1. Statement of Need

Advancing our mission and strategic goals – As mandated by our mission, TNSC provides public educational outreach programs drawn directly from our core resources: our renowned research in biology, geology and paleontology, and our collections of 6,000,000+ natural specimens collected over a period of 70+ years. Our programs are consistently high-quality and include family-oriented public events, teacher training programs, and K-16 classroom presentations that complement formal science education. Because we are one of the few providers of authentic science in Central Texas, the K-16 educational community greatly relies on our outreach programs, all of which offer inquiry-based, hands-on learning opportunities and interaction with our scientists.

Our proposed *Life Through Time* project directly fits into and furthers our permanent Teacher Training Program (our highest-priority outreach program), which has reached 700+ K-16 teachers since the program's inception in 2006. There are long waitlists for every workshop we offer, and teachers' evaluations repeatedly request that we increase our number of workshops and offer them statewide. In their evaluations, teachers repeatedly identify and request specific areas in the life and earth sciences in which they would like additional training, and ask us to continue offering training that: is hands-on and content-focused; incorporates inquiry-based lab and field experiences that can be transferred easily to the classroom; offers interaction with our scientists; is aligned with both state and national standards; provides networking opportunities; and offers future follow-up advice and help. We developed *Life Through Time* in direct response to this feedback (see attached Supportingdocument1.pdf, Supportingdocument2.pdf, and Supportingdocument4.pdf). In addition, from our research we find that teachers who are in the most need of training are those who teach students who are historically under-represented in the sciences, including Hispanics, African-Americans, and females (in comparison with Whites and males); therefore, we will give preferential acceptance into the *Life Through Time* program to teachers who teach a majority of these students.

How this project relates to mission and strategic plan – TNSC is committed to serving the public through educational outreach, as evidenced by our stated mission: "to encourage awareness and appreciation of the interplay of biological, geological and environmental forces as they have shaped, are shaping, and will shape our world." Our *Building on Success: Strategic Plan 2009 – 2014* (see attached Supportingdocument3.pdf) states that "we will continue working to meet the growing demand in Central Texas for our educational outreach programs, which are designed to improve the scientific literacy of students, teachers and the general public, with primary focus on helping K-16 teachers to better understand and teach about life and earth science." Our strategic plan names our proposed *Life Through Time* project as the main objective we will implement to accomplish strategic goal #3, which states: "Public demand for our educational outreach programs across Texas far exceeds our capacity to deliver and is increasing. Increased staffing in education will allow us to better fulfill our mission by utilizing our research and collections for educational outreach. By adding another educator to our staff, we can meet the demand for our programs, expand our reach, and increase our grant-writing activities to generate an additional $60,000 annually for education. It is our continuing commitment to serve the public through educational outreach programs that are grounded in the inquiry process and based on our research and collections. Our objective is to increase staffing in our education department in order to offer *Life Through Time*, a series of teacher training workshop sessions designed to enhance TNSC's successful Teacher Training Program and expand TNSC's role as a science resource for the Central Texas region."

Project as investment in institutional capacity – Our proposed *Life Through Time* project enhances and expands institutional capacity in order to carry out our strategic goals through the use of our research and collections for the public good, in accordance with our mission and strategic plan, by contributing to the science education and literacy of Central Texans and directly serving high-need populations through teachers teaching a majority of students who are historically under-represented in the sciences. The project will also raise awareness about and attendance to the museum, which, in turn, will help us obtain support funding from individuals. A successful project will make us a more viable candidate for corporate and foundation funding. Ensuring the project's continuation, and increasing its reach and impact, the project's lead educator will be responsible for securing additional grant monies to sustain the position once IMLS funding ends. Partnering

with Central Texas Regional Collaborative for Excellence in Science Teaching and Manor Independent School District in this proposed project will bring new opportunities for us to develop other education collaborations across the region.

Strategic planning process and participants *– Building on Success: Strategic Plan 2009 – 2014* was developed with staff, faculty and advisory council input, focus group research, and individual interviews. It was reviewed extensively by TNSC's advisory council's Strategic Plan Review Committee in September and October 2009, and approved by a majority vote of the full advisory council in October, 2009. This plan builds on our 2003 strategic plan, focusing on our core values and utilizing our unique strengths, while recognizing that TNSC provides a valuable service to the community. Our plan details long-term institutional vision while covering short-term goals and objectives to be completed within a reasonable timeline. Our planning process is outlined below:

1. Our director and director of external affairs engaged staff, faculty and advisory council members in assessing TNSC's fulfillment of the goals listed in our 2003 strategic plan, noting which goals were achieved and which are in progress. A list of goals for the 2009 strategic plan was discussed.
2. Our director and director of external affairs engaged current and past advisory council chairpersons in focus group analysis to assess "Where is TNSC now?", "Where does TNSC want to go?", and "How does TNSC get there from here?"
3. Our director of education surveyed and/or interviewed the 700+ Central Texas K-16 teachers who have participated in our educational outreach programs to determine their needs and the needs of their students.
4. Our director, director of education, and director of external affairs visited and interviewed peer organizations to gain from their experience, compare our programs, and identify goals and best practices. Peer institutions were chosen for their comparable research and collections, and/or innovative outreach programs – particularly their successful teacher training workshops – and included: California Academy of Sciences, University of California Museum of Paleontology, and the National Center for Science Education.
5. Our director, director of education, and director of external affairs prioritized our list of educational goals for the 2009 strategic plan. Objectives for fulfilling these goals were discussed with stakeholders, including teachers, parents and advisory council members, who suggested that our proposed *Life Through Time* project be given top priority.
6. Our staff, faculty, and advisory council's Strategic Plan Review Committee conducted a final review of the plan and approved it. On October 16, 2009, our full advisory council reviewed the plan and voted to accept it.

Intended audience – The intended audience for our proposed *Life Through Time* project is 4^{th}-8^{th} grade public school teachers in Central Texas teaching a majority of students who are historically under-represented in the sciences, including Hispanics, African-Americans and females. Our secondary audiences include the teachers' 4^{th}-8^{th} grade students and education colleagues, and the general public.

Texas' student population is becoming more diverse, reflecting changes in the general population, especially among Hispanics, who are projected to assume 60.9% of the total population by 2040. Hispanics also have the highest dropout rate at 56.5%. Texas is seeing significant increases in economically disadvantaged students in public schools – in 2006-2007, 55.5% of all Texas students were considered economically disadvantaged, and that number is expected to increase as the population grows (*Texas in Focus*, Combs 2008).

In Texas' new economic era – driven by globalization, demographic changes, environmental concerns and technology – there is a growing need for a more scientifically literate populace. Yet, many of Texas' elementary and secondary teachers have little interest in science, little confidence in their ability to teach science, and little pedagogical and content preparation (Fuller 2004; NSTA 2002). Texas is experiencing low national rankings in science and decreasing numbers of educators qualified to teach science (Combs 2008). Campuses with the largest percentages of low-income students are likely to have the fewest highly qualified science teachers (Fuller 2006). Additionally, Texas students are reporting loss of interest in science around 7^{th} grade.

TNSC is located within Region XIII, an area comprised of 16 counties with 60 public school districts. Region XIII has an elementary and secondary student population of 345,154 (2007-08 school year) with the

following demographics: 45.6% White; 40.8% Hispanic; 9.6% African American; and, 4% other. White students typically outperform non-white students and males outperform females on the science portion of the state-mandated standardized test, the Texas Assessment of Knowledge and Skills (TAKS), administered only to 5th graders at the elementary level and 8th graders at the middle school level. In 2008, the pass rate was:

2008 TAKS (Science) Pass Rates for Texas Region XIII

Grade Level	White	Hispanic	African American	Female	Male
5th Grade	92%	71%	68%	79%	84%
8th Grade	85%	57%	55%	70%	75%

After determining the goals and needs of TNSC and assessing the goals and needs of the Central Texas community, we identified our primary audience – 4th-8th grade public school teachers – and designed the *Life Through Time* project as the best solution to answer those needs. The project directly supports our mission and strategic plan by expanding the ways in which we share our collections, content and knowledge for the public good. The project is designed in direct response to feedback and requests from our primary audience, and provides opportunities for teachers to learn how to make pedagogical changes from traditional lecture and rote learning methods to student- and idea-centered inquiry learning methods, which are recommended by the National Academy of Sciences and Council of Chief State School Officers.

2. Project Design

Our proposed *Life Through Time* project is an efficient, effective and reasonable approach to accomplish clear goals and objectives. It expands our permanent Teacher Training Program by offering a new series of workshops designed to help 4th-8th grade teachers from Central Texas better understand and teach integrated key concepts in life and earth sciences. Key concepts to be covered include: introduction to geology; fossilization processes; sedimentary rocks and processes; geological time; plate tectonics; basic morphology and biodiversity of vertebrate groups and the roles of fossils in our understanding of macro-evolutionary change; organisms and their environment; environmental change, evolution and extinction; and the Tree of Life.

Two cohorts of 20 teachers each will be trained: one cohort for each of the two project implementation years. Workshop sessions will be taught by TNSC educators and scientists, as well as scientists from the greater University of Texas at Austin community. The project curriculum, based on the Texas Essential Knowledge and Skills (TEKS) and the National Science Education Standards, includes inquiry-based field and lab activities developed from multiple sources and reproducible in the classroom. Teachers will gain firsthand experience in fostering inquiry-based learning and integrating TNSC's teaching resources – museum exhibits and collections, loaner learning kits, and TEKS-based curriculum materials – into the classroom.

Each session is designed to increase teachers' content knowledge and introduce them to exemplary materials that they can use in their classrooms. Time for reflection will be provided so that teachers can plan how to implement the lessons into their classes. During each session, a scientist will make a presentation and discuss his/her current research; participants will then conduct inquiry- and specimen-based lab and/or field activities designed to integrate the discussed concepts directly into classroom curriculum. To deepen their understanding of these concepts, participants will go on multiple field trips to TNSC collections – including the Vertebrate Paleontology Laboratory, Non-vertebrate Paleontology Laboratory, and the Texas Natural History Collections – and fossil field locations in Central Texas.

In addition to attending the training sessions, teachers will collaborate with colleagues in their cohort, and TNSC scientists and science educators, by participating in a web-based forum for a minimum of two hours per month throughout the year to share lesson ideas and resources, further connect what they learned during training to their own teaching, ask questions about content or pedagogical issues, and reflect upon their learning.

Upon completion of the workshops, participants will use the knowledge, skills, and resources gained to train at least 5 other teachers at the local, regional, or state levels for 6 hours in the *Life Through Time* curriculum. Thus, the 40 teachers participating in the *Life Through Time* project will be trained, and they will train 200 additional teachers for a total of 240 teachers to be trained during the two-year implementation period – this will impact 17,760 students during the implementation period alone (assuming: 120 elementary teachers x 22

students = 2,640 students + 120 middle school teachers x 126 students = 15,120 students; 2,640 + 15,120 = 17,760), with sustained impact as these teachers continue to utilize their new skills and knowledge.

Goals and Objectives – The primary goal of the *Life Through Time* project is to provide 4^{th}-8^{th} grade teachers with the knowledge and skills needed to effectively teach an integrated life and earth sciences curriculum using a hands-on, inquiry-based approach. Secondarily, this project seeks to teach teachers how to encourage achievement in science among students from traditionally under-represented populations and foster interest in science as a career. To meet these goals, we have established four objectives: (1) improve 4th-8th grade teachers' understanding of and ability to teach life through time through a TEKS-aligned life and earth science based professional development series; (2) teach teachers how to integrate TNSC resources – including collections, scientific staff, loaner kits, exhibits, and field activities – into their teaching; (3) build a cadre of teachers who will provide *Life Through Time* teacher training to their colleagues; and, (4) disseminate project results via presentations and publications in peer-reviewed journals.

Project management – The *Life Through Time* project is a high priority for the TNSC and has the full support of the Center's director, Dr. Edward C. Theriot, who will also serve as a scientific consultant. Christina Cid, TNSC's director of education, will be responsible for the successful implementation of the project and will oversee all aspects of it. A lead educator, who will be hired at the beginning of the project, will manage the day-to-day activities including recruiting participants, leading the workshops, and managing the web-based forum. Dr. Pamela R. Owen, TNSC's senior paleontology educator, will be the lead scientific consultant, serving as a guest lecturer, reviewing workshop content and pre- and post-tests for scientific accuracy, and contributing to the web-based forum. Other TNSC and UT-Austin scientists will serve as guest lecturers, help review workshop content for scientific accuracy, and contribute to the web-based forum. An evaluation consultant, Dr. Karen Ostlund, will work with the key project personnel to analyze workshop activities, and the teachers' evaluations and test results, to determine and implement program improvements based on the academic content standards and participant feedback. She will also write a report and articles on the project to submit to peer-reviewed science education journals. (See section "Project Resources: Key Staff and Consultants" for additional information.)

Process for adjustments – Adjustment components are (1) participant feedback, (2) direct observations of workshop activities, and (3) teacher contributions to the web-based forum. A pre-test will be administered to participants before the cohort begins to help the lead educator and scientists focus the content of each session. Pre-test results will be compared with post-test results administered at the end of the sessions to assess the gains in participants' understanding of the content presented in *Life Through Time*. As the teachers participate in inquiry-based activities and field trip experiences, contribute to the web-based forum, and network with other educators, project staff will monitor their activities to assess their understanding of the content and pedagogical skills taught. Participants will complete written evaluations of the program at the beginning, mid-term, and end of the workshop series, after which, the project review committee (consisting of the lead educator, evaluation consultant, director of education, and the senior paleontology educator) will analyze the participants' written responses and project personnel's observations to determine and implement mid-term corrections and improvement of project activities.

Partners – Our two partners in this project are Central Texas Regional Collaborative for Excellence in Science Teaching and Manor Independent School District (see attached PartnerCTRC.pdf and PartnerMISD.pdf).

- Central Texas Regional Collaborative for Excellence in Science Teaching (CTRC) provides high-quality, sustained, TEKS-based professional development to science teacher mentors and builds the leadership skills of those teachers as they return to their campus/district and provide professional development to their peers. CTRC works with teachers from across Texas' Region XIII, which encompasses 60 school districts, grades K-16. With 50+ Science Teacher Mentors and 200+ Cadre Members the content and pedagogy knowledge gained through CTRC's professional development affects thousands of children in Region XIII.
- Manor Independent School District (MISD) consistently records science TAKS scores significantly below the state average and enrolls a majority of students from historically under-represented populations in the sciences.

The lead educator and evaluation consultant will work with CTRC and MISD science specialists to conduct a needs assessment of the participating teachers and identify any specific needs that emerge. Partner organizations will also provide time and space for participating teachers to train other educators in the *Life Through Time* curriculum.

Evaluation processes – We will use a mixed-methodology evaluation approach to ensure that the project's activities meet the objectives outlined above. To measure and evaluate the effectiveness of Objective 1, we will use pre- and post-tests, containing both open- and closed-end questions, to assess participants' understanding of the content in *Life through Time*. Teachers will also complete periodic course evaluations, to be used for program improvement. To measure the effectiveness of Objective 2, participants will complete a usage log, to be submitted to the lead educator, tracking how they are integrating TNSC's resources and project curriculum materials into their teaching. Objective 3 will be measured by participants completing a presentation log, documenting the number of teachers they train and the length of time they train them in the *Life Through Time* curriculum. Objective 4 will be measured by the number of presentations given by project personnel at local, regional, or national conferences, and the number of papers published in peer-reviewed science education journals. Lastly, an evaluation consultant will help assess the long-term success of the project by analyzing both the workshop curriculum and participant feedback in light of state and national science standards.

Reaching our intended audiences – Participants will be recruited from our partner organizations. CTRC and MISD will promote our project to our intended audience – 4^{th}-8^{th} grade teachers – and science curriculum specialists using a promotional brochure created by TNSC. Additionally, to help recruit participants, the lead educator will present an overview of the project to MISD and CRTC teachers and answer any questions about the project during teacher in-service days. Participants will take the skills, knowledge and experience gained during our workshops to our secondary target audiences: their 4^{th}-8^{th} grade students, education colleagues, and the general public. Participants will train their colleagues on in-service days, during conference periods, or at science education conferences. Project personnel will make presentations at science education conferences at the local, regional, and state levels, and publish results in peer-reviewed science education journals.

Scholarly involvement – The structure and content of the sessions will be developed by the lead educator and TNSC scientists and is based on research and collections of UT-Austin. Resources drawn from the National Science Teachers Association and lessons created by TNSC education staff for previous teacher training sessions will be supplemented by new curricula developed by TNSC specifically for this training series.

3. Project Resources

Time – The *Life Through Time* project is a three-year project, with a begin date of August 1, 2010 and an end date of July 31, 2013. Teacher training will take 2 years – one year each for two cohorts of 20 teachers – and consist of 9 workshop sessions, online forums, and presentations by participants to their colleagues. Preparation activities for the teacher training will take 0.5 years; dissemination of the project's results will take 0.5 years, during which project staff will also conduct summative evaluations, present program results at conferences, and write articles for submission to peer-reviewed journals. (See attached Scheduleofcompletion.pdf.)

Key Staff and Consultants – The *Life Through Time* project is a key component of TNSC's strategic plan; thus, the project's activities are built directly into our master schedule, with project staff committing adequate time to accomplish project goals and activities. As described in the "Project Design: Project Management" section above, this project will be directed by **Christina Cid**, a **lead educator** (to be hired at the beginning of the project), **Dr. Pamela R. Owen**, and **Dr. Karen Ostlund**. Project staff clearly demonstrate appropriate experience and expertise. As director of education, Cid is responsible for overseeing all educational programs, museum exhibits and visitor services for TNSC. Cid, who has 13+ years of experience teaching K-16 students and teachers, and undergraduates, joined the staff of TNSC in 2006 after receiving her M.Ed. in Science Education. She has designed evaluations for multiple funded projects and is currently completing her Ph.D. in Science Education. The lead educator will be responsible for the day-to-day management of the project. Qualifications of the lead educator, who will be hired at the beginning of the project through a competitive process, include a Master's degree (preferred) in a related discipline, at least 5 years teaching experience, experience conducting teacher training, working knowledge of state and national level curriculum standards,

knowledge of best practices in curriculum and instruction, understanding of Texas' natural history, experience securing grant monies, and proven leadership and management ability. As senior paleontology educator, Owen develops and implements collections-based teaching and outreach programs. She has a M.S. in Biology, a Ph.D. in Geological Sciences, collections management experience, and 22 years of teaching experience, including pre-K-16 and continuing education programs. Dr. Karen L. Ostlund, evaluation consultant, has taught at the elementary, middle school, and university levels and has 35+ years of teaching experience. In addition to developing local, state, and national curriculum projects, she was the major contributor to NSTA *Pathways to the Science Standards: Elementary School Edition: Guidelines for Moving the Vision into Practice*. Dr. Ostlund attended the Evaluator's Institute, designed evaluation, and prepared reports for numerous funded projects.

Two additional TNSC education staff will contribute to the project. **Laura Naski**, paleontology educator, will serve as a guest lecturer. She has a B.A. in Geology and conducts paleontology programs with K-16 students and teachers throughout Texas and prepares vertebrate fossils in the Center's public *Paleo Lab*. Webmaster **Sharon Ruether**, will maintain the project's website and serve as technical advisor. Ruether has 16+ years experience at colleges and universities, producing graphic design, video, multimedia, web design, instructional computing, and technology. A student worker will be hired on a part-time basis to assist the lead educator in coordinating and preparing for the teacher training series.

TNSC scientists, who allocate a portion of their appointed time at TNSC for participating in outreach projects, will serve as guest lecturers, review workshop content for scientific accuracy, and contribute to the web-based forum. **Dr. Edward C. Theriot,** director of TNSC since 1999, has 20+ years of progressive experience in museum management. He holds a Ph.D. in Natural Resources, is the Jane and Roland Blumberg Centennial Professor of Molecular Evolution, and has 30+ years of teaching experience. **Dr. Ann Molineux**, collections manager of TNSC's Non-vertebrate Paleontology Laboratory, holds a Ph.D. in Geology and has 20+ years of teaching experience. **Dr. Travis LaDuc**, assistant curator of herpetology, has 20+ years of conducting herpetology and conservation presentations to school and civic groups around the southwestern US, continues his own research program, and is responsible for the day-to-day activities within the herpetology collection of 80,000+ preserved specimens. **Jessica Rosales,** ichthyology collections manager, conducts outreach programs throughout the year and is responsible for ensuring that specimens are legally accessioned into the fish collections, and properly curated. **Dr. Lyndon Murray**, Vertebrate Paleontology Laboratory collections manager, has 20+ years of collection management experience in vertebrate paleontology and archaeology. **Dr. Matt Brown,** vertebrate fossil preparatory, has 13+ years of paleontology preparation experience.

Scientists from the College of Natural Sciences and the Jackson School of Geosciences at UT-Austin will be hired at the beginning of the project to serve as guest lecturers and contribute to the web-based forum.

Budget – The total cost for the *Life Through Time* Project is $172,115.38. (See attached Detailedbudget year1.pdf, Detailedbudget year2.pdf, Detailedbudget year3.pdf, and Summarybudget.pdf.) A three-year IMLS grant in the amount of $84,680.82 will provide for 49.2% of the total project cost. IMLS monies will be used to pay for the hiring of a part-time lead educator to manage the program; the hiring of an evaluation consultant; honorariums for University of Texas at Austin scientists; participant stipends; lunches and snacks for participants; housing for up to four out-of-town participants in each cohort for the five-day summer sessions; loaner kits and other materials; and curriculum guides and resource books for teachers to use in the classrooms.

As evidence of its long-term commitment to this project, TNSC will contribute $87,434.56 for 50.8% of the project cost. TNSC contributions will pay for TNSC staff time and fringe benefits; materials for loaner kits and other materials; curriculum guides and resource books for teachers to use in their classrooms; transportation, lodging, and registration fees for the director of education and lead educator to present at science education conferences; parking for session participants; transportation for field trips; and activity supplies.

IV. Project Impact

Intended Products – The measured results of this project will be used to inform TNSC's overall teacher training methodology, and continued growth and improvement of our integrated life and earth sciences educational programs. The curriculum developed by TNSC and implemented during our *Life Through Time*

project can be disseminated to other institutions. TNSC educators will make presentations at state and national science education conferences and publish the results of the project in peer-reviewed science education journals.

Participating teachers will receive materials and experiences that can be directly integrated into their teaching and allow for professional growth, including: curriculum and resource materials aligned to the state science standards; lab activities with UT scientists; access to TNSC's loaner kits and teaching specimens; guided field trips to identify areas in Central Texas where participants can take their students to conduct field activities; 96 hours of professional development credit which can be used to renew Texas teaching certificate; and, an online forum providing an opportunity to network and share lessons, ideas and additional resources with other participants and project personnel. Upon completion of the workshops, the 40 participants will each use their knowledge and skills to train at least 5 other teachers for 6 hours in the *Life Through Time* curriculum, resulting in a total of 240 teachers trained in this project.

Measurable Results – Participants' content assessments and usage/presentation logs will be used to measure the impact of the project. Content assessments will be used to evaluate the effectiveness of the project in expanding teachers' content knowledge. Participants will track their use of TNSC resources and project curriculum, the number of teachers they train and length of time they train them in the project curriculum. Data collected will be used to evaluate changes in teachers' attitudes and confidence in teaching life and earth science concepts, and determine how they integrate TNSC resources into their curriculum. Data collected for this project will be incorporated with data from previous workshops to evaluate the teacher training program as a whole.

Long-term impact after IMLS funding ends – The *Life Through Time* project will offer a lasting return on investment and long-term benefits for both the museum and the community, by:

(For TNSC)

•Expanding our ability to fulfill our mission by sharing our collections, content and knowledge.

•Fulfilling our continuing commitment to serve the public through educational outreach programs that are grounded in the inquiry process and based on our research and collections.

•Accomplishing our strategic plan objective by meeting demand for our programs and expanding our reach,

•Increasing our grant-writing activities to generate an additional $60,000 annually for education (essentially paying for and expanding the position we are proposing to create).

•Providing us with valuable feedback from participating teachers, to be used to develop future workshops.

•Providing opportunities for us to develop additional strategic partnerships across Texas.

•Establishing the need for an increase in operational base funding from UT-Austin's College of Natural Sciences and the Texas Legislature, and program funding from NSF and other federal funding organizations, and corporations, foundation and individuals.

•Determining our capacity to expand the project to other parts of Texas.

(For our audiences)

• Providing the 40 participating teachers with the opportunity to increase their understanding of science in hands-on, inquiry-based lab and field activities with TNSC and other UT-Austin scientists, gain skills in teaching an integrated life and earth science curriculum, and establish connections with authentic-science education resources.

•Providing the 40 participating teachers with the knowledge and skills they need to teach hundreds of students, other teachers, and the general public – **these 40 teachers will reach an estimated 2,960 students per year** [assuming: 20 elementary teachers x 22 students = 440 students + 20 secondary teachers x 126 students = 2,520; 440 + 2,520 = 2,960].

•Providing 200 additional teachers with *Life Through Time* training as each of the 40 participating teachers become teacher leaders by training a minimum of 5 other teachers, in at least 6 hours of *Life Through Time* training, conducted during the two-year implementation period – **this impacts 14,800 additional students** during the two-year period [assuming: 100 elementary teachers x 22 students = 2,200 students + 100 middle school teachers x 126 students = 12,600 students; 2,200 + 12, 600 = 14,800].

• Improving the scientific literacy of high-need Central Texas students by targeting teachers teaching a majority of students who are historically under-represented in the sciences.

BUDGET FORM - PAGE FOUR

Section B: Summary Budget

	$ IMLS	$ Cost Share	$ TOTAL COSTS
1. Salaries and Wages	0.00	21,336.00	21,336.00
2. Fringe Benefits	0.00	5,383.53	5,383.53
3. Consultant Fees	38,915.00	0.00	38,915.00
4. Travel	0.00	6,660.00	6,660.00
5. Supplies and Materials	14,878.50	14,878.50	29,757.00
6. Services	7,948.00	2,160.00	10,108.00
7. Student Support	0.00	0.00	0.00
8. Other Costs	18,000.00	2,000.00	20,000.00
TOTAL DIRECT COSTS (1—8)	79,741.50	52,418.03	132,159.53
9. Indirect Costs	4,939.32	35,016.53	39,955.85
TOTAL COSTS (Direct and Indirect)	84,680.82	87,434.56	172,115.38

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	84,680.82
2. Cost Sharing:	
a. Cash Contribution	77,220.16
b. In-Kind Contribution	10,214.40
c. Other Federal Agencies*	
d. TOTAL COST SHARING	87,434.56
3. TOTAL PROJECT FUNDING (1+2d)	172,115.38
% of Total Costs Requested from IMLS	49.20%

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

The University of Texas at Austin

	Grant Year 1 (Aug. 2010-Jul. 2011)				Grant Year 2 (Aug. 2011-Jul. 2012)				Grant Year 3 (Aug. 2012-Jul. 2013)			
Activity	**Aug-Oct 2010**	**Nov-Jan 2010-11**	**Feb-Apr 2011**	**May-Jul 2011**	**Aug-Oct. 2011**	**Nov-Jan 2011-12**	**Feb-Apr 2012**	**May-Jul 2012**	**Aug-Oct. 2012**	**Nov-Jan 2012-13**	**Feb-Apr 2013**	**May-Jul 2013**
Program Planning												
Hire lead educator, UT scientists, and student worker	General Activity											
Recruit and select participating teachers	Cohort 1				Cohort 2							
Develop workshop schedule	Cohort 1					Cohort 2						
Procure materials		Cohort 1				Cohort 2						
Workshops												
Develop and/or refine curriculum			Cohort 1				Cohort 2					
Conduct workshops			Cohort 1				Cohort 2					
Participate in Web-based Forum												
Develop forum		Cohort 1				Cohort 2						
Participants and scientists contribute to forum			Cohort 1				Cohort 2					
Program Dissemination												
Participants train other teachers at the campus, district and state-wide level			Cohort 1				Cohort 2					
Project personnel present at science education conferences						General Activity				General Activity		

Evaluation												
Front-end evaluation/Needs assessment with partners	Cohort 1					Cohort 2						
Design pre- and post-tests and course evaluations		General Activity										
Administer pre-test and analyze results			Cohort 1				Cohort 2					
Administer post-test and analyze results						Cohort 1				Cohort 2		
Teachers complete periodic course evaluations			Cohort 1				Cohort 2					
Project review committee debriefing for program improvement				Cohort 1				Cohort 2				
Summative evaluation											General Activity	
Submit results to peer-reviewed education journals												General Activity