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From Transmission to Constructivism: Pedagogical Models for Teaching Non-Linguistic Disciplines in a Second Language

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Abstract: Teachers of science and other non-linguistic disciplines who teach through English or another second language are expected to teach both their subject and the language itself, without having been trained for this dual role. This paper examines what theory suggests such teaching should look like as it first clarifies a terminology that is often used loosely in the literature: general versus specialized language, Language for Specific Purposes (LSP), English for Specific Purposes (ESP), English as a Medium of Instruction (EMI), and Content and Language Integrated Learning (CLIL). It then examines NLD teaching through three influential models of knowledge transmission: the transmission model, the behavioral approach, and constructivism. By analyzing the established tasks of the NLD teacher through each model, it becomes clear that constructivism provides the strongest theoretical foundation for second-language NLD teaching. Moreover, when combined with bilingualism viewed as a pedagogical resource rather than a barrier, constructivism offers the most coherent and effective approach. Finally, the paper argues that the gap between this theoretical preference and the transmission and behaviorist-oriented practices commonly found in under-resourced multilingual classrooms is best explained by structural constraints, such as limited teacher training, inadequate materials, and insufficient institutional support, rather than by shortcomings in teachers' pedagogical judgment. It concludes by outlining the implications of this argument for teacher education and professional development.

Keywords: English-medium instruction, CLIL, non-linguistic disciplines, constructivism, bilingual education, teacher training

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1 Introduction

Teachers of non-linguistic disciplines (NLDs) who work in English-medium or bilingual programs are expected to teach a subject through a language that is neither their own first language nor, often, the dominant language of schooling. This paper looks at what teaching NLDs in a second or foreign language actually involves: first the terminology that surrounds it (LSP, ESP, EMI, CLIL), then how NLD teaching differs from teaching English itself,

then what three established models of learning (transmission, behaviorism, and constructivism) imply for it, and finally what role bilingualism plays, particularly in the Moroccan context.

2 Clarifying the Conceptual Landscape: From General Language to CLIL

2.1 General and Specialized Language

Various linguists agree that there is no measure to clearly distinguish between a common or general language and a specialized language. The latter is made up of specialized texts containing common vocabulary and specialized vocabulary. Cabré (1999, as cited in Bloschchynskyi et al., 2021) defines the common language as follows:

> A language consists of subcodes that speakers use according to their expressive needs and the nature of the communicative situation. Despite all this diversity, however, all languages have a set of units and rules that all speakers know. The set of rules, units, and restrictions that form part of the knowledge of most speakers of a language constitute the common or general language. (p. 75)

Cabré (1999) highlights the dual nature of language: its flexibility through various subcodes adapted to different communicative needs, and its underlying unity through a core set of universally understood rules and units. The concept of "general language" is introduced as the common foundation for mutual understanding, serving as a baseline from which more specialized forms can deviate. At its core, general language comprises the broad vocabulary and grammatical structures used in everyday communication. It is the language that individuals grow up learning and using in most of their day-to-day interactions. According to Picht and Draskau (1985), "terminology is an essential component of understanding the specific terms used within a discipline" (p. 3). General language serves as a vast pool of linguistic elements — vocabulary, grammatical structures, and communicative norms — that form the basis for more specialized forms of communication; specialized languages are not entirely separate entities, but rather extensions or refinements of the general language, chosen for particular fields or contexts. Language for specific purposes are adaptations or subsets of a general language designed to meet the specific communication needs of a particular professional or academic field. These specialized languages develop by modifying existing elements of the general language to convey a more precise technical meaning.

2.2 Language for Specific Purposes (LSP)

The specialized language is derived from the usual language, since the specialized vocabulary is built on this language; the core of the general language is preserved in the practice of the specialized language, while the names and terminology vary depending on the domain. Many researchers in linguistics, language teaching and sociolinguistics generally use representative designations such as specialized language, scientific and/or technical vocabulary, scientific and technical language, specialty language, technolect, and others. Hyland (2007) described LSP as "a language research and instruction that focuses on the specific communicative needs and practices of particular social groups" (p. 391). By emphasizing "specific communicative needs and practices," this definition highlights the targeted nature of LSP, distinguishing it from general language instruction, while the reference to "particular social groups" underscores the contextual and social aspects of language use, recognizing that different communities — professional, academic, or technical — have unique linguistic requirements. The inclusion of both "research and instruction" in the definition is significant, as it points to LSP as not just a teaching approach, but also a field of study. Certainly, listening to the verbal exchange of two experts in a specialized field (medicine, architecture, mechanics, and others), their discussion would be incomprehensible to someone far from that field; the person listening would not understand what they are saying but would subsequently admit that these activities have a language which is partly or entirely foreign to them and different from usual situations. In essence, this definition of LSP shows a specialized branch of linguistics that is concerned with the intersection of language, profession, and society.

2.3 English for Specific Purposes (ESP)

Strevens (1977) explains that English for Specific Purposes (ESP) refers to various activities, movements, and disciplines that are primarily, though not entirely, conducted in English around the world. That is to say, ESP is a term that refers to teaching or studying English for a particular career like law or medicine or for business in general. ESP programs are made specifically to equip learners with the precise vocabulary, linguistic structures,

and communicative practices pertinent to their specific professional or academic contexts, ensuring that learners can effectively communicate and operate in their respective domains, where English serves as a key medium of communication. Lorenzo (2005) argues that ESP focuses more on the use of language in specific contexts rather than emphasizing grammar and language structures; by concentrating on language in context, ESP aims to meet the precise needs of learners, ensuring that the language skills taught are directly applicable to the learners' real-world tasks or objectives.

2.4 English as a Medium of Instruction (EMI)

The concept of EMI has gained significant attention over the past years, resulting in a variety of definitions. Dafouz and Gray (2022, as cited in Smit, 2023) explain that EMI involves using English to teach subjects other than the English language itself. Dearden (2014) argues that EMI refers to using English to teach academic subjects in regions where the native language is not English, clarifying the larger context of EMI's work outside of English-speaking countries, as it focuses on the way in which it overcomes linguistic gaps in non-English-speaking educational systems. Tsou and Kao (2017) state that EMI is viewed as a strategic decision aimed at enhancing the quality of education, alumni employment, publications, international academic exchange, and other factors that contribute to an institution's global reputation and competitive ability in the academic sphere. According to Chapple (2015, as cited in Elkhayma, 2022), EMI presents an opportunity to improve the English proficiency of students and globalize the content they learn by using the world's primary language, which can enhance academic performance, foster critical thinking, and increase graduates' prospects for securing better job opportunities. However, there are alternative teaching methods that focus on combining language learning and content or knowledge. One method is Content and Language Integrated Learning (CLIL), which is like EMI, as it attempts to combine language development with subject-specific instruction.

2.5 Content and Language Integrated Learning (CLIL)

CLIL is currently gaining widespread recognition globally, resulting in a variety of definitions. As noted by Marsh (2013), Wolff (2012) suggests that CLIL is starting to influence formal education systems and acts as a driving force for change in educational practices, helping to alter the way education is organized and delivered. It is considered an approach that simultaneously focuses on both language and content, where a second or foreign language is used to teach subjects which are non-language or non-linguistic. In this framework, both language and content play an interconnected, crucial and mutually supportive role (Marsh, 2002, as cited in Harrop, 2012). Similarly, Eurydice (2005, as cited in Harrop, 2012) stated that, in CLIL, the association between language and content is strong, though the emphasis on each is different depending on the situation; the objective is to have expertise in both areas, and this flexibility helps students gain a deeper understanding of both, even if it requires careful attention to ensure neither is overlooked. The flexibility of CLIL is facilitated by the 4C model, a framework that includes content, communication, cognition, and culture. Effective CLIL is achieved through five critical elements: the development of knowledge, skills, and comprehension of content, participation in higher-order thinking, interaction within a communicative context, enhancement of communication abilities, and the development of intercultural awareness (Coyle et al., 2010, as cited in Harrop, 2012). CLIL is, overall, a dynamic and effective method of education that promotes both language development and subject mastery while promoting critical thinking and cultural awareness. Having clarified this terminology, the next question is how teaching a NLD in a second or foreign language differs, in practice, from teaching general English.

3 Teaching Non-Linguistic Disciplines in a Second Language: A Distinct Pedagogical Object

3.1 NLD Teaching and Its Difference from Teaching English

Language is the means, the condition, and the result of learning a discipline, emphasizing its integral role in education. This interconnectedness suggests that, by the convergence of teaching methods, educators can effectively promote the deployment of various discursive practices in both the production and reception of learners. From this perspective, no discipline holds a singularly privileged status, and English is no exception. The singularity of English teaching does not lie in the didactic method that promotes communication with others, but rather in its overarching goals and educational program. The English language education is primarily defined by a focus on reflection concerning the expression and mastery of language. In the context of NLDs courses, statements and content are often considered via a pragmatic lens that focuses on the application and relevance of information to real-world contexts. In contrast, English teaching places greater emphasis on how language constructs perceptions of the world, allowing individuals to articulate and share their understanding with others. This approach is essential in cultivating an appreciation of the role of the language in shaping and forming thought and culture. According to Molchanova et al. (2017), the earliest study on the association between foreign language learning and other academic fields was conducted by Brinton et al. (1989). The authors explain that this approach combines the content of non-linguistic subjects with the objectives of foreign language learning. The method helps students simultaneously gain knowledge in a specific subject while also cultivating language skills and the ability to communicate in that language. In practical terms, it assists students in learning how to speak and write in a foreign language, that is English in our case, while mastering the content of non-linguistic disciplines. Teaching NLDs means designing knowledge defined by shared facts which are constructed through the reception of suggestions, discussions and critiques both inside and outside the laboratory or the classroom. The challenge for the NLDs' teacher is therefore not to add English to their teaching subject, but to judiciously integrate disciplinary learning into linguistic practices. Natural language words do not have the same meaning in academic discourse in various disciplines. They refer to varied conceptual universes and require distinct methodologies. For example, describing a landscape in an English course and describing the same landscape in a Life and Earth Sciences course is not the same thing: even if the referent of the statement is the same, the elements retained, their organization in the text and the terminology chosen will differ depending on the purpose of the discipline. Within the same subject, the form of a statement varies depending on the shared knowledge: a Life and Earth Sciences teacher explains the phenomenon of an earthquake in a different way from that of an English teacher. In a school environment, each subject has its own content and methods of transmitting knowledge. Of course, each discipline has the responsibility to introduce learners to its own modes of communication while allowing them to reveal its intellectual universe, its relationship to reality and its modalities of representation. However, the successful execution of the approaches cited above requires institutional support, particularly through training programs for teachers. These programs must consider recruitment competitions in various disciplines to ensure that educators are very well-prepared to adopt and adapt innovative teaching strategies.

3.2 Scientific Texts and Their Difference from Literary Texts

Looking at the literary text and the scientific text helps emphasize the distinction between them. According to Sarasua (2021):

> In order to learn English, pupils must be able to grasp the four basic abilities of English, which are speaking, listening, reading, and writing. Reading is regarded as the most crucial of the four fundamental talents. It has garnered the most attention of any component of education. Reading falls under the category of sensory abilities like listening. This means that it entails responding to text rather than creating it. (p. 36)

This distinction between responding to text (reading) and producing text (writing or speaking) underscores the passive yet essential nature of reading in language learning. Reading plays a vital role in learning any language, and English is no exception; it is an efficient way to acquire a second or foreign language, which means developing this skill should be a key focus in education. Additionally, choosing appropriate reading materials, whether literary or non-literary, is essential. The moment we look through a literary text, we can easily identify its genre as a story,

a short story, a novel and others; we can even see the distribution of paragraphs, chapters and scenes. In addition, it is polysemous and essentially based on subjectivity, which plays a major role. The scientific text, as opposed to the literary text, is a specialized text (physics, biology, medicine, and others); it is monosemic to the extent that it involves clearly identified scientific terms, and knowledge is based on principles and evidence, so it is purely objective and rigorous. According to Nurrohmah, Suparman, and Sukirlan (2015), literary texts refer to works such as short stories, plays, and poetry. In contrast, non-literary texts focus on delivering factual information and reality, such as articles, documents, and scientific texts. These non-literary texts are written in very simple language which helps students understand the material more easily. Another point to consider is that access to the understanding of the scientific text written by experts does not seem easy since the information is at the core of the specialized field. Graphical representations allow you to visualize phenomenon data and there are many varieties: tables, lines, histograms, bar/stick charts, strip charts, circular charts, or pie charts, and others.

4 Three Models of Knowledge Transmission Applied to NLD Teaching

4.1 Transmission Model

Locke (1689) suggests that the mind is initially a blank slate (tabula rasa) at birth, and it is gradually filled with ideas through our five senses and experiences as we interact with the world. This view posits that humans are born without innate ideas, and all knowledge is derived from sensory experiences. While this theory emphasizes the importance of environmental factors and experiences in shaping an individual's knowledge and character, it has been critiqued for potentially oversimplifying the complex nature of human cognition and development. Nevertheless, it is one of the most practiced models today. This seems undeniable, highlighted by the fact that we are often influenced by this way of doing things. The most ancient approach is part of transitive pedagogy, also known as "imprint pedagogy." Its logic lies in the direct transfer of notions. The learner is treated as lacking any knowledge of the subject matter, and the teacher's task is to supplement his or her knowledge. This dates back to an era when books were few and where the word of the teacher was the only source of erudition. This attitude is consistent with the image that the teacher has of his profession. Before the start of the course, his activities include carrying out research on the course content. The knowledge presented in the text must be clear, intelligible and explainable; it must be specific and transmitted by the teacher to his students, considered identical. In short, it is the same speech for all learners. What matters is the reasoning of the presentation, its transparency, its richness, and not the logic of reception. The teacher must also be proactive during the lesson and the student will reprocess the information collected into knowledge. This approach allows learners to receive as quickly as possible as much information chosen by the teacher, provided that they can follow the teacher's speech without getting lost, because they must understand it and pay attention to it as it saves them time. However, to be truly effective, at least two conditions are required: on the one hand, the teacher and the learner must have a common reference during the course, and on the other hand, the lecture must answer the questions raised by students through problem-solving activities. The dominant footprint model is increasingly combined with other models. In fact, pedagogues pave the way for teachers to master the learning problems faced by learners. We can highlight two main concepts in terms of distinct perceptions of learning. Their functions differ considerably in the theoretical framework but can be harmonized in didactic practice. We will distinguish behaviorism and constructivism as the foundations of goal-oriented teaching.

4.2 Behavioral Approach: A Focused Pedagogical Strategy

According to Skinner (1957, as cited in Catania, 2008), "Men act upon the world, and change it, and are changed in turn by the consequences of their action" (p. 280). This behaviorist model was proposed by Skinner. He is at the origin of objective-based learning, which appeared in the 1970s and which achieved immense success. Skinner's statement succinctly captures the essence of behaviorism and the reciprocal nature of human-environment interactions: our actions modify the world, and the consequences of these actions subsequently shape our behavior and understanding. This principle underpins Skinner's operant conditioning theory and emphasizes the importance of active engagement in learning. In education, it supports approaches that encourage hands-on experiences, meaningful feedback, and environments that reinforce desired behaviors. While behaviorism has faced criticism for potentially oversimplifying human cognition, this concept remains influential in understanding learning processes and has inspired various educational methods that prioritize active engagement and reflection

on the consequences of one's actions. Knowledge is engraved in the learner's personality through his or her own actions, but it is the teacher who externally determines the form and order of acquisition. During the sequence design stage, the teacher must take into account not only the educational content and his own behavior, but also the reactions of the learners. Priority is now given to the coherence of learning rather than the rigor of the presentation of knowledge. The course content is divided into overall objectives. The main advantage of this division is that the learner can easily follow the course progress step by step. In addition, thanks to the self-assessment sheets, he becomes familiar with considering evaluation as a learning tool and not as a punishment. The educational strategies implemented by the teacher are dialogue class, student work independently, group work, and others. This method allows the learner to easily determine their expectations and evaluate the knowledge acquired. It can constitute the basis of a clear commitment and, thanks to shared responsibility, the student becomes a proven actor in his training. However, if its application is very strict, we may have significant reservations about the thematic image it conveys and the educational design that implies it. As part of targeted teaching, the content to be assimilated is distributed so that the student can go beyond each phase without difficulty. We can retain certain foundations from this type of learning: specifying the objectives of knowledge, skills or strategies, mentioning elements of evaluation, etc.

4.3 Constructivism: The Process of Acquiring Knowledge

According to Piaget (1970), knowing an object involves interacting with it and creating systems of transformations that can be applied in relation to the object — emphasizing that knowledge is not passively received but actively constructed through interaction with the environment. In educational research, this trend now occupies an appreciable place in the daily practice of the teacher. This is a real breakthrough in the way we think about teaching; it is not another didactic approach, but an updated method for understanding acquisitions and their uses. Unlike behaviorists like Skinner, constructivists believe that all learning is a concrete activity of the subject and a personal learning procedure, in which error is inevitable and indispensable. It is at the heart of the learning mechanism. Knowledge is constructed, organized and articulated in accordance with processes that differ from one person to another. This approach is based on certain decisive foundations linked to planning, representation and group interaction. According to Prawat (1992, as cited in Applefield, Huber, & Moallem, 2000), although there are various interpretations of constructivist theory, there is a general agreement that it represents a significant shift in teaching, where students' active engagement in understanding becomes the central focus of education. Rather than the traditional model where teachers are the primary source of knowledge and students are passive recipients, constructivism centers on students' efforts to make sense of information themselves. This approach posits that learning is most effective when students engage in hands-on activities, critical thinking, and problem-solving exercises that allow them to construct their own understanding of the material. Teachers, in this model, act more as facilitators or guides, providing the tools and support necessary for students to explore and internalize concepts independently. This student-centered focus aims to foster deeper comprehension, critical thinking skills, and a more personalized educational experience, ultimately preparing students to adapt and succeed in a rapidly changing world. It is assumed that learners have to construct their own knowledge individually and collectively. Each learner has a tool kit of concepts and skills with which he or she must construct knowledge to solve problems presented by the environment. The role of the community, other learners and teacher, is to provide the setting, pose the challenges, and offer the support that will encourage mathematical construction (Davis, Maher, & Noddings, 1990, p. 3, as cited in Jones & Brader-Araje, 2001).

5 The Tasks of the NLD Teacher

It should be remembered that the teacher is an expert in erudition and that their fundamental function is to help learners assimilate knowledge. The implementation of their practices arises from their training and the practical skills they have acquired through their professional experimentation, educational projects and personal intentions. Additionally, these actions are reflected in the teacher's conduct in class and are embodied in educational actions. In general, teachers are expected to have sufficient knowledge of their subject, understand how children learn and develop, and be capable of creating effective teaching and learning experiences based on these two factors (Cortis, 1977, as cited in Vilar Beltrán, 2000). Generally, any teacher in any discipline is expected to have a thorough understanding of the subject they are teaching so that they can present explicit and relevant information to their

students. They must also be able to adapt to the different skill levels of learners and offer them appropriate exercises that encourage them to improve their skills in specific contexts. Additionally, appropriate teaching tools must be leveraged for effective learning in the target language. This may include educational manuals, articles from trade magazines, videos or other online training resources. It is also necessary to involve students in interactive activities such as role-playing, discussions or oral demonstrations. Finally, it is important to monitor their progress by providing them with useful feedback on their performance to support their development. Teachers have a powerful, long-lasting influence on their students. They directly affect how students learn, what they learn, how much they learn, and the ways in which they interact with one another and the world around them. According to Stronge (2018):

> Considering the degree of the teacher's influence, it is important to understand what teachers should do to promote positive results in the lives of students — with regard to school achievement, positive attitudes toward school, interest in learning, and other desirable outcomes. (pp. 3–4)

Ultimately, the role of a teacher transcends the mere transmission of knowledge; it encompasses the holistic development of students into capable and enthusiastic learners who are prepared to navigate and contribute to the world.Read against the three models discussed above, these same tasks take on different weight depending on whether knowledge is treated as transmitted, reinforced, or constructed.

6 Bilingualism: Enhancing the Teaching of Non-Linguistic Disciplines

In the Moroccan context, we can say that the learner is already bilingual, or more precisely plurilingual. (S)He theoretically knows Arabic writing and one or more (oral) dialects quite well. Then, most students have two modern languages at school: French and English. The presence of these languages in society plays an important role in the linguistic knowledge of Moroccans. A person who speaks two languages fluently is bilingual: they can use both language systems in their daily life and can switch between them when needed or desired. Education recognizes bilingualism as a complex and essential concept that must be reflected upon by scientists. Despite the controversy surrounding this phenomenon, it seems well anchored in the opinion of experts and the general public. It seems reasonable to determine what bilingual education is, particularly in NLDs courses. This is a type of multilingual education, in which the content of a NLD is taught in a foreign language. Any bi-trilingual interlocutor combines all linguistic means into a single linguistic repertoire, more extensive than that of a monolingual, but of a similar nature. Thus, the bilingual interlocutor alternates, mixes, and sometimes even temporarily dissociates between several linguistic variants, consciously or unconsciously, in accordance with the context. In a bilingual system, it is a question of carrying out teaching units in NLDs, in which the two languages coexist very clearly in a continuous manner; the teacher and the learners have continuous access to the two languages, to the two working instruments. Of course, the main benefits of the discipline extend beyond those of the foreign language and the mother tongue. In essence, bilingual education is a system that simultaneously combines a didactic and pedagogical strategy. Its goal is not to teach courses entirely in the foreign language but rather to alternate languages in a logical and carefully mastered way. The NLDs teacher alternates between the two languages. Their main objective is to accompany and support learners in the acquisition of disciplinary knowledge. They must realize that alternation can promote the learning of the foreign language and represent a real language advantage, but it tends to be a secondary objective. In front of his or her students, the teacher must focus their attention on a gain in the construction of the concepts of their discipline so as to make the knowledge easier to understand. Duverger (2011, as translated by the author) describes the development of a didactic unit of a NLD in a foreign language. According to the author, the practice of this discipline can be carried out in three different methods. The first is to teach an ordinary course in Arabic, then interpret it in the foreign language, or to repeat a course taught in Arabic entirely or in part in the foreign language. As for the second method, the teacher teaches in Arabic, and also covers the course entirely using the foreign language, and vice versa. Although both methods produce favorable results, the second method requires additional time and does not allow for the concepts to be explored in depth according to the set schedule. The third method is the most specific at the institutional level and the most innovative at the cognitive level; the teacher builds an original course, articulating content, methodologies and languages. We are then in an "integrated" education, which comes in two essential variants: either the program of these courses is developed in advance by the official authorities with original themes and content, or else, the most frequent case,

the teacher takes the official/national program as a work program and makes additions, incisions, openings. This is how teachers start from the official program, for each theme, while linking the educational objectives in two languages through supporting materials and complementary documents to develop knowledge and enrich learning. In addition, teachers are required to adopt a variety of learning strategies to promote learners' intellectual construction. Consequently, these tools provided to students during the NLDs' course alternating between Arabic, French and English must include content developed in all three languages in an integrated manner. However, the dominant language remains Arabic since it is the language of schooling, and during the didactic sequence, teachers combine activities in English with predefined objectives. By means of this method, we gradually move from a situation where Arabic is the language of instruction and English the language taught, to a situation where students are likely to use the vocabulary sufficiently to express themselves in the mother tongue or in the foreign language. Regarding the alternation between the first language and the foreign language in the educational sequence, Duverger (2011, as translated by the author) proposes a set of points for each major moment of the sequence:

- The title of the "didactic unit" must be given in the first language and in the foreign language; this is important firstly for symbolic reasons — it is a strong sign which indicates that the lesson will take place in two languages — but also because, often, both versions of the title can be quite far from a literal translation, which is already a reason for reflection.
- The first moment of a didactic unit is typically a moment of "emergence of representations," a moment where we take stock, in a large group but also individually, of what we know or believe we know about the targeted theme. This phase must imperatively take place in the first language, since it is in the first language that these representations, images and often "preconceived" ideas were experienced and constructed, which will most often have to be called into question during the course of the unit.
- The central work which exposes and treats the theme in the most relevant form comes next, and this is where texts and documents in the first language and the foreign language can alternate, intersect, and relate to one another.

Adopting a bilingual education is not an easy task for several reasons. From a linguistic point of view, an NLD teacher is not supposed to teach his subject in a language other than the dominant language of schooling in the country, unlike a foreign language teacher. It should also be noted that no methodological reflection is envisaged in this educational aspect. In educational settings where instruction is delivered in two languages, teachers often face significant challenges due to the lack of methodological guidance and resources. Without a robust framework for teaching in both the official language and another language, which may be the students' native tongue or a widely spoken language in society, educators find themselves at a disadvantage. They frequently encounter a scarcity of textbooks, practical advice, and structured methodologies to effectively navigate this bilingual teaching environment. Consequently, they must rely on their creativity and adaptability to bridge the gap and provide a learning experience that accommodates the linguistic diversity of their students.

7 Conclusion

Read together, these three models point toward the same conclusion. Constructivism, paired with bilingualism treated as a resource rather than an obstacle, fits second-language NLD teaching more naturally than the transmission model or the behavioral approach. It is the only one of the three with a ready place for the learner's full linguistic repertoire, including code-switching, as part of how disciplinary knowledge gets built. Whether this works in practice depends less on theory than on the training and materials NLD teachers are actually given and that is where reform efforts should focus.

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