

A Summary of Ideas About Transactivity at Explora (up to this point)  
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Many museums are developing exhibits and programs with "transactive" qualities—loosely meaning that they contain many manipulable materials that change through use and also provide open-ended opportunities for people's habits of action and behaviors to be changed as a result of their engagement with those materials. Even the concept of transactive exhibits and programs is undergoing development and change. Driven by the need to start organizing our thinking about what we were doing, a few years ago staff at Explora collected a loose group of practices and ideas under the term 'transactive'.

Some of us were uneasy about what was being referred to as interactive in media, marketing, technology, education and museums. We had a feeling that we wanted to try something else. This interest was compelled by an agreement that learning is an act of changing one's habits of thought and action, of changing one's relationship with the environment, with the things in the world, with other people, and with oneself. Learning also means that something about those things in the world, and the other people, and one's self also changes.

Transactivity is an evolving concept. It means that exhibits are somewhat different after being used by someone; they don't necessarily reset themselves to some preconceived status. It means lots of materials with numerous possibilities for use, such that the outcomes are unpredictable. It means relinquishing control of learning outcomes to the learners, and it means that people can apply their prior experiences to the present activity. Sometimes it means that people can change their minds in the middle of what they are doing. Sometimes it means person-to-person facilitation, or making comfortable environments that encourage self-directed learning.

Suppose we assume that the purpose of learning and education is not to remember a lot of things, or to provide a product, but rather to change one's life; and people changing their lives means changing their relationships with other people, with the things around them, and with themselves. The notion of transactivity suggests that the relationships themselves, as they evolve over time, may be a more fruitful focus of attention than the parts, or the subparts. Learning has to do with the meanings of things, and those meanings have to do with the uses of these things in our lives—the meaning is the use. This unavoidably involves a valuation of these things.

This valuation is apparent when educators and exhibit developers have to make decisions about how children and adults will spend their time as learners, and about what materials we will provide for them with which to spend their time. Some things have more educational value than others. To us that value is related to transactivity. Learning requires some enduring change in a person and in the constituents of the environment. Remembering does not require such changes. Learning may well require some sort of remembering, but the most important forms of such memory are habits of action, which are neither necessarily conscious nor symbolic. Learning involves the whole of a changed and changing, active, physical human being engaged together with a correlated, changed and changing, actively reciprocating physical environment. Learning develops through experiential analogs—whole experiences that are perceived as analogous to other experiences and that are transactions with and within an environment.

This environment includes the learner and all of the material and non-material things affecting or affected by the activity. It includes other people and their personal histories and the behaviors of these people, and behaviors of the environment itself and of the things within it. This includes

spontaneous and novel behaviors, individual and social habits of action, and habits embodied in the structures and current functions of objects; for example, in the available tools, or a worn walking path, or the arrangement of objects in a room, or the room itself. It also includes all of the embedded meaning, esthetic and emotional qualities, the affective and material milieu. Acts of learning are transactions among these constituents, during which the constituents change, at least with regard to their meanings—with respect to their use. In this perspective, learning is a transactive experience.

The purpose of conversing about transactive exhibits, activities and experiences is to speculate about how we can help to unify people with their environments in acts of learning—and unify, rather than isolate, the elements of learning experiences. We habitually separate these elements, as an organism or individual, on the one hand, and environment on the other. A result of this habit is that the elements tend toward isolation in practice, as they become defined as student, learner, user, or teacher, knowledge, object, problem, product, and so on; perhaps, even more minutely as idea, information, phenomenon, measurement, datum and such. You can imagine the complexity of this situation, and the inevitable distortion that results not only from the desire to explain it, but also from the perceived need to control it: in schools, colleges, families, secular and religious trainings, economies and politics. Perhaps there never has been so widespread a desire to define and guarantee the outcomes of learning long before they occur. Nor have the constituents of learning been so fragmented.

Elements of Learning Experiences Unified in Transactivity			
	relationships with things	relationships with others	relationships with self
facilitation	changing relationships with things, mediated through facilitation	changing relationships with others, mediated through facilitation	changing relationships with self, mediated through facilitation
materials and exhibits	changing relationships with things, mediated through materials	changing relationships with others, mediated through materials	changing relationships with self, mediated through materials
environment	changing relationships with things, mediated through environment	changing relationships with others, mediated through environment	changing relationships with self, mediated through environment

Even though the terms transactive and transactivity are new, the concept has been developing for a long time. These terms are derived from the word ‘transact’, which has a Latin origin meaning “to do” or “to carry on,” “to carry through negotiations” (implying an exchange of some kind). Among the meanings of the prefix ‘trans’ are “from one place, person, thing or state to another,” “changing,” and “so as to change thoroughly.” From this the adjective ‘transactive’ could mean “changing something thoroughly, moving something from one state to another, as in growth and development.” ‘Transactivity’ as a noun calls attention to the complex activity of an environment as an ecological niche and the exchanges among all the things with and within it. Transactive exhibits and programs are activities through which both the physical materials and the people engaged are changed through their transactions, thus changing certain qualities of their environment as well.

"There is, however, no ground for the separation of the series of events [the environment] which precede the organic processes from these processes. The whole situation is of a single piece....What lies back of this separation is the mutually determining character of the organism and the environment....The reflection of the organism in the environment and the reflection of the environment in the organism are essential phases in the maintenance of the life process that constitutes conscious intelligence." —George Herbert Mead, c. 1925 (1938)

"The 'meaning' of an intellectual concept...is a *habit-change*; meaning by a habit-change a modification of a person's tendencies toward action..." —Charles Peirce. c. 1900 (1965)

"The basic character of habit is that every experience enacted and undergone modifies the one who acts and undergoes, while this modification affects, whether we wish it or not, the quality of subsequent experiences. For it is a somewhat different person who enters into them....But there is another aspect of the matter....Every genuine experience has an active side which changes in some degree the objective conditions under which experiences are had....An experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment." —John Dewey, 1963

"[Behaviour] is at the same time a producer of evolutionary change as well as a resultant of it, since it is the animal's behaviour which to a considerable extent determines the nature of the environment to which it will submit itself and the character of the selective forces with which it will consent to wrestle." —C. H. Waddington, 1959

"That is just what behavior is: a mixture of choice from, and effect upon, the environment, exerting optimal control over exchanges. Learning is no exception to this definition.... [Assimilation] expresses the fundamental fact that any piece of knowledge is connected with an action and that to know an object or a happening is to make use of it..." —Jean Piaget, 1967

"The important thing in any learning is to be able to use it, to go beyond it, in the direction of still further learning and activity....There are two aspects to providing occasions for wonderful ideas. One is being willing to accept children's ideas. The other is providing a setting that suggests wonderful ideas to children--different ideas to different children..." —Eleanor Duckworth, 1973

"There is no true word that is not at the same time a praxis." —Paulo Freire, 1968

So here we are, asking what we can do to create exhibits and programs in our science center environments that are inclined to accept other people's ideas, their personal experiential analogs, and their curious, unpredictable experimental behaviors; and, what can we do to create settings, exhibit and program milieus, that suggest or create opportunities for everyone to have many different, wonderful ideas of their own?