Effective Education for Everyone:

Accommodating Assorted Abilities, Providing for Particular Preferences, and Telling the Targeted

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Museums face serious challenges in their educational role. Educating, relative to collecting, conserving, and exhibiting, is becoming more important for institutions that have a fairly comprehensive collection, have no more collection space, have little or no collection, or are fighting a sleeping image. Yet, there is little evidence that museums are having much educational impact, at least beyond the affective level. "A potpourri of research has occurred in museums over the years which has provided a welter of facts about visitor movement through museums... These studies suggest that, unless the casual observer either has prerequisite knowledge, as directed to specific learning outcomes, or has specific learning intents of his own, it is likely that little learning will result from the casual perusal of exhibits."[1]

Marketing, rather than aiding education, is at times perceived as much as an alien as an ally and has not always adapted to museum needs. The gate in general, or a major exhibition, is usually marketed well, but one does not often see the mission or particular programming publicized. Programs are sometimes tailored for targeted audiences, but the targeted are rarely told.

Many museums are huge or spatially complex, and maps at best indicate where specific subject matter is addressed. Visitors, not knowing what is available and not asked what they would like, wander, and whatever educational impact occurs seems to be very

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1. Falk, Koran, and Dierking, "The Things of Science: Assessing the Learning Potential of Science Museums," P. 504 in <u>Science Education</u>. 70(5), John Wily and Son, 1986. "Evaluation studies have indicated that relatively little learning is taking place of the kind scientists/curators consider important and have built into the content of many exhibits." Teaching Science to Voluntary Learners and the Role of Evaluation. C. G. Screven in <u>Science Learning in the Informal Setting</u>, Chicago Academy of Science, 1987.

haphazard.   The diversity of both the audience and the offerings is growing, but the matching of mindsets and messages is lagging.

Fortunately, many museums realize they are nowhere near achieving their educational potential and are looking for ways to increase their educational effectiveness. Any search for progress might build on and benefit from the following increasingly accepted principles influencing museum education. Museum audiences encompass a wide variety of abilities and interests affecting their learning. The attributes affecting informal or voluntary learning in a museum may best be put in two categories: abilities and preferences. Visitors are going to become increasingly familiar with the kind of personal preferences they may have affecting their ability to benefit from efforts at informal education. Programs prepared for a particular audience will generally be most effective with that audience. A program will be particularly effective when it slightly challenges a visitor's abilities and interests.[2] Museums are presenting an increasing variety of programs.

What about the possibility of matching mindsets and messages? Would it be possible for a museum visitor to go up to a computer or interactive videodisc screen and punch in whatever relevant abilities she has, then punch in several learning preferences, and then see on the screen the names, locations, and times of the two or three programs or exhibits most suited to her? Would it be possible for people who were very differently abled and/or had one or two very strong learning preferences to know from the media that programs specifically tailored for them were available at the museum?

2. "...this kind of learning (intrinsically motivated) succeeds only when the challenge is close but slightly greater that the skill level of the person and when feedback is immediate... This notion argues both for creating a variety of exhibits that match the interests of many visitors and for creating a variety of levels within each exhibit to maximize the chance that something will connect with the visitor in a meaningful way." Science Museums as Environments for Learning, R. T. Semper, in Physics Today, Nov. 1990, P. 53. See also "Apples, Oranges, and Sometimes Unicorns: Appreciating the Differences Between Individual Learners" in Science Learning in the Informal Setting: Symposium Proceedings, Chicago Academy of Sciences, 1988, Pp. 316-327.

A museum that tried to achieve such matching, and it is likely to be only the good-sized ones that will try, might proceed in six stages. The first would be to determine what kinds of abilities affecting access it considered important (e.g., financial, physical, linguistic and educational – see Appendix A), and then what particular levels within each ability it considered significant and either already had, or could develop, tailored programs for. For example, the museum would decide, if it did not do so already, to have a "free" visiting period every week for those unable to afford admission, or a program in French at least once a week.

The next step, a difficult one, would be to determine which four to six preferences affecting volunteer learning, it considered most important (e.g., subject matter, visit frequency, or medium – see Appendix B), and then how many different kinds of a given preference it considered significant and either already had, or could develop, tailored programs for. While a wide range of examples is presented in Appendix B, each museum should choose its own and probably not attempt to cater to more than six. Subject Matter would seem critical even if there were only three or four different offerings. Interest Level is more debatable and could perhaps be merged with Motivation. What is important here is that the highly interested and/or educated know where to go. Frequency of Visit may not be among the most important preferences, but frequent visitors deserve to know about the newest programs. Social Context is critical because studies show that a good deal of visitor time is spent in social interaction, and school groups have very different interests than adult individuals.

Learning Style may be the most important preference, but it is also the hardest to use because not enough people know yet what learning style they fit into. In essence,[3] through a very simple test, an individual is

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3. For a full discussion, see The 4-MAT System, Bernice McCarthy, Excel, Inc., 1987, and What

determined to prefer one of four learning styles. Imaginative learners perceive information concretely and process it reflectively. Analytic learners perceive information abstractly and process it reflectively. Common sense learners perceive information abstractly and process it actively. Dynamic learners perceive information concretely and process it actively. Each learning style is the first choice of a significant fraction of museum visitors and, as Appendix C illustrates, museums can adjust programming to appeal to each one. If a museum thought this was an important preference affecting learning, it might enable its members, and perhaps its visitors, to determine their learning style and explain its significance.

The last preference in Appendix B, Medium, would appear to be quite important given the evidence that different kinds of intelligences are based on different senses[4] and that most people know which senses and media they prefer to process information through.

The third step would be to inventory all current exhibits and programs and determine which abilities and preferences each is suited for. The fourth step would be to identify those abilities and preferences for which there is no, or very little, programming, and determine which vacuums, if any, will be filled in the near future, even if only once a week. This part of the process would be invaluable in helping staff look at the museum's offerings through all the educationally significant abilities and preferences of its public.

The fifth step, putting all this into a computer or interactive videodisc and making it useful to the visitor, can best be described in terms of final output. After punching in a level for each ability, a visitor would

Research Says About Learning in Science Museums, Association of Science and Technology, Association of Science and Technology Centers, 1990.

4. See Frames of Mind, Howard Gardner, Basic Books, 1983.

be offered on a screen a menu of appropriate offerings, and be informed when and where to find them. The visitor could then punch in his choice of level for each of up to three kinds of preferences from a group similar to those in Appendix B, and see on screen when and where to find a few offerings particularly attractive to those preferences.

The sixth step – telling the targeted – is vital. Education and marketing staff would determine which audiences, defined in terms of abilities and preferences and for which tailored programs were available, were of significant size and/or were substantially under-represented in the museum. If those that surfaced were numerous, the museum would prioritize them. Marketing would then make a special effort to market to those audiences the programs tailored for them.

Is the effort worth the trouble? Yes, even if only as an experiment. Would the matching process prove too tiresome or too thought provoking for some visitors?   Perhaps, but give educationally motivated visitors the option. Museums may be better suited to improving motivation and attitudes, and providing frames of reference for their subject matter, than to seeking more cognitive goals,[5] but finding what you like faster does not hurt motivation, and the potential for cognitive impact should be explored further.

Teamwork between marketing and education, so needed in most museums, should improve. While the maintenance needed to keep the information current might be significant, the initial investment would be relatively minor. While educators might disagree about which abilities and preferences are most significant, almost any choices are better than what is available now, and there can be little doubt that

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5. As C. G. Screven thinks. See "Teaching Science to Voluntary Learners and the Role of Evaluation", Page 231, Science Learning in the Informal Setting, Chicago Academy of Science, 1987.

matching mindsets with messages more will improve the educational effectiveness of museums, particularly for first time visitors.

In informal education, intrinsic motivation is the key. Harnessing and fulfilling that motivation is the challenge. Large museums in particular will go a long way toward achieving their educational mission if they can help visitors become more aware of their learning motivation and preferences, and thus make it easier for those visitors to find both what they are looking for and what has been prepared especially for people like them.

When a visitor's motivation meets an educator's intent head-on, educational impact is imminent. Let's make it happen more often.

Appendix A

ABILITIES AFFECTING ACCESS

FINANCIAL	PHYSICAL	LINGUISTICS	LEARNING
Able to afford admission	All	English	grades K-4
Unable to afford admission	All but sight*	French	grades 5-8
	All but sound	Japanese	High School
	All but ambulation	Spanish	Adults (High School Grad.)
	All but manipulation		Specialist (degree or job in Museum's field)

* Special arrangements would be made for those unable to see.

Appendix B

PREFERENCES AFFECTING VOLUNTARY LEARNING

SUBJECT MATTER	INTEREST LEVEL	MOTIVATION	FREQUENCY OF VISIT	SOCIAL CONTEXT	LEARNING* STYLE	MEDIUM
Scientific process	Casual	Education	1st-2nd in year	Individual	Imaginative Feel-watch	Ear-live
Technology	Curious	Education/ Exploring	3rd-4th in year	Family	Analytic Watch-think Assimilator	Ear-taped
Physical sciences, Physics, Chemistry	Involved	Education/ Entertainment	5th + in year	School group	Common sense Think/do Converger	Eye-live images
Earth sciences, Archeology	Advanced	Education/ Socializing		Adult group	Dynamic Do/feel Accomodator	Eye-taped images
Biology, Marine Sciences				Senior Citizens		Eye-print
Astronomy						Touch – hands on
Mathematics						Interactive
Computers						

* See Footnote 3.

Appendix C

THE FOUR BASIC LEARNING STYLES IN MUSEUMS

TYPES OF LEARNERS	INFORMAL ENVIRONMENT AND ATMOSPHERE			FORMAL PROGRAMS	
	Orientation	Interpretation	Visitor Sensitivity	Tours	Lectures/films/classes/etc.
1 (ONE) <u>Imaginative</u> ...learn by listening and sharing ideas	When visitors arrive, are there people to answer questions, listen to ideas?	Does interpretation encourage social interaction with others in groups of visitors?	Do staff members provide opportunities for visitors to articulate their reasons for coming?	Do docents allow time for group discussion and sharing ideas?	Do lecturers involve the audience in discussion? Do discussions follow films?
2 (TWO) <u>Analytic</u> ...learn by thinking through ideas sequentially	Is there a floor plan and other printed information describing what is where?	Does interpretation provide <u>facts</u> and integrate groups of objects through fascinating ideas?	Can visitors submit specific <u>factual</u> questions and get them answered by staff ?	Do docents give <u>factual</u> information along with discussion and analysis?	Do lecturers have outstanding credentials in their field? Are their talks substantive with plenty of information given?
3 (THREE) <u>Common Sense</u> ...learn by testing theories and applying common sense	Is there freedom to discover and find one's own way?	Does interpretation pose questions or allow independent discovery?	Does the museum design-test programs or exhibits with visitors?	Do docents pose questions and allow time for independent discoveries?	Do programs include opportunities to experiment with processes or see demonstrations?
4 (FOUR) <u>Experimental/Dynamic</u> ...learn by trial and error	Are visitors encouraged to explore innovative approaches to seeing the museum?	Does interpretation invite imaginative thinking and provide ways for sharing such efforts?	Is staff prepared to listen to the intensity of visitors' ideas and opinions?	Do docents accept unusual and creative reactions to questions?	Do programs include opportunities to apply new learning by "being" a scientist, artist, historian, zoologist, etc.?

Prepared by Rose M. Glennon, Chairman, Museum Education, The Toledo Museum of Art, 1989