



# State of Missouri 2018 Governor's Award for Quality and Productivity Executive Summary

**Project or Team Name:** Discover Nature Schools Team (DNS)

**Nominator:** Stephanie McKinney

**Nominating Department:** (Nominations must include names of all agencies/departments/organizations/businesses, etc.)

Missouri Department of Conservation

**Category:** Innovation

**Executive Summary:** (Executive Summary page must be 500 words or less, 12 point, Times New Roman font, and left justified. Attach the Executive Summary to the front of the nomination.)

Historically, the Missouri Department of Conservation (MDC) has been a mainstay in educational resources for Missouri public schools. From award winning magazines to well used posters, publications, cd's and books, Missouri public schools have a longstanding patronage of department educational offerings.

As state and national education standards became increasingly more rigorous, the discretionary materials margin in which teachers utilize in the classroom became increasingly narrow. Teachers were tasked with teaching to more rigorous standards, and less on a personal discretionary or supplemental basis. As such, the Missouri Department of Conservation's Outreach and Education Division recognized that to continue to reach a more discerning populous of teachers with more educational rigor, a product...or series of products needed to be offered. Educational times were changing and so was the need for the department to maintain educational relevance in the public school arena. Traditionally, teachers offered conservation materials as supplemental support to their science curriculum. What was needed now, in these changing educational times, was something that could serve dual purpose: reaching educational science standards at a state and national level, but also serving as that well-loved, mainstay of Missouri specific conservation material. The team was tasked with either meeting the needs of, or becoming irrelevant to, our public school constituency.

The result was a groundbreaking undertaking for a state natural resource agency. The Outreach and Education Division was tasked with the creation of new and innovative educational materials that offered no longer additional educational relevance as a supplement, but rather offered educational material that were educationally relevant as a stand-alone unit. In other words, where MDC offerings were historically offered as a supplemental "a la cart item" now, (in order to be educationally relevant) must be, according to science standards, the educational science "main course."

A curricular unit was needed that met state and national standards for educational rigor and content, was cross curricular in nature, meeting department mission and goals for promoting conservation education, done in a way that met diverse learners with diverse educational needs. Meeting rigorous needs of schools all the while serving regular job duties of a state conservation agency proved to be the catalyst that inspired innovation. In 2006, the first Missouri Department of Conservation curricular unit was created. In subsequent years, a myriad of internal and external studies, independent surveys and statewide teacher audits and surveys birthed the creation of MDC's Discover Nature Schools program. (DNS)

Top achievements of the DNS program:

- Over 560,000 Missouri students served through DNS
- Partnership with and endorsement from Department of Elementary and Secondary Education (DESE)

- Inclusive to all students including those with diverse educational needs and physical accommodations
- Endorsement at National Science Teachers of America (NSTA) state and national conferences and in publications as inquiry- nature based educational model
- Online teacher portal discussion board, remediated, alt text materials for visually disabled
- Serve as a model to numerous state conservation and natural resource agencies for educational curricular standard of excellence
- Adoption of DNS curriculum in approximately 90% Missouri School Districts



# State of Missouri – 2018 Governor’s Award for Quality and Productivity

## NOMINATION FORM

### I. GENERAL INFORMATION

**Department:** Missouri Department of Conservation

**1. Project or team name:** Discover Nature Schools (DNS) Curriculum

**2. List the name of all team members, job titles, state agency department, and/or other organizations including public, private sector or business:** *(Please list alphabetically by last name – 2 to 20 team members maximum.)*

1. Libby Block: MDC Designer
2. Chris Cloyd: MDC Digital Communications Manager
3. Jeff Cockerham: MDC Outreach and Education Division Chief
4. Les Fortenberry: MDC Designer
5. Lynn Goggins: MDC Administrative Assistant/Grant Processing
6. Shawn Gruber: MDC Outreach and Education Chief
7. Carol Harris: MDC Administrative Assistant
8. Steven Juhlin: MDC Outreach and Education Coordinator
9. Kevin Lanahan: MDC Web Developer
10. Kevin Lohraff: MDC Nature Center Manager/ (formerly Curriculum Supervisor)
11. Stephanie McKinney: MDC Outreach and Education Programs Coordinator
12. Marci Porter: MDC Designer
13. Mark Raithel: MDC Wildlife Artist
14. Matt Seek: MDC Editor
15. Cliff White: MDC Art Department Supervisor

**3. Nomination Category:** *(Check only one.)*

INNOVATION

CUSTOMER SERVICE

EFFICIENCY / PROCESS IMPROVEMENT

**4. Explain why you selected this category:**

The Discover Nature Schools Program (DNS) is innovative in that this project is not only a nature based science education program for Missouri students grades Preschool-12, but also an encompassing field trip grant program, teacher training model and groundbreaking cross curricular approach/educational framework to teaching nature based education in a Missouri specific way. The delivery mechanism of this project is innovative as well, from digital communications of an online teacher portal as well as incorporation of the newest educational pedagogy needed for today's state and national educational standards. As the first state to create such a comprehensive nature based education curricula, the DNS team created groundbreaking partnerships with the Department of Elementary and Secondary Education (DESE) as well as partnerships with state and national teacher's organizations to design and implement a complete, free and developmentally appropriate set of curricula, field trip grants and teacher training models that exposed students to nature based education and conservation ecological principles for all grade levels. While state agencies generally provide public education materials, few do so up to the national and state educational standards for educational rigor and pedagogy of today's public school standards. To offer a competitive curricular unit, MDC had to step outside the traditional realm of a conservation agency in order to speak the educational vernacular of a curricular entity in a way Missouri teachers expressed need of. Increasing demands on teacher productivity regarding student standardized test scores required the DNS team to incorporate cross curricular science units in a new and innovative way that incorporated technology and educational rigor in not only science, but arts, language arts, music and differentiated instructional strategies, innovation in delivery methods, marketing tools and accessibility to field trips and teacher training in order to continue to be an educationally relevant mainstay in Missouri public schools. To meet the needs of our constituency, the team was forced to identify

new needs, assessment strategies, design and implement curricular units at all grade levels and reinvent the traditional way of "doing business." Identifying these new strategies required every DNS team member to expand their former job duties to allow for the identification of new goals and objectives in order to accommodate the innovation process that birthed the Discover Nature Schools (DNS) Curricular Units.

## II. BACKGROUND

### 1. When did the team begin its work?

The original DNS unit was created in 2006 as a stand alone sixth grade curricular teaching module. However, over the past decade, groundbreaking design processes and implementation of a new curricular framework models have been brainstormed, designed, created, tested and measured for student impact on learning and achievement and have since morphed into a model of Science Based Nature Education that many other states are now following, from grades PreK-12. In 2010, through the present, innovations, curricular and education program internal and external audits have paved the way for the comprehensive, and educationally relevant curricular and grant based program that DNS is today.

### 2. What date did the team initiate the implementation phase of the project?

Implementation Phase: 2010-Present

### 3. Is the project:

Time Limited

Completed

Ongoing

## III. PROJECT DESCRIPTION

### 1. Why was the project necessary?

Prior to the creation of the Missouri Department of Conservation's Discover Nature Schools Program, (DNS) teachers throughout Missouri were meeting Missouri Learning Standards (MLS) and National Science Standards (NGSS) through curricular units, that while appropriate for science pedagogy, were not student inquiry based in a Missouri specific way. There was no formal curricular unit available to Missouri teachers to address the importance of student led scientific inquiry that fostered nature based education and ecological stewardship. While teachers all across the state were clamoring to teach specific grade level standards in science, few existing science curricular units did so in a way that exposed students to the outdoors, fostered stewardship appreciation, much less recognizing Missouri's unique fish, forest and wildlife connections to science education. In addition, natural resource education that met the needs of educational rigor for state and national science standards were virtually non-existent. Teachers across the state, were in essence, to choose between wishing to teach Missouri specific science, such as MDC offerings, or comply with the evermore increasing state and national science standard based education models. In recent years, teachers increasingly used less "supplemental" offerings such as MDC offerings as the educational standards became more and more specific, leaving teachers little time to teach "discretionary" topics that were not covered by standardized tests.

Thus, the department recognized the need to fit the educational bill of a curriculum for all grades in science that met national and state standards rigor test while still fulfilling the Department's mission. As a state conservation agency, diving into the text book curricular world was quite a monumental task that fell outside the periphery of the team's traditional job duties. The Outreach and Education Division of MDC recognized the need not only to continue to offer educational materials, but more specifically and incredibly more arduous of a task was that of fitting the needs of educational restraints while being more relevant to such state standards. This task, identified by the team included doing something previously unheard of from a state conservation agency: provide not only educationally relevant science curricula, but do so in a way that accommodated all learners, in a Missouri specific way, with the same rigor and standards set by curricular text book companies that solely focus on such products. This unit was determined by the team to need to be: cross curricular, interdisciplinary with differentiated instructional strategies and remediated instruction practices for students with special and diverse learning needs while fulfilling department goals and objectives. As the Department strives to connect Missourians to fish, forest and wildlife opportunities and promote conservation education, the way in which we carry out that mission must meet the individual and ever

changing needs of all our constituents. It became clear to the team that our Missouri school district constituency needed much, more in the way of educational relevance.

**2. What were the primary goals of the project?** *(150 words or less.)*

Primary goals of the Discover Nature Schools Curricular Units and Grant programs were:

- \*Provide science education that fostered inquiry to nature based education
- \*Provide financial assistance to schools for field trip reimbursement through non-competitive grant to engage students outdoors.
- \*Field experiences that connect students with hands on, inquiry based science instruction.
- \*Free training to teachers via Education Consultants, who offer free, grade level appropriate teacher workshops based on national and state science standards.
- \*Provide curricular units that meet all diverse learner's needs including those with disabilities and Individualized Education Plans (IEP's.)
- \*Provide online Teacher Portal-discussion boards with equal access including remediation of publications to allow for Braille-to text reading and screen readers for visually impaired.
- \*Provide in addition to curriculum, training and grants, interdisciplinary teaching strategies through mentorships to offer to Missouri teachers through our DNS workshops for: curriculum, differentiated instruction strategies and nature based education.

**3. Describe the project:** *(200 words or less.)*

DNS is an ongoing, continually expanding science education program. Through teacher training, field trip grants and groundbreaking nature based science education, MDC has not only created an educational entity, but surpassed the traditional function of a natural resource agency by not only providing educational materials, but by doing so in such an innovative way. Numerous other state natural resource agencies have adopted our curricular framework. Historically, MDC has been a mainstay in Missouri classrooms. However, given the everchanging set of state and national learning standards that teachers are pressed to meet, little time was left for teachers to teach what they deemed "extra material." The creation of DNS was a solution to the problem of teachers wishing to teach nature based science education, but not having the time and or resources to teach outside the periphery of standards based instruction. The creation of a Missouri specific science curricula that not only met Missouri Learning Standards, but also national science standards, to all students regardless of educational ability, fit the need of both teachers across the state, all the while simultaneously fulfilling the mission of MDC.

**4. What technology, if any, was used in the development, implementation, maintenance or measurement of the project?** *(150 words or less.)*

Through the work of our web page developers, digital communications managers and curriculum coordinators as well as various field staff, an online Teacher Portal was created to be the vehicle in which our curricular units could all be centralized. Accessibility to all was critical to the success of DNS Online Teacher Portal. As such, "alt text" (a tenant of accessible web design for the handicapped) was included with our content in order to make all web content available to readers, even those with visual disabilities. Readers of the teacher portal who have screen readers are able to access our curricular units in their entirety, as are students with disabilities able to access the student books, even if they lack the physical acuity to visually read the individual units. Video segments, digital music and cross curricular online lessons and hotlinks are a few of the technological modalities designed and created by the DNS team in order to better reach all school districts, and more importantly, better reach all ability levels of students. In addition, the teacher portal also serves as an internal database of grants, cooperative learning agreements as well as fiscally important information such as number of schools and students participating in DNS, allowing for data collection on an immediate basis for monitoring and measuring school patronage, retention, reactivation and grant status.

**5. Explain how the accomplishment of the team exceeds its regular duties and responsibilities.** *(150 words or less.)*

To offer a competitive curricular unit, MDC had to step outside the traditional realm of a state conservation agency in order to speak the educational vernacular of a curricular entity in a way the Missouri teachers

expressed need of. The DNS project required field testing, collaboration with universities teaching pre-service teachers as well as a trial and error period of pilot curricular units in public and private schools all across the state. Our team immersed themselves in the educational world of rigor, partnering with the Department of Elementary and Secondary Education, attending numerous professional development days regarding current exceptional practices in education and finally implemented the Curriculum Design Framework for nature based science education to serve as an internal rubric to measure viability and relevance of the DNS program on a fiscal basis.

**6. Which of the following describes the intended benefits of the project?** (Check all that apply and provide an explanation. - 150 words or less)

- Cost Reduction                       Time Savings                       Increased Effectiveness  
 Improved Process                       Other: Describe

**Explain the intended benefits:** The intended benefits of the Discover Nature Schools Curricular Units and Grant programs are:

- \*Provide science education that fostered a student's sense of inquiry to nature based education
- \*Encourage Missouri students to be stewards of natural resources through proven educational strategies in nature based education models
- \*Provide financial assistance to schools, not only through the curriculum, but also in form of field trip reimbursement through non-competitive grant to engage students outdoors.
- \*Field experiences that connect students with hands on, inquiry based science instruction.
- \*Free training to teachers via Education Consultants, who offer free, grade level appropriate teacher workshops
- \*Provide curricular units that meet all diverse learner's needs including those with disabilities and Individualized Education Plans (IEP's.)
- \*Provide online Teacher Portal-discussion boards with equal access including remediation of publications to allow for Braille-to text reading -screen readers for the visually impaired.
- \*Provide in addition to curriculum, training and grants, interdisciplinary teaching strategies through mentorships to offer to Missouri teachers through our DNS workshops for: curriculum, differentiated instruction strategies and nature based education.

#### **IV. RESULTS / MEASUREMENT**

**1. Explain how the success of the project was measured and what outcomes were achieved.** (Explanation should not exceed 300-500 words.)

The University of Missouri and the Missouri Department of Conservation conducted a cooperative three year study of the Discover Nature Schools Program DNS to measure outcomes, both qualitative and quantitatively. The purpose of the study was trifold:

1. To measure which specific outcomes were reached in student science achievement through pre and post test quantitative data as well as outcome of effect of curriculum on students performance on state standardized tests in corresponding grades in which science standardized tests are administered.
2. To qualitatively measure DNS curricular connectedness to a students current and future behavior toward outdoor stewardship and or attitudes toward ecology, habitat restoration and the likelihood of the curriculum changing such attitudes and or stewardship behaviors and to have a tentative number of the actual scope and sequence of students/districts and schools that would be re-using our DNS units.
3. To qualitatively measure the ease of use, functionality, fidelity of use and affect on student disciplinary behavior.

The results of the 3 year study (completed in 2016) were heartening and further drove the team's action steps:

- \*58% of teachers utilizing DNS units reported student discipline referrals were down dramatically on day the DNS nature based education was implemented.
- \*Pre and Post test scores showed in all grade levels, staggering improvements of student achievement, comprehension and clarity in tests (administered on human participants through University of Missouri student candidates.)
- \* Over half a million students have completed DNS units, of which, the majority then became reinrolled for consecutive years. (Presently 560,000 students.)

\* Students with special needs, more specifically those with Individualized Education Plans (IEP's) were just as successful, and teachers reported overwhelming anecdotal evidence of the impact this type of learning had on specifically students with Autism Spectrum Disorder as they were engaged in non traditional classroom settings. Survey feedback from across the state in Special Education Classrooms suggested that in students with disabilities, focus was achieved through DNS models, discipline referrals and redirection was lessened and finally, Individualized Education Plans (IEP's) were offered for differentiated instruction as to supply the teacher with various instructional strategies for teaching individual grade level units. The Missouri specific focus and nature and student inquiry based environment lended itself to favorable reactions from teachers who noted that when compared to traditional in classroom lessons, the DNS lessons produced longer periods of instruction without disruption from student behaviors and or inattention.

As success continued with the program, statewide Education Consultants began providing not only training to existing Missouri teachers, but also began collaborating with local universities with teacher education programs in order to reach "pre-service" teachers in training of DNS curricular units, nature based education and student driven science inquiry. Presently, over twelve Missouri Universities partner in such a capacity.

**2. Are the benefits derived from this project:** (Check only one.)

Recurring

One-time

**3. If recurring, how will the benefits be sustained?** (Explain in 150 words or less.)

By creating a Curricular Framework for all DNS Units, we have create a rubric of sorts or an "internal flight plan" of yearly analysis, measurement of outcomes and continual public feedback through teacher pilot evaluations, to ensure that what we have started continues at the educational level of rigor and quality that our curricular units have come to be known for. By utilizing the University of Missouri's Sustainability, Fidelity and Measurement Outcome Study, our team is comitted to continuing to utilize all resources at our disposal to continue to be groundbreaking in the way of nature based science education and how it relates to the mission of the Missouri Department of Conservation to connect all Missourians to fish, forest and wildlife resources. Yearly auditing of our programs ensure such fidelity and assume that we do not become stagnant in educational trends, while maintaining strict adherence to the Missouri Department of Conservation's Mission. MDC's Department Strategic Plan, was the framework in which the Discover Nature School Strategic Plan continues to be measured by.

By creating a team of curriculum coordinators, education consultants an other state and national partners who serve as educational innovators, we strive to continually "think outside the classroom" to connect all students to the outdoors in a way that fufills the Department's misson as well as the academic mission of our great publicschoool constituency and their ever changing needs.

## V. RECOGNITION / AWARDS

**1. Has this project previously been nominated for the Governor's Award for Quality and Productivity? If yes, when?**

No

**2. If yes, for which category was it nominated?**


**3. Has this project received any other awards or recognition? If yes, describe.**

No

## VI. NOMINATOR'S INFORMATION

**Nominating Department:** Missouri Department of Conservation

**Name:** Stephanie McKinney

**Signature:**  SMG

**Telephone Number:** (417) 217-2230

**E-Mail Address:** stephanie.mckinney@mdc.mo.gov

**VII. DEPARTMENT COORDINATOR'S INFORMATION**

**Name:** Heather Herigon

**Signature:** 

**Telephone Number:** (573) 522-4115 ext 3687

**E-Mail Address:** heather.herigon@mdc.mo.gov

**VIII. DEPARTMENT DIRECTOR APPROVAL**

**Department Director's Name:**

Sara Parker Pauley

**Signature:**



**Nomination must be signed ONLY by the Department Director to be eligible for consideration. Nominations not signed by the Department Director will be returned to the agency coordinator.**