A New Typology of Communication Configurations: Building Blocks for Lesson Design

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Abstract
Following a review of the literature on classifying teaching-learning arrangements, conducting a conceptual analysis of the basic elements of instruction, and carrying out a conceptual synthesis, the authors propose that the basic elements of instruction—learner, facilitator, resources, setting, and communication pattern—can be combined into eight different configurations, comprising a typology that encompasses all of commonly used arrangements for teaching and learning in face-to-face instruction, in online instruction, and in every other type of organized instruction. The eight communication configurations are: Presentation, Demonstration, Whole-Class Discussion, Small-Group Discussion, Tutorial, Repetition, Study, and Expression.

Review of Literature on Classifying Teaching-Learning Arrangements
In one of his early books, Robert Gagné proposed a typology of what he called modes of instruction (Gagné, 1965). Gagné (1965) outlined six different modes of instruction: tutoring, lecture, recitation, discussion, laboratory, and homework. Gagne himself did not pursue this idea in his subsequent work.
Later researchers, such as Ivor Davies (1981), David Berliner (1983), and Susan Stodolsky (1988), also proposed classification schemes for what they termed, respectively, as “methods,” “activity structures,” and “instructional formats.” None of these was based on a systematic definition of its elements nor did they specify the basis used for classifying activities into different categories. Further, all of them were developed before the era of distance education, and so were focused on the sorts of activities that take place in face-to-face (F2F) classrooms.

One of the authors began working on this problem early in his career and continued to return to it as a topic in classes he taught in instructional design; see, for example, Molenda (1972). It was not until distance education came into prominence that the flaws of earlier classification systems became apparent. The earliest form of distance education, correspondence study, consisted of little more than printed brochures sent through the mail, for the student to read and respond to study questions or quizzes, which were graded and returned in the mail. The next major format of distance education was “telecourses,” broadcast or closed-circuit television programs, coupled with print materials and tests. By the mid-1990s, online computer-based delivery became the norm—but the content tended to be audio or video lectures supplemented with textbooks or other print materials. What was new was that learners could now communicate easily and quickly with each other through discussion forums and with the instructor through forums, chatrooms, and email. In the U.S., government regulations specified that distance education required “regular and substantive interaction between the students and the instructor.” These developments placed a new spotlight on factors that had previously been lurking in the shadows—the importance of individual study and individual expression, in the form of answers to quizzes, oral or written exchanges with classmates, projects, and research papers. Plus the
requirement of “regular and substantive interaction”—focusing attention on the flow of communication between and among students and instructors. These features may also appear in F2F instruction, but they tended to be overlooked because they normally took place outside the classroom.

The categories to be included in a comprehensive classification scheme of teaching-learning activities were now much clearer, but on what basis should the categories be defined?

**Conceptual Analysis: Defining the Basic Elements**

The authors realized that a sound classification system required a sound vocabulary of basic terminology. Consistency in the use of basic terms has never been a strong point of the literature of pedagogy. Even the term *instruction* itself has lacked a clear consensual definition. We propose the following definition, based on Gagné’s focus on “conditions of learning.”

*Instruction* is a deliberate effort to provide learners with conditions suitable for achieving specified learning objectives; success criteria include being humane, effective, and efficient. Further, an *instructional event* is defined as any occasion during which one or more learners engage in purposive and controlled learning in some setting.

A review of recent findings of neuroscience—reported in detail in Chapter 3 of *The Elements of Instruction* (Molenda & Subramony, 2021)—led to the realization that even the concept of *learning* was open to new, more sophisticated interpretation. Researchers beginning with Kandel (2006) found that different types of learning follow distinctly different neural pathways, being received, processed, stored, and retrieved differently. For educators, the most fundamental distinction is between the unconscious, effortless process of *implicit* learning (acquired through everyday life experiences) and the conscious, effortful process of *explicit*
learning (acquired through interventions proffered by instructors). The former could be termed *experiential* learning, the latter could be termed *instructed* learning. The analyses reported in this paper are focused on *instructed* learning, as most of the pedagogical literature and most of the conventional educational research endeavors have focused these processes.

Starting from this base, the Elements of Instruction Group, after a review and conceptual analysis of pedagogical literature, decided to base its terminology on the concrete entities that are visible during any instructional event: 1) a learner, 2) a facilitator, 3) resources, and 4) a setting, as described in detail in Molenda and Subramony (2021). Very simply, a *learner* is anyone who voluntarily enters into an instructional setting and participates in teaching-learning activities; a *facilitator* is a person or device that manages instructional events, selecting instructional objectives and methods, monitoring and guiding learner progress, and assessing achievement; a *resource* is any material or device that learners interact with during instructional events; they may be instructional resources or real-world resources. A *setting* consists of the physical surroundings in which the learner, facilitator, and resources interact.

The term *element* is used in chemistry to designate substances that cannot be separated into simpler substances; here *element* is used similarly—to indicate the simplest component of a complex whole, that “complex whole” being an instructional event. The fifth basic element of an instructional event is not a physical object, but it is observable—the communication pattern among facilitator, learner, and resources during the event. We refer to this pattern as a *communication configuration*—which we define as the pattern of the flow of information and control among learner, facilitator, and resources during an instructional event.
Conceptual Synthesis: Creating A New Typology

The Elements of Instruction Group proposes that the basic elements described above can be combined into eight different configurations, comprising a typology that encompasses all of commonly used arrangements for teaching and learning in face-to-face instruction, in online instruction, and in every other type of organized instruction. These eight configurations are: Presentation, Demonstration, Whole-Class Discussion, Small-Group Discussion, Tutorial, Repetition, Study, and Expression (Molenda & Subramony, 2021). Each has a distinctive pattern of information flow and control among learner, facilitator, and resources.

Presentation Configuration

In the Presentation configuration, a Facilitator (F), or some Instructional Resource (IR) playing the role of Facilitator, conveys information one-way to a number of Learners (L); the Facilitator or Instructional Resource controls the flow of communication.

Figure 1: The Presentation configuration
Examples of activities conducted in the Presentation configuration:

- A teacher giving a lecture in a normal classroom
- Audio or video clips inserted into a live presentation in a classroom
- A PowerPoint presentation given by a speaker in front of a live audience
- A lecture recital in a music hall—a pianist plays and talks about the music
- Instructional film or video shown to a classroom audience
- Panel discussions or debates conducted in front of an audience
- Didactic stage plays, e.g., the “morality plays” of the Middle Ages.

**Demonstration Configuration**

In the Demonstration configuration, a Facilitator (F) or some Instructional Resource (IR) playing the role of Facilitator displays and explains an Example (Ex) of some process, procedure, or other complex task to a number of Learners (L); the Facilitator controls the flow of communication.

**Figure 2: Demonstration configuration**
Examples of activities in the Demonstration configuration:

- Physics experiment in front of a class
- An oversize model of a clock to show hours & minutes
- A dynamic model of the solar system (orrery) showing planetary movements
- Role play of salesperson and customer conducted in front of sales trainees
- Historical re-enactments, e.g. Civil War battles
- Slow-motion video of proper free-throw technique
- Working math problems on whiteboard
- YouTube “how-to” video (some may call it a “tutorial,” but it is demonstration).

**Whole-Class Discussion Configuration**

In the Whole-Class Discussion configuration, a Facilitator (F) engages the whole class in a conversation in which Learners (L) take turns sharing information and opinions, with the Facilitator remaining at the center, setting the agenda and controlling the flow of communication.

Figure 3: Whole-Class Discussion configuration
We distinguish Whole-Class Discussion from Small-Group Discussion because they have significantly different patterns of information flow and control. The most important difference is that in the Whole-Class Discussion the teacher or moderator remains in control. In effect, all audience members’ comments are directed to the chair, who decides how to respond and what to do next.

Examples of activities in the Whole-Class Discussion configuration:

- Seminar having open discussion with students guiding the discussion
- Class interaction during a pause in a lecture, e.g. brainstorming session during a lecture
- Debriefing discussion following play of a game or simulation.

Small-Group Discussion Configuration

In the Small-Group Discussion configuration, two or more Learners (L) exchange information and opinions without the intermediation of a Facilitator; a Facilitator may set the agenda and control logistics, but Learners control the flow of communication within the group.
Examples of activities in the Discussion configuration:

- Buzz group or breakout session during a lecture
- Study groups, meeting live or over a Web application
- Web chatroom or discussion forum
- Dyads are also considered “small groups,” e.g. “interteaching” method, “writing buddies,” or conversation partners for language learning.

**Tutorial Configuration**

In the Tutorial configuration, a person or a device playing the role of Facilitator (F) interacts, intensively and substantively, one-to-one with a Learner (L) (or small group of Learners acting as one or taking turns); the Facilitator (tutor) and Learner (tutee) share control of two-way communication.

Figure 5: Tutorial configuration

Examples of activities in the Tutorial configuration:

- Peer or cross-age tutoring
- Apprenticeship training or mentoring in the workplace
- Learner-teacher email exchanges of substantive content
- Athletic coaching, e.g., a personal trainer
- Intelligent computer tutoring systems with sophisticated response judgment and feedback capability.
Repetition Configuration

This category might also be labeled as “Practice,” but that term has a more generic meaning, in that most skills—cognitive, affective, interpersonal, or psychomotor—require some sort of mental rehearsal or physical practice, but not necessarily repetitious rounds of practice, as is implied here. In the Repetition configuration, a Learner (L) performs repeatedly all or part of a specified Skill (S) in order to improve retention and proficiency. Learners may monitor their own performance, but it is often desirable to have a Facilitator (a coach) to provide corrective feedback.

Figure 6: Repetition configuration

Examples of activities in the Repetition configuration:

- Memorization drills, e.g. reciting multiplication tables
- Athletic practice, such as a volleyball practice session
- Written exercises, such as worksheets for math or language study
- Working as an intern or volunteer
- Conversation practice for language learning
- Games, e.g. “Math Blaster” that require repeated practice of a curricular objective
- Simulator practice, e.g., CPR with a manikin
Most tests would also be examples of Repetition; the learner is applying the new knowledge or skill for evaluation purposes, but enhanced learning is another outcome.

**Study Configuration**

In the Study configuration, a Learner (L) interacts with Instructional Resources (IR), or with Real-World Resources (RR), or with their own inner resources, without the direct supervision of a Facilitator (F), but often inspired or guided by someone playing the role of Facilitator. The Learner is in control of events, deciding exactly what to do and when to do it.

**Figure 7: Study configuration**

Examples of activities in the Study configuration:

- Reading a textbook (IR)
- Private listening to a podcast or video or slide set (IR)
- Reading a blog that is informative (IR) or that is an example to be critiqued (RR)
- Examining biological specimens under a microscope (RR)
- Analyzing architectural style of buildings while walking in a historic district (RR)
- Identifying artifacts at archaeological dig (RR).
Expression Configuration

In the Expression configuration, a Learner (L) creates some type of tangible Product (P) in order to process some new knowledge or attitude; the experience may be structured and/or monitored by a Facilitator (F), but the Learner controls what is created and how it is created.

Examples of activities in the Expression configuration:

- Writing a term paper
- Preparing a written or podcast book report
- Short reflection paper at end of class
- Writing a blog or memoir about one’s experiences
- Creating a schematic diagram of a process
- Painting a picture using a new brush technique
- Sculpting a figure
- Designing a set for a theatrical play.
Communication Configurations as Building Blocks

Different Configurations for Different Stages of Instructed Learning

Any given lesson might combine different configurations to accomplish different stages of the learning process. Each instance would be like a photograph which, combined with others photographs, can constitute a movie of the lesson. Different configurations are suited to different steps in the process—gaining attention, stimulating motivation to learn, providing practice opportunities, and evaluating achievement of the objectives. For example, an elementary school teacher:

- holds up a jar containing a tadpole (Demonstration) and ask children to guess what it is;
- individuals call out answers (Repetition in the form of recitation);
- the teacher then states that the tadpole represents one stage in the life cycle of a frog (Presentation);
- using flash cards, the students then read new vocabulary terms in unison (Repetition);
- teacher projects images showing all the stages in the life cycle of a tadpole (Demonstration);
- as she points to each stage, students identify them in unison (Repetition);
- students work individually on worksheets, labeling the stages in the life cycle (Repetition);
- the culminating activity is a construction project: consulting a chapter in the textbook (Study) and using art supplies to create a frog life-cycle drawing (Expression).

Each Configuration Can Consist of Different Formats

As illustrated in the earlier discussion of communication configurations, any given configuration might be instantiated by a number of different media formats. For example,
someone planning a F2F class may decide that a Presentation is needed to provide new information early in a lesson. They may choose among a live oral presentation, an audio recording of a lecture, an instructional video, a “chalk talk” with a whiteboard, or a panel discussion. In a distance-education course, the same Presentation need may be met by showing an existing video or a newly made audio or video recording.

Our contention is that different media formats are essentially fungible. As long as the format offers the affordances needed to convey that new information—say, diagrams accompanied by oral narration—it doesn’t matter instructionally which format is chosen. One of the options may be readily available, while other options would be expensive or time-consuming to acquire or create. Different media formats offer time and expense trade-offs, but they are instructionally fungible. Thus, lesson design becomes simplified as what matters is selecting appropriate configurations for each step of the instructional process—a choice of one of eight configurations—versus sorting through scores of various media formats and teaching-learning activities.

Next Steps

The Elements of Instruction Group intends to continue to explore the applications of the Molenda-Subramony communication configurations to instructional design. Which configurations are best suited to what sorts of objectives? To what stages in the instructed learning process? What are the “best practices” for implementing each configuration, for obtaining the most “bang for the buck” when creating learning experiences within each configuration? Finally, we intend to return to the different types of learning and to explore the relationship of our communication configurations for the “conditions of learning” needed for experiential learning, an area that has burgeoned over recent concern for social and emotional
learning (SEL), as discussed, for example, by Lopes and Salovey (2004). Much work remains to be done.

References


