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Graduate School of Arts and
Social Sciences

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**National Research Council, Washington DC,
June 6, 2006**

**Learning Science in Informal Environments:
The Need to be Both Cautious and Bold**

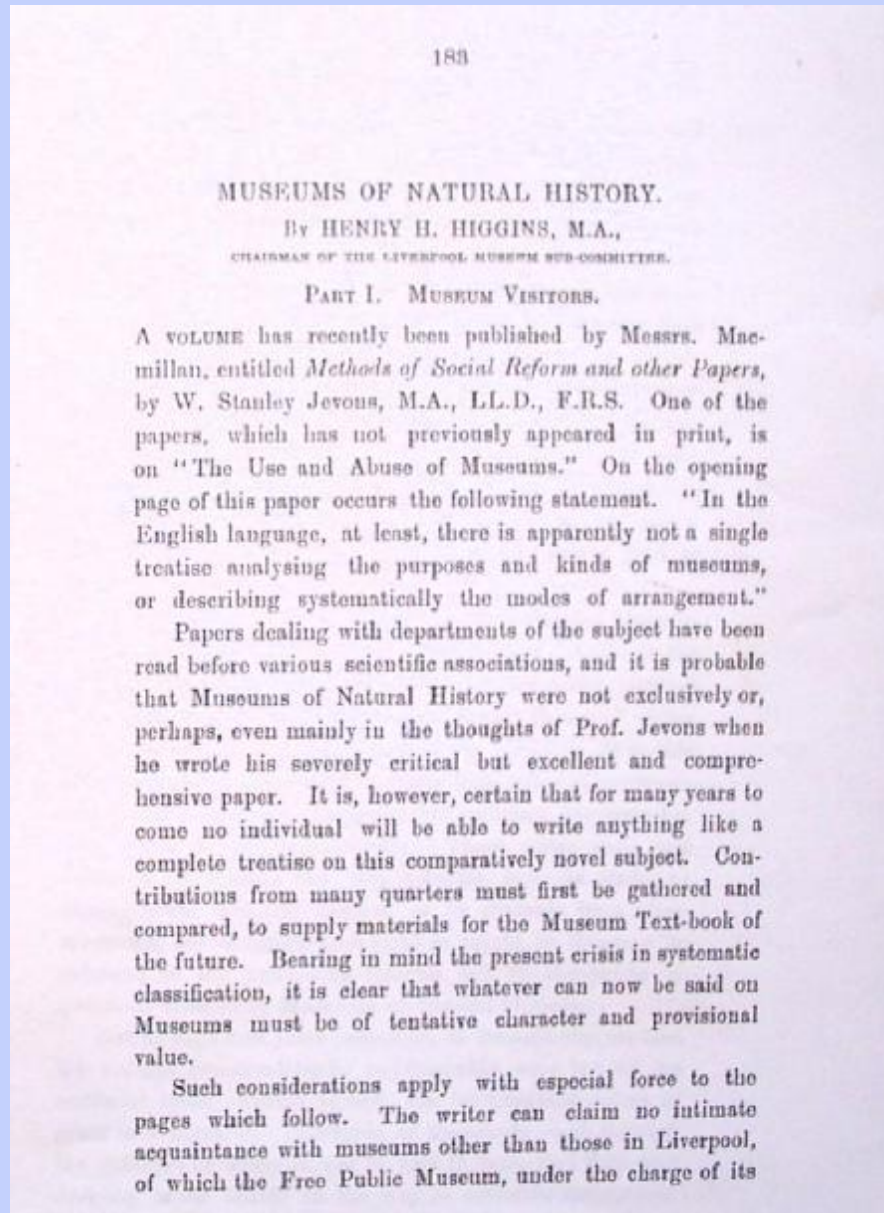
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Topics

1. Read and review visitor studies history,
Higgins—for credit and knowledge
Nielson—Correct errors
Robinson and Melton—need to interpret
Define “informal”
2. Be bold, models outside the field
Nurses health study
3. Social/ethical issues
Measures of learning?
Favoring types of research
Deliberative Democracy

The first published visitor study:



Higgins, Henry. H. (1884). Museums of natural history, *Transactions of the Literary and Philosophical Society of Liverpool*, pp. 183-221.

A report of his observations:

Classification of visitors:

- Students, 1-2%
- Observers, 78 %
- Loungers, 20%

Modern Classifications of visitors into “types”

1. Anthropological: hunter gatherers (P. McManus)
2. Shopping: serious, impulse, window (J. Falk)
3. Anthropomorphic: ants, butterflies, grasshoppers, fish (Veron & Lavasseur)
4. Behavior: readers, sniffers, listeners, feelers (L. Heald & G. E. Hein)

Higgins recognized the value of multiple measures, but had difficulty in obtaining interviews:

I have long been convinced that a series of observations on the constituents of this irregular procession of visitors, combined with overtures suitable for inducing them to make remarks on the objects exhibited—in a word, the application of the inductive method to the examination of human elements *in transitu* through the museum—might lead to much valuable information. . . . But as days and years passed on, it became obvious that the visitors conversationally approachable were but as the scattered taller flowers amidst the innumerable culms of grass in a meadow. . . . (Higgins, *op. cit.* p. 185.)

Focus on specific visitors; not only averaged results

Higgins on children:

Little parties of children sometimes found the table-cases convenient for racing around . . .and elders of all grades in affinity, kept up a daily perambulation, noticing a bird or a butterfly or a fossil with desultory but by no means vacant looks.. . . It was easy to see in them mere loungers, and in the children unmitigated plagues; but it was better to remember that they, of their own accord, had brought themselves for the time into contact with sources of improvement, and that their large numbers made them after all, **the most interesting class of visitors.** (Higgins, *op. cit.* p. 186.)

Many studies have comments about special visitors:

Among children visiting the Children's Gallery at the (London) science museum, there are "habitues" who go to "considerable trouble and expense" to come to the museum, even from "more distant parts of London by means of buses, tubes or both."

Brooks, J.A.M. & Vernon, P. E., (1956) A study of children's interest and comprehension at a science museum, *Brit. J. Psych.* 47, 175-182.

Higgins on emigrants (Going from northern Europe to US):

One other class, however, deserves distinction; and it is gratifying to mention the admission, year after year, of streams of German and Scandinavian emigrants, who, after seeing their packages piles up at the railway station, seem to pass almost immediately to the Museum or the Gallery of Art. In the midst of the distractions of the most important crisis of their lives, these strong-hearted men and women find time and inclination to increase their stock of knowledge; and, though they are unable to understand the explanatory label, their conduct strikingly indicates respect towards the institution and its purpose.

Higgins, H. H. (1884). *op. cit.* 186-187.

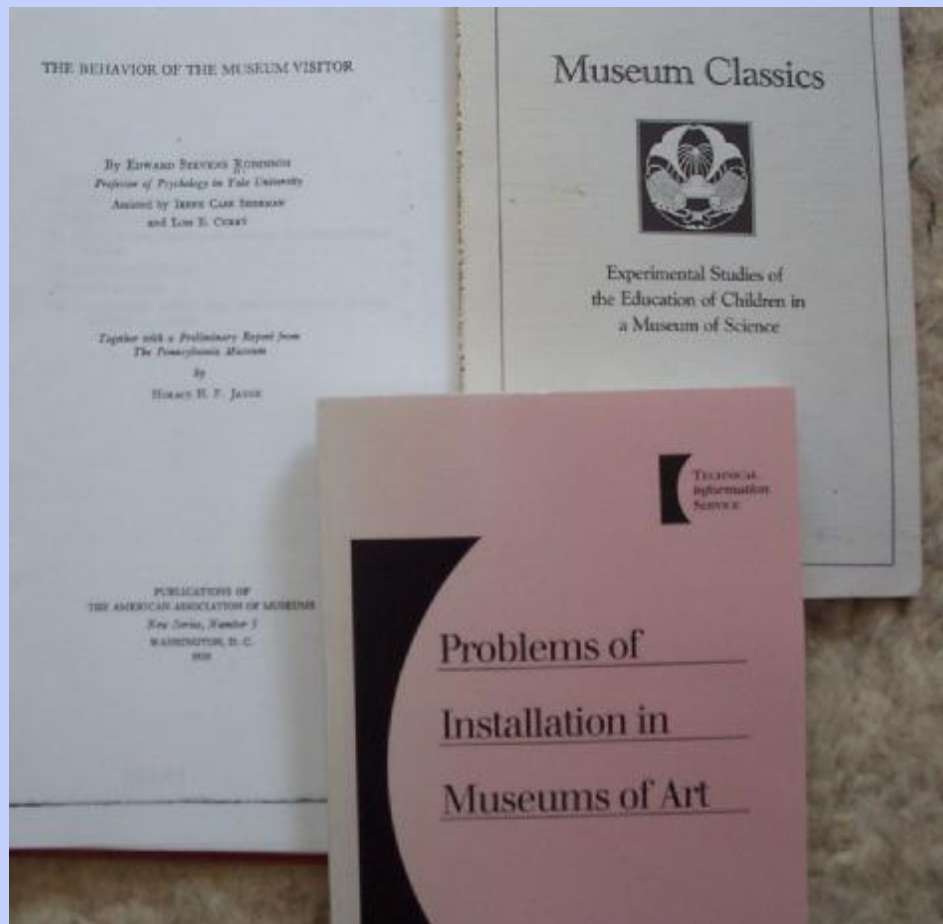
Who are the “unusual” audiences for today’s informal learning opportunities and how are they served?”

Correct errors

The first use of movie recording in a gallery:

Nielson, L. C. (1942) A technique for studying the behavior of museum visitors, *The Journal of Educational Psychology*, 37, 103-110.

He has been misquoted about visitor time in gallery. He did not report, “no more than 30 seconds.” He actually reports, “variations of average time of from nine seconds to one minute, and ranges from five seconds to three and one-half minutes per exhibit.”



DR. ROBINSON

Edward Stevens Robinson
(1893-1937)



Arthur W. Melton
(1906-1978)

in the total
continues to fixate the object in question during the movement.

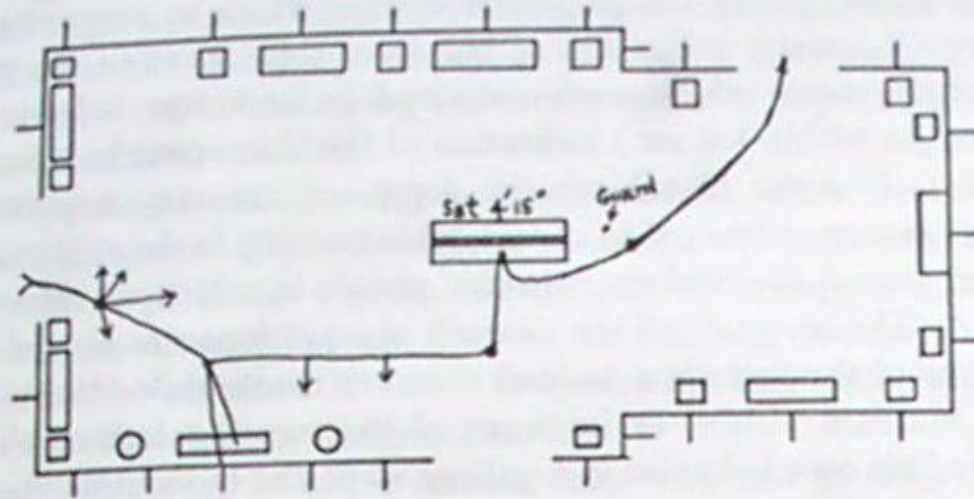


FIG. 9. The routing card record of the behavior of a visitor in the French gallery.

If in the course of the visitor's stay in a gallery he stops before the same object on two distinct occasions, the time of the second stop is included in the total object time but the second stop does not affect the total number of objects examined. Therefore, the total number of objects examined may be interpreted as the total number of *different* objects examined.

Melton, A. W. (1935/1988).
*Problems of Installation in
Museums of Art*. Washington,
DC: American Association of
Museums, p. 43.

Robinson and Melton accomplishments:

1. Defined museums as educational, and use behavior as surrogate of educational outcome.
2. Invented tracking.
3. Created “holding” and “attracting” categories.
4. Studied only observable behavior (interviews are “subjective” and therefore suspect).
5. Studied single visitors only.
6. Results purely “*statistical*”—about “*representative*” (abstract) visitors, not *typical* (real) visitors.
7. Noted continuous variation in data, difficult to classify visitors, especially in binary groups.

TABLE I

Differences in the Museum Test Scores Made by Classes Predominantly Composed of American, Polish, and Italian Children

Teaching Method Used in the Museum	Polish Classes	Italian Classes	American Classes	Mixed Classes
Fifth Grade Children				
30-Minute Lecture and Docent Lectures	8.62 ± .21 <i>N</i> = 270	5.66 ± .44 <i>N</i> = 128	9.35 ± .27 <i>N</i> = 235	8.08 ± .40 <i>N</i> = 133
30-Minute Lecture and Game Cards	6.73 ± .31 <i>N</i> = 270	7.41 ± .24 <i>N</i> = 318	9.18 ± .30 <i>N</i> = 237	8.22 ± .48 <i>N</i> = 101
15-Minute Lecture and Docent Lectures	8.46 ± .37 <i>N</i> = 199	9.14 ± .33 <i>N</i> = 161	11.28 ± .32 <i>N</i> = 185	9.42 ± .36 <i>N</i> = 177
15-Minute Lecture and Game Cards	6.50 ± .28 <i>N</i> = 297	7.07 ± .39 <i>N</i> = 241	9.76 ± .26 <i>N</i> = 313	7.98 ± .27 <i>N</i> = 240
Sixth Grade Children				
30-Minute Lecture and Docent Lectures	6.79 ± .38 <i>N</i> = 159	7.15 ± .24 <i>N</i> = 314	8.47 ± .29 <i>N</i> = 194	5.44 ± .45 <i>N</i> = 111
30-Minute Lecture and Game Cards	6.50 ± .27 <i>N</i> = 308	7.37 ± .26 <i>N</i> = 275	9.83 ± .27 <i>N</i> = 214	5.61 ± .55 <i>N</i> = 85
15-Minute Lecture and Docent Lectures	6.66 ± .36 <i>N</i> = 141	7.83 ± .41 <i>N</i> = 81	9.18 ± .27 <i>N</i> = 197	6.14 ± .48 <i>N</i> = 109
15-Minute Lecture and Game Cards	6.49 ± .34 <i>N</i> = 159	7.63 ± .32 <i>N</i> = 188	10.27 ± .27 <i>N</i> = 303	5.35 ± .29 <i>N</i> = 284
N = Number of Children Tested.				

Melton, A. W. Goldberg, N. & Mason, C. W. (1936/1988) *Experimental Studies of the Education of Children in a Museum of Science. New Series, no. 15.* Washington, DC: American Association of Museums.

“Polish,” “Italian,” “American,” and “Mixed Classes”

This makes two significant assumptions:

- 1) Schools that “serve children predominantly of the Polish or Italian groups” can be labeled as Polish or Italian classes.
- 2) The definition of “Polish” or “Italian” is based on the following information contained in a footnote:

“In 1933-34 there were 71,425 children in the elementary public schools of the city of Buffalo, and of this group only 41,091 (58 per cent) had American born fathers. Among the 30,334 children of foreign-born fathers, 11,930 were children of Italian-born fathers, and 8,227 were children of Polish-born fathers.”

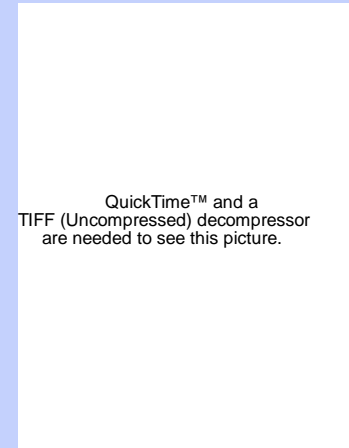
How are race, ethnicity and class treated in current literature?

Possible Research Studies?

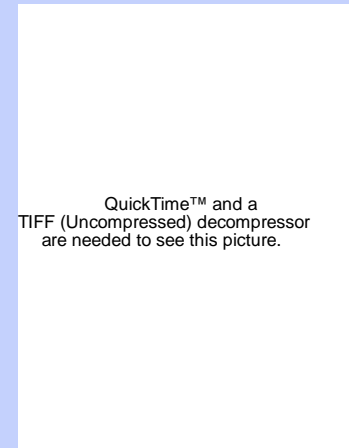
The Nurses' Health Study, established in 1976 by Dr. Frank Speizer, and the Nurses' Health Study II, established in 1989 by Dr. Walter Willett, are among the largest prospective investigations into the risk factors for major chronic diseases in women.

<http://www.channing.harvard.edu/nhs/>

Can we think of a visitor studies equivalent?



Dr. Frank Speizer



Dr. Walter Willett

SOCIAL (POLITICAL) CRITIQUES OF QUANTIFICATION

Many examples:

Campbell, D. T. (1976). Qualitative knowing in action research, in Brenner, M. March P. & Brenner, M. (editors). ***The Social Contexts of Method***, London: Croom Helm.

Porter, T. M. (1995) ***Trust in Numbers: The Pursuit of Objectivity in Science and Public Life***, Princeton, NJ, Princeton U. Press.

Scott, J. C. (1998) ***Seeing Like a State: How certain schemes to improve the human condition have failed***. New Haven: Yale University Press.

Elster, J. (Ed.) (1998) ***Deliberative Democracy***. Cambridge: Cambridge U. Press.

The theme of First International Congress focuses on qualitative inquiry and the pursuit of social justice in a time of global uncertainty. The congress is a call to the international community of qualitative researchers to address the implications of the attempts by federal funding agencies to regulate scientific inquiry by defining what is good science. Around the globe governments are enforcing evidence-based, biomedical models of inquiry. These regulatory activities raise fundamental philosophical epistemological, political and pedagogical issues for scholarship and freedom of speech in the academy.

Opening statement, 1st International Conference of Qualitative Inquiry,
May 5-7, 2005, U. of Illinois, Champaign, IL, USA

Recent research literature examples of issues that may influence research itself.

American Educational Research Journal, 43[2] 2006

Klewer, C, D. Biklen, and C. Kasa-Hendrickson, Who may be Literate? Disability and resistance to the cultural denial of competence, 163-192.

This article challenges the common perception that citizenship in the literate community is an organic impossibility for people defined as intellectually disabled.

Lee, J-S. & N. K. Gowen, Parent involvement, cultural capital, and the achievement gap among elementary school children, 193-218.

Types of parent involvement vary with demographic characteristics. But there are inequalities in the opportunities for and benefits of parental involvement across demographic groups.