II. RESEARCH FINDINGS

A Profile of the Museums in the Study

The responses of the museum professionals, experts, and independent exhibit designers interviewed for this study provided support and additional context for many of the issues discussed in the previous chapter. In particular, the interviews give a picture of the resources and the educational mindset museums apply to interactive multimedia projects.

Throughout this section of the report, where responses are tabulated by museum type the categories "art," "history," "children's," "science" and "other" are used. Included in "other" are zoos and corporate museums. The institutions represented in the interviews are listed in Appendix A. The methods of tabulating responses and conventions for quoting responses for this section are explained in Appendix B.

Most of the participating museums have between one and five exhibit designers, whose responsibility it is to attract and inform visitors about the exhibit's subject matter (See Table 1). A science, children's, and history museum reported the largest exhibition staff, though this question was not formally asked of all participants. In the few cases where there are no exhibit designers in-house, the exhibit work is contracted out to independent designers.

Table 1

How Many In-House Exhibit Designers Does Your Museum Have?

	Totals by museum type					
Number of in-house exhibit designers	art	hist	chld	sci	oth	ttl
3 - 5	2	4	1			7
1-2	1		1	4		6
0				1	2	3
9 - 10				1		1
n/a	2	1	3	1		7
Percent of responses by category	**21%**	**21%**	**21%**	**29%**	**8%**	24
Size of exhibition department*						
10 - 20		1	1	1		3
6	1					1
8	1					1
21 - 30			1			1
31 - 40				1		1
over 50		1				1
Percent of responses by category	**25%**	**25%**	**25%**	**25%**	**0%**	8

* This question was not formally asked of each participant; it is included here only when responses to the original question proved difficult to determine due to the multiplicity of exhibit design staff responsibilities.. That is, in many cases individuals perform multiple functions, making it difficult to count "exhibit designers." This contributed to the "n/a" response in some instances.

When the participants were asked to describe their museum's philosophy or mission in their own words, the majority described some form of education as an important part of their mission statement, with almost half using the words *educate* or *inform* (see Table 2). Only a few mentioned preservation, collection and research. Given the fact that the museum interviewees were closely involved in overseeing and/or creating exhibits on a day-to-day basis, this shows that those responsible for exhibit design in these museums have indeed established informational and educational priorities.

Table 2
What Is Your Museum's Educational Philosophy?

	Totals by museum type					
Museum philosophy or mission	art	hist	chld	sci	oth	ttl
To educate/answer questions/inform	3	2	3	7	1	16
To enhance curiosity/inspire interest to learn more	1			5		6
To provide greater understanding/exposure/enjoyment	3	1				4
To provide hands-on experience/experiential learning			1	3		4
To provide interactive learning experiences			3			3
To preserve & collect	1		1		1	3
To teach about/interpret history		1		1	1	3
To research		1				1
To test exhibits		1				1
Percent of responses by category	**20%**	**15%**	**20%**	**39%**	**7%**	**41**

Note: No attempt was made to match the spontaneous responses to this question with the museums' published mission statements, since the aim of the question was to discover the interviewee's perception of the museum's goals.

Looking at the responses to the question of educational philosophy by museum category further shows that each type of museum has visitor learning in mind, albeit without rigidly defined methods or objectives. Support for both Maton-Howarth's and Hooper-Greenhill's observations that educational objectives are often vague was provided later in the interviews when participants commented that what or how much the visitors learn is not as important as how much they enjoy the exhibit or total museum experience. Professional educators, in fact, are rarely involved in exhibit design or in establishing the learning objectives of exhibits (Booth, et al., 1982; Maton-Howarth, 1990, p. 189). Nonetheless, these study participants claim that the melding of educator and entertainer is an important characteristic for exhibit designers. Similar to the Montessori classroom approach, where "things" are considered to be the best teachers and children are given games and puzzles to learn from, many of the educational activities within museums are designed to be enjoyable with little or no distinction between play and learning (Lee, 1968). Several of the children's museums interviewed explicitly commented that the play element of the exhibit is at least as important as the learning that might go on. One of these museums further described their exhibit objectives as being *much more qualitative...designing an exhibit that changes attitudes or excites people"that's what it's all about.*

Several participants for this study were specifically asked how important systematic design of instruction or the individual instructional design procedures were for museum exhibit design. In most cases some elements of the instructional design process were followed, namely the setting of clear objectives and provision of examples and hands-on activities to reinforce the ideas presented. Beyond that, the exhibit design process remains much more flexible and geared toward exploratory learning opportunities. Two comments sum up the perspectives heard:

> *There is a big question as to whether you need to have strictly educational objectives to have a successful exhibit, or to get funding for that matter. But I really think an exhibit is successful if the visitor gets anything out of it - enjoyment, learning, increased curiosity. It doesn't have to be the retention of specific content. One danger is that too little control (over the communicated content) can lead to misinterpretation, and you have to watch for that.* (a children's museum)

> *I don't think of creating exhibits as an instructional design process. It's a sticky question because we want to educate and inspire, but frankly if someone has a good time, that's far more important. It's not an arcade, we have pedagogical objectives, but we don't use a formal model of instruction. These multimedia activities and experiments cause people to think and interpret in ways the designer cannot even imagine, but afterwards you can see that the responses are the result of logical thought processes and learning that had to have taken place.* (a science & technology museum)

Of the museums interviewed for this study, six reported between one and four million visitors per year, and three mentioned visitations of 10,000 to 50,000 per year, with the remaining museums reporting between 75,000 and 1,000,000 visitors per year (See Table 3). Based on the most recent estimates of visitations to US museums by the AAM (Data Report, 1992), average attendance to all US museums was approximately 69,000 in 1988, placing most of the participating museums in a fairly high visitation category (p. 125). Participants acknowledged that higher visitation generally leads to more resources and greater opportunity to take on innovative interactive multimedia projects, a fact that should temper the conclusions of this study.

Table 3
How Many Visitors Does Your Museum Have Annually?

	Totals by museum type					
Number of visitors per year	art	hist	chld	sci	oth	ttl
1 - 4 million	1	2		2	1	6
500,000- 1 million			1	1		2
251,000-500,000	1	1				2
101,000-250,000		1		1		2
75,000 - 100,000				1		1
10,000 - 50,000				2	1	3
n/a	3	1	4			8
Percent of responses by category	**21%**	**21%**	**21%**	**29%**	**8%**	24

Note: Many of the participants based their response to this question on opinions, not research data. Also, the numbers do not specify how many of the visitors recorded in any one year are repeat visitors.

When asked whether they thought their visitors matched the museum's target audience, the responses by participants in this study were most commonly "yes" or "believe so," though only one of them was basing their answer on an actual (preliminary) evaluation (see Table 4). Several participants did not feel they were meeting the museum's community attendance goals, and indicated a desire to further attract a specific underrepresented minority, most often African Americans from the local community. While each of the children's museums interviewed felt they attracted their target audience, several mentioned that much of the diversity in their visitors may be attributed to school groups which represent a large portion of their visitors.

Table 4
Do You Feel Your Visitors Match Your Target Audience?

	Totals by museum type					
Do visitors match the target audience	art	hist	chld	sci	oth	ttl
Yes, would say so for the most part	2	2	5	1	2	12
No/not really	1	2		2		5
Don't know/not sure		1		2		3
n/a	1		1	1		3
Not sure, think so				1		1
Percent of responses by category	**20%**	**20%**	**24%**	**28%**	**8%**	24
Additional comments						
Would like to attract more economically disadvant/minorities	2		1	2		5
Would like to attract more people (of all kinds)	1	1		2		4
Have specific outreach programs/activities		1		3		4
The local community is under served		1				1
Doing a visitor study now to look at this			1			1
Percent of responses by category	**20%**	**20%**	**13%**	**47%**	**0%**	15

When museum participants were asked how the various segments (i.e., children, adults, or various ethnicities) of their audience had responded to their interactive technology-based exhibits, most stated that all segments seemed to have responded equally well. However, many added that children take to the interactive technologies much more readily than adults, and often directly or indirectly act as teachers of how to use the technology (i.e., the adults watch kids interact to learn what to do) (see Table 5). The quick acceptance of technology by younger audiences was often attributed to the effect of the media-rich, high-tech era in which kids are now growing up. Younger generations are more comfortable with computers and other electronic devices because technology has occupied so many aspects of their lives. In addition, the nature of children allows them to enter the museum and approach an exhibit without preconceptions of what they will encounter, which increases the likelihood of their exploring the exhibits. Adults on the other hand, enter museums with relatively established notions of what to expect, and if something is out of their frame of reference for what a museum should contain, it may be rejected or avoided (Zetterberg, 1968). Interactive technology in museums may simply be too far out of context for some adults. Zetterberg adds that adults frequently come to museums for social or incidental reasons, while children most often experience museums as part of their compulsory school activities. These differences in nature, motives, and circumstances make experimentation with interactive exhibits more common among younger populations.

Table 5
How Have the Various Segments of Your Audience Responded to the Interactive Technology-Based Exhibits?

	Totals by museum type					
Audience reactions to interactives	art	hist	chld	sci	oth	ttl
All segments seem to respond well	5	3	2	4	2	16
Kids love/take to technology more readily than adults	1	2	1			4
Quite varied -depends on learning style not demographics			1	2		3
Children often teach /encourage adults to use technology		2				2
Adults tend to watch kids interacting			1			1
n/a	1					1
Percent of responses by category	**26%**	**26%**	**19%**	**22%**	**7%**	27

Even though the experiences of the participating museums with interactive technology-based exhibits have been very positive, this does not necessarily translate to evidence of more learning taking place. Traditionally, inexperience with evaluation procedures and a general lack of funding to conduct visitor research have prevented museum professionals from formally evaluating exhibit success factors (Shettel, 1991; Washburn, 1987; Interviews: J.A. Wetzel, 1992; Museum Education Consortium, 1992; The Museum of Science, 1992; New England Technology Group, 1992). Several of the associations and independent exhibit designers interviewed for this study claimed that few formative or summative exhibit

evaluations are ever done. They state that appropriate feedback is attained through informal observation by the museum staff. However, as evidenced by the increasing popularity of the field of visitor studies and the increase in exhibit evaluations being reported by this field, it appears that more museums are taking a greater interest in developing a better understanding of visitor behavior toward exhibits (Alexander, B., 1992; Borun, 1992; Bearman, 1991; Benefield et al., 1991; Miles et al., 1988; Interviews: Association of Science and Technology Centers, 1992; Museum of Science, 1992). Shettel (1991) states that an increasing number of museums are being required by federal granting institutions to conduct exhibit evaluations for special projects, but adds that more and more museums are also exploring the impact of museum learning on their own (p. 11). Vance and Schroeder (1991), for example, conducted a study for the Milwaukee Public Museum which examined the different ways museum visitors process information in order to help exhibitors improve their strategies for presenting information. Yet even though more visitor and exhibit evaluation studies exist, the results are often not shared across the museum community (Benefield et al., 1991; Hood, 1991). In addition, visitor variables can differ greatly from museum to museum making it difficult to transfer the knowledge from one museum's experiences to other museum environments.

Instead, most exhibit designers aim to define the exhibit objectives in the way that will accommodate the largest possible audience given the content and resources available (Interviews: The Austin Children's Museum, 1992; Motorola Museum of Electronics, 1992; Minneapolis Institute of Art, 1992). Several museum exhibit designers interviewed for this study insisted that no matter how well designed, there will probably be some visitors who do not pay attention to one or more exhibits (Interviews: The Austin Children's Museum, 1992; American Museum of Natural History; Astronaut Memorial Hall). The key to serving visitors is to present information in a context that can be immediately understood and/or taken away and understood elsewhere by anyone who becomes interested in the exhibit material. Discovery-based multimedia programs can often accomplish this quite effectively because they can contain a wide range of topics, stimuli and learning contexts that can be tailored to the various segements of their audience.