

Are science centers really life-long learning organizations?

Comments for the ASTC session: Are We Really Doing Our Job As Life-Long Learning Organizations?  
Paul Tatter, October 21, 2013

Are science centers really life-long learning organizations? Probably not yet. Among the numerous indicators of this are two common observations: it is difficult to establish evidence of learning as a result of several hours in a science center; and every science center is unsuccessful in appealing, on a large scale, to some age demographic, such as teenagers. There are, in fact, so many similar observations that I believe for the most part science centers are neither life-long nor primarily learning organizations. This is not to say that they couldn't be. But to achieve this there would need to be some difficult self-examination, challenges to our assumptions, and changes in what we do.

First, a science center would need to be clear about whether or not it really wants to be a life-long learning organization. Some may prefer to focus primarily on entertainment, or exhibition, or collecting, or performance, demonstration, exposition, or other functions. But even if that commitment is clear, what it means to be life-long or what it means to be a learning organization is not self-evident. And we need to question our assumptions and habits of thinking about these things.

For example, life-long is commonly described in at least two very different perspectives. From a cross-sectional perspective we tend to think of generations of people in categories like pre-school, teen and senior citizens. These categories are static and so, often, we create static spaces intended to accommodate these generations separately; and usually don't do very well at accommodating some of these groups. So we leave some out, and are not life-long on this account.

On the other hand, from a longitudinal perspective, we tend to think of life-long as the life-span developmental pathway of a person. These pathways are dynamic threads that extend into the past and into the future, and have unique qualities characteristic of individuals. From this perspective we create dynamic spaces intended to accommodate people individually in multigenerational social groups. We create spaces that we expect to accommodate these individuals as they grow and develop unpredictably over long periods of time through many, many repeat visits.

Whether a science center has primarily a cross-sectional perspective or a longitudinal perspective on what it means to be life-long will have a profound effect on the characteristics of the institutional environment, both physical and cultural, the design of exhibits, and the manner of activities and programs provided. What does our institutional environment enable? What does it disable?

Questioning our assumptions and habits of thought about learning is much more difficult than questioning what we mean by life-long. We don't often make decisions about how to operate science centers, or how to make exhibits, or how to design our institutional environments, or how to facilitate our program activities by struggling with challenges to our assumptions about how people learn, or what it means to learn something, or what is learning - really.

For example, learning with respect to time and activity is commonly described in at least two very different perspectives. From a formal, school-based perspective we tend to

describe learning as an event. We say there are flashes of insight, knowledge transfers, information acquisitions, teaching lessons, all of which appear to happen at some moment in time; these are events. We have the impression that all we need to do is remember these events to have learned something, and so learning is often identified or equated with memory or remembering. This conception is reinforced by what we do in schools.

On the other hand, from an informal, experience-based perspective we tend to describe learning as an ongoing process. From this perspective learning is not usually described as an event, or a moment that has been memorized. From an informal perspective learning is described as incremental, and requiring continuity and repeated, evolving transactions over long periods of time. Furthermore, learning is usually described as doing, as engaging the material environment through thoughtful and creative activity. And it persists as the lingering consequences of that activity, carried over into subsequent activity.

Even though they are informal organizations, most science centers function as if they have a formal, school-based perspective on what it means to learn. Whether a science center has primarily a school-based perspective or an experience-based perspective on what it means to learn will have a profound effect on the characteristics of the institutional environment, both physical and cultural, the design of exhibits, and the manner of activities and programs provided. What do our institutional environments enable? What do they disable? To what extent do they encourage, support and sustain acting on the basis of values that make us desirably human and humane?

This holds true, also, in our circumstances and for our purposes and our values, for what we believe science is. So we must question our assumptions about what is science, especially with regard to public understanding of science, or what UNESCO and most of our hemisphere calls popularization of science or communication of science to the public, and the movement toward a more scientific public culture.

Science is a social process for learning through experience. This distinguishes, in numerous ways, what should be current scientific assumptions about learning from archaic, pre-scientific assumptions. For example, until the seventeenth century it generally could be assumed that knowledge was certain and immutable, and the sources of learning were mental or spiritual. After the nineteenth century it could be assumed that all knowledge evolves, and the sources of learning are experimental or active, corporeal experiences with the physical world. Yet we behave, for the most part, in museums and schools, as if we believe in the obsolete assumptions.

A scientific public culture probably will develop only through the public use of science - learning through experience - and probably will not develop on a large public scale through reading, talk, demonstration or exposition. Science does not exist in books, or in lectures, signage, or online. Science, like music, exists when it is being used, or made, or done. The science that matters to people is the science they use to inquire about the circumstances of their lives, that articulates the experiences they actually are having in ways that they can use to think and do something about those experiences - to learn from them. We need to help people use science to learn through their experiences in order for them to appreciate and value it.

People learn by making and doing, through thoughtful and creative action. Learning is a continuous process of adjustment in life activity, change in relation to all the things that

participate in some activity, which ensues from experiencing the ongoing and emerging consequences of the activity, especially the consequences of one's own behavior. These adjustments are embodied as physical, behavioral, attitudinal and functional changes, carried over into other activities, in self, others, objects and processes that make up the environment at the time. Learning is a transactive experience of give and take among the things involved in the activity, and not only is the learner changed, but also changed are other objects, people, processes and the developing relationships among these that constitute the environment of that activity. Because learning is a transaction among these functional constituents, its outcomes are always unpredictable.

If learning is really about change, then we can't avoid including these changing physical and functional relationships in our attempts to think through what kinds of experiences we are going to provide for the public. This includes thinking about people's changing relationships with things, for example, making something or creating a new use for an old tool; and with others, for example, finding a new way to collaborate and share an activity or to assimilate someone else's perspective; and with self, for example, breaking a habit or changing a long-held assumption or expectation about how something works. For what kinds of change can we hope to provide opportunities?

All of these questions about the meanings of science and life-long learning may require us to rethink the physical and cognitive accessibility of our places, where we are located, what our physical and organizational culture looks like, what our exhibits look like and how our exhibits work, what our programs and activities are like, and what our public environments encourage and support or discourage and suppress. And becoming a life-long learning organization may require us to change what we are doing in very substantial ways, to act on the basis of our deepest human values with respect for the autonomy of the learners and trust in the immeasurable, incalculable capacity of all people to freely learn.

We probably need to apply values we think are implicit in worthwhile learning experiences, values like respect, trust, hope, happiness, reason, equality, community and collaboration, personal growth, direct experience and activity, liberating attitudes and emotions. We probably need to democratize and level the learning field to minimize contextual discrimination, reducing prejudice or bias toward someone's personal history, income, amount of formal schooling, literacy, language, gender, age, ethnicity, cultural background, or circumstances of birth, residence or living environment.

We probably need to democratize cognitive access by making exhibits and programs with elements so fundamental to human experience that they might get beneath things that separate people (like income, schooling, etc.); fundamental experiences we all have because we are biological humans and alive. We probably need to suspend urgency, and cultivate comfort with not knowing how something will turn out before it happens.

We probably need to make places of refuge, where we first do no harm; where people can be entirely absorbed in the present without the threat of embarrassment or humiliation, anxiety or insecurity, shame, guilt, fear or foreboding. Freedom to learn means guaranteed choice of privacy in learning. We probably need to make places with the challenge of taking intellectual risk and the comfort of knowing you won't be punished for it, or tested, evaluated, judged, ranked, separated, sorted, classified, and placed. We probably need to respect and value people for who and what they are today, rather than what they ought to be, ought to think, ought to know.