



## Embracing Complexity: The Task of 21st Century Teachers of Adapting to Complex Systems

### Aceptando la complejidad: la labor de los docentes del siglo XXI de adaptarse a los sistemas complejos

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## ABSTRACT

This paper explores the evolving role of English educators and assessment through the lens of complexity theory. Traditional education has always prioritized efficiency in evaluation, rejecting the unpredictability and multidimensional nature of learners. Complexity theory views learning as a dynamic, context-driven process, which requires assessment methods that reflect authentic engagement. Teachers are repositioned as mediators and reflective practitioners, shaping evaluation practices that align with emergent learning models. By incorporating insights from Complexity Theory and Díaz Larenas et al. (2021)'s principles of English assessment instruments, this reflection article examines how educators can reimagine how they think about their role as teachers and how they assess to enhance meaningful learning experiences and achieve authentic evaluation.

### Keywords:

Authentic assessment methods, complexity theory, formative assessment, role of teachers, mediation.

## RESUMEN

Este artículo explora la evolución del rol de los educadores de inglés y la evaluación desde la perspectiva de la teoría de la complejidad. La educación tradicional siempre ha priorizado la eficiencia en la evaluación, al tiempo que rechaza la imprevisibilidad y la naturaleza multidimensional del aprendizaje. La teoría de la complejidad considera el aprendizaje como un proceso dinámico y dependiente del contexto, que requiere métodos de evaluación que reflejen un compromiso auténtico por parte del estudiante. Los docentes se repositionan como mediadores y profesionales reflexivos, cambiando sus prácticas de evaluación para alinearse con modelos de aprendizaje emergentes. Al incorporar la perspectiva de la teoría de la complejidad y los principios de Díaz Larenas et al. (2021) de instrumentos de evaluación del inglés, este artículo de reflexión examina cómo los educadores pueden reimaginar su rol docente y cómo evalúan para mejorar las experiencias de aprendizaje y lograr una evaluación auténtica y significativa, particularmente en la enseñanza del inglés.

### Palabras clave:

Evaluación formativa, mediación, métodos de evaluación auténtica, rol docente, teoría de la complejidad.

## INTRODUCTION

Who we are as teachers is etched onto every decision we make about our practices. These choices reveal our teaching philosophy, our concept of teaching and learning, and the roles we assign both to our learners and to ourselves. Our pedagogical approach is shaped not only by internal factors, such as previous education and experience, but also by external influences, including institutional and societal constraints and opportunities. We can observe this in the way we assess our learners, as expressed by Santos Guerra (2017), who develops the idea of viewing the assessment we implement in our classes as a reflection of the process, the actors, and the objective of the teaching and learning process, which will ultimately define the quality of education.

The concept of what is considered good quality education has evolved over the years. One primary indicator has traditionally been effectiveness and efficiency, relying on set standards and a generalization of its target audience: students. One example of traditional evaluative tools is standardized testing, as it can reliably and systematically measure students' achievements of the learning objective of a given subject and rank their performances with those of their peers. Grisales (2021) describes this way of assessing as a "methodical and behaviorist vision, in which the evaluation was placed in the foreground before measurement" (p. 60). More recently, however, the concept of a good quality education has started to shift from this predictable, isolated, and reductionist approach to one that embraces complexity, with what Moreno and Pájaro refer to as "indisciplining the curriculum" (2018). This disruption of the previous paradigm assigns meaning to the chaos and unpredictability of learners as complex systems and defines learning as a transformation on an individual or collective level of knowledge that actively relates to the learners' context and interest.

Complexity theory examines people, objects, and phenomena as complex systems. This quality makes them unpredictable, multidimensional, dynamic, and even contradictory (Hernández & Aguilar, 2008). In the field of education, this perspective suggests that the learner, the subject of study, and even the teaching and learning processes are complex systems. There is no one way of learning as such, but there are countless possibilities of achieving meaningful learning shaped by the capacities, previous knowledge, experiences, and external factors of the learner. In the field of EFL learning, language should be approached as a series of interdependent units that must be studied in tandem under a communicative context to make learning authentic (Verspoor, 2017).

This paradigm shift, in the view of education within Complexity Theory, affects all aspects of education, including the role of the teacher. No longer an authority figure that delivers unquestionable knowledge, they become a mediator and an agent of transformation. They also engage in ongoing, constant reflection, questioning what they teach, how to best present content to their students, and, most relevant to the purposes of this paper, how to assess their understanding and mastery of the subject or topic. This assessment must evolve beyond rigid frameworks to become more flexible and authentic than its traditional counterpart, integrated seamlessly into the curriculum as a vital part of the learning process. There is a need, then, for teachers to align with these emergent ways of educating and assessing. This reflection paper explores the themes of the role of English educators and assessment under complexity theory and offers insight into how some evaluation practices can be appraised to accomplish authentic assessment by incorporating the principles of English assessment instruments proposed by Díaz Larenas et al. (2021).

## **STRUCTURED ANALYSIS OF THE TOPIC AND CRITICAL REFLECTION**

### **Changing the way we define the role of teachers**

Complexity theory is conceived by Edgar Morín (1994) as the study of complex systems, which can be objects, processes, or phenomena. These systems are characterized by an individual, contradictory, non-linear, and multidimensional nature, which also affects how they relate to their environment (Hernández & Aguilar, 2008). This philosophy can be adapted to many different fields, such as education, where the learner, as well as the educator and their teaching methods and evaluation, are all considered complex systems. Thus, each learner presents a unique learning process that is then complemented by other actors around them, such as classmates or teachers.

An educator who embraces complexity theory within their pedagogical philosophy and practices must be aware of the shift in role they have to undertake. Learning is an unpredictable, creative, and deeply personal process that starts by transforming and disrupting what is structured (Godoy Gálvez et al., 2020). Pedagogical mediation responds to this by proposing that educators-mediators accept this diversity and allow for individual expression as a way for learners to communicate their understanding. Teachers embrace unpredictability as an opportunity for each complex system that is the learner to reorganize and evolve with every learning opportunity.

In the context of language teaching, adopting a complex theory approach also implies that educators must also redefine our subject of teaching—language. Language, as is the case with learners, is a complex dynamic system. It cannot be properly learned in parts, but rather as a holistic system within a specific communicative situation (Verspoor, 2017). In theories such as the Dynamic Usage-Based Approach (DUB), for example, language is meant to be studied as a series of levels that interact with each other and with the learner's socio-cultural environment. These levels develop language skills by adapting the patterns they already know and building on them so they can respond to the different affordances in a communicative situation.

The teacher must also assume the role of a facilitator and let students take a more active role in their learning process. Teachers are a bridge between the students, the knowledge, and the world around them. Besides having domain over the subject, they must also provide students with the proper learning environment and the pertinent strategies to challenge their cognitive skills and metacognition while still being motivating and engaging (Alzate-Ortiz & Castañeda-Patiño, 2020). In this expanded role, Alzate-Ortiz and Castañeda-Patiño add, teachers critically assess their mediation across multiple dimensions: philosophical (to promote critical thinking and reflection), psychological (to address motivation, metacognition, communicative competence, and meaningful learning), political (to position education as a means for emancipation and democracy), pedagogical (to embrace an inter- and transdisciplinary vision of learning), and technological (to integrate information and communication technologies [ICT] in mediation).

Finally, teachers must constantly be contemplating how learning occurs in students and how it can be assessed. For this, some questions, such as those listed by Hernández and Aguilar (2008), must be considered:

What can be evaluated? What deserves to be evaluated?

What information do I want to obtain?

How can I best evaluate?

What indicators reveal the development of the student's learning?

Is it possible to detect the mental operations used by the student during their learning process?

Are the learners' interests, feelings, and values revealed in their work? (p. 4).

## Changing the way we think about assessment

Assessment can generally be defined as the different methods employed by educators or other stakeholders involved to follow the learner's progress by collecting information in various stages of their learning process, which will then be evaluated based on a particular set of criteria (Ghanavati, 2015). Three perspectives of assessment can be distinguished:

- **Assessment of learning:** It is usually done at the end of a course, unit, or topic, as it evaluates the way in which students' knowledge reflects the learning outcomes proposed at the beginning.
- **Assessment as learning:** It allows students to be critical and reflective of both the knowledge acquired and of their learning process.
- **Assessment for learning:** It is student-centered, as it considers each individual learner and their learning style. It evaluates and provides feedback.

Traditional assessment aligns mostly with the first view, as it is meant to be summative. It is usually performed in the form of standardized tests, quizzes, and end-of-year assignments, which present some advantages, such as objectivity, validity, and efficiency in administering and grading. However, as argued by Simonson et al. (2000), these methods of evaluation may focus on the learner's lower levels of cognitive skills, like recalling, and their results can be easily influenced by guessing. This, in addition to their lack of use of the subject to be evaluated in context, makes most ways of traditional assessment inauthentic and thus unsuitable for complexity theory-based teaching and learning.

Authentic assessment is, as characterized by Conrad and Openo (2018), holistic and integrated with everything else in the curriculum, making it assessment for learning. It must reflect the vision of learning as integrated, ongoing, and multidimensional. It emphasizes the importance of the process as much as that of the result. It must also engage students by presenting them with topics that are interesting and relevant to them, drawing from the real world. Authentic assessment accepts complexity by providing different modalities of learning and respecting diverse skills and learning styles. It fosters higher-level cognitive skills by making tasks that are challenging and go beyond memorization. Finally, it considers reflection and feedback an essential part of the evaluation, as it gives students opportunities to improve on their work and motivates them.

A teacher who wants to incorporate complexity theory in their educational philosophy must strive to design and administer authentic assessment. Despite its benefits, the traditional line of assessment is limited in authentic language acquisition and evaluation,

and thus, the teacher has the responsibility of questioning its monolithic use and exploring alternatives. The subsequent section reflects on a range of proposals and techniques for educators-mediators to improve their assessment practices.

### **Changing the way we assess**

The last factor to be discussed in this reflection paper is assessment. As previously mentioned, it is pivotal for teachers who want to rethink their practices to employ complexity theory to examine the way they evaluate and ensure that their assessment is authentic. The reason for this is that only authentic assessment can respond to the needs of students, institutions, and other stakeholders when it comes to providing evidence on the quality of the learning outcomes while still being completely integrated with the learning process (Conrad & Openo, 2018).

From a traditional standpoint of language assessment, testing is usually behavioral and focused on one isolated skill to assess organizational competencies (Tuzi, 2013). These competences include units such as grammar or vocabulary, or textual competence like cohesion, rhetoric, and text organization. There is a lack of assessment that includes skills integration, or the conscious use of language skills in context. Also, as mentioned previously, traditional techniques are usually closed-ended to conform to a more standardized, summative approach. Alternative techniques must be implemented to integrate complexity theory into assessment methods.

According to Ataç (2012), authentic assessment methods are those that achieve the objective of integrating learning, teaching, and assessment. Authentic assessment is a mirror to the rest of the classroom practices, and its results are used as feedback for both the teacher and the students on how students gain knowledge and on what can be improved. It is also commonly called “performance assessment,” as it seeks to examine how the learner can apply what they learn in practice rather than theory. One example of these procedures is self-evaluation. When students are given the opportunity to have a more active role and evaluate their own learning, it promotes autonomy and metacognition, as well as motivation. Other examples include peer assessment; portfolios of learners’ work, projects, and exhibitions; teacher observations; and hands-on experiments or demonstrations.

Additionally, Conrad and Openo (2018) propose other pre-, during-, and post-assessment tools in the forms of learning outcomes, rubrics, and feedback, respectively. Before designing and implementing an evaluative activity, having well-established learning outcomes can help align a path that connects the content to be learned, learning activities, resources, and assessment. When assessing, well-constructed rubrics that are explicit and relevant to the purpose and manner of the evaluative activity can be used as guidelines

to appraise learners' performance by contrasting it with a set of criteria. These rubrics also help students to understand the standards under which they will be evaluated and the conditions their work needs to exemplify to prove understanding of the subject to be evaluated and of the instruction. At the end of any given evaluative task, exploratory and confirmatory feedback is the most effective way to continue the cycle of authentic learning. By acknowledging and validating the efforts of students, students are engaged in their work and become more willing to improve it to reach the desired performance.

Student-centered models of teaching, learning, and assessing can be suited to complexity theory and authentic assessment. Problem-based learning (PBL) or enquiry-based learning (EBL), for example, start by either assigning the learner a problem in their field of knowledge or letting learners choose a problem. Then, learners work in groups with the teacher's facilitation and resources to solve the problem and present their findings (Elton, 2010). Assessment is mostly formative throughout the process in the form of feedback to gauge the level of learning before learners can move on to the next tasks (Koksalan & Ogan-Bekiroglu, 2019). Using this approach in language learning is particularly useful, since the target language would function as the vehicle to search for the information necessary to solve the problem and to present the results, aligning with the previously explained holistic vision of language and its use in context. It also fosters autonomy and a sense of awareness over the student's own process.

Nowadays, meaningful language is also being recognized as an important way of reaching authenticity in language learning. New approaches are meant to expose students to language in a communicative context, as is the case with Film and Language Integrated Learning (FLIL). FLIL uses fragments of popular movies, which are then used by the teacher to introduce students to different forms of language from the dialogues, as well as having the possibility of opening class discussion on social and cultural implications as portrayed in the movie (Verspoor, 2017). Assessment is usually done through during- or post-activities where the themes of the movie are discussed critically in class by appealing to the students' diverse reactions to them. Another communicative approach that integrates all skills and presents language as a complex system instead of an isolated level is teaching through storytelling. Besides being an effective method to introduce new vocabulary and grammar in a meaningful and familiar context, this approach can reinforce thinking strategies, foster creativity, provide a shared social experience, and even include interdisciplinarity by using stories from different subjects (Dujmović, 2006). Storytelling can help assess specific language skills in oral or written formats, as well as in grammar or vocabulary.

Lastly, educators must guarantee a high standard of their assessment-practices by adhering to principles that determine their authenticity. To be able to consistently align their evaluative instruments, techniques, and procedures to these guidelines, teachers

must regard the process of design, use, and evaluation of assessment as a professional competence to be mastered (Díaz Larenas et al., 2021). Any assessment must, then, adhere to the following principles:

- Activities must reflect real-life contexts and contain themes that expose learners to relevant and meaningful language use (authenticity).
- Assessment must subject all students to the same rules and standards to ensure impartiality on the side of the evaluator and clarity about the instructions and indicators of performance on the side of students (fairness).
- The type of assessment must be chosen according to the context of the institution. It must be doable with the resources, time, and space available (practicality).
- Assessment scores must be consistent over time with diverse groups of students, despite format, administrative, and affective obstacles (reliability).
- Assessment must evaluate at an appropriate complexity level and align with course contents and outcomes (validity).

## CONCLUSIONS: WHAT IS NEXT FOR ASSESSMENT PRACTICES

In re-examining our roles as English educators through the lens of approaches such as complexity theory and authentic assessment, this reflection paper has underscored the need for adaptive and dynamic teaching and evaluative practices that embrace the emergent nature of language, language learning, and assessment. Traditional assessment in language learning can be insufficient to properly ascertain the depth of students' linguistic, communicative, and cognitive skills and how they can be utilized in real life. By integrating the concept of complexity theory and the principles of authentic English assessment, teachers can evolve in their roles towards more holistic and student-centered evaluation frameworks, such as self-evaluation, portfolios, or inquiry-based learning, so we can recognize the intricate relationship between student agency, sociocultural factors, and language skills development that play into each learner's complex dynamic system.

This perspective aligns with the evolving demands of this new paradigm of language education and fosters an environment where assessment is unified with the rest of the learning process and inspires growth and constant self-reflection. As more educators continue to update their practices to include complexity-informed assessment

models, they will start to cultivate reflective and autonomous learners capable of taking progressively cognitively challenging tasks that result in language skills they can use to express themselves and communicate with others.

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