

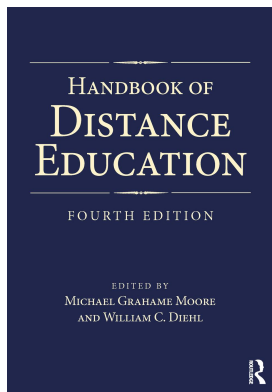
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The Theory of Transactional Distance

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3

THE THEORY OF TRANSACTIONAL DISTANCE

Michael Grahame Moore

Previous editions of this *Handbook* have described the theory of transactional distance, reported some of the most recent research based on the theory, and commented on related developments in the field. A similar structure will be adopted here.

The First Theory of Distance Education: A History

Before looking at the theory itself, we should note the historical context in which it first emerged, because regardless of how useful the theory may be for research today, its first importance is that it articulated an idea about teaching and learning that was, in its time, quite revolutionary.¹

For most readers, now living in a world in which e-learning, online learning, and blended learning are such familiar features of the educational landscape, it is hard to imagine the world of the 1970s and 1980s, when any suggestion that students could possibly learn as well at a distance from their teachers as they could in a classroom was, to the vast majority of educators, a preposterous idea. Some of those same educators, at only a few universities, might have been aware that in some out-post of their campus was a building that administered a team of part-time, adjunct instructors who were engaged in something called correspondence study; this meant sending and receiving lessons through the post. They might even have known there were others attempting to deliver educational programs by broadcasting from radio and television stations operated by the Corporation for Public Broadcasting.

However, so despised and derided by the educational establishment were these forms of teaching, that it would be a very adventurous professor of education in 1970, or even 20 years later, who would deign to mention them when lecturing on teaching methodology or countenance their inclusion in the theories about education that appeared in the textbooks supplied to teachers in training in the college of education. Not surprisingly, this neglect meant that there was no academic research into such out-of-classroom practices, the only research of any kind being data gathered in university Extension departments attempting to evaluate the effectiveness of their correspondence and broadcast programs. Scholarly research, in the sense of research that is driven by theory and that contributes to theory, was impossible, simply because there *was no theory* to start with. All scholarly research in education was grounded in the almost universally accepted assumption as stated by the Association of Supervision and Curriculum Development that “instruction refers to the activity which takes place during schooling and within the classroom setting” (ACSD 1968, p. 123)

It was to establish the identity of the *other* form of teaching and learning, i.e., that which did *not* take place in classrooms, that the term “distance education” was first proposed and later developed into the theory of transactional distance.

The argument for a specific theory of distance education was first made in the following terms, in a presentation to a conference about correspondence education:

As we continue to develop various non-traditional methods of reaching the growing numbers of people who cannot or will not attend conventional institutions but who choose to learn apart from their teachers, we should divert some of our resources to the macro-factors, i.e. describing and defining the field . . . discriminating between the various components of this field; identifying the critical elements of the various forms of learning and teaching, in short building a theoretical framework which will embrace this whole area of education.

(Moore, 1973, p. 661)

Distance education was defined, for the first time, as: “the family of instructional methods in which the teaching behaviors are executed apart from the learning behaviors . . . so that communication between the learner and the teacher must be facilitated by print, electronic, mechanical or other device” (Moore, 1972, p. 76). The “critical elements,” which had been identified through empirical analysis of a large selection of program descriptions and (Moore, 1972, 1976) were described as three sets of “macro-factors”—and it was these, it was argued, that should define the field. The first of these macro-factors was derived from analysis of the content of courses, found in study guides and broadcast programs, and was labeled as the program’s “structure;” the second, derived from analysis of interactions between teachers and learners was labelled as “dialogue” in the program. The third, based on analysis of the behaviors of students in the programs, described the extent to which they participated in making decisions normally reserved exclusively for teachers, decisions about what to learn, how to learn, and how much to learn, which was labelled as “autonomy.”

Origins of the Terms Used in Transactional Distance Theory

The term “distance education” itself originated at the University of Tübingen in Germany, where researchers in the 1960s wrote about “fernstudium” (“distance study”) to describe how certain practices common in industry, especially use of technology and *division of labor*, might be applied in teaching. The terms “dialogue,” “structure” and “transaction” all originated with University of Wisconsin’s professor of adult education Robert Boyd. The term “dialogue” was chosen in preference to “interaction” in response to Boyd’s argument that the latter term includes relationships that are manipulative and negative, and that a better term would define the solely constructive exchanges that are essential in a teaching-learning relationship. Boyd’s teaching theories were heavily influenced by Gestalt psychology, and it was from this that the importance of identifying programs according to their ‘structure’ originated. The term “transactional distance” was first used in Boyd’s 1980 *Handbook of Adult Education* (Boyd & Apps, 1980, p. 19). Originating with John Dewey, the concept of transaction “connotes the interplay among the environment, the individuals and the patterns of behaviors in a situation” (Boyd & Apps, 1980, p. 5). Thus, the “transaction” in distance education is the interplay of the behaviors of teachers and learners in environments in which they are in separate places and have to communicate through a technology. It is this separation between learners and teachers that necessitates special “patterns of behavior” in how content and teaching are organized in courses and programs—that is their structure—and special “patterns of behavior” in how teachers interact with learners when using communications technologies in the tasks of creating knowledge—that is, through dialogue. In both creating the right structure and determining the appropriate form of

dialogue for any specific student, group of students and subject matter, the aim is to build a bridge across what might be conceived as a psychological distance—a distance or gap in what a student understands about a reality, and the understanding of that same reality by the person or persons charged with helping that student in the development of his or her knowledge. (Here the use of the singular pronoun is unavoidable because the psychological processes of making knowledge is *always* the work of an individual, each person doing so differently to some degree.) It is in addressing the essential and inevitably *personal* character of learning—ignored or down-played in traditional education in which teachers were compelled to treat students as a “class”—that has proven the value, some would say the superiority, of distance education. And this recognition has accelerated, as the rich diversity of modern communication technologies allows for the production of materials and the development of applications that on the one hand benefit many but are also sufficiently flexible to be made relevant to each individual.

The recognition of the key role that students play in managing, to different degrees, their own learning when separate from, or independent from, their teacher, was inspired by Charles Wedemeyer’s (1971) definition of “independent study,” as well as by the (then) radical writings of Carl Rogers (1969), Abraham Maslow (1968), and other “Humanistic” psychologists.

Thus, to summarize, transactional distance is the gap between the understanding of a teacher (or teaching team) and that of a learner, and distance education is the methodology of structuring courses and managing dialogue between teacher and learner to bridge that gap through communications technology.

More About Structure

Although different teachers might use different terminology, all teaching begins with the planning of a set of activities, traditionally called “lessons,” and these may be further organized into a curriculum extending over a period of several days, as in a workshop, or many weeks. Let there be no equivocation on this, however—the fact is that there *must be a plan*. Certainly, learning occurs in the normal course of living, and certainly too, persons may pursue a learning plan of their own without the aid of a teacher or teaching institution. That, however, is not education, which by definition is, as Dewey himself insisted, a transaction between two or more people, both teachers and learners, in which learning is not random but deliberate and planned. The plan normally includes: a statement of the teacher’s expectations regarding what the students should learn; a presentation of content that frequently includes information, perhaps a demonstration of skills, sometimes case studies, images, possibly audio and video recordings; activities, projects, and other exercises to help the student engage with and apply the content; advice and guidance about study; and tests to gauge progress or the need for remediation. Although traditionally every teacher constructs all the lesson’s components, each component might be the work of a specialist, and the lesson is the product of the team. All activities in the teaching program might be very strictly specified by the lesson’s designers, leaving little room for deviation, as is often the case in medical, nursing, military, or other technical training, where a high degree of standardization is appropriate. In high-quality distance education programs, before final determination of the structure of each lesson, it might be tested on a pilot group of students, to find out, for example, precisely how long it will take each student to accomplish each intended learning outcome, or the validity of the activities designed to evaluate performance; they might measure the reading, viewing, or listening skills of the sample of students and then tailor the number of pages of reading, audio or video, research or other activity to be undertaken in each part of the course. Where the course, after design, is to be handed off to more than one instructor (which in better distance education systems is usually the case), to ensure all students achieve the same level of competence, instructors may be given detailed marking and testing schemes. During the phase of dialogue between students and with instructors, synchronous discussions might be

carefully organized, minute by minute, to ensure participation by each student, according to a carefully scripted plan. Instructors might monitor the progress of each student very frequently and give regular feedback and remedial activities for those who need them, and so ensure that every student has accomplished each step of the course in a tightly controlled sequence. Each student might have to follow the exact same sequence of reading and activity; audio and video materials might be tightly scripted and linked to specific pages in an online study guide. There might be ways for students to work at their own pace within the lesson, with some needing more time and others less to reach the teacher's objectives, but the student is not likely to be able to deviate from meeting those objectives according to personal needs or interests.

What has been described here is a course with a *very high degree of structure*. By comparison, other courses that are designed with lesser structure might allow students to articulate their own learning objectives, or find their own paths through the content, or find their own content relevant to the objectives of the lesson or allow them to negotiate other variations with the instructor(s). In such a course with less structure, students might surf the Internet, browse YouTube or a broad set of recommended websites, or view a podcast at their own speed, chosen from a list of recommended readings or find their own, and only submit written assignments when they feel ready. They may be told to contact an instructor if, and only when, they need advice. Such would be a course with a *lower structure* than the one described before. *Since structure expresses the rigidity or flexibility of the course's educational objectives, teaching strategies, and evaluation methods, it describes the extent to which a course can accommodate or be responsive to each learner's individual needs and preferences.*

More is said about this, and the importance given to the student's "autonomy" in the teaching-learning transaction later in this chapter.

More About Dialogue

Dialogue is a particular kind of interpersonal interaction. Interaction is not always constructive, but dialogue, by definition, is. Dialogue is synergistic, as each party in the exchange builds upon comments of the other. In dialogue, "each party . . . is a respectful and active listener; each is a contributor and builds on the contributions of the other party or parties" (Moore, 1993, p. 26).

In *Dialogue in Teaching: Theory and Practice*, Nicholas Burbules (1993) elaborates excellently on the idea and implications of dialogue, although he did not mention distance education: "dialogue involves two or more interlocutors. It is marked by a climate of open participation by any of its partners, who puts forth a series of alternating statements of variable duration (including questions, responses, redirections, and building statements), constituting a sequence that is continuous and developmental." (page 7–8). "Dialogue is an activity directed toward discovery and new understanding, which stands to improve the knowledge, insight or sensitivity of its participants." (page 9).

Courses of instruction may allow almost continuous dialogue between students and teachers—or none, and there is a range of variations between those extremes. The extent and nature of dialogue in a lesson is determined by numerous factors, including such mundane variables as the number of students in the charge of an instructor, but overarching all is the *structure* of the course. For example, a teaching institution that uses synchronous videoconferencing on the Web (a potentially highly dialogic medium) but holding the view that the content of the course demands that the student assimilates very specific information by listening and taking notes, might design highly structured lessons and limit dialogue to asking factual questions of the teacher and receiving answers. A particularly important variable affecting the extent of dialogue is the medium of communication, with the evolution of highly interactive technologies profoundly changing the potential for dialogue in educational programs. We see the limitations of technology on dialogue when we look back at traditional correspondence courses, when each contribution by teacher and student was through the mail. If the same course is delivered on today's Internet even with communication still in text, the technology

allows rapid and frequent responses by teacher to student, and a greater degree of dialogue is made possible. A tutorial between an instructor and a *single* student conducted in real time by Skype or similar audio-video application has the potential of being a highly dialogic process, while a similar online videoconference between *groups* of students would probably have a lower degree of dialogue (for each student). Some courses—such as those using “teach yourself” books, video discs, or Web-based learning—are not only very highly structured but have no dialogue. As will be explained later in this chapter, they are high in transactional distance. Besides the communications technology that link students and teachers, other determinants of the extent of dialogue that is appropriate in any course include the subject of the course, the abilities of students to manage their side of the dialogic process, the personality and interpersonal communication skills of the teacher, and cultural and even language differences between instructors and students.

Managing Transactional Distance Is a Function of Managing Dialogue and Structure

In the history of transactional distance, as described above, following the discovery of structure and dialogue as key “macro-factors,” an attempt was made to construct a typology, i.e., to classify the large collection of program descriptions that had been assembled to provide the empirical basis for that discovery. This typology showed programs that ranged from those that were relatively highly structured, based on behaviorist and cognitivist theories of learning, to those—at the other extreme—in which learners engaged in a high degree of dialogue in programs with minimal structure. (It should be noted that the term “relatively” used here is very significant, since transactional distance theory recognizes the fullest range of *all possible* degrees of structure and dialogue.) Because this is a point that is often overlooked, it bears repeating, that transactional distance is *relative*, not *absolute*. Teaching-learning programs are *not* dichotomously either “distance” or “not distance,” but they have “more distance” or “less distance.”

How transactional distance is determined by the variables of dialogue and structure can be illustrated graphically (Figure 3.1).

More on Learner Autonomy

To include the learner’s side of the distance teaching-learning transaction, a third dimension is needed. It was during the analysis of the database of programs that led to the proposition of the two dimensions of transactional distance that this third element emerged. This was the apparent varying ability of students in the programs being analyzed to manage their own learning. Historically, this was a phenomenon previously reported in a landmark series of case studies by Alan Tough in his book *The Adult’s Learning Projects* (1971). The same phenomenon was labelled as “learner autonomy” by the psychologist Carl Rogers in his *Freedom to Learn* (1969).

In Moore’s (1973, 1976) examination of his sample of programs, it became apparent that the effectiveness of varying degrees of structure or the dialogue in each teaching program appeared to interact with the extent to which learners in those programs were able (or unable) to participate in the design and execution of their own learning programs. In other words, managing transactional distance requires more than deciding the structure of the lesson and skillful management of dialogue in presenting it, but also requires knowledge about the ability of each student to manage his or her engagement with varying degrees of those teaching procedures. A further typology was developed, explained in 1973 as follows:

In our efforts to explore various aspects of learner autonomy in distance teaching and learning programs, we have tried to prepare a system that makes it possible to order programs

As structure increases, transactional distance increases
As dialog decreases, transactional distance increases

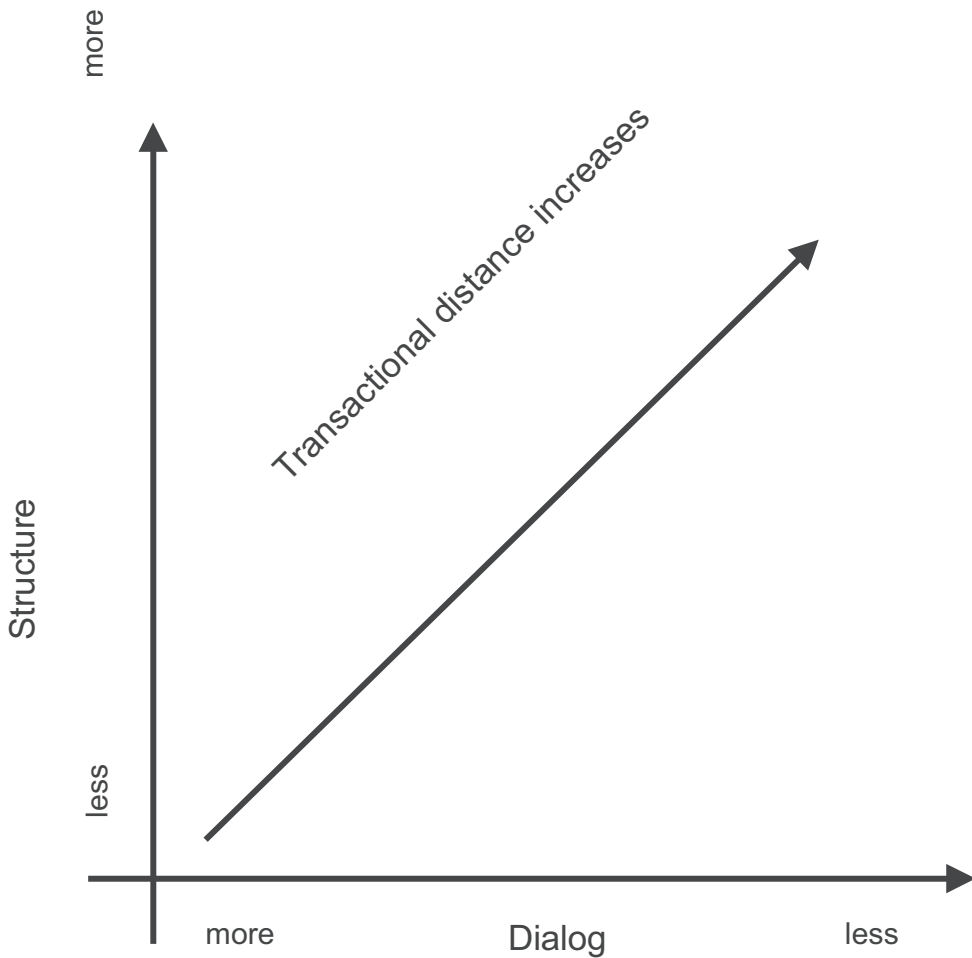


Figure 3.1 Relation of course structure and instructor–student dialogue in transactional distance

according to the kind and extent of autonomy the learner is expected or permitted—to exercise. We are placing programs in appropriate positions on a continuum, with those permitting the exercise of most autonomy at one extreme and those permitting the least at the other. For every program, we seek to identify the relationship between learners and teachers, and where control of each instructional process lies.

(Moore, 1973, p. 672)

Programs were classified on a range labeled AAA that meant the learner had complete autonomy in deciding what to learn (objective setting), how to learn (implementation), and how much to learn (evaluation) at one extreme, and NNN at the other extreme, describing a program in which the learner had absolutely no freedom to make any such decisions (Table 3.1). Because no one is entirely

Table 3.1 Degrees of learner autonomy in determining what to learn, how to learn and evaluating learning

| | | Objective Setting | Implementation | Evaluation |
|---|---|-------------------|----------------|------------|
| A= Learner Determined (“Autonomous”) | 1 | A | A | A |
| | 2 | A | A | N |
| | 3 | A | N | A |
| | 4 | A | N | N |
| N= Teacher Determined (“Non-Autonomous”) | 5 | N | A | A |
| | 6 | N | N | A |
| | 7 | N | A | N |
| | 8 | N | N | N |

Source: Moore (1973), p. 673

without freedom or absolutely without constraint, these are only theoretical constructs, and in real life all teaching-learning programs lie between these theoretical poles.

In this typology, programs are placed in a hierarchy:

1. Those that give the learner complete autonomy.
2. Those in which only the learner’s achievement is judged by an external agent, such as the teacher, college, or an examining authority.
3. Those in which the learner identifies goals and evaluates progress, but the path to achieve goals is controlled.
4. A program type in which learners define their own learning problem and goals but have no control of the implementation and evaluative processes.
5. Programs in which objectives are externally determined, but implementation and evaluation are learner controlled.
6. (Most uncommon), a program in which the student evaluates progress and completion of objectives and procedures determined by the teaching agency.
7. (By far the most common), those programs in which the student has some control over the implementation, but the goals are prescribed by a teacher and evaluation is also by teacher or an external agency.
8. Finally, like AAA, NNN programs cannot exist in reality, since no learner is either entirely free of others’ influence or entirely dependent on others.

These are theoretical constructs only, which describe the bounds of reality.

(Moore, 1972, p. 83, slightly modified)

Since this classification has sometimes been misunderstood, it should be noted that it was *not* suggested that all distance learners are fully or even highly autonomous. It is recognized that learners vary in their ability to exercise autonomy, and some might want to have greater autonomy in some courses than in others. Consequently, it is appropriate for educators to allow the exercise of more or less autonomy even within the same course. Indeed, ascertaining the appropriate level of autonomy for the students in a course in general as well as for each individual should be an aspiration in the design and implementation of every course.

Relationship of Learner Autonomy and Transactional Distance

In a course with low structure and high dialogue, i.e., low transactional distance, learners receive information and guidance through frequent ongoing dialogue with their instructors and through

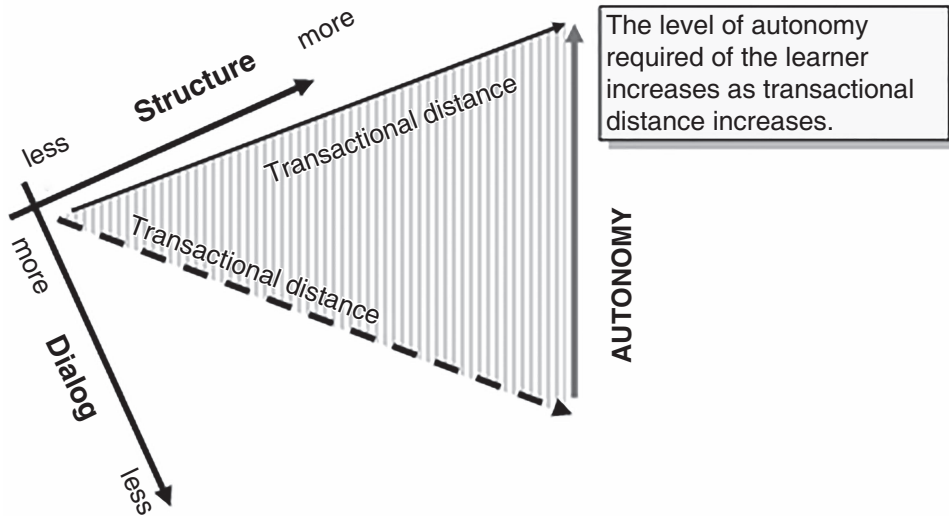


Figure 3.2 Relation of dimensions of transactional distance and learner autonomy

instructional materials that allow modifications to suit their individual needs, learning style, and pace. Such a program, having a lower degree of transactional distance, is likely to be more attractive to those learners who are less confident in managing their own learning. On the other hand, more autonomous learners are more comfortable with less dialogue, receiving instruction through more highly structured course materials, comfortable with finding information and making decisions for themselves about what to study, when, where, what ways, and to what extent. In other words, the greater the transactional distance, the more opportunity (and necessity) for the learners to exercise autonomy.

This relationship is illustrated in Figure 3.2.

Commenting on the significance of this relationship between the three variables, the eminent German pioneer scholar Otto Peters (one of the Tübingen group mentioned earlier) has observed:

by showing the transactional distance not as a fixed quantity but as a variable, which results from the respective changing interplay between dialogue, the structured nature of the teaching program being presented, and the autonomy of the students, it (the transactional distance theory) provides a convincing explanation of the enormous flexibility of this form of academic teaching. It also provides an insight into the pedagogical complexity of distance education.

(Peters, 1998, p. 42)

Recent Trends in Educational Practice: Personalized, Collaborative and Blended Learning

In this revision of the *Handbook* it seems timely to mention—although too briefly—three trends in educational conceptualization that have become fairly well established in contemporary practice since earlier editions of the *Handbook*, each of which suggests new opportunities to link with transactional distance theory.

The first of the three trends is the rediscovery of the idea of learner autonomy, now discussed as “personalized learning.” The recent history of this concept is found in several international projects

and publications as well as in the United States. For example, in a 2006 conference in Beijing, China, educators from 14 countries issued a declaration about the importance of personalization, defining the concept as “a means of enabling every student to reach their potentials, to learn how to learn and to share the responsibility for their own education” (International workshop for school principals, 2006).

In Europe, a multi-national project in adult education defined personalized learning as “learning that may be self-directed or may be facilitated by a tutor on a one-to-one basis and/or within a group setting. The learner is seen as the actor of his learning and in this sense, is associated with the decisions of the training organization” (LEADLAB, 2010).

In the United States, describing personalized learning as one of the most significant new trends in education, the New Media Consortium defined it as: “the range of educational programs, learning experiences, instructional approaches, and academic-support strategies intended to address the specific learning needs, interests, aspirations, or cultural backgrounds of individual students” (Johnson, Adams Becker, Estrada, & Freeman, 2015).

According to the United States National Educational Technology Plan, “personalized learning means adjusting the pace (individualization), adjusting the approach (differentiation), and connecting to the learner’s interests and experiences. Personalization is broader than just individualization or differentiation in that it affords the learner a degree of choice about what is learned, when it is learned and how it is learned.” (OET, 2017).

It can be expected that as technologies now being developed become widely adopted, this trend to personalization will accelerate. In particular, innovations in artificial intelligence (AI) will enable the analysis of information such as the frequency of a student’s logging in and posting to discussion boards, and problems with various learning tasks, as well as information about each student’s prior experience, performance, strengths and weaknesses, personality characteristics, and any relevant socio-economic circumstances. Recent enthusiasts for artificial intelligence claim that a machine that can run multiple permutations of such variables will be able to suggest a personal program for each student. These could include specifying learning objectives relevant to the competence of each individual, and linking each student to suitable resources, monitoring their learning performance, and providing links to support services as needed by each individual. Some cases recently reported of this kind of activity include a project in India called Mindspark that draws on a bank of the 2 million answers generated every day in response to some 45,000 questions. In Brazil, 415,000 pupils in São Paulo are supported by a system called Geekie, and in the United Kingdom a company called “No more Marking” develops tests based on information gleaned from millions of successful essays (McAfee & Brynjolfsson, 2017).

None of what is cited here was suggested with distance education specifically in mind, nor, of course, is a personalized approach to education restricted to distance education. However, because individualization of instruction has been such a distinguishing feature of distance education since the days of teaching by correspondence and then by computer networks and other teleconferencing technologies, there exists a considerable body of knowledge about how to personalize learning. For researchers in education, theories of distance education such as the theory of transactional distance should be ideally suited to framing good questions for empirical research in this growing area of practice.

A second recent trend to note at this time is the explosion of the faculty’s interest in understanding dialogue, this having been driven by the popularity among students of communication through social networking technologies. With about three of every four Americans using social media, today’s students have an unprecedented ability as well as resources for interacting with each other, not only in virtual groups, but also one on one. Such interaction can of course be time wasting, but if managed under the care of a knowledgeable teacher, within a well-designed course structure, it has the *potential of becoming dialogic*; that is, to be an asset for each student in the creation of their personal

knowledge. This is the vision pursued by those educators who see distance education not as much as a means of personalized individualized instruction in the correspondence tradition, but rather as a reinvention of the traditional class in the form of a virtual group or “community of practice” (see for example Draper, 2015). It is too widely presumed that students and teachers know intuitively how to make knowledge collectively as well as personally, but this is not the reality, and such a shift—if it is to be efficient—requires training based on research. Students have to learn skills of learning together, and for example learn how to share in the design and implementation of learning experiences that will meet their individual as well as collective learning needs. The overlap between the personalized learning view of teaching of increasingly autonomous learners and the view of the virtual class as a community of practice should be apparent, but also apparent are the opportunities for research into these relationships.

In these changing settings for learning, where success depends increasingly on developing the skills of dialogue, some students whose only experience is in the teacher-dependent classroom will have difficulty in adjusting. For the next generation, however, adjusting will become even more essential, as more schools and colleges adopt the practice of “blended learning.” This is the third trend of note, the spread of “blended learning,” in which distance education programs are dovetailed into conventional campus-based courses. This trend, sometimes also called “flipped learning,” keeps the socially convenient arrangement of fixing teaching on a campus—(we have to ask: where would the children go if not in school, or the young adult go when faced with a shrinking workforce?)—while permitting students to benefit from better teaching and personalized learning using distance education programs, managing their own pace of learning and choosing their preferred technology. When blended with face-to-face class time under the control of a competent teacher, each student also benefits from being trained and mentored as a skillful participant in a community of learners, and also from one-on-one interaction with a teacher in designing and managing their personal learning programs. For a broad examination of the application of transactional distance theory to blended learning, see Swart, Wengrowicz, and Wuensch (2015) and Swart (2017).

Other currently popular topics that further indicate a renewed interest in the individual learner, include a resurgence in competency-based education, often connected to the assessment of prior learning, and practices described as adaptive learning. Especially helpful in these developments is the technology of learning analytics, with large data sources brought to bear in the analysis of the individual student’s prior performance, individual strengths, weaknesses and noted difficulties with various learning tasks.

These trends toward engaging with learner autonomy and facilitating dialogue between students, as well as between instructor and students—trends in both in distance education and in the blended classroom—not only challenge learners, but bring many new challenges for teachers, too. One of the most demanding challenges for teachers is to make it possible for the student to benefit from the new freedoms by how lessons and courses are *structured*. The greater the freedom and openness to use of a wide range of resources, even greater than before is the need for, for example, well-constructed learning objectives to guide the selection of learning resources and evaluation tasks. Equally, with greater freedom of choice, most students will depend on good course and lesson *structures* that help in organizing their study time and study activities, and structures that help navigate the infinity of online and other resources. Thus, the challenge for teachers in designing courses, either individually or collectively as members of a course team, is to design environments and experiences for learning that takes advantage of social networks as well as the infinity of online resources by providing the *structure* that allows numerous pathways to common goals, with collaborative tasks that stimulate knowledge sharing, while allowing each student to personalize the experience.

For more about these emerging issues of personalization of learning, study in communities of learning and the blending of distance education with face-to-face classrooms, the reader is pointed to upcoming chapters in this *Handbook*.

The final point to be made here is that each of these trends offers many opportunities for the articulation of researchable questions within the framework of transactional distance.

Transactional Distance Theory at Work in Research: Early Studies

Although the term transactional distance first appeared in print in 1980 (Moore, 1980), the first major researcher to recognize its potential, and subsequently to contribute significantly to the development of transactional distance theory, was Farhad Saba. In pioneering the use of computer simulation in educational research, Saba and colleagues developed a model based on principles of systems dynamics that operationalized dialogue, structure, and autonomy, and tested the hypothesized changes in each of these that resulted from changes in others (Saba, 1988; Saba & Twitchell, 1988). In a subsequent project, Saba and Shearer (1994) used discourse analysis to identify ten categories of teacher-learner transactions and again demonstrated how changes in dialogue, structure, and teacher/learner control effected changes in each of the others. Shearer has further developed his interpretation of the theory (2009), while Saba and Shearer's instrument has been adapted for use by others, as for example by Shinkle (2001) and by Braxton (1999), whose instrument was one of the first of several such attempts to create an instrument to measure transactional distance. Most early research addressed questions about transactional distance in programs that were delivered by audio, video and computer-based conferencing. The beginning of the new century saw the beginning of studies that focused on Web-based learning, these including Jung (2006), Chen (2001) Clouse (2001), Dron (2002) and Zhang (2003).

Recent Doctoral Dissertations (2012–2018)

Following the pattern of chapters about transactional distance theory in previous editions of the *Handbook*, what follows in this chapter is a listing of some of the recent doctoral dissertations that feature the theory. Doctoral research is overseen by faculty who are presumed to be knowledgeable about the literature as well as research methodology. It is the literature review that makes the doctoral dissertation an especially valuable resource, as it is the build-up of literature that results in the maturing of the theoretical framework itself as an asset for the next generation of researchers. The following is a selection of recent (2012–2018) dissertations that report research directly based on transactional distance theory. This selection *does not repeat* the studies reported in previous editions of the *Handbook*, and therefore *it is essential* that in order to establish a foundation for a specific research study, the researcher consults those previous editions as well as this one. When undertaking the essential literature research, it is also advisable to look for studies that might not cite TD theory as a primary resource, but nevertheless draw on it as a secondary resource in conjunction with other theories. It is also advisable to seek out, as far as possible, some of the many studies that use the theory without explicitly saying so.

In this most recent selection, the studies were undertaken in various parts of the United States (and none have been identified overseas in the past five years), with data gathered in Texas (Minor, 2014), Louisiana (Purdy, 2016), Pennsylvania (Winters, 2017; O'Brien, 2015), and Florida (Bhargava, 2016). Subjects of research have been students learning in biology (Riggins, 2015), nursing (Koslow, 2015), military courses (Kenyon, 2012), composition and reading (McKelvey, 2016), algebra (Berry, 2017), and Russian (Kostina, 2011). Data were gathered from pre-service teachers (St. Arnauld, 2016), educators in community colleges (Riggins, 2015), and students and faculty in universities (Fullwood, 2015; Paul, 2015; Kung, 2016; Forte, 2015), with a preponderance of studies addressing problems at the virtual high school level (Purdy, 2016; Winters, 2017; Berry, 2017; Lane, 2017; O'Brien, 2015; Bhargava, 2016). This expansion in research in the high school population is a notable development when research inventories are compared with those of a decade ago.

Also reflective of the age is that the technology engaged in all the recent studies delivers programs online, some focusing on learning that uses specific applications, such as video games and Second Life (Atkinson, 2013), asynchronous video (Casteel, 2016), and conference calls (Minor, 2014).

The most common research questions focused on instructional design. Clyde (2016) examined the practices of a sample of high school virtual course designers, while Blue (2015), Wheatley (2016), Barnett (2014) and Congress (2015) all used the Delphi method to gather expert opinions about instructional design strategies. Other instruments used in the various studies included the Structure Component Evaluation Tool (Casteel, 2016), the Distance Education Learning Environment Survey (Fullwood, 2015), and the Individual Development and Educational Assessment (IDEA) survey (Forte, 2015). Lane (2017) developed and tested a 35-item survey instrument, the Blended Learning Assessment Scale of Transactional Distance.

Dependent variables reported in the studies included student achievement (Riggins, 2015; Berry 2017; Kenyon, 2012), attrition and dropout (Winters, 2017; Paul, 2015), satisfaction (Koslow, 2015; Komarnicki, 2014; Fullwood, 2015; Scharf, 2015; Kenyon, 2012), personality traits (Casteel, 2016), retention (Waite, 2016), and motivation and autonomy (Purdy, 2016).

Kinyanjui (2017) found no relationship between ethnicity and transactional distance. Kung (2016) examined cultural aspects of online learning by Chinese students in the United States. Scharf (2015) observed differences in student satisfaction between a traditional classroom venue and a live virtual classroom but noted no differences in performance. Cross (2015) explored methods used to develop collaborative learning communities in online classrooms.

Purdy (2016) concluded that virtual high school students do not value virtual learning communities. Similarly, Nwankwo (2015) showed that what students most value is interaction with course material, followed by interaction with the instructor. Kenyon (2012) also examined the effects of interactivity on learner performance, and satisfaction and found a relationship between interaction and gains in mastery of course content. O'Brien (2015) identified tools and techniques used by "highly-qualified" teachers in their online classrooms and described implications for pre-service teacher education programs.

Conclusion: How to Use This Literature

Transactional distance theory provides a very broad framework that defines the variables in the pedagogy of distance education. It allows the generation of a multitude of hypotheses for research into the interactions between all types and variations of course structures, of the great variability of forms of dialogue between teachers and learners, and the equally wide range and variety of students' propensity to exercise control of the learning process. It is as a framework for such a disciplined scientific approach, building new knowledge on the foundation of the old, as contrasted to the haphazard "wouldn't it be nice to know?" approach that is unfortunately too prevalent in education, that transactional distance theory, like other theory, is most valuable.

This chapter has summarized the genesis of the theory and listed some of the research projects it has spawned recently, which now serve to point the way for future research.

Note

1. In this chapter, the words "teacher" and "instructor" are used synonymously, as are "teaching" and "instruction", and "learners" and "students".

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