

Sample Application

2008 National Leadership
Grants for Museums

Demonstration Category

Franklin County Historical
Society, dba COSI
Columbus, OH

Labs in Life Interface: Bringing
Real Science to Public
Audiences

Abstract

The Labs in Life Interface @COSI (LILI) is a project of COSI Columbus to design, construct, and evaluate interactive experience platforms that will serve as the interface between The Ohio State University (OSU) research laboratories operating on-site at COSI and public audiences and classroom space for group activities and community educational programming on nutrition and physical activity. The laboratories have a focus on nutritional science, body composition, and physical performance assessment. They serve as a site where real research is taking place daily in full public view. The experience platforms will be located adjacent to this lab area and will provide information about nutrition and physical health along with activities for self-assessment of body condition while also explaining the science behind the research topics. The LILI project creates a new model for building partnerships and bringing the public into the real world of scientific investigation in ways that are meaningful and personally relevant. The time frame for this project is 24 months, from 11/1/08 – 10/31/10.

Two of the critical issues facing the United States today are the decreasing interest and knowledge of young people in Science, Technology, Engineering, and Math (STEM) disciplines and the increasing rates of health issues in children. LILI also builds on COSI's base of successful programming related to health. In addition to modeling a new and unique university-science center partnership, the LILI project has potential to develop deeper relationships with visitors. There is evidence that COSI visitors – particularly members – will seek to engage in the research taking place, encouraging repeat visits in order to continue participation. Additionally, data collected from central Ohio teachers in 2004 revealed a strong desire for programming related to “the human body” and “nutrition.”

The overarching goal of this project is to concurrently explore different ways of portraying science in real time for the visitor while also studying and evaluating the effectiveness of changing experience platforms. To address this goal, 2 major input and 4 outcome sub-goals are identified:

INPUT:

1. Using the OSU/COSI partnership, create engaging visitor interface with the science.
2. Define, develop and implement various components around the visitor/science interface.

OUTCOME:

3. Identify the visitor and how this experience affects their larger experience.
4. Determine the degree to which this approach affects scientists' and visitors' understandings of science.
5. Determine the degree to which this approach affects scientists', visitors' and staffs' understanding of a science museum?
6. Determine the perception of value of this approach to the scientists and to the science museum.

The evaluation and research component of the project will be constructed to answer appropriate questions in each phase of the project: developmental, prototype, formative, and outcome. The guiding evaluation questions include:

- In what ways do visitors integrate the visual, experiential and personal messages from the integrated platforms?
- What elements of the experience contribute to motivation for behavior?
- How does this type of experience add to a visitor's intent to return?
- Does this type of experience alter the perception of a visitor related to “role of the science museum”?
- Does this type of experience alter the perception of the scientists and science center staff related to science and the science museum?

The first two sub-goals of the project are input measures and therefore are not reflected in these questions.

Narrative

Labs In Life Interface: Bringing Real Science to Public Audiences

NARRATIVE

Introduction

The Labs in Life Interface (LILI) is a project that builds on a collaborative partnership between COSI and The Ohio State University (OSU) to design, construct, and evaluate interactive experience platforms that will serve as the interface between working research laboratories operating on-site at COSI and public audiences. The OSU research laboratories will provide for exercise and fitness evaluation, body composition analysis, and blood draw and metabolic measures. They serve as a site where real research is taking place daily in full public view. The experience platforms will be located outside this lab area and will provide information about nutrition, health, physiology, body mechanics, body composition, physical activity, and exercise science, as well as activities for self-assessment of body condition, while also explaining the science behind the research topics. The LILI project creates a new model for building science center –university researcher partnerships and for bringing the public into the real world of scientific investigation in ways that are meaningful and personally relevant. “Museums should strive to find new and more effective ways of portraying science in the making. For only in this way can we be true both to the nature of science itself and to the needs of a general public which is continuously exposed to new (and often conflicting) scientific knowledge claims in the mass media.”(Durant 2004: 51) The overarching goal of the LILI project addresses Durant’s call for action by concurrently exploring different ways to portray science in real time for museum visitors while also studying and evaluating the effectiveness of easily changeable experience platforms.

Assessment of Need

Two of the critical issues facing the United States today are 1) a decreasing interest and knowledge of young people in Science, Technology, Engineering, and Math (STEM) disciplines and 2) the increasing rates of health issues in children, particularly the rates of early onset of Type II diabetes, obesity, and reduced overall physical activity.

The National Academies report “Rising above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future” (October 13, 2005), expressed concern that the poor preparedness of young people will lead to reduced prosperity, security, and health of the nation. Stimulated by the warnings of the report, the America Creating Opportunities to Meaningfully Promote Technology, Education and Science (COMPETES) Act was signed into law in August 2007, to improve STEM education throughout the K-12 grades, as well as enhance STEM teacher training. While there is a national call for improved and increased STEM education, this concern does not seem to be shared by parents. In a random sample of 1,379 parents from across the country, the Education Insights project at Public Agenda reported that families were aware of the need for strong science and math education and the challenges the country faces in addressing these areas in a general sense, but few saw this as a major issue for education overall and even fewer saw the implications for their own lives or the lives of their children. Their report, *Reality Check 2006: Are Parents and Students Ready for More Math and Science* (2006) revealed that 69% of parents felt their child would graduate high school ready for college and 61% felt they would graduate high school ready for the work world. In addition, 57% of parents felt the amount of science and math their child was currently receiving was the “right” amount

and the number who expressed worry over this issue had dropped from 52% in the mid-90's to only 40% in 2005.

In addition to national concern over STEM education issues there is concern over a variety of health issues. Not only is the entire population of the US becoming increasingly overweight (Centers for Disease Control 2008), there is particular concern for the physical condition of young people as reflected in increasing prevalence of obesity (Hedley, et al 2004; Ogden, et al 2006; National Center for Health Statistics 2008) and reduced physical activity (US Health and Human Services 2000). Poor dietary habits and low levels of physical activity can lead to life long health problems, including poor cardiovascular health, increased incidence of cancer, increased incidence of Type II diabetes, high blood pressure, osteoarthritis, and gallbladder disease. With decreasing health, one's ability and motivation to learn is limited and, some researchers warn that today's children will have shorter life spans than their parents.

In the US, 61.5% of children aged 9-13 participate in no organized physical activity during their non-school hours and 22.6% do not engage in any free-time physical activity (Morganstein and Brick 1996). In Ohio, there are no guidelines governing the amount of physical education (PE) in schools. A recent survey by the Ohio Association for Health, Physical Education, Recreation and Dance, revealed that students on average attend only one 30-minute PE class a week.

According to the Centers for Disease Control and Prevention, the prevalence of overweight children is increasing. Data from 1980-2004 show nearly a three-fold increase (6.5% to 18.8%) in overweight children aged 6-11 years. With 18.4% "at risk" for overweight, the combined total is 37.6%. The findings are similar in both younger and older children (Hedley et al 2004; Ogden et al 2006). Ohio children have similar incidences of overweight, ranging from 11.4% to 21.7%, in those 10-17 years (Health and Human Services 2005). In Ohio, among 3rd graders, 17% are 'at risk' for overweight and 20.6% are overweight (combined total of 37.6%). Among these 3rd graders, the lowest rates were found among children residing in the suburbs (at risk for overweight – 17.2 %, overweight – 17.3 %, combined total - 34.5%) while the highest rates were found among children residing in rural Appalachia (at risk for overweight – 17.6%, overweight – 23.5% and combined 41.5 %). (Ohio Health and Human Services 200402995)

Obesity trends are not isolated to children. Only two states in the nation have adult obesity rates of less than 20%. With a prevalence of obesity of 25-29%, Ohio ranks below only West Virginia and Mississippi in prevalence of obesity (Centers for Disease Control). Health consequences include hypertension and high cholesterol, coronary heart disease and certain types of cancers, sleep apnea, respiratory problems and gall bladder disease. While the news media regularly carry articles admonishing consumers to eat right and to exercise more, it is difficult to motivate people to change without personal contact and engagement (Ornish 2007).

The concern over health and fitness in young people extends beyond issues of weight management. For example, while it is easy to assume that collegiate athletes are generally healthy, athletes who are physically large may actually have significant health risks. A study by one of OSU's researchers has demonstrated that of 70 football linemen 34 already have metabolic syndrome (Buell, et al in press) which places them at a two-fold risk of dying from a heart attack, three-fold risk of having a stroke and five-fold risk of developing type II diabetes

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(Alberti 2006). Partnering with COSI will give the researcher the opportunity to extend her work to examine younger athletes. The female athlete, on the other hand, may be at risk for amenorrhea, osteopenia, and disordered eating which can lead to stress fractures and osteoporosis. At COSI the OSU research partners will screen female athletes of all ages and at all levels of competition for nutrition and bone density and help them to maximize their bone density with different nutrition and physical activity interventions, as well as to determine the relationship with their level of training by the maximal oxygen consumption. (Nattiv, et al 2007)

Science centers have a role in addressing both of these societal issues through a free choice learning environment that promotes self motivated learning and provides life long learning opportunities to explore the connection between science research and real life experience (Pedretti 2004). Once the visitor's imagination is captured, the barriers to learning that might be experienced in a school setting, where a particular level of competence or performance is expected, are eliminated.

In the past two years, COSI has conducted studies of its current and former members, as well as non-members to gauge perceptions of COSI and identify needs and desires of the community. All three studies revealed the same two results: a perception that COSI has a relative lack of experiences for visitors who are in middle school and older, and a desire for new experiences at COSI. LILI will address these issues because both the content and the experiences lend themselves to a slightly older audience, and the very nature of the experience platforms is to be flexible and easily changed. In addition, data collected from central Ohio teachers in 2004 revealed a strong desire for programming related to "the human body" and "nutrition," so the LILI project has potential for meeting needs of student and teacher audiences as well.

In addition to modeling a new and unique university-science center partnership, the LILI project has potential to develop deeper relationships with visitors. There is evidence that COSI visitors, particularly members, will seek to engage in the research taking place in *Labs in Life @COSI*, encouraging repeat visits in order to continue participation. This evidence stems from a number of research studies in which data was collected at COSI during the past 18 months. In all cases, researchers (university and otherwise) have expressed satisfaction in the quality and quantity of data collected at COSI due to the positive response by COSI guests. One example includes research conducted at COSI during summer 2007 by the Developmental Language & Cognition Lab of the OSU Department of Psychology. The response from visitors was so great that the study at COSI has been extended and is ongoing. In fact, the lab prefers data collection at COSI over their own lab school because COSI's audience is more socio-economically and ethnically diverse and responsive to participation in the study.

Another example of the power of research to engage COSI visitors is a study that COSI conducted with OSU in 2007 on mediated learning experiences. To recruit family audiences, an email invitation was sent to COSI member families with children in the targeted age range with the hope of recruiting 90 participants within a two-week period. The response was overwhelming, with email responses well over the 90-person goal within 40 minutes of sending the email. COSI had to turn families away from participating in this research. Though no incentive was offered to participate in this research, COSI members overwhelming expressed interest and enthusiasm in being part of "real" research at COSI.

LILI also builds on COSI's history of successful programs related to health. A number of Electronic Education programs feature live interaction with medical professionals via videoconferencing technology. "Surgical Suite: Open Heart," in which COSI visitors observed open heart surgery in real time, ran successfully from 2000 to 2007 and sold out every program during the last two years of its existence. "Surgical Suite: Total Knee Replacement," in which participants observe knee surgery in real time, won the AAM Golden Muse Award for Science in 2003 and continues to be a popular program with school audiences. Both of these programs not only represent the best in distance education, but also illustrate COSI's strong relationships with partnering hospitals to deliver live medical science to student audiences.

COSI's other health related experience includes an on-going relationship with Prevent Blindness Ohio, which is currently developing eye health and safety experiences for young children and their families, and collaborations with a number of local health organizations to present special "awareness" events around specific health issues at COSI. These programs illustrate the desire for health related programming and COSI's role in the community for delivery of such programs.

Many museums and science centers have attempted to bring real science to the public. For example, The Science Museum of Minnesota and the Oregon Museum of Science and Industry each provide laboratory-like experiences for their visitors, allowing them to use microscopes and other equipment to explore the process and technology of science research. Another model is exemplified by The Field Museum of Chicago, where real paleontology research is going on behind large windows allowing visitors to observe real scientists at work. This proposal is unique in that the COSI audience will be involved in some of the research studies, as they participate in exhibit floor experiences, observation, and human mediated activities.

National Impact and Intended Results

Discussions on new models for the 21st century science center have emerged over the past several years, a conversation that COSI has helped lead. These discussions often focus on redesigning the science center as a force within the community that facilitates connections to real life issues by tapping the potential of science centers to be the nexus of bringing together researchers and community members, resulting in a more engaged public that has the opportunity to participate in real decisions, real work, and real experiences.

Unlike natural history, history, or art museums, science centers do not typically have collections upon which to draw for new experiences and programs. COSI is experimenting with a new concept where the "collections" are the STEM+H rich organizations in the community and their work. While it is not unusual to see community assets being brought into museums in single exhibits, programs, or events, COSI is developing more systemic ways to bring these assets into the science museum. Relationships with local business and education partners are serving as the pipeline for constantly changing content. These partners will, in essence, serve as the "collections" upon which COSI draws for cutting edge content in the STEM disciplines.

Moving away from being a science center with traditional interactive exhibits toward being a center of science with that connects real scientists with visitors will result in experiences that keep visitors engaged and excited. This is the direction COSI is taking in its strategic plan for the next five years: engage visitors, in deeper, more meaningful, and more regular ways to help them

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better understand science and how it relates to their everyday lives. Science learning is critical for all members of society according to Truman Schwartz, 2007 recipient of the Pimentel award given by the American Chemical Society. “The health of modern society demands that the public understand the strengths and limitations of science, its potential for good and evil and how its discoveries can be used wisely.” (Schwartz 2007)

COSI’s effort to reinvent itself for the 21st century involves a systematic change process (COSI+2012 Strategic Vision, Supporting Document 1). A key component of this reinvention is the establishment of a pipeline for bringing real and current science to the general public. To do this, COSI has built formal relationships with OSU, Battelle (one of the country’s leading research and design institutions), and TechColumbus (an umbrella association for science and technology firms). The LILI project builds on a replicable model for moving COSI toward a new way of programming that includes bringing the research into the museum through a concept called “@COSI”, and allowing the public to not only interact directly with scientists and researchers, but to better understand the important work taking place in these settings.

Under this model COSI has developed a strong relationship with OSU that has been formalized in a multiyear Memorandum of Understanding (MOU). This MOU stipulates that the two organizations will work together to provide OSU researchers with a stable and reliable outreach mechanism for their research work and COSI with ongoing content for its setting. In addition to collaboration with individual researchers from OSU, COSI has formed partnerships with WOSU, the public broadcast station affiliated with OSU, and the OSU Center for Family Research, a social science research center. Both are now physically housed within COSI and have resulted in multiple funded grants to jointly produce and deliver unique programming.

In 2007, OSU and COSI proposed the creation of an OSU research laboratory to be embedded in the Life Exhibition Area at COSI as a site for new research in nutritional sciences and physical performance assessment. OSU has committed funds, as well as release time for faculty member Dr. Kathryn Jakes to act as liaison for collaborations between OSU and COSI. In order to effectively engage general public visitors with the scientists as they are doing authentic work a new interface needs to be developed. Traditional science museum exhibits that are stationary and that do not change over time will not work. As the research evolves or changes with the introduction of a new topic, the visitor experience and the take away messages will also change. Therefore, it becomes necessary to view the visitor interface as a platform that contains many easily adaptable and changeable elements. These experience platforms include human mediated experiences, observation, interactive exhibits, signage, technology, and other activities.

COSI is guided in its strategic vision by American Association of Museums (AAM) sponsored research on characteristics of successful museum partnerships conducted by COSI’s CEO (Chesebrough, 1998). Recent online discussions hosted by the Association of Science and Technology Centers (ASTC Connects, January 2008) and led by the LILI project directors reveal that the model of collaboration between OSU and COSI is already generating great interest from other centers who have indicated their interest in using this example as a model.

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The OSU researchers involved in the *Labs in Life @COSI* will benefit from the collaboration as well. They have several research objectives that will be served by being located in a science center with access to the general public audience. These research objectives include:

- assessing what people know about physical activity, nutrition, and physical condition;
- including misconceptions they might have
- developing activities that stimulate learning about physical activity, nutrition, and physical condition, as well as the core science principles supporting these applied sciences
- evaluating different forms of participatory and interactive activities for their effectiveness in both engaging and teaching visitors

The research results will serve as guidelines for other science centers interested in tackling these issues through their exhibits, activities and programs and for other university based researchers who can benefit from a public setting for their work.

LILI represents a unique science center/university research partnership that is innovative in several ways.

- 1) Locating a set of public experiences adjacent to a working research laboratory gives visitors the opportunity to view the activities being conducted.
- 2) Our prototyping will allow us to explore ways to encourage visitors to learn about themselves with the self-assessment modules and compare their performance to their peers in similar tests.
- 3) By testing methods of storing data on each visitor through the use of a unique identifier, the project provides a new type of infrastructure for large research studies in learning and behavior change over time. The ability to evaluate behavior change over time for repeat visitors will enhance the research being conducted within the laboratories.

As a result of the partnership between OSU and COSI and the coordinated development of both the laboratories and the experience platforms, an example of collaboration between a university and science center will be created which informs both the field and the public while also serving as a site for data collection on a diverse population. In addition, opportunities for repeated measures on individuals will be possible, thus providing longitudinal research opportunities and thereby enhancing future research grant opportunities.

Project Design and Evaluation Plan

As stated earlier, the overarching goal of this project is to concurrently explore different ways of portraying science in real time for the visitor while also studying and evaluating the effectiveness of changing experience platforms. To address this goal, 2 major input and 4 outcome sub-goals are identified:

INPUT:

1. Using the OSU/COSI partnership, create engaging visitor interface with the science.
2. Define, develop and implement various components around the visitor/science interface.

OUTCOME:

3. Identify the visitor and how this experience affects their larger experience.
4. Determine the degree to which this approach affects scientists' and visitors' understandings of science.

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5. Determine the degree to which this approach affects scientists', visitors' and staffs' understanding of a science museum?
6. Determine the perception of value of this approach to the scientists and to the science museum.

The research in the *Labs in Life @COSI* embodies application of principles from all of the core STEM disciplines. However, because it can be applied to the visitor's own immediate experience, the intrinsic motivation to learn will be triggered. Research has shown that audiences are more engaged and learn from science museum exhibits when they can apply the concepts to themselves (e.g. "Learning is about affirming self" Falk and Dierking 2000:33). LILI will allow COSI to combine exhibits and human interactions to help visitors personalize the research work taking place in the labs they are observing. In addition, this project will allow COSI to present "unfinished science" rather than simply presenting facts and accepted theories to explain how the world works.

Upon completion of the physical structure of the *Labs in Life @COSI*, a set of exhibits, interactives and carts will be developed and combined to form the final experience platform outside the lab area. While COSI has over 43 years of experience in engaging the public in exhibits, this project offers a unique opportunity to translate the mysteries of scientific research into tangible and relevant experiences. The requested funds will

- allow COSI designers and OSU researchers to experiment with a variety of means and avenues for best engaging the public
- allow COSI to experiment with creating platforms that can be used to actually collect data from the public on an ongoing basis and to encourage repeat visitation through stimulating the desire to return and "try it again".
- allow COSI to integrate the work being done in these spaces across the institution, through things such as special events, opportunities for special member experiences to deepen relationships, and increased access opportunities.

More specifically, COSI will utilize the requested funds for the following activities:

Experience Platforms

COSI will create 4-8 exhibits, activities, and interactives for the experience platforms. Data will be collected on prototype versions of each element to inform the final design. A typical experience platform could include:

- **Self assessment modules**, such as a test of grip strength, that are linked so visitors can obtain a single "report" of test results. The single report serves as motivation for visitor participation because it includes an assessment of their condition and some general comments on how to improve.
- **Informative modules** with displays that visually describe nutritional concepts, such as "food is fuel," physical activity concepts, such as "make more muscle," along with examples of appropriate and inappropriate nutrition choices and the consequent effect on body composition.
- **Exhibits and signage** that describe the systems of the body and how they interact, as well as how they are related to the research work taking place in the labs.

COSI

The experience platform components will be developed and tested in two phases, allowing us to test the largest possible combination of pieces while gathering the most useful and informative data on how to best engage and inform the public.

Classroom/Large Group Research Space

A recently renovated classroom space at COSI, The North Exploration Space, will be used for large group activities and community educational programming on nutrition and physical activity. It will be rewired so that data can be collected from visitors and utilized in the *Labs in Life @COSI*. Data collection technology (i.e. Turning Point) and the software necessary to utilize it will be purchased so that, in some instances, COSI audience participants will be able to immediately see the results of studies in which they participate. For OSU faculty, this is a significant opportunity to share the process and outcomes of their research with the public. For COSI, it provides visitors with unique experiences during their time in the building.

COSI's Exhibit Design Team is well versed in the development of exhibits that can perform well under the repeated use and wear of thousands of visitors a year. The COSI Floor Faculty's expertise in creating inquiry based learning activities will enhance the message being presented. The *Labs in Life @COSI* researchers will provide data for visitors to compare themselves to their peers in task performance, as well as data to allow modeling programs to describe the outcomes of changes in their physical activity or dietary behavior. For example, a visitor can explore questions such as, "If I exercise more, what will happen to me?"

In order to determine the outcomes of the project related to its goals, a comprehensive evaluation plan will be developed and carried out by Joe Heimlich, Ph.D. in cooperation with COSI's in house evaluator. The evaluation and research component of the project will be constructed to answer appropriate questions in each phase of the project: developmental, prototype, formative, and outcome. The guiding evaluation questions include:

- In what ways do visitors integrate the visual, experiential and personal messages from the integrated platforms?
- What elements of the experience contribute to motivation for behavior?
- How does this type of experience add to a visitor's intent to return?
- Does this type of experience alter the perception of a visitor related to "role of the science museum"?
- Does this type of experience alter the perception of the scientists and science center staff related to science and the science museum?

The first two goals of the project are input measures and are not reflected in these questions.

In order to evaluate different forms of participatory and interactive modules for effectiveness in both engaging and teaching visitors, specific tasks to be accomplished will include the evaluation of modules through pre and post experience testing using target member groups. These surveys will examine factors of satisfaction with the activities (prototype and formative), factors of knowledge gained through participation (formative and outcome) and factors of learning and behavior change (outcome). For each component, behavioral capabilities (knowledge and skill), self-efficacy (confidence about skill), and outcome expectancies (value placed on using skill) will be the targets to evaluate, since these constructs are key Social Cognitive Theory variables that mediate and hence influence behavior. The evaluand will remain the "visitor" and through

larger samples, discernments around age, sex, interest, composition of group, occasion of visit, and number of experiences will be analyzed. The study will also measure perceptions, satisfaction, and understandings of the scientists and the science museum staff. See Supporting Document 2 for the General Evaluation Plan. This study will represent an important step forward in research by evaluating the effectiveness of this type of experience from the perspectives of the science center, the researchers and the visitors.

Project Resources: Budget, Personnel, and Management

The project will be led by Kim Kiehl, Ph.D., Vice President for Partnerships and Chief Strategy Officer at COSI, Kathryn Jakes, Ph.D., Professor at OSU and Joe Heimlich, Ph.D. OSU Extension@COSI faculty member. Dr. Kiehl was a tenured faculty member at OSU for ten years before moving to COSI and is well versed in the needs of university researchers and faculty. Dr. Kiehl has been involved with the development of the partnership with OSU from the very beginning, so her expertise on how to balance the needs of university partners with the needs of the science center will insure the success of the project. Dr. Jakes brings extensive experience as a researcher and faculty member and has served as the main liaison for a larger project, called “CollABoration” that will bring multiple research laboratories to COSI in the future. Dr. Heimlich is widely recognized as an expert in research on informal learning. Dr. Heimlich holds an appointment at the Institute for Learning Innovation (ILI) and has consulted for zoos and museums worldwide. The Project Team for *Labs in Life* consists of COSI Team Members from each of COSI’s divisions, as well as the researchers from OSU, in order to capitalize upon the complementary strengths of each organization and address each organization’s goals.

The *Labs in Life* research team will also serve as a science content advisory board for the COSI’s Project Team and will work closely with Dr. Heimlich and Rita Deedrick, COSI’s in house evaluator, to design and use the evaluation instrument. Members of the OSU research group include Dr. Jackie Buell, Director of Sports Nutrition, Department of Human Nutrition; Dr. Carmen Babcock, Assistant Professor, Department of Physical Activity and Educational Services; and Dr. Gail Kaye, Extension Specialist in Human Nutrition and director of the Dietetics Internship Program, Department of Human Nutrition. Regularly scheduled meetings will serve to update partners in the progress being made on the project.

Because the project is an integral part of COSI’s strategic plan, the COSI Team Members who are involved will integrate project activities with their daily job duties. This includes Dr. Heimlich’s time as a result of his fulltime appointment to COSI for a multiyear period. The involvement of Dr. Jakes in developing collaboration between OSU and COSI has been supported by OSU and cost sharing has been provided for the proposed work. Dr. David Chesebrough, CEO of COSI and author of an AAM study on museum partnerships will advise and help implement partnership strategies and relationships at the highest levels. Periodic evaluation of healthy partnership characteristics and their indicators will be guided by Dr. Chesebrough.

Dissemination

By maintaining records of the meetings and progress throughout the development and implementation of this work, the demonstration project will be documented in order to share the lessons learned with other science centers, and to provide reports to the IMLS. Regular

communication through the Association of Science and Technology Centers (ASTC) will provide avenues for sharing information with centers worldwide. Dr. Chesebrough has co-lead the discussion and dissemination of new models through ASTC (5 years of conference and online forums, writings) and is uniquely positioned to disseminate findings from this model experiment of partnering also with Institute for Learning Innovation. COSI will also work with key museum professional museum partners to convene a Community of Practice as a means of disseminating COSI's findings and stimulating continuing discussions in the professional field. A Community of Practice brings together people who "share a concern, a set of problems, or a passion about a topic, and who deepen their understanding and knowledge of this areas by interacting on an ongoing basis." (Wenger et al 2002) While the idea of a Community of Practice is not new this project will bring intention, focus on a system to this ideas, thus allowing for it to play a more central role in the everyday running of the museum. The exact members of this Community of Practice will be determined by looking at other related projects (ex. Portals to the Public and a pending COSI NSF grant) and seeing how to best make use of these networks rather than inventing new groups. Publication of results will extend to both science center literature, such as ASTC Dimensions, and to health and physical activity literature, such as the Journal of the American Dietetics Association and Medicine and Science in Sport and Exercise. Findings from the project evaluation will be presented at conferences including Visitor Studies Association, ASTC, National Association of Research in Science Teaching, and North American Association for Environmental Education. COSI will promote the project and the research to the central Ohio community through its website (www.cosi.org) and through regular publications, such as the Member Enews, the Teacher Enews, and a variety of print pieces.

Sustainability

The *Labs in Life @COSI* will be a working laboratory with a permanent presence at COSI. An operational business plan is being developed with assistance of Alan Proctor, former CFO of Harvard University as part of his overall future financial modeling for COSI, to insure that the LILI project is sustainable for many years to come. The LILI project builds upon COSI's experience with other OSU partnerships, such as WOSU @ COSI, to develop and deliver sustainable models based on leased space, rentals, and grants, both shared and individual. Success has been demonstrated on leveraging unique @COSI strength to obtain local, state and national funding support.

As research changes within the lab, new programming can be developed, but the core themes of nutrition and physical activity will remain, so the exhibit infrastructure will be permanent. They will become part of COSI's regular programming and exhibits, so that maintenance will be part of COSI's operating budget. Programming surrounding the activities in the exhibit space will be enhanced by ongoing participation of dietetics intern students who will conduct part of their rotations on site at COSI, working within the labs and with the audiences in the exhibit spaces. Ongoing support for the experience platforms and new development of content will be funded through the various grants the researchers receive to carry out their work.

PARTNERSHIP STATEMENT

Complete one of these forms for each formal partner.

Legal name of applicant organization (5a from Face Sheet): _____

1. Legal name of partner organization: _____

2. Partner DUNS number: _____

3. Mailing address

Street1: _____ Street2: _____

City: _____ State: _____ Zip+4: _____

4. Partner Web address: http:// _____

5. Partner project contact name: _____

Title: _____

Telephone number: _____ E-mail: _____

6. Governing control of partner (choose one):

- | | |
|---|--|
| <input type="checkbox"/> State Government | <input type="checkbox"/> Nonprofit with 501(c)3 IRS Status (Other than Institution of Higher Education) |
| <input type="checkbox"/> County Government | <input type="checkbox"/> Nonprofit without 501(c)3 IRS Status (Other than Institution of Higher Education) |
| <input type="checkbox"/> City or Township Government | <input type="checkbox"/> Private Institution of Higher Education |
| <input type="checkbox"/> Special District Government | <input type="checkbox"/> Individual |
| <input type="checkbox"/> Regional Organization | <input type="checkbox"/> For-Profit Organization (Other than Small Business) |
| <input type="checkbox"/> U.S. Territory or Possession | <input type="checkbox"/> Small Business |
| <input type="checkbox"/> Independent School District | <input type="checkbox"/> Hispanic-serving Institution |
| <input type="checkbox"/> Public/State-Controlled Institution of Higher Education | <input type="checkbox"/> Historically Black Colleges and Universities (HBCUs) |
| <input type="checkbox"/> Indian/Native American Tribal Government (Federally Recognized) | <input type="checkbox"/> Tribally Controlled Colleges and Universities (TCCUs) |
| <input type="checkbox"/> Indian/Native American Tribal Government (Other than Federally Recognized) | <input type="checkbox"/> Alaska Native and Native Hawaiian Serving Institutions |
| <input type="checkbox"/> Indian/Native American Tribally Designated Organization | <input type="checkbox"/> Nondomestic (non-U.S.) Entity |
| <input type="checkbox"/> Public/Indian Housing Authority | <input type="checkbox"/> Other (specify) _____ |

7. What is the partner organization's mission? [500 characters]

8. Describe the partner organization's service area (audience served, including size, demographic characteristics, and geographic area). [500 characters]

9. List the partner's key roles and responsibilities in the project. [1000 characters]

Please note:

- A. Submission of this application by the authorized representative of the applicant organization reflects the partner organization's agreement with the following statements:
- We will carry out the activities described above and in the application narrative.
 - We will use any federal funds we receive from the applicant organization in accordance with applicable federal laws and regulations as set forth in the program guidelines and the terms and conditions of the grant award.
 - We assure that our facilities and programs comply with the applicable federal requirements and laws as set forth in the program guidelines.
- B. Prior to submission of the application, the applicant will ensure that the partner organization has provided to the applicant a signed original of this Partnership Statement for the applicant's records. Such original will be made available to IMLS, if requested by IMLS.

OMB No. 3137-0071, expires 7/31/2010

Burden Estimate and Request for Public Comments: Public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comment regarding this burden estimate or any other aspect of this collection of information, including suggestion for reducing this burden, to the Institute of Museum and Library Services, Chief, Information Officer, 1800 M Street, NW, 9th Floor, Washington, DC 20036-5802, and to the Office of Management and Budget, Paperwork Reduction Project (3137-xxxx), Washington, DC 20503.

BUDGET FORM - PAGE FOUR

Section B: Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages			
2. Fringe Benefits			
3. Consultant Fees			
4. Travel			
5. Supplies and Materials			
6. Services			
7. Student Support			
8. Other Costs			
TOTAL DIRECT COSTS (1–8)			
9. Indirect Costs			
TOTAL COSTS (Direct and Indirect)			

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS

2. Cost Sharing:

 a. Cash Contribution

 b. In-Kind Contribution

 c. Other Federal Agencies*

 d. TOTAL COST SHARING

3. TOTAL PROJECT FUNDING (1+2d)

% of Total Costs Requested from IMLS

* If funding has been requested from another federal agency, indicate the agency's name:

IMLS Schedule of Completion

November 1, 2008- March 2009

- Development of formative evaluation instrument
- Data collected on cart activities being presented in area (11/08-3/09)
- Begin development of Phase 1 experience platform components (12/08-3/09)
- Wire North Exploration Space to Labs in Life (1/09-3/09)
- Install Turning Point system in North Exploration Space (1/09-3/09)

April 2009- September 2009

- Preparation of first semi-annual financial report (4/09)
- Analysis of data collected from cart activities (4/09)
- Install of Phase 1 experience platform components begins (5/09)
- Recruiting of member families (4/09)
- Preliminary testing of Phase 1 components with COSI team members (5/09-9/09)
- Test data collection capability in North Exploration Space (5/09-9/09)

October 2009- March 2010

- Preparation of Year 1 Report (11/09)
- Begin testing Phase 1 components with members (10/09-12/09)
- Completion of testing with Phase 1 components (1/10)
- Community of Practice meeting (10/09)
- Development, install and testing of Phase 2 components (1/10)

April 2010 – August 2010

- Preparation of second semi-annual financial report (4/10)
- Completion of testing on Phase 2 components (5/10)
- Compilation of results of Phase 1 & 2 testing (6/10-8/10)

September 2010 – November 2010

- Completion of final set of components for experience platforms (9/10)
- Install final set of experiences (10/10)
- Final report preparation (11/10)

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