having finished taking notes, they were asked to talk about the topic with one of the group members for four minutes. Next, they were required to repeat the same task with the same content for the second and third listeners for 3 and 2 minutes, respectively. The same procedure was kept for all the given tasks. The logic behind changing the listeners is that speakers do not feel any obligation to change the content and employ new linguistic items when the listeners remained fixed. The same repetition procedure was followed for the whole ten training sessions. However, the participants were allowed to change the members of the groups whenever they wanted.

One week after the posttest, four participants from concept mapping and four from 4/3/2 experimental groups were randomly selected for a semi-structured interview. This semi-structures interview was done in the institute in which the treatments were run. The questions were about their perceptions of the treatments during the training sessions, namely, "Do you think this technique is boring?", "Do you think this technique can increase your self-confidence?", "Do you think this technique can increase your speaking fluency?", etc. Thematic analysis was employed to analyze the interviewees' responses.

# **Results and Discussion**

Paired Differences								
	Mean	Std. Deviation	Eta Square	95% Confidence Interval of the Difference				Sia. (2-
				Lower	Upper	t	df	tailed)
Rate A	45.46	1.25	.37	41.8	53.3	11.5	39	.001*
Rate B	42.3	1.09	.32	37.9	49.9	12.6	39	.002*

Concept mapping instruction showed a positive effect on speaking fluency.

As shown in Table 1, the participants benefited from the treatment (p < .05), implying positive effects of individual concept mapping instruction on the EFL learners' speaking fluency.

Note: \*level of significance was set at .05

Table 1: Paired-samples T-test descriptive and inferential statistics for the concept mapping group

This enhancement may be explained in light of the following arguments. The first is that concept mapping, due to the shortage of time and an excessive amount of anxiety in the IELTS speaking test, helped language learners retain words and concepts more easily. The concept maps showed the learners the main topics and the relationships between the components, thereby helping them to more effectively organize concepts, plan tasks, and monitor activities. By this strategy, the learners could structure what they wanted to talk about, and how to exchange their information effectively. One problem that most IELTS candidates in the speaking section have is that they find it difficult to stay focused on the main topic. Concept mapping may serve as an anchor to help them categorize their ideas around the main topic and connect the graphical nodes in a logical way, which results in oral fluency. This justification lends support to the sociocultural theory which implies that language learners, when suffering from linguistic and discourse competence, may resort to other-regulation by scaffolding from the new material, teachers, or strategies to process the information more efficiently (Lantolf & Thorne, 2006).

The other explanation behind this fluency enhancement relates to the effects of concept visualization, and the cognitive dimension of concept mapping in language learning. The employments of graphical representations and drawing graphic patterns between key points further activated the learners' background knowledge which, to a great extent, positively improved speech production. The improvement in the learners' fluency during the treatment would reveal that concept mapping helped learners to employ more

transitions to reduce unnecessary pauses. Moreover, such a technique facilitated the way in which language learners selected the concepts and sequenced them more proficiently. Additionally, it may be claimed that converting thoughts to visual representation provided the learners a roadmap to structure the flow of contents, thus increasing their speech pace. This efficiently and effectively directed the participants' attention to the generation of new ideas, helped them process the relevant information. This is based on Ausubel's (1963) Assimilation Theory which reasons that activation of prior knowledge, building on it, and making ties with the new information enhances learning performances.

The 4/3/2 technique, contributed to the development of the participants' oral fluency.

Two measures were employed. Rate A counted the number of syllables produced per minute of speech, and Rate B counted the number of meaningful syllables per minute of speech. Table 2 shows no statistical differences (p. value <.05) between the performances of the learners before and after the instruction run by the 4/3/2 technique, meaning that EFL learners' oral fluency improved. So the second null-hypothesis was rejected.

	Paired Differences							
	Mean	Std. Deviation	Eta Square	95% Confidence Interval of the Difference				Sig. (2-
				Lower	Upper	t	df	tailed)
Rate A	45.11	1.3	.34	40.4	50.3	10.3	39	.000*
Rate B	43.2	1.4	.32	38.3	49.2	11.2	39	.001*

Note: \*level of significance was set at .05

Table 2: Paired-samples T-test descriptive and inferential statistics for the 4/3/2 group

These results can be attributed to lexical and structural priming during speech production. When lexical resources and grammatical structures are more readily accessible for use, there would be fewer attempts to search, which ultimately decreases the number and length of pauses, and improves the pace of articulation (De Jong & Perfetti, 2011). The first encounter with the task helped the learners complete some processing work, which facilitated creating form-meaning pairings. This could also be explained by drawing upon Skehan's (1998) dual-mode system which argues that the language learners under time pressure (as they are required to perform the tasks within the time limit of two minutes) resort to their exemplar-based system to quickly and easily access the linguistic codes. Some traces of the forms and content that the learners have constructed at the conceptualization stage were available to be employed in the formulation and articulation stages. According to the dual-mode system, a fluent speech is based on the ready-made exemplars that need minimal processing capacity, as those prepared by repetition for the second and third time.

Furthermore, the other explanation may be related to the effects and contributions of planning and attentional resources. When learners knew what and how to say it, the rate of articulation went up while long, silent pauses reduced. Repeating a talk is assumed to free up the mind from the first two components of Levelt's (1989) model, deciding on the content and retrieving the necessary linguistic means to encode that content. This gave the participants enough time to concentrate on linguistic units.

According to Ellis (2008), task repetition is regarded as a kind of pre-task planning. When a task is being done, all the capacity of attentional resources cannot be available because some parts of it go for controlling. In contrast, in performing a routine or familiar task, the control mechanism uses less processing power since it has been done before. Additionally, some aspects of the meaning have been processed in the conceptualization stage of Levelt's (1989) Model of Speech Production, the first stage, which releases some parts of attentional resources for concentration on the further stages of formulation and articulation and monitoring the delivered information. Proceduralization and automaticity, resulting from speech repetition, leave long-term and transferrable influences on learners' oral fluency.

Concept mapping and the 4/3/2 technique seemed to increase fluency equally.

To answer the third question and to be sure that only the treatments and not any other extraneous variables were the reasons for the change in the performances of language learners, an Analysis of Covariance (ANCOVA) was run (Table 3) in which the pretest was used as the covariance variable.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	17.985	1	17.985	3.367	.075	.083
Pre-treatment	14.582	1	14.582	2.730	.107	.069
Group	16.423	1	16.423	3.074	.088	.077
Error	197.649	77	5.342			

As is indicated in Table 3, the non-significant F-value associated with the pretest (F (1, 77) = 2.73, p = .107, Partial  $\eta 2$  = .069 representing a moderate effect size) indicated that it did not have any significant contribution to the ANCOVA statistical procedure.

Although both techniques proved to be effective in the performance of L2 speakers' fluency, the statistical analyses illustrated that there was no significant difference between them. The use of concept mapping could assist learners to retain words and concepts in their minds with little effort, which helped them to concentrate better on the ideas and content. The concept maps could show the learners the main topics and the relationships between the components, thereby helping them to more effectively organize the concepts, plan their tasks, and monitor their activities. The 4/3/2 technique helped them free up their attentional resources from unnecessary issues and ultimately led to proceduralization and automaticity. So, it indicates that this method could free learners' minds from focusing on the content and speeding up the retrieval of linguistic means. The findings of this section indicate that the use of new and innovative techniques, either concept maps or 4/3/2, in contrast with the traditional ones namely listing the key items from top to down on the test paper, could help speakers enhance their fluency. This result implies that teachers in language classes or learners employ each of these techniques independently or jointly to enhance the speaking fluency.

The research was followed by interviewing the participants in both groups to find out their attitudes toward employing task repetition and concept mapping techniques.

## Concept mapping treatment was well-received by participants.

The examination of the interviewees' viewpoints (which were in English, not their mother tongue) toward the concept mapping showed both positive and negative aspects of the technique. For example, S5 said that concept mapping could help him to make better use of the pre-speaking plan:

The problem that I had before was that I did not know what to do in the preparation time, and often I was trying to find a strategy to assist me with generating ideas...... The concept map helps me to come up with good ideas in the pre-speaking plan...... When I make concept maps, I better concentrate on the relation between the top and bottom ideas....... This helps me not to deviate from the main topic and more effectively organize the talk.

S13 mentioned that employing this strategy could affectively help her as she got more self-confident on the test:

Before this class (concept mapping treatment class), I almost always had difficulty concluding the talks, and that made me be afraid of the negative points to receive on the test session. But, this strategy could significantly raise my confidence since now I am sure how and where to start and finish my responses to the questions, now I know how to conclude my sentences...... When I use map, I check whether I have used appropriate cohesive devices, and clear examples....

S23 was of this opinion that concept mapping was effective in helping her not to leave out any significant ideas and better organize her thoughts but that was time-consuming during the short the preparation time:

I participated in different English classes and speaking courses.... I had been instructed to take down the relevant points on the given paper or could not take the best advantage of them because I sometimes felt stressed and forgot the written points...... If I use a concept map, I won't leave out my ideas, so I think it's useful....... However, I think I need to care about the preparation time (one minute) .... Drawing hierarchal relations and other lines to show the relationships in concept mapping may take more than the allowed preparation time. So, I think I ought to learn it.

The last interviewee, S25, had favorable attitudes toward this technique as he felt more able to generate new ideas and create hierarchal relationships, which helped him feel less concerned about missing points.

When I was asked the speaking question in part 2, I usually became inactive for the first 30 seconds of the preparation time because I did not know how to start off.... Concept mapping could help to me categorize the ideas and connect

them faster. Writing the main topic on the top and the details on the bottom give me a template for connecting the ideas to each other...... So, I don't feel worried a lot for missing any points.

The comments showed that the participants judged concept mapping as a very helpful and effective strategy in generating new ideas and connecting them to each other. It could help them focus on the main topics and the details to more efficiently categorize their information. However, one interviewee recognized the negative aspect of this treatment. She stressed that mastering this technique needs more practice because one-minute preparation time seems inadequate to complete the concept map template.

Task repetition treatment was well-received by the participants.

The interviewee, S7, in the 4/3/2 group found the technique interesting and inspiring. She argued that repeating a task for several times increases the possibility of giving the best performances in the final task:

Not only this strategy is not boring, but also it is quite energetic.... When you know that after repeating the words and grammar for three times or even more, you see your improvement, and then you get motivated. ..... My mind gets more ready for the following tasks.... I think I will continue this technique for other skills such as writing and reading....

S19 believed that task repetition had its own strong and weak aspects. The negative part, in her opinion, lied in the fact that getting used to repeating a task for two times and trying to see the best outcome in the third repetition resulted in over-reliance on a series of three consecutive practices.

I think this technique is both good and bad. The reason for being good is that you improve after each session. But, the negative point is that after some time you become very reliant on this strategy and want to repeat every speaking tasks for several times.... This would in a long run be negative for our confidence because I think that all the time I have to repeat a task for three times to see the best performance at the end of the course....

S26 talked about the merits of running an oral class in this way. He stated that the first repetitions helped him determine the content. Keeping the content in the mind, he felt more focused on the linguistic codes, pauses, and speed.

When I repeat a task for several times, I feel successful in the end... I have sensed that repetition for the first time helps me to use some grammatical structures and vocabularies which I use for the second and third times. For the first time I decide on the content that I want to use later. So, when I am sure that this content is going to be used in the second and third time, I try to focus on the grammar and vocabularies.... This could help me to increase my speed when speaking.

S35 was the last randomized selected interviewee. Similar to the former participants, she held both positive and negative attitudes toward this treatment. Repeating the same things without changing the content seemed somehow tiring and boring to her.

I sometimes got tired of this strategy because I had to repeat the same things to just different people.... This is a good technique but it is used randomly not as the main technique in the class.... However, the positive points cannot be disregarded for example, I became happy when I was given another chance to correct my mistakes and use them for other times.... this helps to memorize some structures in your mind and employ them for the other tasks.

These comments made by the interviewees confirm many of the positive effect of task repetition in improving oral fluency. As the participants of the interview mentioned, repetitions three times helped them during the conceptualization stage, which freed up the attentional resources for concentrating on the syntactic codes.

The comparison between the strategies based upon the elicited interviews indicates that language learners were more positive towards using the concept mapping technique although one-minute preparation time seemed too short. However, the viewpoints derived from the receivers of the 4/3/2 task repetition technique implied that repeating a task three times bored learners and had counter-effects on the outcome.

## Conclusion

This paper gave an account of the effects of two instructional techniques, concept mapping introduced by Novak and Gowin (1984), and the 4/3/2 technique to explore their efficacy on L2 speaking fluency. Regarding the first aim, the results seem to suggest that both the concept mapping and 4/3/2 techniques were significantly effective in developing L2 learners' fluency when compared before and after the treatment. This improvement in the learners' abilities can be attributed to the fact that concept mapping paves the way for meaningful learning by providing a context for learning and a graphic representation. The 4/3/2 technique would lead to proceduralization and cognitive enhancement as a result of task repetition. ANCOVA

was administered to find any already existing differences between the experimental groups before the treatment. The findings revealed that the 4/3/2 technique and concept mapping were almost equally effective in developing speaking fluency.

Concerning the second aim, to elaborate more on the quantitative data, a semi-structured interview was run to explore the underlying affective and cognitive mechanisms of EFL learners in using these two techniques. The interviewees were more positive towards employing concept mapping techniques to generate new ideas and connect them in a chronological order, which seems necessary for achieving a high score on the IELTS exam. Despite some merits, the participants expressed that repetition three times would not be interesting for a long run course.

This study has several implications for language teachers and L2 instructors. Teachers could help their learners by giving them clear instructions on how to organize and connect ideas in concept mapping treatment, and also showing them how to repeat the linguistic codes such as lexical resources and grammatical structures in the second and third times. This would be far more effective if the teachers provided feedback after each oral production. Teachers are highly advised to incorporate the above-mentioned techniques in their formal classes because these student-directed techniques do not need state-of-the-art technologies. In addition, educators need to know that integrating these techniques can lead to more academic achievement, which in turn can lead to more self-confidence and interest. The findings suggest that the employment of concept mapping and 4/3/2 techniques help language learners, in particular when they engage in problem-solving and task-based activities.

Some limitations of the current work need to be considered in applying the findings. First, the participants' level was pre-intermediate which may constrain generalizing the findings to other contexts and across the other proficiency levels. So, other studies could be replicated with high-level proficiency learners, for example, to investigate the effects of task repetition and concept mapping on the oral fluency. Second, the present research intended to investigate the differential effects of two practical techniques namely 4/3/2 and individual concept mapping construction techniques on the speaking fluency of international exam candidates. It is recommended that future research focus on the efficacy of these techniques on other aspects of oral skills such as accuracy and complexity. Third, as the literature explained, there are different kinds of task repetition and concept-mapping treatments such as procedural repetition (the same syntactic structure with different content) and expert concept mapping or cooperative concept mapping. Thus, further research can be conducted to incorporate them in the EFL fields to investigate their effects on skills such as writing and speaking.

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