Learning by Design and Second Language Teaching

Theory, Research, and Practice

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1 Introduction to *Learning by Design*

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1 Introduction to *Learning by Design*

Learning by Design: Theoretical and Pedagogical Bases

The global crisis brought about by the COVID pandemic affected all aspects of our lives, including the way in which we communicate, work, teach, and learn. In 2020, the majority of our activities were carried out virtually, and most of us were forced not only to learn how to use a myriad of digital tools, but also how to create a variety of new kinds of texts. This was particularly true in education, where both educators and learners needed to adapt to new instructional environments with different expectations, forms of communication, and overall ways of doing things. Of course, we had lived in this technology-based, new media world for at least two decades (Green & Beavis, 2013), but the health crisis exacerbated our reliance on digital forms of interaction and action. Another crucial aspect of our recent social experience was the civic movements, such as Black Lives Matter, that once more brought to light the realities faced by countless minoritized communities, and the effects of systemic racism and discrimination on people's lives. These movements reminded us that we all have a role to play in making this world more inclusive and equitable, and that the diversity of our societies should be celebrated and valued, and be the norm in all aspects of our lives. Everyone should have a seat *and* a voice at the table, and opportunities and conditions should be present for this to happen. And this cannot be truer than in education, a crucial site for societal change (Kalantzis et al., 2016, 2019).

In the mid-1990s, a group of scholars anticipated what we experienced in the past two years, though I am quite sure they could not have predicted the COVID crisis or envisaged the extent to which their predictions would hold true. The scholars belonged to the New London Group (NLG)—ten international educators who met in New London, New Hampshire, in 1994 (Cope & Kalantzis, 2006, 2009; NLG, 1996) with the purpose of focusing on literacy. Based on current trends in globalization and technology at that time, the NLG posited that the traditional concept of literacy, tied to the printed medium and to "a single, official, or standard form of language" (Cope & Kalantzis, 2015, p. 1), and the way in which it was taught, were inadequate for a generation for whom learning already involved much more than the printed, "official word." The NLG believed that what was needed was a pedagogy that would encompass not just printed

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language, but also other modalities of communication present in the everyday reality in which the new generation was growing. In addition, this new approach would have to address and incorporate learners' diverse identities and life experiences (Kalantzis et al., 2005). For the NLG scholars, it was evident we were living in a diverse, globalized world, and we were becoming both multimodal and multilingual meaning-makers. The traditional concept of "literacy" was no longer relevant. We needed

> a kind of learning which [would] facilitate [learners'] active engagement with new and unfamiliar kinds of [multimodal] texts, without arousing a sense of alienation and exclusion, [and would focus on the] increasing complexity and inter-relationship of different modes of meaning.
>
> (Cope & Kalantzis, 2006, pp. 37–38)

To refer to this new type of educational approach, the NLG introduced the concept of *multiliteracies*.

But what exactly did the NLG scholars (1996) have in mind when they coined this term? What does the *multi* in *multiliteracies* refer to? Broadly speaking, the term *multiliteracies* makes reference to the multiple ways in which we create and convey meaning. These encompass two dimensions of meaning-making: The *social* (context/function) and the *modal* (form) (Kalantzis et al., 2016, 2019). The first one is connected to the diverse social contexts in which communication takes place, which shape what and how we communicate. The social *multi* might comprise the personal experiences, cultural or "community setting[s], social role[s], interpersonal relations, identit[ies], subject matter, etc." that are "significant to the ways in which we make and participate in meaning" (Kalantzis et al., 2016, pp. 1–2). The second dimension, the *modal*, refers to the variety of communication modes or semiotic systems to which we might resort to create meaning, such as the linguistic (written and oral), visual, gestural, or auditory. These modes are directly connected to the new media (and the tools and practices associated with them) which we experience daily, and which we have come to rely on in today's world. Lister et al.'s (2009) characterization of *new media* denotes this current *multimodal* nature of meaning, and it encompasses the following (also embedded in the concept of multiliteracies):

> *New textual experiences*: new kinds of [genres][1] and textual [multimodal] forms, entertainment, pleasure, and patterns of media consumption (computer games, simulations, special effects cinema).
>
> *New ways of representing the world*: media which … offer new representational possibilities and experiences (immersive virtual environments, screen-based interactive multimedia).
>
> *Computer-mediated communications*: email, chat rooms, avatar-based communication forums, voice image transmissions, the World Wide Web, blogs, [vlogs and vodcasts], etc., social networking sites, and mobile telephony.

> *New ways of distributing and consuming* media texts characterized by interactivity, [multimodality] and hypertextual formats.
>
> A *whole range of transformations and dislocations of established media* (in, for example, photography, animation, television, journalism, film, and cinema).
>
> (pp. 12–13)

When applied to educational contexts, the concept of *multiliteracies*, which encompasses both *multis*, the social and the modal, entails the need to establish educational contexts that allow learners to understand, create, and be able to appropriately and effectively participate in multimodal meaning-making involving new media in a multiplicity of diverse social contexts (Anstey & Bull, 2006; NLG, 1996). Thus, a pedagogy whose goal is to develop students' multiliteracies relies on students' exposure to and work with multimodal texts and technologies reflective of a variety of social and literate practices. Based on their existing body of work (e.g., Anstey, 2009; Anstey & Bull, 2006), Bull and Anstey (2019) posit that instructional approaches based on the notion of multiliteracies need to prepare learners to:

> - Be strategic, creative and critical thinkers who can engage with new texts in a variety of contexts and audiences.
> - Understand that … texts that have differing purposes, audiences and contexts will require a range of different behaviors that draw on a repertoire of knowledge and experiences.
> - Understand how social and cultural diversity affect literate practices.
> - Understand, and be able to use, traditional and new communication technologies.
> - Be critically literate … to determine, [in every literate practice], who is participating and for what reason, who is in a position of power, who has been marginalized, and what is the purpose and origin of the texts being used and how these texts are supporting participation in society and everyday life.
>
> (p. 7)

Though not articulated precisely in Bull and Anstey's (2019) terms, these goals were present in the NLG's (1996) proposal for a *pedagogy of multiliteracies*.

This new instructional approach was theoretically grounded in Halliday's (1985) Systemic Functional Linguistics (SFL). This theory's overarching principle is that language is a semiotic system that cannot be separated from its social function, as it expresses meaning according to the different social contexts in which it is used. That is, SFL "treats linguistic systems and structures as intrinsically organized with respect to the … kinds of meaning they construe, enact, and compose" (Martin, 2016, p. 44). Language use in specific social contexts can be analyzed in terms of the three aspects present in all meaning-making: The *field*, the *tenor*, and the *mode*, or, simply put, "what is happening [subject-matter, situation]; who is taking part [participants]; and what it is that the participants expect

language to do for them [language form, communication channel]" (Halliday & Hasan, 1985, p. 12). These aspects of meaning will be realized through language, fulfilling three types of semantic functions (or *metafunctions*)—the *ideational* (or *experiential*), the *interpersonal*, and the *textual*. That is, the *field* or what we are experiencing/noticing in the world will be expressed through the *ideational* metafunction; the *tenor* or aspects of our communication with others (e.g., emotions, attitudes, type of relationship, etc.) will be expressed through the *interpersonal* metafunction; and the *mode* or the way in which we structure/organize/express our message will be expressed through the *textual* metafunction (Halliday & Hassan, 1985; Martin, 2013).

In the *pedagogy of multiliteracies*, SFL's three situational features and metafunctions are first embedded in the importance that the approach bestows upon the connections among language, sociocultural context (including participants), meaning, and text. Nevertheless, the pedagogy goes beyond a focus on only language, to include other modalities of communication, as they are realized in different multimodal meaning-making manifestations beyond printed texts and speech (Cope & Kalantzis, 2006). Additionally, the multiliteracies approach guides learners in the understanding of the how and why of meaning-making based on the analysis of what is communicated (the *field—ideational* metafunction), who is participating in the social situation (the *tenor—interpersonal* metafunction), and what semiotic resources (or modalities) the participants are using to create and convey meaning (the *mode*) and how they are organized/expressed (*textual* metafunction), and why this is the case.

So how are these foci and goals materialized in the classroom? The NLG (1996) proposed four main pedagogical moves—*Situated Practice*, *Overt Instruction*, *Critical Framing*, and *Transformed Practice*—to integrate the multiliteracies pedagogy into educational contexts. Not all of the moves need to be part of the instructional sequence, nor there is a particular order in which they should be enacted, but each of them is crucial for the development of students' multiliteracies (Cope & Kalantzis, 2006). Regardless of which move is chosen and included in educators' practice, the point of departure is always the learner. That is, the NLG scholars believed that for instruction to be relevant and to reflect the diversity of life experiences learners bring to the classroom, curricula must establish connections with their "different subjectivities and with their attendant languages, discourses, and registers, and use these as a resource for learning" (p. 72). Thus, students' personal contributions become part of the *Available Designs*, or existing resources for meaning-making (e.g., language, other semiotic resources, and diverse social discourses), that will be incorporated into the different curricular elements. Through their active involvement in the four pedagogical angles, in a process that the NLG defines as the *Design* (or *Designing*), the instructor and students will collaborate to dissect, use, and transform the curricular Available Designs. This process will result in the *Redesigned*, which can be characterized as new meaning constructions and/or representations (i.e., new knowledge) not only with respect to the Available Designs, but also the meaning-makers themselves. That is, while engaged in *Designing*, both the teacher and learners "transform their relations

with each other, [and] themselves, [and also] configurations of subjects, social relations, and knowledges are worked upon and transformed" (NLG, p. 76).

Educators enacting an instructional sequence grounded in the multiliteracies framework might choose *Situated Practice* as their first move. This move relies mostly on the Available Designs students bring to the classroom, which are closely tied to their community and personal and previous academic experiences (NLG, 1996). Connections are established between curricular foci and outcomes, and students' identities and needs. This is also the stage where new, but somewhat familiar, Available Designs are introduced and weaved into what has already been experienced and/or is known (Cope & Kalantzis, 2015). Situated Practice can be followed by *Overt Instruction*, as it is in this pedagogical move that instructors guide learners in the analysis of the semiotic elements in the Designs introduced in the previous move. In Overt Instruction, students learn and work with explicit concepts and metalanguages that they can apply to examine and understand semiotic resources and modes, and how they have been used to convey meaning in the Designs being analyzed. The expected outcome in this "pedagogical angle [is for] students [to] have a way to describe the processes and patterns of [meaning] Design in a meaningful way" (Cope & Kalantzis, 2006, p. 40). Learners' understanding of meaning-making is further developed in the next move, *Critical Framing*. The focus here is on what Kress (1993) defines as the *motivated* aspect of a sign (or Design), i.e., the reasons why it has been created. Students critically explore Designs in terms of their creators' intentions, trying to understand ideological and sociocultural connections with regards to the semiotic resources used, and the message that is being conveyed. The desired result of Critical Framing is for learners to "gain the necessary personal and theoretical distance from what they have learned, constructively critique it, account for its cultural location, [and] creatively extend and apply it" (NLG, p. 87). In the fourth pedagogical move, *Transformed Practice*, students are provided with the opportunity to apply what they have learned or the transformed Available Designs in the creation and use of new ones (e.g., new multimodal texts).

The NLG's (1996) proposal for a multiliteracies pedagogy offered a blueprint for a different approach to education—one that would not only reflect the changes to communication and meaning-making brought about by information technology and the new media, but that would also connect learners' lifeworld and their diverse communities to curricula. Since it was first presented, the framework has guided a myriad of instructional and research projects on a variety of academic subjects, both in the humanities and STEMM, in countless educational contexts around the world. The NLG's work has been cited almost 3,000 times, and a Google Scholar search of "multiliteracies pedagogy" since its inception in 1996 renders close to 17,000 existing articles, web pages, and books. These numbers bear witness to the significance of the approach in current educational settings.

In the year 2000, two of the scholars in the NLG, Mary Kalantzis and Bill Cope, took some of the original ideas in the 1996 proposal, and they reconceptualized them (Cope & Kalantzis, 2015; Kalantzis et al., 2005, 2016, 2019).

Kalantzis and Cope's goal was to reframe the concepts in the NLG's (1996) pedagogy of multiliteracies, so that it would be easier for both instructors and students to understand them, and make sense of the instructional path of which they were part. Additionally, the researchers and the team of educators with whom they worked (Kalantzis et al., 2005) introduced new pedagogical conceptualizations. These and the reframed NLG's ideas would become the framework *Learning by Design* (*L-by-D*), the focus of this book. In the next section, each component of this pedagogy will be discussed in detail, and throughout this volume, they will be presented in connection with second language (L2) learning. However, before we do so, we will examine some of the similarities and differences between the NLG's pedagogy of multiliteracies and *L-by-D*, and we will delve into the framework's tenets.

Learning by Design: Principles and Components

The emphasis that the NLG's (1996) pedagogy of multiliteracies places on learners' identities and personal and community experiences as learning resources is also a crucial aspect of *L-by-D*. Indeed, one of the main premises of the framework is the need for the integration of *informal* and *formal* learning. The first type of learning refers to what students learn endogenously and tacitly in their personal, everyday lives: It is a reflection of knowledge based on their lifeworld experiences. The second kind of learning is academic: It is connected with schooling, and can be characterized as systematic and designed. Kalantzis and her colleagues (2005, p. 41) believe that the most effective formal learning experiences are those that incorporate informal learning into curricula, by "engag[ing] with the learner's experiential world and apply[ing] what is learnt in that world." This is particularly important in today's globalized and technology-based society, where, through their interaction with and use of new media and digital tools and their participation in virtual communities, students have more diverse learning opportunities in their everyday lives than in school settings (Green & Beavis, 2013; Zammit, 2010). Also, Kalantzis et al. (2005) posit that learners might prefer this type of learning because they might consider it more appealing and more closely related to their personal lives. It is, therefore, imperative that informal learning be part of students' academic experiences.

The incorporation of informal learning into formal academic experiences is directly connected to the two conditions Kalantzis and her colleagues (2005) have identified as necessary for learning to happen. The first one is *belonging*. This concept emphasizes the importance of establishing instructional environments to which learners can connect at a deep, personal level and to which they feel they *belong*, not only in terms of curricular content, but also with regards to the school/learning community and context. Learners' identities and *funds of knowledge*, defined by Moll et al. (1992, p. 133) as "the historically accumulated and culturally developed bodies of knowledge and skills essential for household and individual functioning and well-being," are also crucial aspects of *belonging*. In Kalantzis et al.'s words, "belonging to learning is founded on …

the learning ways [i.e., the learner's identities and learning preferences], the learning content [i.e., curricula], and the learning community [i.e., the learning environment]" (p. 43). The second essential condition for effective learning is that of *transformation*, which makes reference to the life-long changes that can result from students' in-depth involvement in their learning process, and to the instructional elements needed for this to happen. For learning to be transformative, Kalantzis and her fellow researchers believe that instructional paths need to

> take the learner into new and unfamiliar terrains. However … the journey into the unfamiliar needs to stay within a zone of intelligibility and safety. At each step, it needs to travel just the right distance from the learner's lifeworld starting point.
>
> (p. 51)

In *L-by-D*, if these two conditions are not met, equitable education is not possible.

These two conditions provide the basis for the implementation of instructional moves and the development of transformative curricula that will result in the equitable development of learners' multiliteracies. *L-by-D*'s pedagogical angles are based on those proposed by the NLG (1996). Nevertheless, in the work of Kalantzis, Cope, and their colleagues (Cope & Kalantzis, 2006, 2009, 2015; Kalantzis et al., 2005, 2016, 2019), the multiliteracies dimensions have been renamed, reconceptualized, and expanded. In *L-by-D*, instructional angles are defined as *knowledge processes* or *epistemic moves*. Kalantzis et al. (2016, p. 74) characterize these processes as "foundational types of thinking-in-action or … things you can do to know." A comparison between NLG's instructional angles and *L-by-D*'s epistemic moves is provided in Table 1.1.

L-by-D's knowledge processes can be said to be somewhat more comprehensive and transparent than the multiliteracies dimensions, because they offer more information about what is expected of teachers and learners. Also, the terminology used is more straight-forward and easier to understand.

Table 1.1 Comparison between the Pedagogy of Multiliteracies and *Learning by Design*

Pedagogy of Multiliteracies	***Learning by Design***
Situated Practice	Experiencing the Known Experiencing the New
Overt Instruction	Conceptualizing by Naming Conceptualizing with Theory
Critical Framing	Analyzing Functionally Analyzing Critically
Transformed Practice	Applying Appropriately Applying Creatively

L-by-D's eight knowledge processes mirror those that are present in informal learning. In formal or academic learning, they are embedded in the following instructional moves, which allow students to:

1) experience known and new meanings by departing from known concepts and experiences and by moving forward to explore new situations and/or information;
2) conceptualize meanings by grouping into categories, classifying, defining, and by formulating generalizations, establishing connections among concepts, and developing theories;
3) analyze meanings functionally by focusing on the structure and function of semiotic resources and by establishing logical connections, and critically by evaluating different perspectives, interests, and motives; and
4) apply meanings appropriately by engaging in real-life applications of knowledge, and creatively by applying new knowledge in innovative and creative ways. (Kalantzis & Cope, 2010, 2012a)

Cope and Kalantzis (2015) see learning based on the incorporation of these epistemic moves to instruction as "a process of 'weaving' backwards and forwards across and between [them]" (p. 4).

In *L-by-D*, the "weaving" of the eight knowledge processes can constitute a blueprint for the establishment of a *transformative curriculum*—one that will "[take] students from their lifeworld experiences to deep [and new] knowledge, understandings and perspectives" (Bruce et al., 2015, p. 82). However, it is important to emphasize that *L-by-D* does *not* provide prescriptive information on how to develop curricula, what activities to use in the classroom, or in what order to implement them. Instead, the framework offers guidelines on possible types of tasks and ways in which they can be used (Cope & Kalantzis, 2015). This is the case because, above all, *L-by-D* bestows utmost importance upon the idea that if productive learning is to happen, it cannot be based on a one-fits-all model: It has to be *designed* according to each individual learning situation and for each specific group of students. This means that the choice of knowledge processes and/or the order in which they are instructionally organized will depend on who the learners are and the educational context in which learning is taking place.

Regardless of which epistemic moves are chosen and how they are enacted in practice, what is important is the development of a *transformative curriculum*. For Kalantzis and her colleagues (Kalantzis et al., 2005), this type of curriculum incorporates learners' diverse lifeworlds into instruction with the goal of setting and achieving "comparable learning outcomes without prejudice to difference, [so that] the effect[s] … are pluralism—a community of productive diversity—[and] equity" (p. 64). Such a curriculum encompasses the following elements:

- Dialogical, collaborative teaching and learning
- *L-by-D*'s knowledge processes

- Instructional sequences, outcomes, multimodal content, and tasks based on subject matter and learners' academic and personal needs
- Curricular connections with learners' diverse identities, personal experiences, and community (i.e., funds of knowledge [Moll et al., 1992]) (*belonging and transformation*) (Kalantzis et al., 2005)
- Engaged, critical citizenship

In practice, such a curriculum provides opportunities for students to be exposed to and actively work with different multimodal texts that are connected to their lifeworld experiences and those of their families/communities. Curricular materials include different kinds of genres and non-linguistic ensembles[2] associated with a variety of subjects (depending on specific academic content, outcomes, and learners' needs). Tasks are based on *L-by-D*'s knowledge processes, and they allow students to critically analyze meaning-making in terms of social function, structure, and linguistic/non-linguistic semiotic resources. Learners develop their own personal projects, collaborating with their classmates and expressing their identity and newly gained knowledge in what Cope and Kalantzis (2007, p. 78) defined as the "re-voicing, and not replication" of that knowledge. Kalantzis et al. (2005, p. 66) describe the successful outcome of a transformative curriculum as follows:

> First, the learner has, notwithstanding the uniqueness of their identity, belonged in the curriculum. They have been part of the curriculum, and the curriculum has been part of them. Second, the learning has taken them into a new and unfamiliar place, changed their view of the world, and changed them in some incremental way into a person whose horizons have been broadened. [The result has been] productive learning—both purposeful and transformative.

Instruction based on *L-by-D*'s principles and components is summarized in Figure 1.1. In the next section, we will explore each knowledge process in depth.

Learning by Design: Knowledge Processes

Experiencing

Even though Kalantzis, Cope, and their colleagues (Cope & Kalantzis, 2015; Kalantzis et al., 2005, 2016, 2019) do not prescribe an order in which the knowledge processes can be weaved into curricular content, I envision *experiencing* as the point of departure in our teaching practice. For example, in *experiencing the known*, instructors can *situate* students in the specific context of a new learning experience by facilitating connections between academic content and learners' informal learning, lifeworlds (including funds of knowledge), and previous educational experiences. Activities such as recalling, retrieving, and reflecting

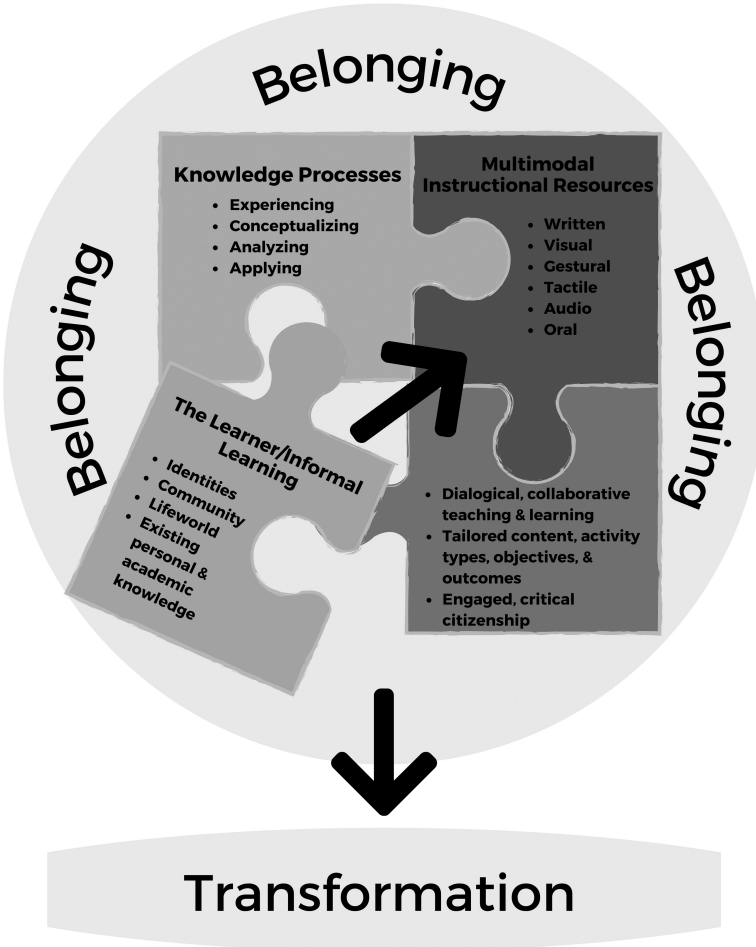

Figure 1.1 Instruction based on Learning by Design.

on memories/events in their lives/communities and identifying personal preferences/interests (e.g., through tasks like *show and tell*, class/group surveys, Socratic dialogue) allow students to "introduce their invariably diverse experiences into the classroom, [and] teachers and other learners also begin to get a sense of each student's prior knowledge" (Kalantzis et al., 2016, p. 77). *Experiencing the known*, therefore, can scaffold instructional moves, and can undoubtedly prepare learners for what's to come.

Once existing schemata (Carrell, 1984; Rumelhart, 1980) have been activated, and personal connections have been established in *experiencing the known*, instructors can start to introduce new academic content in *experiencing the new*. This can be achieved in different ways, but in L2 learning, the focus of this book, it can be done through the use of multimodal texts. New texts will take students

into the realm of new knowledge and target language use. However, it is crucial to remember that novel content always needs to exhibit some type of connection to the learner to the extent that the new makes enough sense for learning to occur. Also important is the need to scaffold students' work (I discuss this instructional aspect in more depth in Chapter 3) within this process (and, of course, others). Archetypal tasks in this move may include those that involve students' collaboration in the completion of comprehension and interpretation activities that might take the form of jigsaw group work, Think-Pair-Share, spider maps, comparison and contrast between known and new experiences, summarizing, retelling, etc. (Zapata, 2017; also see Table 5.1 on page… [add page #]).

Cognitive/learning process dimensions: Retrieving, recognizing, identifying, recalling, general understanding of message (Kalantzis et al., 2005)

Conceptualizing

To describe the processes of *conceptualizing by naming* and *conceptualizing with theory*, we will continue with the text example I introduced in the previous section. When learners are working with a text, their work in these two epistemic moves will first center on its design elements (e.g., the organization and classification of information). That is, in *conceptualizing by naming*, students might

> draw distinctions [e.g., through a focus on what type of information different parts of the text convey]; identify similarities and differences [e.g., through comparisons among different textual elements]; and categorize with labels [e.g., through the development of concepts that identify textual elements such as *hyperlinks*].
>
> (Cope & Kalantzis, 2015, p. 19)

In order to facilitate this kind of work, instructors might rely on tasks that allow students to make connections, classify (or cross-classify), find common patterns, define, and give examples, all of which could be achieved through the use of instructional tools such as affinity diagrams, comparison charts or matrices, concept organizers, information text pyramids, and/or Venn diagrams (Zapata, 2017; also see Table 5.1 on page… [add page #]).

Once learners have developed new concepts, in *conceptualizing with theory*, they make connections "to explain how a kind of text works to make meaning, in general terms" (Kalantzis & Cope 2012a, location 7403). That is, students synthesize the functional and theoretical links found among concepts, and they arrive at generalizations or theoretical definitions that can be applied to similar conceptual relationships within a particular discipline, or in our case, other texts. For example, generalizations could be made about specific academic genres such as reports, or about multimodal ensembles such as vlogs (e.g., how they are organized, semiotic resources used, etc.). As a result of their work in this epistemic move, learners are able to "uncover implicit and underlying realities which

might not be immediately obvious from the perspective of lifeworld experience" (Kalantzis et al., 2005, p. 77). Tasks that can promote students' analytic synthesizing and theorizing include those that incorporate pedagogical tools such as cause and effect pattern organizers, flow diagrams, mind maps, and/or taxonomies of generalization (Zapata, 2017; also see Table 5.1 on page… [add page #]).

Cognitive/learning process dimensions:

- Interpreting (also clarifying, paraphrasing, representing, translating)
- Exemplifying (also illustrating, instantiating)
- Classifying (also categorizing, subsuming)
- Summarizing (also abstracting, generalizing)
- Inferring (also concluding, extrapolating, interpolating, predicting)
- Explaining (also constructing models) (Kalantzis et al., 2005, p. 82)

Analyzing

In the two *analyzing* epistemic moves, learners first explore functional aspects of meaning-making. This is *analyzing functionally*. For example, if students are working with a linguistic text, they might focus on the language structures that are used to convey certain meanings, paying attention to the relationship between meaning and form. If working with multimodal texts, learners' work "may involve examining the choices [i.e., semiotic resources] made by creators in the design of their texts, and the effects of these choices in the representation of meanings" (Cope & Kalantzis, 2015, p. 20). In other words, the process of analyzing functionally, regardless of the ensemble on which students are focusing, rests on finding the answers to the questions *what* and *how* with respect to the semiotic elements present in it. To achieve this goal, teachers can develop tasks that allow learners to compare and contrast, connect, deconstruct, infer, and interpret (Zapata, 2017; also see Table 5.1 on page… [add page #]).

The *analyzing critically* epistemic move provides students with the opportunity to explore the reasons why the ensemble they are examining has been created. In this stage of the learning process, learners establish connections between the meaning-maker (i.e., the author/creator) and the ensemble, trying to discover motivations and sociocultural connections, as well as the voices that might be represented or silenced. These goals are achieved through the critical analysis of the semiotic resources used in connection to the author's/creator's identities and their and their text's sociocultural/sociohistorical context, with the purpose of "interrogat[ing] the world of subjectivity—human agency, interest, and intent" (Cope & Kalantzis, 2015, p. 21). To carry out their critical examination, students might appraise, argue, assess, critique, deconstruct, infer, and interpret through tasks such as debates, polling, point of view interviews, and comparison of perspectives and/or ensembles on similar topics (Zapata, 2017; also see Table 5.1 on page… [add page #]).

Cognitive/learning process dimensions:

- Differentiating (also distinguishing, focusing, selecting)
- Organizing (also finding coherence, integrating, parsing, structuring)
- Attributing (also deconstructing)
- Checking (also coordinating, detecting, monitoring)
- Critiquing (also judging) (Kalantzis et al., 2005, pp. 82–83)

Applying

Work in the two *applying* knowledge processes, *applying appropriately* and *applying creatively*, involves students' application of their new knowledge in the creation of their own ensembles. In *applying appropriately*, learners might develop products with characteristics similar to the ones found in the texts on which they have been focusing. For example, if students have been analyzing reports, they might create one. It is important to remember, however, that even though student-produced artifacts reflect what their creators have learned in the educational environment and they are tied to classroom work, they also need to bear a clear connection to the real world and learners' lifeworlds (Cope & Kalantzis, 2015; Kalantzis et al., 2005). Applying appropriately might also "involve transfer from theoretical understanding to a practical example of that theory in action" (Kalantzis & Cope, 2012b, p. 248). The form that this process will take will depend on the discipline and the particulars of the instructional context.

In *applying creatively*, learners are encouraged to "think outside the box" by developing products that might incorporate modalities, media, and tools they might have not tried before. Also, students' work might "involve taking something out of its familiar context and making it work—differently perhaps—somewhere else" (Kalantzis et al., 2005, p. 78). This implies that applying creatively tasks are expected to be innovative, imaginative, and creative, and can definitely involve not only learners' lifeworlds (e.g., their interests, identities, and lived experiences), but aspects of the informal learning they bring to class. The richness of new media and digital tools in today's world opens up a myriad of instructional options for instructors to consider to fully engage learners in the meaning-making process (see Chapter 5 and Table 5.1 on page… [add page #]).

Cognitive/learning process dimensions:

- Executing (also carrying out)
- Implementing (also using)
- Generating (also hypothesizing)
- Planning (also designing)
- Producing (also constructing) (Kalantzis et al., 2005, pp. 82–83)

Throughout the chapters in this book, I explore a variety of pedagogical possibilities based on existing scholarly work on current L2 education. But before I

do that, in the next section, I address some of the theoretical developments that Kalantzis, Cope, and their colleagues have introduced to *L-by-D* in recent years.

Learning by Design: Recent Theoretical Developments

As discussed in the first section of this chapter, *L-by-D* is grounded in the tenets of SFL (Halliday & Hassan, 1985; Martin, 2013, 2016). When examining the pedagogical objectives of each of *L-by-D*'s knowledge processes, it is clear that an instructional path that incorporates them provides students with opportunities to explore meaning in terms of *field* (topic/subject—the what), *tenor* (relationship between participants—the who), and *mode* (presentation of meaning—the how), as well as in connection with SFL's three metafunctions—*ideational*, *interpersonal*, and *textual*. Recently, however, Kalantzis and Cope have expanded SFL's metafunctions (originally tied to the analysis of speaking and writing) from three to five to offer a more comprehensive framework to analyze meaning in connection with multimodal ensembles or those that incorporate only specific modes (e.g., visual, gestural, etc.). The five metafunctions brought forward by these two scholars are characterized as follows in two of their most recent works (Cope & Kalantzis, 2020; Kalantzis & Cope, Forthcoming):

- *Reference* bears similarities with Halliday's *ideational* metafunction, and aims at answering the question **"what's this ensemble about?"**
- *Agency* is similar to Halliday's *interpersonal* metafunction, but Cope and Kalantzis also encompass social action in general with the purpose of answering the question, **"who or what has created the ensemble?"** (i.e., focus on the meaning-maker).
- *Structure* exhibits similarities to Halliday's *textual* metafunction. However, in a broader multimodal view, it answers the question, **"how does the ensemble hang together?"**, with a focus on "the devices used to create internal cohesion, coherence, logic, and boundedness in meanings" (Cope & Kalantzis, 2020, p. 46).
- *Context* is one of the added metafunctions, though it is connected to the concept of the same name in SFL. Cope and Kalantzis, however, have transformed it into a metafunction. The purpose is to "locate meaning in its surroundings [e.g., time and space]" (Cope & Kalantzis, 2020, p. 47) and to answer the question, **"what is the ensemble connected with?"**
- *Interest* is connected to SFL's notion of purpose, but Cope and Kalantzis (2020) have expanded it as a function with the goal of answering the question, **"what is the ensemble for?"** That is, through the analysis of *interest*, we can explore:
    - what emotions, social impulses, and reasoning motivate meaning;
    - how subjectivity and objectivity work … in texts;
    - how interests [are] embodied; [and]
    - how interests [are] served and shaped in the spaces of nature and the constructed environment (p. 48).

These five metafunctions are part of an integrated theory that Cope and Kalantzis (2020; Kalantzis & Cope, 2020) have developed for the analysis of multimodal meaning, which they have named *a grammar of multimodal transposition*. Even though the grammar might not have a pedagogical purpose per se, its five metafunctions bear a theoretical relationship with *L-by-D*'s knowledge processes and overall principles behind the framework, and they expand it. That is, not only are the metafunctions compatible with the type of discovery and work that learners already undertake in each epistemic move (e.g., *context* and *interest* and *analyzing critically*), but they are also clearly connected with the idea of a transformative curriculum. Cope et al. (Forthcoming, pp. 7–8) posit that

> to trace meaning patterns [e.g., by focusing on the five metafunctions they propose] is to see the meaningful coherence of the world, while recognizing the finely calibrated nuances of ceaseless differentiation. It is also to insist on the responsibility of meaning-makers because, in our natures, we are always changing the world.

Clearly, these words mirror the expected outcomes of transformative learning. In other words, by expanding the range of analysis in the eight epistemic moves, the inclusion of the five metafunctions into *L-by-D* allows for the creation of tasks through which learners can delve more deeply into meaning-making in terms of both analysis and action (as meaning-makers themselves). In Figure 1.2, I offer a modified representation of instruction based on *L-by-D*'s principles and components, establishing connections between the knowledge processes and the five metafunctions.

Summary

In the first part of this chapter, I introduced the pedagogical framework from which *L-by-D* evolved, the NLG's (1996) *pedagogy of multiliteracies*. I discussed its theoretical tenets, connected to SFL (Halliday & Hassan, 1985; Martin, 2013, 2016), and I described its four pedagogical moves—*Situated Practice*, *Overt Instruction*, *Critical Framing*, and *Transformed Practiced*. I also tied the pedagogy to current sociocultural aspects, including our reliance on new media and the diversity of today's world.

In the second part of the chapter, I examined *L-by-D*, first comparing it with the multiliteracies pedagogy. Once I had established existing parallels between the two approaches, I introduced *L-by-D*'s principles, components, and goals. I offered definitions for key concepts such as *belonging*, *transformation*, *knowledge processes*, and *transformative curriculum*. I then presented each knowledge process in detail, describing them in connection to instruction. In the final section of the chapter, I focused on some of the theoretical developments that the creators of the framework, Mary Kalantzis and Bill Cope, have recently introduced in connection with meaning-making. Specifically, I discussed the five

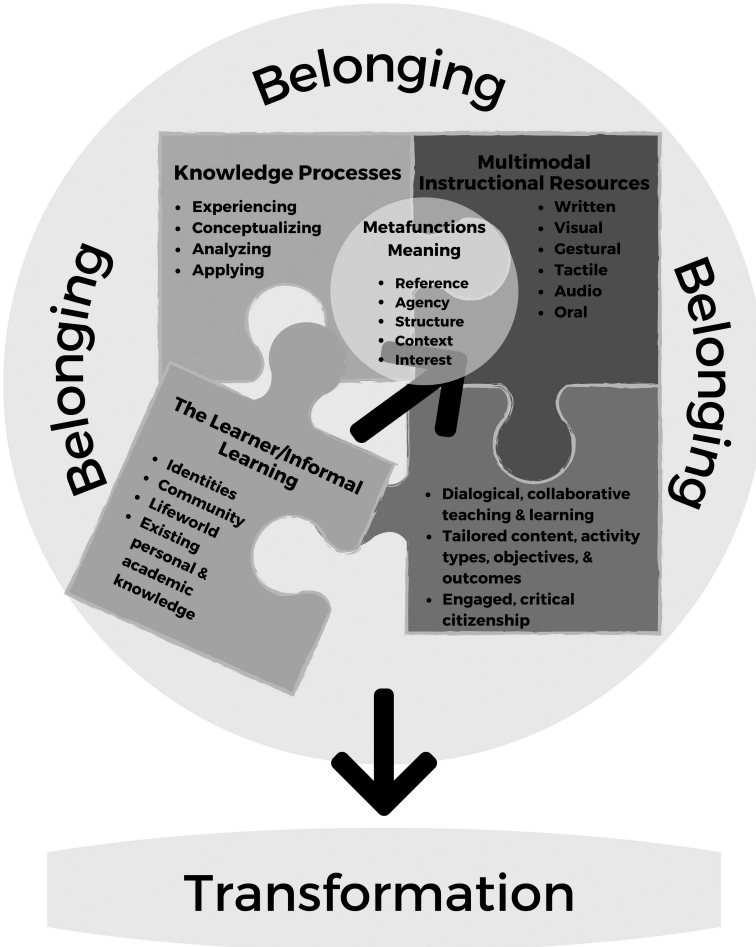

Figure 1.2 Instruction based on Learning by Design and metafunctions.

metafunctions in their *grammar of multimodal transposition*—*reference*, *agency*, *structure*, *context*, and *interest*—and I tied them to *L-by-D*'s epistemic moves. I decided to incorporate these metafunctions as part of this chapter's discussion because I believe they expand the approach, even though they are not directly related to it.

In the next chapter, I examine the connections between *L-by-D* and current L2 education. However, before I move to this topic, I offer a summary of the *L-by-D*'s knowledge processes as "a series of pedagogical principles" (Kalantzis et al., 2016, p. 82). The information presented is adapted from my existing work with Kalantzis and Cope (Kalantzis et al., 2019, pp. 73–74).

Experiencing

- Premise: Human cognition is always situated in a particular sociohistorical and sociocultural context.
- Meaning is intrinsically connected to personal experiences (including funds of knowledge), actions, and subjective interests, and it is grounded in the real world.
- Formal, academic learning is weaved with learners' identities, lifeworld, lived experiences, and informal learning.
- Learners' experiences and the texts they are familiar with are also weaved with novel experiences and texts.

Conceptualizing

- Learners do not merely reproduce concepts. Instead, they are active conceptualizers and theory developers.
- Students transform tacit information into explicit knowledge, and they arrive at generalizations from the connections they establish among concepts.

Analyzing

- Learners develop analytic skills to not only discover, interpret, and articulate functional aspects of meaning in terms of semiotic elements, but also purposes, interests, and motivations in connection with meaning-makers.

Applying

- Learners apply their new knowledge, conceptualizations, and understandings to real-world situations.
- Learners create diverse texts with different communication purposes, resorting to a variety of semiotic resources.

Notes

1 In this book, I adopt Hyland's (2014, p. 4) definition of *genre* as

> a term for grouping texts together, representing how [individuals] typically use language to respond to recurring situations. [The term is] based on the idea that members of a community usually have little difficulty in recognizing similarities in the texts they use frequently and are able to draw on their repeated experiences with such texts to read, understand, and [create] them relatively easily.

I discuss this concept in connection with L2 instruction and *Learning by Design* in Chapter 4 (see pages…[add page #)].

2 In this volume, the words *text*, *artifact*, and *ensemble* are used interchangeably to make reference to multimodal products. The use of the term *ensemble* is based on Serafini's (2014) work, in which it is defined as "a type of text that [might] combine written language, design elements, [and/or] visual images, [and] utilize[s] various semiotic resources to represent and communicate meaning potentials" (p. 2).

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