

**Environment and Natural Resources Trust Fund
2014 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 076-C

Raptor Lab: Online and Outdoors!

Category: C. Environmental Education

Total Project Budget: \$ 186,676

Proposed Project Time Period for the Funding Requested: 2 Years, July 2014 - June 2016

Summary:

The Raptor Lab will create an environmental education curriculum for middle schools that integrates authentic outdoor experiences with technology and scientific investigation to empower students to explore their local environment.

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Sponsoring Organization: U of MN

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Web Address www.TheRaptorCenter.org

Location

Region: Statewide

County Name: Statewide

City / Township:

<input type="checkbox"/> Funding Priorities	<input type="checkbox"/> Multiple Benefits	<input type="checkbox"/> Outcomes	<input type="checkbox"/> Knowledge Base
<input type="checkbox"/> Extent of Impact	<input type="checkbox"/> Innovation	<input type="checkbox"/> Scientific/Tech Basis	<input type="checkbox"/> Urgency
<input type="checkbox"/> Capacity Readiness	<input type="checkbox"/> Leverage	<input type="checkbox"/> Employment	<input type="checkbox"/> TOTAL <input type="checkbox"/> %



Environment and Natural Resources Trust Fund (ENRTF)
2014 Main Proposal
Project Title: *Raptor Lab: Online and Outdoors!*

PROJECT TITLE: Raptor Lab: Online and Outdoors!

I. PROJECT STATEMENT

We propose to integrate 7th and 8th grade students in the design and execution of student-based research projects that focus on outdoor exploration of their local environment. We will use an online environment to link outdoor experiential learning with a STEM-focused classroom curriculum. Online access will allow students throughout the state access to an environmental education program developed, piloted and evaluated by The Raptor Center in partnership with three metro-area schools. There is an urgent need to connect students with the natural world and inspire them to participate in solving the challenging environmental problems our world faces. To do this, they need critical thinking skills, strong backgrounds in science and technology, and exposure to impactful environmental experiences. Each of these themes will be a fundamental component of *The Raptor Lab*. The Raptor Center has already successfully implemented aspects of this curriculum at three middle schools, piloted over the last two years as a yearlong, raptor-based curriculum focusing on the real world problem of raptors and environmental toxins.

The program provides students with access to scientific experts and real-time data, mentors them in data analysis, and culminates in student-based capstone projects. Designed to meet state standards, assessments have shown this to be an effective way of building knowledge and engagement in students; evaluation has shown student learning increasing by 25% in two pilot schools. While two additional schools have already adopted this curriculum during the pilot phase, the use of live-birds and scientific experts presents a challenge of accessibility for many schools. Distance learning technology provides the opportunity resolve this challenge. In addition, the impact of the program will be strengthened by the incorporation of outdoor science projects as capstones and the provision of an on-line platform for collaboration and communication among students. Our goals for this project are to:

- Instill in students an action-based conservation ethic through outdoor, student-centered exploration
- Expand access to an effective environmental education curriculum to middle school teachers and students throughout the state of Minnesota
- Engage students in solving environmental issues through experiential learning and scientific investigation
- Develop leadership skills of critical thinking, collaboration and communication in middle school students

The Raptor Center will partner with the Learning Technologies Media Lab to develop an on-line learning environment that will serve as a platform for distance learning. The Media Lab has a strong history in building teaching modules that use technology to connect students with outdoor learning adventures. Experiential learning, a key component of the curriculum, will occur through student projects analyzing real-world data from The Raptor Center’s clinic, as well as during the capstone projects, where students will take an active role in exploring their local environment, participating in citizen science efforts and using technology to share their discoveries with teachers, classmates, other schools and communities. Ultimately, this project will work to instill in students a long-lasting and action-based conservation ethic in their local community through outdoor, student-centered exploration.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Technology development and software modification

Budget: \$74,670.40

Outcome	Completion Date
1. Online learning platform – <i>The Raptor Lab</i> (Teacher & Student Modules)	30 June 2015
2. Project specific software modifications – <i>WeExplore</i> & <i>FlipGrid</i>	31 Dec 2015

We will design, develop, integrate and evaluate an on-line, aesthetic and easy-to-use multimedia driven learning platform with two distinct engagement and resource areas for 7th and 8th grade teachers and for students. Two programs already developed by the Media Lab will be modified for use with this curriculum. *WeExplore* is a user-driven adventure learning environment that will be adapted to allow students to become explorers generating projects centered on their local environment. *FlipGrid* is a video-based online reflection environment where students respond to teacher questions and reflect on their experiences throughout the curriculum.



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Activity 2: Curriculum formalization and publication

Budget: \$37,335.20

Outcome	Completion Date
1. Formalized and published curriculum with online resource center	30 June 2016
2. State standards benchmarks for science, math, and language arts	30 June 2016

The curriculum piloted during the past two years will be adapted for distance learning, formalized, published online and housed within *The Raptor Lab* learning platform. Documentation of how it meets state standards in science, math and language arts will be developed for teachers. An online resource and integration area for teachers will provide a program curriculum calendar with suggested projects and learning timelines, as well as guides for successful integration through three areas of knowledge: technological, pedagogical and content.

Activity 3: Program pilot and integration

Budget: \$74,670.40

Outcome	Completion Date
1. Digital pre and post assessment tools	30 June 2015
2. Teacher training and planning workshops (3 workshops)	30 June 2016

Five schools will pilot the program over a year and a half reaching demographics in rural outstate, suburban, and urban areas impacting 900 students. Ten teachers and two curriculum integration coordinators will take part in teacher integration workshops and classroom pre and post assessments to provide formative evaluation feedback regarding overall project goals and objectives.

III. PROJECT STRATEGY

A. Project Team/Partners

The Learning Technology Media Lab is a research and design center in the College of Education and Human Development (University of Minnesota) with a focus on innovation in design for online learning. The Raptor Center (University of Minnesota) is a world leader in raptor medicine and surgery, research on issue facing raptors in the wild and environmental outreach. Dr. Charles Miller (Media Lab) will be responsible for leading the overall design and development of all components of *The Raptor Lab* online learning environment. Dr. Julia Ponder (The Raptor Center) will be responsible for scientific oversight of all curriculum content as well as management of TRC proposed outputs and outcomes and sponsor reporting. Dr. Aaron Doering (Media Lab) will be responsible for overall integration and evaluation within partner schools, as well as design of all implementation plans for the online learning environment. All are proposed to receive ENRTF funding. Partner schools already identified include: Rockford Middle School Center for Environmental Studies, Twin Oaks Middle School (Prior Lake), Hidden Oaks Middle School (Prior Lake), Caledonia Senior High School (8th grade), and Ramsey Junior High.

B. Timeline Requirements

This project will be carried out over 24 months.

C. Long-Term Strategy and Future Funding Needs

Once developed, this program will be self-supported through earned income in addition to donor support providing access for under-served students. The curriculum will be marketed nationally, providing a national platform for student exchange and collaboration.

2012-2013 Detailed Project Budget

INSTRUCTIONS AND TEMPLATE (1 PAGE LIMIT)

Attach budget, in MS-EXCEL format, to your "2012-2013 LCCMR Proposal Submit Form".

(1-page limit, single-sided, 10 pt. font minimum. Retain bold text and DELETE all instructions typed in italics. ADD OR DELETE ROWS AS NECESSARY. If a category is not applicable write "N/A", leave it blank, or delete the row.)

IV. TOTAL ENRTF REQUEST BUDGET: 3 years

BUDGET ITEM (See list of Eligible and Non-Eligible Costs, p. 11)	AMOUNT
Personnel:	\$ -
Dr. Julia Ponder , Principal Investigator - Scientific oversight of curriculum content; Sponsor reporting, Management of Raptor Center proposed outcomes; 5% academic year effort Y1 and Y2 (base salary \$116,699 in Y1, 3% inflation applied each year, fringe benefits 33.6% of salary: Y1 \$5,835 salary/\$1,961 fringe; Y2 \$6,010 salary/\$2,019 fringe)	\$15,825
Dr. Charles Miller Co-PI - project lead and overall design/development of all components, scientific oversight of educational components; 13% academic year effort Y1, 5% Y2 (base salary \$80,165 in Y1, 3% inflation applied each year, fringe benefits 33.6% of salary: Y1 \$10,421 salary/\$3,501 fringe; Y2 \$4,128 salary/\$1,387 fringe)	\$19,437
Dr. Aaron Doering , Co-PI - design and implementation of online learning environment and overall integration into partner schools, 5% academic year effort Y1, 13% Y2 (base salary \$84,937 in Y1, 3% inflation applied each year, fringe benefits 33.6% of salary: Y1 \$4,246 salary/\$1,427 fringe; Y2 \$11,373 salary/\$3,821 fringe)	\$20,867
Bradford Hosack , LTML Lead Developer, 25% calendar year effort Y1 and Y2 (base salary \$79,568 in Y1, 3% inflation applied each year, fringe benefits 33.6% of salary: Y1 \$19,892 salary/\$6,683 fringe; Y2 \$20,488 salary/\$6,884 fringe)	\$53,947
Michael Billington , Program manager/naturalist - adaptation of curriculum content to online format, day-to-day logistics, interdepartmental communication and team planning, 48% calendar year effort Y1 and Y2 (base salary \$36,675 in Y1, 3% inflation applied each year, fringe benefits 36.8% of salary: Y1 \$17,604 salary/\$6,478 fringe; Y2 \$18,132 salary/\$6,672 fringe)	\$48,886
Contracts: A naturalist/curriculum writer consultant to assist in content development for online educational environment (180 hours @ \$25/hour)	\$4,500
Equipment/Tools/Supplies: 10 Licenses per year for Flipgrid software @ \$60 per license	\$600
Additional: Stipends for teachers participating in workshops (\$500/per workshop, 3 workshops, 9 participants)	\$13,500
Additional: 10 blood sample testing procedures	\$9,114
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 186,676

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ Being Applied to Project During Project Period: Indicate any additional non-state cash dollars to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.	\$ -	Indicate: Secured or Pending
In-kind Services During Project Period: Two years online hosting and support on LT Media Lab servers (\$1800 per year x 2 years)	\$3,600	Secured
Funding History: Indicate funding secured prior to July 1, 2014, for activities directly relevant to this specific funding request, including past ENRTF funds. State specific source(s) of funds.	N/A	N/A

The Raptor Lab: Online and Outdoors

Outdoor experience



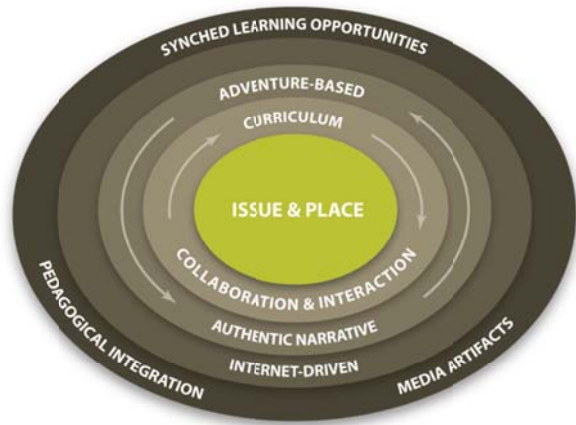
Technology integration



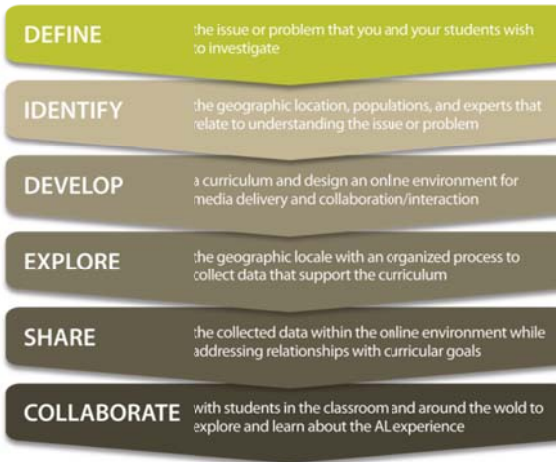
Authentic Learning



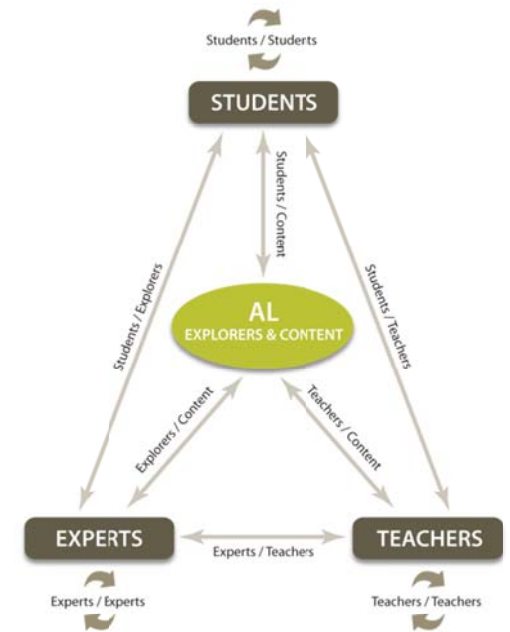
Based on Research Guided Adventure Learning Model



PRINCIPLES



PRACTICE



COMMUNITY

Project Manager Qualifications and Organizational Description

Dr. Julia Ponder, Principal Investigator. Dr. Ponder is the Executive Director for The Raptor Center and College of Veterinary Medicine faculty member. Dr. Ponder is a veterinary expert in raptor health working in a clinical and research environment devoted to raptors. She has extensive project management experience, as well as international experience working with NGOs and governmental agencies; previous examples include serving as project manager for a \$230,530 grant to develop a pilot GIS-based epidemiological database for monitoring wildlife health issues, assessing disease impacts and identifying emerging diseases in raptors. She works with contaminants in raptors including heavy metals and rodenticides. Dr. Ponder will be responsible for sponsor reporting, scientific oversight of all curriculum content and timely and successful completion of TRC proposed outputs and outcomes.

Dr. Charles Miller, Co-Principal Investigator -Associate Professor of Learning Technologies (LT) at the University of Minnesota and Co-Director/Co-Founder of the LT Media Lab in the College of Education and Human Development. Dr. Miller's research explores opportunities to transform the instructional experience through design, bridging the gap between aesthetic learning experiences and interaction design. Currently, Dr. Miller is the PI and Co-PI on several projects including; *Earthducation*, 7-continent expedition to explore the global intersections of education and sustainability; *Explore15*, a user-driven adventure learning online environment for students across the U.S. to explore and collaborate on diverse environmental issues; and *AvenueASL*, an e-assessment environment for postsecondary American Sign Language (ASL) instruction. Dr. Miller will be responsible for leading the overall design and development of all components of *The Raptor Lab* online learning environment and will be accountable for the management of the timely and successful completion of the proposed outputs and outcomes.

Dr. Aaron Doering, Co-Principal Investigator. Dr. Doering is an Associate Professor in Learning Technologies at the University of Minnesota and Co-Director of the LT Media Lab. Dr. Doering currently holds the Bonnie Westby-Huebner Endowed Chair in Education and Technology, is a Laureate of the prestigious humanitarian Tech Awards, and has delivered education on sustainability and climate change to over 10 million students by dogsledding and pulking over 5,000 miles throughout the circumpolar Arctic since 2004. His most current project, *Earthducation*, investigates the intersection of education and sustainability on all seven continents over the next four years. Dr. Doering will be responsible for overall integration and evaluation of *The Raptor Lab* within our partner schools, as well as the design of all implementation plans for the online learning environment.

The LT Media Lab (LTML) is a research and design at the University of Minnesota with a focus on innovation in design for online learning and integration of educational technology in K-20+ environments. The Center's mission is to inspire global engagement and collaboration in applying technology to humanity's most pressing educational, social, and environmental issues by designing, developing, evaluating, and disseminating innovative technology-mediated solutions for K-20+ learners, educators, researchers, and policy-makers from around the world.

The Raptor Center (TRC) is a University research and outreach center focused on health issues found at the intersection of raptors and humans. In addition to providing medical care of over 700 injured and ill raptors each year, TRC's Education department averages over 1,000 programs reaching more than 200,000 people throughout Minnesota, Wisconsin, and Iowa annually. Its education specialists utilize live charismatic raptors to present captivating and engaging educational programs to school groups and a wide variety of other audiences. This expertise and experience will provide the backdrop for the content delivery.