Artists or Educators? Managing Evaluation

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Although evaluation is a crucial part of developing a successful project, the evaluation process presents very real managerial challenges. These challenges relate to the management of resources both human and financial. On a deeper level, evaluation—especially formative evaluation—raises a fundamental question about project development: are we approaching the project, whatever it is, as artists, or as educators? This is not a dichotomy but a continuum—it is possible to be a little of both. Our relationship to the evaluation process reveals our placement on this continuum.

Artists are inner-directed—personal vision is paramount. Although communication is important to the artist, an artist does not change his or her work until half the audience understands it. On the other hand, education is more outwardly-directed and focused on the learner. If the learner does not understand, the educator changes the approach until the message is communicated successfully.

Formative evaluation assumes an educational perspective which is focused on the visitor and not on the creator. Goals are set and success can be defined quantitatively. A project is successful when the agreed-upon message is understood by a majority of visitors. Yet managers of museum projects cannot be confined to this end of the continuum, since artistry is a pre-requisite for many of our projects. This raises the first managerial challenge: making good use of artistic abilities while staying outwardly-directed—focused on our visitors—not on ourselves.

A second challenge relates to staff motivation. Museum work is intrinsically rewarding, but not overly lucrative. Museums offer involvement in interesting, challenging projects to which museum staffs devote an enormous amount of time, energy and talent. One of the rewards is ownership of these projects, which inspires a great deal of personal investment. This can clash with formative evaluation, which is predicated on the belief that the audience, not the creator, is the real owner.

The third set of challenges involves the time and money that evaluation requires. Although these are sometimes seen as the most formidable obstacles to evaluation, they may be the easiest to overcome as long as evaluation is factored in at the earliest stages of planning.

An on-going project at The Franklin Institute, The Franklin Institute Computer Network, illustrates each of these points (Borun and Mintz, 1990). This museum-wide computer system serves seven categories of museum visitors: adults, older children, preschoolers, and teachers of grades K-3, 4-6, 7-9, and 10-12. Computer stations placed in every Franklin Institute exhibit interpret that exhibit for the first three categories of visitors, while material for teachers is offered on-line through an electronic bulletin board. Formative evaluation has shaped the development of this project since its inception in late 1989 (Mintz, 1991).

The development process was greatly facilitated by two key facts. First, project planning incorporated experience gained during the development of an earlier large-scale computer project. Second, this previous project was directed by expert evaluator Minda Borun, the Institute's Director of Education. Her experience provided invaluable guidance, and she continues to oversee the evaluation process. As a result, appropriate resources were allocated to the process of formative evaluation.

Time proved more difficult to obtain than money. Like many projects, the computer network had a non-negotiable deadline. It was an intrinsic part of a new wing. The opening date for this wing had been set years before support was obtained for the computer network from Unisys Corporation. Although discussion had been in progress for some time, and much conceptual development had taken place, formal approval was not received until eleven months before opening day. As a result, project staff had less than one year to develop multi-level interpretive material for eight different exhibits.

Despite this very short timeline, it was clear that time must be found for formative evaluation. The project incorporated several unique features that demanded testing with visitors. This meant that interpretive material had to be developed for even more exhibits, for one simple reason. Network programs are exhibit-specific, and useful data could only be obtained by testing programs in the exhibits they interpreted. The new wing was accessible only to construction workers and exhibits were still under development. The only reasonable strategy was to develop and test a pilot system in the existing museum, which remained open to the public throughout the construction process.

This raised a series of management challenges. The first was to convince the Institute's top management that it was worth devoting time to developing and testing programs that were not intended for the new wing at a time when most resources and attention were focused on this exciting new project. The strategy that proved successful was to stress the need for a technical shake-down period well before opening day.

This technical shake-down could not be performed on stand-alone computers. It required a mini-network that utilized the same program architecture as the finished product, and the same full-screen, full-color, high

resolution images. The information design and the user interface could be evaluated while the much-needed technical evaluation was in progress.

Evaluation does not always lead to challenges from management. While the pilot system was under development, the design of the computer kiosks was evaluated. Formal ergonomic studies were conducted with the help of the Unisys Human Factors Engineering Group. These ensured that the system could comfortably be used by adults, children, people in wheelchairs, and the small groups that often explore science museums together. The imaginative kiosk design called for monitors mounted on a surface that could be tilted. The studies established 30 degrees as the appropriate amount of tilt. Because they were carried out while interpretive programs were written and designed, no time was lost and no additional expense incurred.

Formative evaluation, guided by Minda Borun, began when the pilot was installed on the museum floor. The initial results were mixed. The design of the content itself was successful. Visitors used the system and enjoyed the colorful graphics. The text was readable, and the amount and complexity of the information was appropriate. However, the user interface required considerable improvement, and one of the network's central features was unsuccessful.

The original concept was that access to the multi-layered system would be provided by bar-coded cards. These cards would be produced for adults, children, and parents of preschoolers. This seemed simple and elegant: when a card was used, the appropriate menu would appear. It was technically successful, but extremely unpopular with visitors. Adults were attracted to the bright colors of the kids' programs, while some children wanted access to the serious content in the adult programs. No one wanted to be limited to the program designed for them. Everyone wanted to move freely between the layers.

This was the ultimate management challenge: accepting the failure of one of the project's unique features. Everyone had a major investment in this concept, which had shaped project design from the very beginning. It was an unpleasant surprise to find that it did not meet the needs of visitors.

This discovery was easier for the project staff to accept than it was for management, because the multi-layered concept was already established when the staff joined the project. However, the staff had a deeper personal investment in other aspects of program design such as the system of control icons, introductory screens, and structure and wording of menus. When evaluation revealed a host of smaller problems in these areas, additional effort was required to find appropriate solutions. For instance, the simple, highly stylized system of wordless icons was immediately accessible or "transparent" to 50% of museum visitors. When the icons were explained on an introductory screen and explanatory signage was added to each station, the transparency rate rose to 75%.

The management challenge here was to address the issues identified by evaluation while maintaining staff motivation and morale. The timing was crucial. Although the pilot was not completed until December of 1989, the new wing was opening in May and a significant amount of re-design was needed on programs that were otherwise complete.

Intellectually, everyone understood that the changes must be made, though there was some resistance to the idea that reliable information could be obtained from a relatively small sample of visitors. Emotionally, the picture was far more complex. The task was already enormous, time was very short, and a great deal of energy and creativity was invested in the work that had already been accomplished. That the staff could accept the need for significant change, and that program development and design were completed by opening day is a tribute to their professionalism and commitment. Together, project writer Lisa Dewey Strader and graphics designer Carol Carr re-formulated the menu structure, re-wrote and re-designed the introductory screens, and changed the control icons on each of thousands of individual screens, while system manager Rich Freedman re-programmed each new screen. The result of their heroic efforts was the installation of Computer Network stations in every exhibit when the new wing opened.

This could not have been accomplished without a careful setting of priorities—the final management challenge. Because of the size and scope of the project, all of the potential problems that evaluation revealed could not be addressed within the limited time before opening day. Every change had to be implemented in 28 computers containing fourteen different multi-level programs. The most pressing problems received the most attention.

An entirely new, more flexible front-end was developed, utilizing computer screens which explained the system and the user interface and permitting visitors to choose programs intended for adults, children or preschoolers. In one study, half of the adult visitors chose programs designed for children. The bar code interface was retained, but is used by visitors primarily as a mechanism to request print-outs of science information to take home—approximately one thousand print-outs each week. The system also uses the bar code to record every transaction, providing invaluable information about patterns of use, duration of interaction, and relative popularity of various menus.

Project development and evaluation continues. The system has grown to 42 computers located in every exhibit throughout The Franklin Institute. Some issues have been satisfactorily resolved, while others—notably the bar code interface—still require attention. A new bar code instrument was developed to provide information about the system and how to use it. Its design was finalized after testing with almost one hundred visitors. Studies are currently in progress to determine the effectiveness of this brochure. It is clearly more successful than the original bar coded card, but empirical data are required.

Since time pressures are much less acute, managing the process has become infinitely easier. The project is now placed towards the education side of the continuum. The creative, dedicated staff is central to the project, but the focus is clearly on the needs of the museum visitor.

References

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