A Pedagogic and Didactic use of Representations and Learning Styles for Learner Engagement: A Conceptual Framework for Teacher Mediation

Agba Yoboué Kouadio Michel
Ecole Normale Supérieure d'Abidjan
Abidjan, Côte d'Ivoire

Abstract. The issue of student engagement in learning has all the time been a concern in educational circles. Many studies have addressed it, yet these appear to be mostly concerned by aspects related to teaching. This paper which addresses this issue in a different way sets out to suggest an explanatory model showing how learners' representations and their learning styles can be used as didactic and pedagogic tools to improve engagement in learning. To achieve this, concepts of learning styles and representations are first defined before explaining how they interrelate. The notion of engagement in learning is clarified, focusing on its behavioral, affective and cognitive components. Finally, a framework is proposed that describes how as a mediator, the teacher can engage students in learning by using on the one hand, didactics and pedagogy and on the other, their learning styles and representations.

Keywords: learning styles; representations; engagement; mediation; pedagogy; didactics.

Introduction

From the 1950s to recent dates, educational research aimed at describing teaching behaviors deemed conducive for successful learning have been elusive (Devlin & Samarawickrema, 2010; Devlin & O'Shea, 2011; Çakmak & Akkutay, 2016). This idea never survived because, as Steele (2010) noted, the question of "*who is an effective teacher?*" is difficult to answer. So, today, academics working on language teaching and teacher training seminars rather focus more on course content planning and on the effective implementation of the most recent teaching methods and approaches. Their aim is to give precise contours to a rational decision-making procedure in classrooms, and to promote 'good' educational practices.

However, a recent analysis of school results by the Ministry of Education in Côte D'Ivoire, in accordance with the Educational Research Network for West and

Central Africa (ERNWA)[1], has emphasized the excessive importance given in curricula to the cognitive aspects of learning at the expense of the emotional aspects. This concern is in line with a unanimous agreement among educators that there is a need to promote teaching procedures that allow students to take pleasure and interest in learning.

As Taylor & Parsons (2011: 5) state:
> "*Educators must continue to seek to understand and apply specific, well-considered, if not agreed upon, strategies that support student engagement in learning.*"

Various studies accordingly tend to focus more on learner engagement and on identifying the factors of success and failure in learning and at school. For example, Hammar-Chiriac (2014), Orosz et al. (2015), and Senior & Senior (2014) examined the possible social and psychological mechanisms in play in learner engagement, whereas Shernoff et al. (2016) investigated the linkage between the quality of the learning environment and the quality of students' engagement.

Student representations are also receiving increased attention in research as they are deemed essential for a better understanding of the kinds of thoughts that students bring to the learning situation (Castellotti & Moore, 2002; Muller & Pietro, 2007). Likewise, still other studies point to the critical role of learning styles (Lake, Boyd & Boyd, 2017).

It is believed that:
> "*no two individuals learn in the same way, nor do they bring the same prior knowledge to a learning experience. The way we learn is as unique as our fingerprint* " (Osborn, 2013:3).

Thus, learner engagement would be to a large extent, dependent on their representations and on their learning styles. Yet, if it can be assumed that most teachers have a good knowledge of course content organization and delivery, it would seem that only a few of them take into account their students' learning styles and representations. Most of their teaching practices consequently appear to be based on a simple postulate: '*say'*, '*show'*, '*make them do'*, and '*students will learn'*. But in practice, teachers can only involve a small number of students. Despite their goodwill and no matter the teaching procedures used, in many cases, learners often remain reluctant to engage in learning.

From the foregoing, it can be assumed that without a good understanding of students' learning styles and representations, even the latest teaching approaches will not suffice to increase their engagement.
This paper, therefore, sets out to propose a conceptual framework for using learning styles and representations to engage students in learning. It also aims at contributing to research on the importance of individual differences especially, on the roles of learning styles, representations and engagement in learning.

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[1]Educational Research Network for West and Central Africa (ERNWA) - Grants Program for Research in Education.

To achieve these objectives, the following main question will be answered:

How can teachers use learners' representations and learning styles to improve their engagement in the language learning process?

Three specific questions follow from the main question:
1. How can learning styles, representations, and engagement be defined?
2. What is relationship between learners' representations and their learning styles?
3. How does this relationship determine their engagement in the foreign language class?

Firstly, the concepts of learning styles, representations and engagement will be clarified. Secondly, we will demonstrate how learning styles and representations relate. Finally, we propose a framework to explain how the teacher as a mediator in the classroom, can use his students' learning styles and representations to trigger their engagement in learning.

I. Learning styles: a composite concept

Learning styles belong to the broad field of differential psychology and some its assumptions relate to cognitive psychology (Rayner, 2013). However, the concept seems to involve so many dimensions that giving it a standard definition is a concern for researchers (Sanderson, 2011). Despite this, we can infer from the literature that the learning style can broadly be understood as involving three human dimensions.

a. Cognition, affect, and behavior as a basis for defining learning styles
In the literature, the concept of learning styles is first defined as a way, a tendency, a predisposition, a characteristic related to cognition. Patureau (1990) for example, argues that a person's learning style is his/her way of learning, shaped by his/her cognitive style (the way he/she operates) and by his /her experience as a learner. Dunn and Dunn (1978) in the same line, explain that a learning style is the way each learner begins to focus on new and difficult information, processes it and retains it. Reiner (1976) therefore contends that a learning style has to do with how a person is programmed to receive, understand, remember and use new information. For these authors then, the style is a kind of personal strategic approach to which the individual systematically resorts to solve problems. It would be his tendency or even a 'predisposition' to adopt a particular learning strategy.

The style is also seen as the result of an emotional connection that learners have with certain modes of perception and processing of information. They would prefer in specific situations, to receive information through certain senses rather than through some others. In that case, their learning styles would correspond to preferences for some particular modes of classroom instruction and for some educational conditions likely to favor their learning. To a larger extent then, it would be a preferred method by which the learner likes to master a subject, solve problems, think or simply react to a teaching situation (Legendre 1993).

Finally, the learning style appears to be a kind of inner program, a personal mode of operation, and an effective tool, proper to an individual which he would use in imposed learning situations.

b. Three basic learning styles

Many learning style evaluation instruments have been developed since the concept has been well-known. They derive from studies that have shown that students remember fifty percent (50%) of what they hear and see, seventy percent (70%) of what they say, ninety percent (90%) of what they say and do, and ninety-seven percent (97%) of the things that involve seeing, hearing, saying and doing (Abidin et al. 2011*).* Put differently, while some learn primarily through the eyes (visual style) or the ears (auditory style), others prefer to learn through experience and/or by doing tasks or by handling things (kinesthetic styles or tactile). So, students generally fall into three categories:
    i.   visual learners: their sight and thought are their dominant senses. They would feel more comfortable with shapes, colors and space and would easily process information conveyed through pictures, charts, graphs or diagrams.
    ii. auditory learners: their audition is their dominant sense. They would accordingly usually take very few notes and rely on their memory.
    iii. kinesthetic learners: are those who learn best when they can participate, feel, act, imitate, are physically active. These are the people who prefer the trial and error method instead of listening to instructions.

De la Garanderie (1980) explored the characteristics of the visual learning style and the auditory learning style to design appropriate teaching procedures for individuals and groups, based on visual and auditory evocations and learning objects (concrete, words, complex operations and elaborate operations). From his personal experience of a person with a hearing impairment, as a teacher, and based on the study of how students learn, he showed that everyone has a preferred method of evocation that takes the form of visual or auditory mental images.

II. Representations

The concept of '*representations*' is fundamentally interdisciplinary as it belongs to the fields of cognitive psychology, social psychology and pedagogy (Raynal & Rieunier, 1997). According to its Latin origin '*repraesentare*', it means «*to shape in one's mind an image*». Therefore, representations first refer to an act of thought by which a subject relates to an object (Jodelet, 1989). Through a representation, an "imaging" relationship is established between a subject and an object (Moscovici, 1969). The percept, what we see, touch, smell, and the concept, the general and abstract idea, become interchangeable and things relate to words. Consequently, representations are what we know, think, believe, and dream about something.
Representations also depend on the history, the social and ideological context that surround the subject. Clenet (1998) explains that they are a person's or a group's most intimate relationship with the organization and their environment. They have a "*collective, shared, individual, and heterogeneous aspec*t" (Moore, 2001:10), made up of a set of inter-subjective cognitive elements which

determine the psychic life of people (Mannoni, 1998). Subsequently, representations are internalized models that individual builds from his environment and from his actions on this environment. They are used as a source of information and an instrument for controlling and planning behavior. They allow the individual to symbolize an object (something or someone) and to make sense of it by selecting data or information (often distorted) depending on his positions in a given social situation and according to his relationships with others (Fischer, 1996). Thus, representations function as an interpretation system of reality and govern the individual's relationships with his physical and social environment.

Finally, representations are both a product and a process. As a product, they result from the human mind that maps the information and their content. They operate as «*reading grids*» and as a «*guide for action*» (Jodelet, 1993). The individual is a 'producer of meaning and his representations convey the significance he gives to his experience. As a process, representations are a system of interpretation through which the individual interacts with his environment. As such, they are a system of construction of ideas (Seca, 2002), a coherent and personal set that organize action based on experience. In the next section, we will explain how representations relate to learning styles.

III. Representations as related to learning styles

According to Gardner and Miller (1999:3):

> "*learners bring their own beliefs, goals, attitudes and decisions to learning and these influence how they approach their learning*".

Therefore, before any instruction, it is essential to consider that the students already have a representation of the object being taught, even if it is a new object. This relates to what is known as '*learner beliefs*', i.e., each student already has a different set of knowledge and they build their own significance of the situations they face. So, insofar as learner beliefs are said to relate to their emotions, cognition and behavior, they are also connected to learning styles. This relation holds because like representations, learning styles act as a «guide to action» (Abric, 1996) and are operative images that the learner constructs about himself as he interacts with his environment.

The propinquity between the two concepts is acknowledged and reinforced by the following constructivist postulates:

a. Learning is a "personal" act that engages the whole person in his cognitive affective dimensions as much as his self-concept and his information processing strategies (Romainville, 1993).
b. The learner is the central agent of learning who builds his knowledge through chosen actions and strategies; he/she actively processes information and the quality of this treatment determines the quality of his knowledge (Romainville, 1993).
c. There is great variability in the ways of learning and this variability is in part an expression of personal characteristics of the learner.
d. Learner representations play a predominant role in learning, especially on how he mobilizes cognitive resources (Boekaerts, 1995).

From the above, we believe that learning styles are anchored or emanate from the ongoing efforts of the learner to give meaning to the learning experience. For example, when a learner says, '*I learn in a particular way.*', he/she describes his/her learning style and at the same time, refers to his/her learning experience and to how he/she makes sense of that experience. His/her description of the ways he/she prefers learning is akin to a self-representation of his/her own preferred ways of learning, and to beliefs about himself/herself as a learner. We also believe that all the dimensions (cognitive, affective and behavioral) involved in the learning styles are related to beliefs about operational modes in a learning situation. These modes originate from past or present, successful or unsuccessful learning experiences. They also include the strategies believed to have determined success or failure in learning. This leads us to the issue of the impact of learning styles and representation on learner engagement.

IV.   Engagement in learning

Any engagement implies a yearning to achieve something desired (Brunstein, 1993). Hence, most psychologists agree to consider 'engagement' as a force that stabilizes the individual's behavior of (Dubé et al., 1997), and compels him/her to reach for an objective despite difficulties.

a. Engagement as a behavioral force
Kiesler (1971) argues that engagement creates a link between an individual and his actions because only actions demonstrate engagement. Real engagement is therefore behavioral.

Parn's description is quite explicit when she says:
> "*Students who are engaged are focused on the learning going on in the classroom. This focus is demonstrated by the student's attentive body language (good posture, eyes on the speaker, chair pushed in, and head up). The student is also prepared for the class by having their book and notebook, sharpened pencils, and completed homework. Not only is the student prepared with the appropriate materials, but the student also makes good use of the materials. The student is thinking about [the subject], asking clarification questions, participating in group discussions, and providing examples of the concepts being taught. The student is positive and assertive and takes ownership for his or her own learning*" (Parn, 2006:6).

Engagement is thus a behavioral demonstration of some willingness to learn, a deliberate choice to act and persist. It is also the mindset with which an activity is conducted, i.e., time spent performing an activity, concentration, effort, tendency to remain at task, and the propensity to initiate actions (Klem & Connell, 2004). This behavioral dimension also has emotional and cognitive underpinnings.

b. Engagement as an affective and a cognitive force
A learner may engage in something for the pleasure and joy he/she feels vis-à-is that thing (Csikszentmihalyi, 1990). The power of enthusiasm, of attraction or passion he/she feels can trigger engagement in learning. This can lead him/her

to give learning, attention and energy in exchange for a feeling of joy and gratification (Dubé, 1994). In this way, the learner may find some meaning to his/her 'existence' simply because his/her engagement results from an emotional force that comes from within, and which is based on a personal act of volition and on a need for something perceived as valuable. Most writings related engagement thus emphasizes: a positive emotion, enthusiasm, optimism, curiosity, interest, a desire to learn, aspirations, attitudes, self-perceptions, an emotional involvement and a motivation to learn.

Lastly, engagement can be said to be cognitive when demonstrated through a psychological investment or the desire to go beyond the ordinary demands of a work and a preference for the challenge it may constitute. Cognitively engaged learners would then be flexible in solving problems, prefer hard work and like to learn beyond the simple behavioral level so that the relevance and quality of their exchanges with teachers, their classmates, and the learning materials are notable.

c. Engagement as three forces in one
According to Fredricks et al. (2004), all the dimensions of engagement "*correlate dynamically and they are not isolated processes*". Hence, students who are cognitively and emotionally engaged are also likely to be behaviorally engaged. True engagement calls for a synergistic mobilization of affect or enthusiasm (emotions and attitude), cognition (motivation, learning strategies), and behavior (active participation and good conduct in class). As such, even the perceived value of school and the overall learning environment would also be part of engagement (Munns & Martin, 2005). As shown in figure 1, affect is connected to cognition which in turn is connected to behavior. These three concepts interrelate and also relate to engagement. This dynamic operation of all the concepts together includes the school (as an institution) and the classroom (as a place for learning).
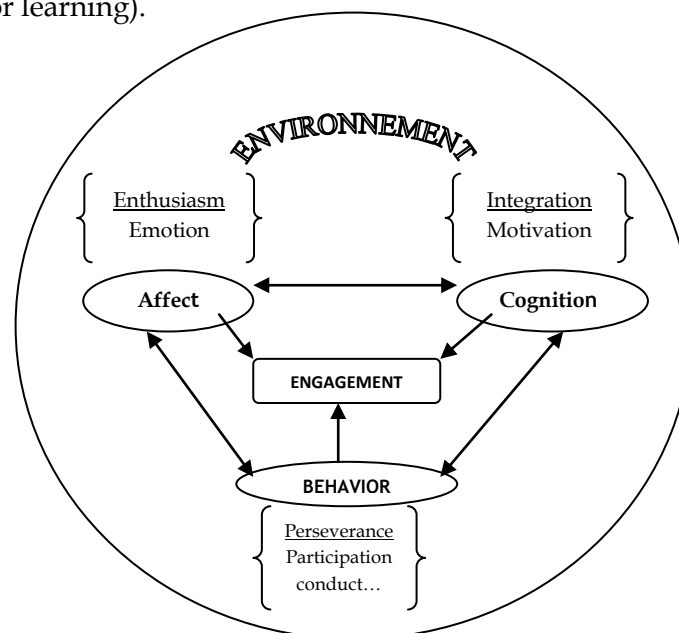
Figure 1: A broader view of learner engagement and its components.

d. Motivation and engagement: are they similar or different?
As compared to engagement, motivation is an individual energy which instills the will (courage, determination) that permits a person to keep on working or doing something. It gives the direction, the reasons for acting (Martin, 2002; Ainley, 2004). However, a motivated person cannot be considered engaged if he/she does not act or demonstrate his/her motivation though an engagement into something. Studies even indicate that some students who achieved positive scores in a motivational test got lower scores in class work (Russell, Mackey & Jane, 2003). Put differently, there is there is no engagement if the energy of motivation is not transformed into an activity or an action.

V. Improving learner engagement: a proposed framework
The teaching profession cannot ignore the processes involved in learning if it wishes to allow each student in a class to go beyond their limits. To this end, we put forward a conceptual framework (see figure 2) in line with the procedures by which teachers can engage their students in learning taking into account their representations and their learning styles. The framework is made up of the following components: the teacher as a mediator, didactic and pedagogy, the student as a learner, and the learners' representations and learning styles.

a. A didactic and pedagogic use of learning styles and representations
The suggested framework is derived from Rezeau's (2001) work on pedagogic mediation in a multimedia environment but has been redesigned to address the issue of learning styles and representations on learner engagement. In the context at hand, it sets out to be an explanatory model of the teacher as a mediator using a didactic and a pedagogy lever on the one hand, and learner representations and learning styles on the other, to foster learners' engagement in learning. The two double-orientation arrows connected with the didactic and the pedagogic axis indicate the flexibility of the teacher's role as a mediator, as shown in figure 2. They allow the '*mediating force*' that results from the combined activation of didactic and pedagogy to force '*learning styles*' and '*representations*' to aim at the learners' (behavioral, cognitive and emotional) engagement. The teacher is in the role of a mediator trying to reconcile the '*learners' representations*' and '*learning styles*' with '*engagement*' in learning.
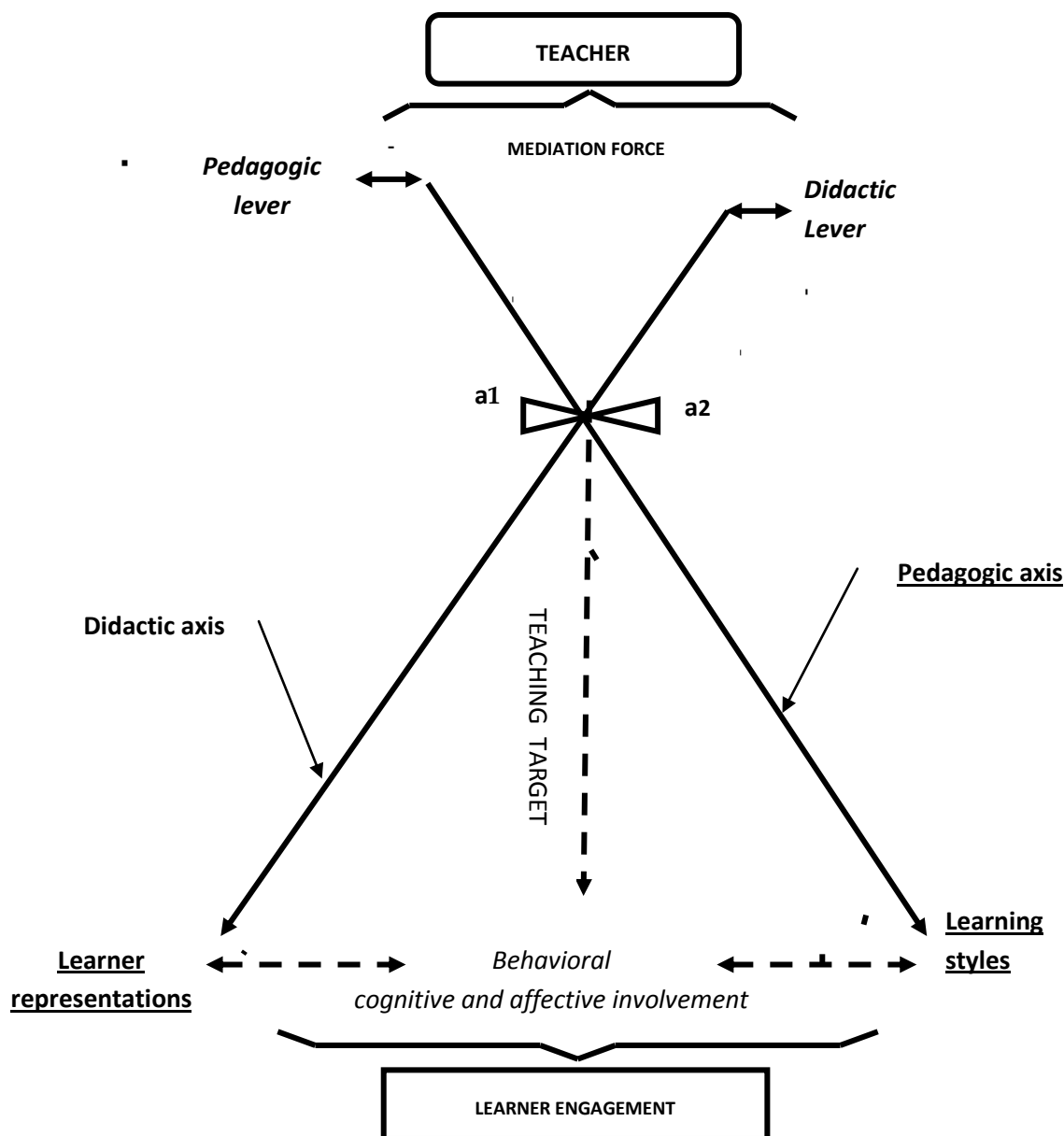
Figure 2: A pedagogic and didactic use of representations and learning styles for learner engagement. A suggested framework for teacher mediation

b. The teacher's mediation

Mediation involves all aids that an instructor can give a learner in order to make knowledge more accessible (Raynal & Rieunier, 1997). It is also what Bruner (1975) refers to as ' scaffolding '; a metaphorical term that draws a parallel between teachings and building where a temporary structure is erected to support construction. It is gradually withdrawn as the building emerges and becomes solid and stable (Donato, 1994).

Similarly, the teacher's mediation or scaffolding:

> "*allows to introduce learners to a new approach, much like the master initiates apprentice working with him and leaving him more and more initiative [...] the goal is ultimately to bring together means for it to become independent.*" (Barth, 1993:165).

The main idea here is that the teacher's role is to adopt methods of intervention which allow learners to gradually take more and more initiatives in learning. The teacher's mediation takes on its full meaning in the pedagogical and didactic use of learners' representations and their learning styles to involve all the students in the class in the teaching-learning process. This will entail finding time for informing, explaining, giving advice, encouraging and supporting initiatives, making every student's aware of their learning styles and representations and how they can negatively or positively affect their perceptions of the teacher, the subject and their engagement in learning. As shown in the framework in figure 2, the teacher's role as a mediator, is based on his/her 'mediation force' or his/her capacity to mediate using didactics and pedagogy. While didactics will be used to unravel learner representations and get them to engage, pedagogy will address how to match teaching modes with students' learning styles.

c. The didactic lever and the teacher- learner representations axis
Didactics as a discipline seeks to, *"ensure optimal transmission of knowledge as defined by the objectives and content specific to each discipline"*, (Dieuzeide, 1994:17). For that purpose, it endeavors to better understand how educational actions can result in learning and propose a means of making teaching conducive to learning. So didactics goes to and forth between the realities of the educational field and theoretical reflections (Dabene, 1989 as cited in Rezeau, 2001, p.48). It reflects on teaching and drawing from theory suggests ways of teaching so that learners can grasp, integrate, assimilate and re-use the knowledge they have been exposed to.

In our framework, the didactic lever (a2) is associated with a bi-directional arrow that shows that the teacher can 'play' on learner representations by pulling them towards engagement in learning (behavioral, cognitive and emotional). However, learners may be resistant to their actions and this may produce adverse results such as withdrawals and/or disengagement. To find the reasons for this, the teacher will have to engage in a constant reflection on his/her teaching practices and on how to take into account his learners' representations. Considering that learner representations guide their judgment and determine their motivation to learn, operating the didactic lever will help the teacher better understand learner behavior as regards teaching practices. Furthermore, the lever on the didactic axis also symbolizes the teacher's quest for more knowledge about the representations. It will allow him to question his teaching assumptions that do not necessarily match with his students' learning preferences. The following questions may help:
- How do students perceive themselves and the learning situation?
- What are their beliefs about the subject they are learning and the people who teach it?
- How do they understand learning?

A collection of data based on these questions may call for the following actions:
- Discussing with students their negative representations ,
- Showing students their various styles and the strengths and weaknesses of each style,
- Teaching some knowledge on the cognitive, affective, and behavioral processes involved in learning.

d. Using the pedagogic lever on the teacher-learning styles axis
Pedagogy is the conduct or support of a person being educated, or the educational relationship between the educator and a person being educated (Labelle, 1996). For Dieuzeide (1994:17), "*[it also] strives to rationalize and optimize the learning process*". We may then infer that, in adopting a pedagogical posture, the teacher wishes to establish a learner- knowledge relationship conducive to learning.

In the suggested framework, the pedagogic lever is used to work on students' learning styles. It is associated with a bi-directional arrow and with the pedagogic axis (a1). This indicates that to engage his students, the teacher needs to work on '*reconciling*' them with what is taught by trying to make his teaching practices match with their learning styles. This will first imply a reflection on learning styles through the following questions:
- How do my students learn?
- From what I know about their ways of learning, which pedagogical practices can I use to make my teaching match their learning styles?

With the answers to these questions, the teacher will want to bring about positive changes in the various rationality systems of his/her students about learning and make them converge towards a more consistent rationality with what he teaches and how he/she teaches. He/She may then:
- Use a questionnaire that enables each student to explore his learning style.
- Identify ways of encouraging flexibility in learning styles.
- Integrate knowledge gained by the students about their own style and other students' styles to develop of their own conception of learning.

The final goals will then be bringing to light the paradoxes and contradictions about learning and teaching as perceived by students and use these for pedagogic purposes.

Conclusion
More often than not, teachers shape their practices according to their own ways of learning or according to formal teaching methods. Indeed, if we can assume that every teacher is *a priori* conscious that his/her profession is based on his/her relationship with the learners, many teachers may not be aware that the latter's representations and their learning style may hamper good educational practice and learner engagement in learning. Therefore, in this work, I have tried to explain what the concepts of representations, learning styles and engagement are, before suggesting how these could be used for didactic and pedagogical purposes. We have also proposed a framework that describes how students'

representations and learning styles can be used as teaching tools for obtaining learners' engagement. The teacher's role as a mediator who can help learners come to terms with language learning using didactics and pedagogy to unveil learners' representations and learning styles, and to alter his teaching practices, have also been highlighted. However, it would also be instructive to uncover teachers' learning styles and representations too. This may help them better understand those of their learners.

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