Volume 21 Issue 47
Originally issued as G11



Global Journal of human-social science: G
Linguistics & Education
Volume 21 Issue 11 Version 1.0 Year 2021
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-460X & Print ISSN: 0975-587X

Educational Technology: From a Historical Perspective to an Empirical Exploration of Moroccan Learners' EFL Speaking Fluency

By Prof. El Morabit Nadir
Al Imam Al Ghazali High School

Abstract- One of the common challenges facing practitioners is the critical speaking fluency of EFL learners. Many students find immense challenges in communicating their ideas, let alone finding the appropriate and practical modalities to communicate authentically outside the classroom walls and measuring it. This paper aims at exploring the impact of educational technology on students' oral fluency. To gauge the intended impact, a quantitative method is used. Educational technology is used as an independent variable with an insightful historical overview of the term, whereas oral fluency, the dependent variable, is narrowed down into measurable descriptors. The findings of this study inform the literature with the importance of the implementation of educational (instructional) technology into refining the teaching practices via an empirical evidence on the one hand and improving the speaking (oral) skills by the affordances supplied by the app and software designed for testing the validity of the data. This paper is concluded with some limitations and recommendations to open more horizons for action research and investigate the debated topic under study.

GJHSS-G Classification: FOR Code: 200499



Strictly as per the compliance and regulations of:



© 2021. Prof. El Morabit Nadir. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

Educational Technology: From a Historical Perspective to an Empirical Exploration of Moroccan Learners' EFL Speaking Fluency

Prof. El Morabit Nadir

Abstract- One of the common challenges facing practitioners is the critical speaking fluency of EFL learners. Many students find immense challenges in communicating their ideas, let alone finding the appropriate and practical modalities to communicate authentically outside the classroom walls and measuring it. This paper aims at exploring the impact of educational technology on students' oral fluency. To gauge the intended impact, a quantitative method is used. Educational technology is used as an independent variable with an insightful historical overview of the term, whereas oral fluency, the dependent variable, is narrowed down into measurable descriptors. The findings of this study inform the literature with the importance of the implementation of educational (instructional) technology into refining the teaching practices via an empirical evidence on the one hand and improving the speaking (oral) skills by the affordances supplied by the app and software designed for testing the validity of the data. This paper is concluded with some limitations and recommendations to open more horizons for action research and investigate the debated topic under study.

I. Introduction

Over few decades, the implementation of educational technology to improve the teaching and learning processes has been a thorny topic. It has been more than eight decades since the emergence of the term 'educational technology'. The same construct has been redefined several times by the AECT (Association for Educational Communications and Technology) and many other writers. It is high time we made a shift towards normalizing the use of the instructional modalities (Bax, 2003) regardless of the theoretical principles underpinning the term, which has been under a heated debate between authors who consider the concept as a theory and those who perceive it as a bunch of modalities adding nothing to the instructional process (Clark, 2007). The implementation of educational technology should be conducive to improving the learning process and refining the teaching practices to cater not only to the learner's needs, styles and preferences but also establishing the twenty first century digital classroom. It is the classroom that should boost the twenty-first century skills of students to prepare them for the real-life complexities. The first section of this paper provides a historical background of the terms under study (i.e., educational technology and fluency). The definitions listed below are chronologically reflecting the heated debate about the framework of the term since its emergence eight decades ago. Fluency as a sub-construct is also defined considering its ramifications and the instability of its foundations due to the lack of research in the field. Having investigated the framework of the terms, the concept used here as an independent variable (educational technology) is applied in the form of an integral digitizing project of the teaching-learning process. The speaking skill fluency is used as a dependent variable to measure the impact of instructional technology on the oral fluency of a sample of Moroccan learners. To do so, the SRM (Speech Rate Meter) software is used to measure the impact of educational technology (*Flipgrid* app as an element of the digitized project) on the oral fluency of students considering the basic descriptors (temporal variables) as embodied in the section of results. This paper is concluded by a thorough analysis of the primary data collected from my classes (First Baccalaureate students) and a set of recommendations for further research in the field and the required actions to be taken by stakeholders and policymakers.

Author: EFL Teacher, Al Imam Al Ghazali High school, Tetouan, Morocco. e-mail: ndrmorabet@gmail.com

II. Definition of Terms

a) Educational technology

i. Theoretical Background of the Term

In his attempt to trace back the term's history, Paul Saettler, the historian of educational technology, admitted having difficulty identifying the pioneer of the term (Saettler, 1990, as cited in Januszewski, 2001). However, he documented the years of the 1940s as the period of using the terms 'educational technology' and 'instructional technology'. Prior to this period, Saettler found out that 'educational engineering' as the coined term was in use in the 1920s (p. 1). Januszewski points out that there are three main trends influencing the emergence of educational technology as a field, namely engineering, science, and AV (audio visual) education.

Concerning engineering, Januszewski traced back the works of Saettler, who credited the term use 'educational engineering' to Franklin Bobbit and W.W. Charters, and the works of James Munroe. Having investigated the findings of Munroe in 1912 and Charters in the 1940s, Januszewski reached the conviction that Munroe was the leading figure to

© 2021 Global Journals

establish "a conceptual tie between scientific management in educational settings and educational engineering" (p. 3). Munroe argues that the educational setting is identical to a business plant on the level of the organizational structure. He was confident that schools would operate effectively when he explained that:

> Such [educational] engineers would make a thorough study of (1) the pupils who constitute the raw materials of the business of education; (2) the building and other facilities for teaching, which make up the plant; (3) the school boards and the teaching staff, who correspond to the directorate and the working force; (4) the means and methods of instruction and development; (5) the demands of the society in general and of the industry in particular (Munroe, 1912, as cited in Januszewski, 2001, p. 4).

Munroe believes that the scientific management of plants or business would trigger much effectiveness in schools. Moreover, educational engineers are the ones who can prepare youth to life and find out about the weaknesses and the strengths of the industry (i.e., school).

Unlike Munroe (1912), who seemed much interested in "engineering the overall schooling process, the central tenet of educational engineering for Charters was the systematic development of instructional methods and products" (p.6). Although both agree on adopting the scientific management of plants and businesses to transmit them to schools, Charters is still more systematic than Munroe due to his focus on methods, techniques, materials, and efficiency. Charters admires the adoption of scientific methods in engineering for the sake of productivity (i.e., wealth) in a short time. Januszewski cited a thought-provoking depiction of the role of the educational engineer for creating efficient instructional methods and materials by the following:

> The engineers will identify the idea to be worked upon, analyze it and select promising hypotheses concerning its practical uses. He will experimentally play with plans for building a structure that will use the full value of the idea. He will build a unit, an operational technique, an instructional method. He will operate the tool and try it out in practice. He will test the results to measure the efficiency and practicality of what he has constructed (Charters, 1951, as cited in Januszewski, 2001, p.6).

The analogy between engineer and educational engineer led to shaping the conceptual framework of instructional technology.

The second factor to influence the concept of educational technology was science. Januszewski argues that in 1987 the educational historian Herbert M. Kliebard "identified three distinct views that were held in the twentieth-century educators regarding the purpose of science as it related to education" (p.9). The first one pertained to G. Stanley Hall regarding the investigation of the "natural order of development in the child" which was based on data collection, data analysis and finally prescribing appropriate activities (Hall, 1987, as cited in Januszewski, 2001). Second, was Dewey's advocacy of the "scientific inquiry" (p.9), and the third one "was science of exact measurement" (p.10). Concerning the third view, Januszewski argues that it is still representative of the current practices namely the experimental methods, quantitative studies, laboratories, task analysis, criterion-referenced testing, etc.

The third impact on the shaping of the educational technology concept was the audio-visual education movement. This movement, according to Finn (1960), "was based on the hardware and equipment" which was available after World War II (Finn, 1960; Lange, 1969, as cited in Januszewski, 2001, p.12). This movement was principally criticized for being materials-driven and machine-based rather than being focused on methods and systematic approach to improve instructional practices. However, there was a remarkable shift from considering audiovisual communications (AV) as "teaching aids" to "audiovisual techniques" and mere "things" to "concrete experiences" by "visualizing the curriculum" (Hoban, 1937; Dale, 1946; McBeath, 1972, as cited in Januszewski, 2001).

ii. *Attempts to Establish a Grounded Definition*

The first official definition of the term goes back to 1963. The Association for Educational Communications and Technology (AECT) used the Audiovisual communications definition to describe the field (educational technology) "as it was evolving from the AV education movement to educational technology. Later, the leadership of the AECT acknowledged the 1963 definition as the first formal definition of educational technology, even though this statement was intended as a definition of audiovisual communications" (p. 18). However, the adaptation was systematic to establish theoretically grounded definition of the following definition of Audiovisual communications:

> Audiovisual communications is that branch of educational theory and practice primarily concerned with the design and use of messages which control the learning process. It undertakes: (a) the study of the unique and relative strengths and weaknesses of both pictorial and nonrepresentational messages which may be employed in the learning process for any purpose; and (b) the structuring and systematizing of messages by men [sic] and instruments in an educational environment. These undertakings include the planning, production, selection, management, and utilization of both components and entire instructional systems. Its practical goal is the efficient utilization of every method and medium of communication which can contribute to the development of the learner's full potential (Ely, 1963, as cited in Januszewski, 2001).

As noted from the definition, the selective words were slightly different than how the AV concept was viewed, namely on hardware and equipment orientation. The selective words this time were the words process, systematizing messages, planning, production,

© 2021 Global Journals

selection, management, utilization, etc. the principal intention was to establish theoretical principles and a self-contained field by a semantic shift of the AV definition.

In 1972, the AECT considered the critique accompanied the publication of the definition of 1963 to come up with the following revised definition:

> Educational technology is a field involved in the facilitation of human learning through the systematic identification, development, organization, and utilization of a full range of learning resources and through the management of these processes (Ely, 1972, as cited in Januszewski & Persichetti, 2008, p. 267).

What is new in the definition was the word "field" instead of "theory", which is open to interpretation. It seems that there was a reason behind hedging on the word theory implemented in the 1963 definition. This reason was revealed by Januszewski and Persichetti (2008) when they maintained that "the writers of 1972 definition chose to use "field" rather than "theory" in the definition because the use of the word field established a territory. It provided certain legitimacy to efforts to advance both products and processes" (pp. 273-74). It can be inferred from this that neither the writers of the 1963 definition, nor those of 1972 could specify whether educational technology was a theory or a field or any other congruent name. It should be noted, as being suggested above, that educational technology was not formally in use as a conceptual term till 1972. Perhaps this skepticism denotes a lack of research and content at that time. This issue of concept classification will be clear in the next published definitions by the AECT.

In 1977, the AECT published a revised definition after having taken into account the criticism to the previous definition and the research area:

> Educational technology is a complex, integrated process, involving people, procedures, ideas, devices and organization, for analyzing problems and devising, implementing, evaluating and managing solutions to those problems, involved in all aspects of human learning. In educational technology, the solution to problems takes the form of all the *learning resources* that are designed and/or selected and/or utilized to bring about learning; these resources are identified as Messages, People, Materials, Devices, Techniques, and Settings. The processes for analyzing problems, and devising, implementing, and evaluating solutions […] (AECT, 1977, as cited in Januszewski & Persichetti, p.270).

This definition was also criticized for two reasons. First, according to Januszewski and Persichetti (2008), the definition did not establish a demarcation between instructional technology and educational technology since the first was a subset of the second. Second, the term "process" was used basically to "connote the idea that educational technology could be viewed as a theory, a field, or a profession" (p.271). This criticism led to the reconsideration of the definition.

In 1994, there comes the following definition of educational technology after revising the previous one: "Instructional technology is the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning (Seels & Richey, 1994, as cited in Januszewski & Persichetti, p.279). The quoting authors admit that there are no new concepts, yet they still find that "there are some serious flaws in the reasoning of the theoretical framework" (p.274). The above definition included the term instructional technology rather than educational technology. This entails that the terms are used interchangeably though the second one is broader semantically than the first, as the 1977 definition points out:

> Instructional technology was to educational technology as instruction was to education. The reasoning was that since instruction was considered a subset of education then instructional technology was a subset to educational technology […] the concept of educational technology was involved in the solution of problems in all aspects of human learning. the concept of instructional technology was involved in the solution of problems where learning is purposive and controlled" (AECT, 1977, as cited in Januszewski & Persichetti, p.276).

The interchangeability of the terms denotes the instability of the framework of the definition. It is true this is one of the most economical definitions the AECT has come up with after considering the critique of all the former definitions. However, this official new label of the field of study from educational technology to instructional technology is a kind of surrender to finding an appropriate discipline to classify the new "study", "field", "process", or even a "theory" within its scope. Many authors accepted the term regardless of its unstable 'territory' but with much hesitance. Thus, among all the new concepts the AECT has implemented in the definition of educational technology, the term "theory" has been a thorny one. Januszewski and Persichetti (2008) argued that "educational technology is [certainly] a theoretical construct. [It] may also be a theory depending on what exactly is intended by the word *theory*" (p.281).

In 2008, another focused definition was released by the AECT which read as the following:

> Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources (Betrus et al 2008 as cited in Januszewski & Persichetti, p.1).

Again, the term educational technology is used instead of instructional technology. What characterizes this definition is the shift from mere hardware-based-process (1963) to focusing on the learning process.

© 2021 Global Journals

Moreover, the use of the word "study" instead of other terms implemented in the previous definitions on the one hand and the label shift from instructional technology to educational technology still denotes that this area of study is still in need of theoretical foundations and expanded research though it has been more than eight decades now since the emergence of the term as has been claimed above by Saettler in 1990. This mismatch in classifying the term under a particular discipline and grant it the badge of theory is recognized in the works of many authors. Unfortunately, these studies were claimed to have known some sort of "propaganda". In his foreword to Januszewski's book *Educational Technology: The Development of a Concept,* Yeaman, A. R. J. (2001) stated that:

> The historical definitions of educational technology have the qualities of propaganda. They tell us what the facts are and what questions about those facts are acceptable. Like Humpty Dumpty, meanings are given word by word and there remains, as with the complex texts produced by most committees, at least some vagueness-possibly because the social purpose is to gain consensus. There is an insistence on people joining together to support a good idea that should not be opposed (Yeaman, A.R.J., forword in Januszewski, 2001).

Yeaman considers that the profusion of definitions is the result of propaganda developed in "naïve optimism" (p.xii). He acknowledges that educational technology deserves analyses and more research rather than considering the "practical functionality" of it (p.xi).

In 2000 Delcloque refers to two types of researches in the field of CALL:

1. The properly researched, objective historical accounts with attempt to summarize the progression and might include precise dates and a comprehensive list of sources.
2. The interpretative type which tends to draw more subjective conclusions about advances and trends in the field, thus analyzing its progression in a less objective manner (Delcloque, 2000 as cited in Bax, 2003, p. 14).

It becomes clear that the historical background of educational technology has known some ramifications regarding the attempts to come up with a precise and accurate definition on the one hand, and to stick to subjective perspectives, which caused some kind of construction and deconstruction of the historical discourse of the term as being the case of Bax (2003) when he tries to deconstruct Warschauer's stages of CALL by describing it "to have a number of significant weaknesses" and his approach adds to "the conceptual confusion" (p 16) to introduce his common approach called "normalization". I am not here in a position to say who is better than who and who is more approachable than the other. However, I argue that for more than six decades now, the concept has known several refurbishments which persists up to the present. This process resulted in two teams. Those who favor the technology-approach in the classroom context with some skepticism and those who do not favor the implementation for subjective reasons.

b) Fluency

In foreign languages, fluency is used to gauge the oral fluency. However, the term should not be restricted to assessing the ability to produce language, but to write as well. Fluency is frequently contrasted in twofold way: fluency to accuracy and explicit to implicit knowledge (Richards, 2003), yet our concern here is to shed light on the concept of fluency in EFL/ESL context. The concept of fluency is not easy to define since it is confusingly related to oral proficiency (Chambers, 1997; Maisa, 2018). In her article, *What Do We Mean by Fluency?* Chambers did not come up with any definition of fluency because she admits that there is not any precise one according to the intertwined descriptors and variables related to the concept. Accordingly, she maintains that:

> Fluency is a commonly used notion in foreign language teaching and yet it is a concept difficult to define precisely. Its frequent use as a descriptor of oral performance in the course of assessment requires that we agree on what constitutes fluency. As teachers we also need to know how it develops in order to create the conditions in which foreign language learners increase their fluency (Chambers, 1997, p.535).

Given its complexity, we can infer from Chambers's article the following elements that constitute the fluency concept:

- It is frequently contrasted to accuracy.
- It is often used as synonym of oral proficiency.
- It is qualitative (flow, smoothness, ease, effortlessness, etc.).
- It is quantitative (speed, articulation rate, repetition, length of pauses, hesitations, etc.)
- It is traditionally perceived: language mastery (native-like performance).
- It is modernly perceived (natural language flow regardless of nativity).

Chambers makes it clear that due to the lack of precise definitions of the concept and considering the works of Raupach (1980), Riggenbach (1991), and Towel et al. (1996), she reached the conviction that the concept is "multi-layered and needs to be defined specifically" (p. 543).

In her thorough review of the existing literature concerning language fluency, Maisa (2018) posits that "the concept of fluency has been used with a distinctive meaning clearly opposed to overall proficiency or to an end state close to native performance. Fluency in CLT is about effectiveness of language use within the constraints of limited linguistic knowledge (Maisa, 2018, p.321).

© 2021 Global Journals

Brumfit defined fluency as "the maximally effective operation of the language system so far acquired by the students" (Brumfit, 1984, as cited in Maisa, 2018, p.321).

H.D. Brown refers to fluency as "saying or writing a steady flow of language for a short period of time without any self or other correction at all (Brown, 1994, as cited In Maisa, p.321).

What is more, Crystal defines fluency "as smooth, rapid, effortless use of language" (Crystal 1987, as cited in Maisa, 2018, p. 320).

It becomes clear from the above definitions that oral fluency is a real challenge since the criteria suggested to measuring the given construct maybe approved by some and disapproved by others. The concept can be summarized as follows:

- Fluency is measured according to 4 temporal variables (speaking rate, phonation time, articulation rate, and mean length of runs).
- Fluency is difficult to be separated from linguistic knowledge (strategic competence/procedural knowledge).
- Speed of articulation (steady flow) and frequency of pauses (hesitations and unfilled breakdowns) are the principal indicators agreed on by writers.
- Two views: modern vs traditional (language mastery in contrast to natural flow regardless of being native-like performance).
- The demarcation between L1 and L2 is a challenge.

The complexity of the concept resulted in three problems, the lack of a precise definition, the difficulty to gauge fluency, and the debatable criteria for measurement.

In 1979, Filmore proposed four parameters to make judgments about fluency:

a. The ability to talk at length with minimum pauses;
b. The ability to package the message easily into "semantically dense" sentences without recourse to lots of fillers (for example, "you know", "the thing is that", etc.);
c. The ability to speak appropriately in different kinds of social contexts and situations, meeting the social communicative demands each may have,
d. The ability to use the language creatively and imaginatively by expressing ideas in new ways, to use humor, puns, metaphors, and so on.

(Fillmore, 1979 as cited in Maisa, 2018, p. 321)

Fillmore adds something important to the existing literature about evaluating fluency. In contrast to the technical criteria suggested by other writers, he adds meaning (speaking appropriately) and the learning environment (social context). That is to say, the uttered message should not be regarded as a bunch of spoken words measured by time, yet these criteria ought to be revised and considered in light of the meaning conveyed and the social context the speaker (i.e., learner) is involved in. What is the use of speaking loads of words in a short time if the semantic dimension is absent?

III. Literature Review

a) Historical Overview

Many studies agree on the years of the 1960s as the starting point of the implementation of instructional technologies in the teaching-learning process with the development of PLATO system in the university of Illinois as the first computer-assisted instruction system which supplied students with tailored materials for practice accompanied with the required feedback (Levy, 1997; Beaty, 2003; Smith, 2016). This was delineated by the meta-analytic study conducted by Tamim et al. maintaining that "thousands of comparisons between computing and noncomputing classrooms ranging from kindergarten to graduate school, have been made since the 1960s" (Tamim et al., 2011, p.5). However, the booming of the educational technologies or the so-called computer-assisted language learning (CALL) did not become widespread till the 1980s "when computers become more of a commodity" (Smith, p. 2). Hubbard (2009) summarizes the 1980s which was characterized by the proliferation of microcomputers as follows:

> Early work with what were called "microcomputers", such as the BBC computer, Apple II, and IBM PC, began to proliferate in the early 1980s. this new wave continued to include academic projects involving teams of designers, programmers and language teachers, but this era was also marked by the emergence of teacher-programmers, typically using the basic language to create activities for their own students (p.3)

The development of educational technology witnessed another surge in the 1990s with the emergence of the World Wide Web (WWW) which is categorized according to different types. Web 1.0 which in known as the "read-only" where consumers are allowed to read (consume content) but cannot be content creators like the case of e-commerce sites targeting customers to purchase products rather than negotiating content (meaning). In 1999, Web 2.0 emerged with new affordances which granted it the name of "read-write-publish" web. Users could use Bloggs and social media to publish their thoughts and interact. It seems that the final stage was up with Web 2.0, yet web developers reached Web 3.0 known as "read-write-execute" which is characterized by "tailor made search, personalized search, evolution of 3D Web, deductive reasoning" (flatworldbusiness.wordpress.com). What is more, Web 4.0 is an adaptative version of the prior types but to mobile phones distinctive by the synchronous mode in a virtual real time talk. Finally, Web 5.0, known as "emotional Web", is going to be a revolutionary. Web-users will be

© 2021 Global Journals

able to interact with computers and smart phones; "the interaction will become a daily habit for a lot of people based on neurotechnology. For the moment web is "emotionally" neutral, which means web does not perceive the users feelings and emotions. This will change with web 5.0. One example of this is www.wefeelfine.org, which maps emotions" (flatworld business.wordpress.com). For the best example of the five types of Web (appendix B).

b) Debate

Since the widespread emergence of computers in the 1980s, the implementation of technology into the teaching-learning process was scrutinized thoroughly. Two opposing perspectives emerged between those who favored the implementation of the instructional technologies backing their convictions by the speed of change imposed by the inevitable fluctuation of instructional methods and approaches on the one hand, and the appealing affordances (i.e., features, abilities, and advantages) these mediums offer to enhance the second language acquisition by the profusion of user-friendly devices, software, and apps. On the other hand, those who disfavor the implementation of educational technology like Richard Clark claiming that "media are delivery vehicles for instruction and do not directly influence learning" (Clark, 1983, p. 453).

In the 1980s, Clifford welcomes the use of CALI Computer-Assisted Language Instruction though he was cautious about it. The opposing stand that happened in the 1970s he referred to in his article did not reflect his own. On the contrary, it reflects the practitioners' reaction to the "claims of CALL reducing faculty staffing by one-third to one-half" (p. 11). My focus here is on the advocates of educational technology rather than writers who disfavor the implementation of it.

i. *Cautious Advocates*

Clifford (1986) highlights the merits of Computer-Assisted Language Instruction (CALI) in the well-designed programs, the assistance for reticent students, motivational benefits, etc. however, he acknowledged that he is a cautious advocate "because of the interrelated issues of credibility and teacher acceptance" (p.15). By credibility, Clifford means the readiness of the system to accept the implementation of CALI and meeting the needs of teachers to make the language learning environment successful and not exposed to the prior failures. Hence Clifford puts his famous sentence: "computers will not replace teachers. However, teachers who use computers will replace teachers who don't" (Clifford, 1986, p.5).

Hubbard (2009) acknowledged the role of CALL (Computer Assisted Language Learning) for "those who wish to incorporate it into their professional practice or understand its impact on the language teacher and learner" (p. 1). However, with the plethora of technological devices implemented in the classroom and the constant change of their affordances, Hubbard feels that we should direct our attention to the question of *how* to use technology rather than *what* technology to use. Moreover, he calls for the reconsideration of some definitions (Beaty, 2003) of technology or rather educational/instructional technology by "two additional questions: what do we mean by computer? And what do we mean by improve?" (p. 1)

Thorne and Smith (2011) acknowledged the considerable interest in social media and social networking environments to "support the meaningful language use [and] interpersonal engagement" (p.268). Thorne and Smith's maintained that "CALL is both exciting and daunting due to its rapidly changing tableau of tools, environments, cultures, and expressive possibilities" (p.274). That is, it is not the question of what mediums to use but how best "to integrate the right technology into […] specific L2 teaching and learning context" (Smith, 2016, p.2). This conviction was shared by Clifford, 1986; and Hubbard 2009.

c) Rational and Purpose

The main purpose of this study is not only to review the literature of CALL but to explore and investigate its feasibility on language skills. Our concern in this study will address the speaking skill. That is, we will attempt to gauge the impact of educational technology on speaking fluency. In doing so, this study will add an empirical inquiry to the body of literature as a decisive mechanism to test the impact of educational technology on the learning process. Therefore, educational technology will be treated as an independent variable whereas speaking fluency, the dependent variable, will be narrowed down into measurable descriptors.

d) Research Questions

1. Is educational technology implementation conducive to speaking fluency?
2. Does the digitization of the teaching-learning process result in remarkable oral fluency?

IV. Methodology

Having reviewed some literature that has established the territory for the emergence of CALL (preferred in the US) or ICT (preferred in European countries), we will try to measure the impact of CALL on speaking skill. It should be considered that this skill was enhanced by the reading skill, which was part of the digitization of the teaching and learning processes project underpinning my teaching strategy to change the mode of delivering lessons and refining my teaching practices to cope with the new generation of students. We believe that from reading other skills and subskills stem out since language structures and vocabulary items are absorbed and acquired incidentally (El Morabit, 2021) eventhough the reading skill is not the

© 2021 Global Journals

focus line of the research, but it was an integral part of the whole project.

A quantitative method is used to gauge students' oral fluency. In doing so, the SRM (Speech Rate Meter) software is used since it is of utmost difficulty to measure the speech rate, pauses, length of pauses, hesitations, etc., manually and by impression. The Moroccan First Baccalaureate level is the population sample used for this study at Al-Imam Al-Ghazali High school in Tetouan city. Four classes with an approximate number of 100 hundred students were asked to participate on *Flipgrid,* yet the focus was oriented towards low proficiency level students with poor performance on oral fluency in class. It is an app where students film themselves responding to each other's comments or responding to a specific theme set by the teacher over a period of five months. All the activities were under the teacher's guidance and surveillance. At the end of each lesson or unit, the teacher posts a topic for discussion related to what students have covered in class to enrich their ideational system with some background knowledge to be able to lead an asynchronous speech. Students not allowed to read from papers. All they needed to do was to speak spontaneously and the posted instructions. The reason behind this is to stick to the input under measurement on the one hand and to encourage learners to adapt to the virtual community (digitization of learning). Maybe fluency should be measured in real- time talk (synchronously), yet the reason behind alternating the process was mainly for two reasons. First, to expand the teaching-learning process beyond the classroom walls by granting students more learning opportunities and more research to be conducted by the teacher to refine the teaching practices with the help of students' engagement and learning agency. Second, to help students being in an emotionally supportive environment to stimulate oral fluency which is sometimes affected by psychological factors such as nervousness, public phobia, reticence, demotivation, etc. These factors affecting the fluency are vivid when students undergo the public speaking activity in class which is an integral part of the formative assessment representing a challenge to many students.

It should be noted that the use of the app was supported by the standards and principles set by Hubbard (1988), namely the operational description, learner fit and teacher fit (appendix A), and some of the TESOL Technology Standards Framework (Healey et al., 2008).

V. Results

Having used Speech Rate Meter (SRM) to measure the oral fluency of the First Bac students, the following charts embody the measures obtained from the students' speeches. As mentioned above, students were required to film themselves (selfie forms) in an application called *Flipgrid.* All the necessary instructions were posted in the app so that students can resort to them whenever they like. Once their talks on the app were posted, learners were categorized into two levels: By basic level, I mean students whose level of English, especially the oral fluency, is slow and developing level is used to describe students who are above the average in terms of oral fluency and the language proficiency. These talks were converted from MP4 to Wav format supported by SRM. All the data obtained from the software are documented in the following charts. Students' names were removed as agreed on in fulfillment of the ethical commitment. The transcribed data below is randomized:

Table 1

Basic level

Students	Speech Rate (wpm*)	Articulation Rate (wpm)	Phrase Pauses (sec)	Speech Duration (sec)
Student 1	101	123	0.00	12
Student 2	116	138	0.26	13
Student 3	102	121	0.51	32
Student 4	119	153	0.26	10
Student 5	91	141	0.76	9
Student 6	88	116	1.27	30
Student 7	107	129	0.51	19
Student 8	97	114	0.77	96
Student 9	82	94	0.51	51
Student 10	105	118	0.26	22
Student 11	125	139	0.00	11
Student 12	97	153	1.79	27
Student 13	101	127	0.51	14
Student 14	99	117	0.51	17
Student 15	96	135	1.02	11

© 2021 Global Journals

Student 16	123	141	0.51	52
Student 17	106	132	1.02	15
Student 18	103	129	0.51	19
Mean	103.22	150.94	0.61	24

**Wpm: word per minute*

Developing level

Students	Speech Rate (wpm)	Articulation Rate (wpm)	Phrase Pauses (sec)	Speech Duration (sec)
Student 1	107	141	1.28	30
Student 2	120	167	0.76	11
Student 3	100	123	1.02	66
Student 4	78	96	0.76	42
Student 5	108	129	0.77	59
Student 6	103	121	0.51	21
Student 7	118	135	0.25	17
Student 8	94	129	1.53	23
Student 9	99	119	0.51	64
Student 10	89	114	1.28	64
Student 11	105	132	1.02	39
Student 12	99	128	0.76	24
Student 13	84	145	1.02	21
Student 14	100	128	0.76	17
Student 15	80	100	0.51	17
Student 16	103	119	0.51	20
Student 17	92	116	1.02	22
Student 18	138	152	0.26	13
Mean	100.94	127.44	0.76	31.66

VI. Discussion

It seems from the results obtained above that the basic-level-students with higher speech duration make more pauses. That is, students who speak for more than 30 seconds their speech rate is slightly less speedy than students with fewer pauses except for student 16. By contrast, students whose speech duration bellow 20 seconds make relatively fewer pauses (e.g., S1, S2, S4, S11), and their speech rate is a bit higher than the rest. Generally, students whose speech rate is slow, their articulation rate decreases moderately, whereas students whose speech rate is higher witness some increase in speech articulation (e.g., S2, S4, S11, S16).

As for the developing level, students who talk for 40 seconds make more pauses (S3, S4, S5, S10, S11). Their speech rate is moderately not speedy, but their articulation rate is above the average. However, students who talk less than 20 seconds are confusing in terms of the number of pauses. They are remarkably higher in contrast to the speech duration. This is maybe due to the topic assigned to the two levels under study. That is, the same students (developing level) who contributed to the topic of the basic level students their speech rate was higher with less pauses and higher in articulation rate though they are not documented in the charts above. Moreover, what characterizes the students' speech below 20 seconds is the higher speech rate and the articulation one as well.

We can deduce that the rates scored by the SRM software are not highly consistent as there are many implausible cases. All in all, we may conclude from the obtained rates that whenever a speech duration is higher, students make more pauses, and their articulation rate is moderately less than students whose speech duration is lesser in time whose speech rate is higher somehow and so the articulation rate as the mean rates provide evidence for this analysis.

We may say that the rates scored above are relatively consistent with the research questions. To explain, students welcome first the project of the digitization of the teaching-learning process. Second, learners using *Flipgrid* app find it appealing since they can still feel engaged in the learning process outside the classroom walls. Moreover, students who did not participate in the class started doing so as the strategy of using the app was a stepwise beginning towards more participation and more oral fluency, and this was noted by class observation, too.

VII. Limitations and Recommendations

There are many limitations to this study which provides some opportunities to conduct more research in the future. There are very few reliable softwares to

© 2021 Global Journals

help conduct research, and some of them need a lab to control the whole process. Moreover, the study results in many inconsistencies, which are possibly due to the small sample of students, the criteria for measuring the speaking fluency, or even the validity of the software which still under development. It becomes clearer that speaking duration is an important element in the criteria compared to the other ones. Even the articulation rate of the basic level students is somehow higher than the developing level students which questions the previous studies providing evidence about the fluency of native speakers above non-native speakers. How come that basic level students surpass the developing ones in the articulation rate considering the low-proficiency level of these students? For further investigation of the issue, there should be more research focusing on the speech duration of basic, developing and expanding levels. Learners should be divided into three levels, each level with at least 20 students to be assigned the same topic and the same speech duration with strict surveillance from the teachers' side. Moreover, the criteria for judging speaking fluency should be reconsidered in order to confirm or disconfirm the mastery of the native speakers over the non-native speakers.

VIII. Conclusion

In summary, along with the history of educational technology, many advocates were hesitant about the impact of the revolutionary modalities on either the learning improvement or the language fluency particularly. However, the speed of change we are living in today imposes more use of educational technology and thinking about the best possible ways to make them compatible with our teaching practices and appealing to students' needs. On the other hand, stakeholders and policy-makers should supply schools with the required materials and softwares to encourage teachers to implement more technological devices into their teaching practices. We cannot be living in the twenty-first century if our classrooms are not digitized. Our students may not find it engaging if their surrounding uses technology whereas their classrooms are low-tech or not tech at all. Educators should undertake more action research if they want to improve their teaching practices and cater to their students' differentiated learning styles, needs, and preferences.

Acknowledgements

I am grateful to my family for their patience and loads of thanks go to my ex-teacher Mrs. Rahaoui Khadeja for her constant support. Special thanks go to all my colleagues for their encouragement (especially Mr. Bensabbouh Anass).

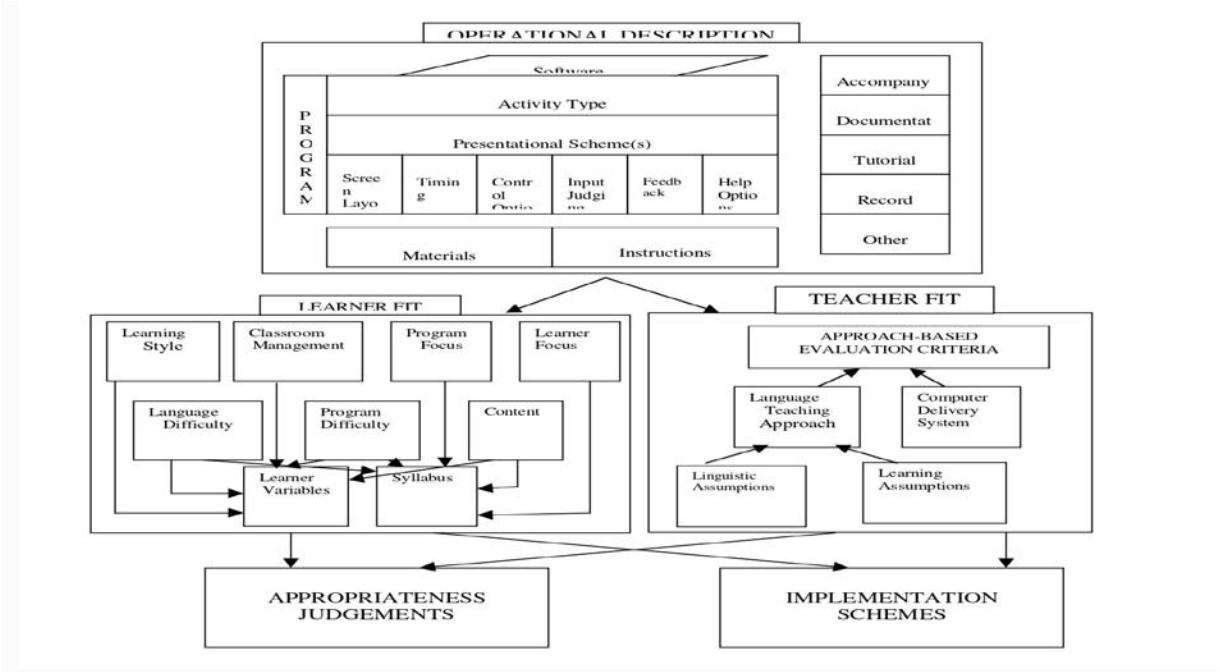
References Références Referencias

1. Bax, S. (2003). CALL - Past, present and future. *System*, *31*(1), 13–28. https://doi.org/10.1016/S0346-251X(02)00071-4
2. Beatty, K. (2003) *Teaching and researching computer assisted language learning*. New York: Longman.
3. Betrus, K., Branch, R., Philip, D, Molenda, M., Pearson, R., Kay, P., Persichetti, K., Rezabek, L., Robinson, R., Stoddard, & Ch. Chair, A. J. (2008). Definition: Definition and Terminology Committee of the Association for Educational Communications and Technology. In A.J. Chair and M. Molenda (Eds.), *Educational technology: A definition with commentary,* (pp. 1-14). Routledge.
4. Chambers, F. (1997). What do we mean by fluency? *System*, *25*(4), 535–544. https://doi.org/10.1016/S0346-251X(97)00046-8
5. Clark, R. E. (2007). Reconsidering Research on Learning from Media. *Review of Educational Research*, *53*(4), 445–459.
6. Clifford, R. (1986). The status of Computer-Assisted language instruction. *CALICO Journal*, *4*(4), 9–16. https://doi.org/10.1558/cj.v4i4.9-16
7. El Morabit., N. (2021). *Graded Readers : An Empirical Study Measuring the Impact on Low-Proficiency EFL Students' Writing Fluency in Morocco*. *0299*(c), 237–244. https://doi.org/10.32996/ijllt
8. Healey, D., Hegelheimer, V., Hubbard, P., Ioannou, S., Kessler, G., & Ware, P. (2008). *TESOL Technology Standards Framework*. https://www.tesol.org/docs/books/bk_technologystandards_framework_721.pdf
9. Hubbard, P. (1988). An integrated framework for CALL courseware evaluation. *CALICO Journal*, *6*(2), 51–72. https://doi.org/10.1558/cj.v6i2.51-72
10. Hubbard, P. (2009). A General Introduction to Computer Assisted Language Learning. *Computer Assisted Language Learning: Critical Concepts in Linguistics.*, *1*, 1–20.
11. Januszewski, A. (2001) *Educational Technology: The Development of a Concept*. Englewood, CO, Libraries Unlimited.
12. Januszewski, A. & Persichitte, Kay. (2008). A history of the AECT's definitions of educational technology. *Educational technology: A definition with commentary*. (pp.259-282). Routledge.
13. Kurt, S. "Definitions of Educational Technology," in *Educational Technology*, October 12, 2016. Retrieved from https://educationaltechnology.net/definitions-educational-technology/
14. Levy, M. (1997) *Computer-assisted language learning: Context and conceptualization*. Oxford: Clarendon.

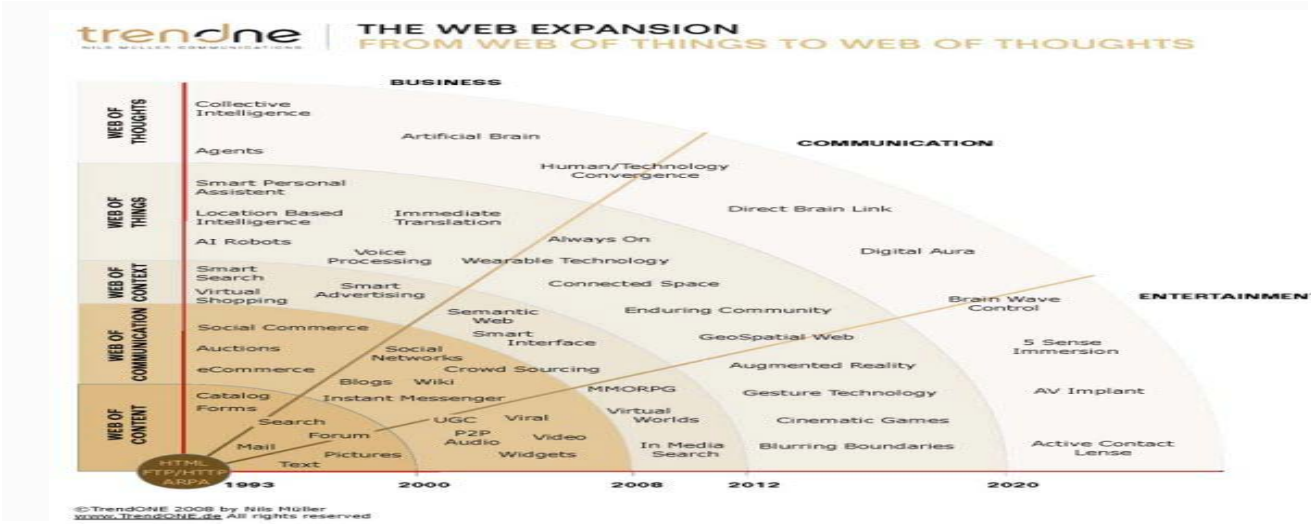
© 2021 Global Journals

15. Smith, B.J. (2016). Technology in Language Learning: An Overview. Routledge E-Modules on Contemporary Language Teaching.
16. Tamim, R. M., Bernard, R. M., Borokhovski, E., Abrami, P. C., & Schmid, R. F. (2011). What forty years of research says about the impact of technology on learning: A second-order meta-analysis and validation study. *Review of Educational Research*, *81*(1), 4–28. https://doi.org/10.3102/0034654310393361
17. Thorne, S. L., & Smith, B. (2011). Second language development theories and technology-mediated language learning. *CALICO Journal*, *28*(2), 268–277. https://doi.org/10.11139/cj.28.2.268-277

Appendix A



Appendix B



© 2021 Global Journals