

**2013 HOUSE EDUCATION**

**HB 1334**

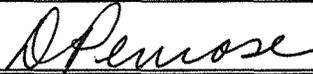
# 2013 HOUSE STANDING COMMITTEE MINUTES

House Education Committee  
Pioneer Room, State Capitol

HB 1334  
January 29, 2013  
179299

Conference Committee

Committee Clerk Signature



## Minutes:

**Ch. Nathe:** We will open the hearing on HB 1334.

**Rep. Marie Strinden:** Sponsor, support (see attached 1). I work in the arts field. The ND Council on the Arts is requesting funding to add the Arts to the STEM field to make it STEAM. Art is very important to academics. Kids who participate in the arts are four times more likely to be recognized for academic achievement; three times more likely to be elected to class office within their schools; four times more likely to participate in a math and science fair; and three times more likely to win an award for school attendance. The arts aren't just about academic achievement. They are also about nurturing our economy. The arts are an industry and growing child artists into adult artists can really help the state of ND. Arts organizations are responsible businesses, employers and consumers. Non-profit arts organizations generate \$135 billion dollars in economic activity annually, supporting 4.1 million jobs and generating \$22.3 billion in government revenue. Investment in the arts supports jobs, generates tax revenue, promotes tourism and advances our creativity based economy. The arts are also good for our local merchants. The typical arts attendee spends \$24.60 per person, per event, not including the cost of admission on items such as meals, parking and babysitters. Attendees who live outside the county in which the arts event takes place, spend twice as much as their local counterparts, \$39.96 vs. \$17.42. Valuable revenue for local businesses and the economy.

**Rep. Meier:** There's quite a strong STEM network in the state of ND, have you visited with them about your bill.

**Rep. Marie Strinden:** The ND Council on the Arts has been involved and working with them to integrate this.

**Ch. Nathe:** STEM takes care of the jobs we're looking to fill that we're in short supply of right now. So how is putting arts in this going to help. Why put arts in it.

**Rep. Marie Strinden:** I believe it will add to the success. In specific, the arts are a hands-on project in addition to whatever you're learning. For instance, at the Grand Forks Library, they have a technology program where they build robots, and in addition, they create LEGO sculptures, so it's getting it into their bodies what they are learning in their head is also being created by their hands. I know a Physics

**teacher in Minnesota and she has her students build bridges out of toothpicks and that is what we are trying to integrate into our program. We're looking at arts and physics, arts and technology, etc. I think it can really benefit the students and add another aspect to it.**

**Ch. Nathe: Thank you.**

**Rep. Mark Owens: Support (see attached 2). This is for the whole person concept.**

**Ch. Nathe: Thank you. Further testimony in support.**

**Janine Webb, Executive Director for ND Council on the Arts: Support (see attached 3, 4).**

**Rep. Meier: What type of feedback did you receive from the STEM network, when you had proposed this idea.**

**Janine Webb: Actually, there is a representative from that program here.**

**Ch. Nathe: Thank you. Further testimony in support.**

**Rebecca Engelman, Arts in Education Director for ND Council on the Arts: Support (see attached 5).**

**Rep. Rohr: I believe that creativity in the arts do enhance student's ability to apply principles. However, when the teachers develop curriculum, their objectives have to include the application phase of all the concepts they teach. I'm thinking that a lot of these points are already occurring. Is this more of a teacher-focused project, or if the students are already receiving this, I'm trying to figure out how this is all going to be integrated.**

**Rebecca Engelman: We see our role as providing professional development and changing teaching practices in and through the arts. We have found that students will achieve, once teachers change their teaching practice, it's just an outcome of improving teaching practice. Our goal is to provide the tools for teachers through our arts integration programs that are already established. We aren't creating any new programs, but we are trying to build them up so we can reach more students and more schools; to provide that expertise that we need. Arts integration can be superficial, where it's just an add-on, or it can be deep, where it's going to surface the learning that's happening in both the art and non-art curriculum.**

**Rep. Hunskor: Teachers who have been on the job for a while, get in a pattern, they have their way and so now you approach them with integrating the arts with their old-fashioned way. How do the teachers receive this. Is this a problem to get those folks who have been teaching for years to get them on board.**

**Rebecca Engelman: That is why our programs usually work for a three year extended time. You have to take them where they are at and build onto that**

**foundation. It's not something that's learned through a one-week program. We provide an instructional coach that works with them as a team. The teaching artist and the teacher works together with the instructional coach. They work together over the course of three years. We found that by allowing the teachers to also experience the arts process themselves, that that creates a depth for the understanding of the artist. That's important.**

**Rep. Heller: How is the ND Council of the Arts funded:**

**Rebecca Engelman: We are funded through the state.**

**Rep. Heller: Have you ever thought of integrating your concepts at the teacher's schools throughout the state and while those students are learning how to teach, that they would learn it right from the beginning instead of trying to jump in mid-stream.**

**Rebecca Engelman: That is an ultimate goal of mine. At some point, I would like to be able to work with higher education and teacher training. Some universities are already going in that direction in their teacher training, where they have programs where they are teaching, when you do your programs say in science and math. When I was elementary education, we had to do science and math; but to do it through integration. In a multi-disciplinary approach too, we cannot continually be teaching just in isolated little segments like this because that's not the reality of our work anymore. As our work force is growing and technology is infiltrating, we have to be able to bring things from all disciplines together and we need to start mirroring that in the way we train our teachers.**

**Ch. Nathe: On page 3, the proposal you're laying down, is this being done already in other school districts across the state.**

**Rebecca Engelman: That is currently in its third year in Jamestown; that is one of the teaching teams that we have out there. After three years, they have created quite an extensive unit, a math unit that is really focusing on the concepts of fractions, and they were having trouble with the students in third grade. So at the end of this year, we will probably do some measuring and get some data on that to see what's happened. We have a couple of other teams too.**

**Ch. Nathe: Has this been proposed to other school districts; have they decided not to do it.**

**Rebecca Engelman: It is a grant with the ND Council on the Arts that they can apply for. It takes an effort from the teaching team to come together and say that they want to apply for the grant. It has to come from the group. The information is out there, and we are hoping that if we get more support, that we can create more teams across the state.**

**Rep. Hunskor: When you start this process in a school that applies for a grant, do you start with 1<sup>st</sup>, 2<sup>nd</sup> grades, or all the grades. How does the process work.**

**Rebecca Engelman:** The process works as follows: I have two teachers out in South Heart who have been working through our teacher incentive and artist in residency grants already. So they have experience in having artists come into their schools. They have focused on a particular artist who they enjoy working with and they've decided they would like to go deeper with arts integration. So now they are going to be applying this spring for a STEAM Team grant, which was previously our SALT grant. Two teachers and the artist comprise the team. We will pair them up with an instructional coach who will work with them over a three year period for professional development, they do six professional development days that they spend out of the classroom, plus they will work in the classroom. We do a lot of observations; the instructional coach comes out there and observes and coaches the teachers, does a lot of recording of what is happening and helps them development and build their unit of study. I just currently implemented a teaching for understanding framework that comes out of Project Zero. It's a beautiful framework for really getting into deep learning and helping students really create understanding about certain subjects.

**Ch. Nathe:** Thank you. Further testimony in support.

**David DeMuth, Great Plains STEM Network:** Support (see attached 6).

**Rep. B. Koppelman:** If this grant was approved, how would this tie in; would the recipients be similar.

**David DeMuth:** I see this as purely a pilot project; to see how the arts and sciences mix together. I don't know that it is more than a one-time thing, but I think that afterwards it will demonstrate clearly that the two go hand in hand. There are some questions about teachers, the in-service teachers that are there and how to motivate them. That's what Valley City State does during its teacher training and I would hope that we would try to do this in the beginning, but we need to learn how to mix these two together. We haven't done this yet. I think we will increase the number of students interested in going into the STEM professions, which is the Network's goal, because that is what is going to save the nation. We need more people working at the John Deere's, who have all the skills including communication, arts and creativity is so important.

**Ch. Nathe:** You stated that you see this as a pilot program. Can you explain further.

**David DeMuth:** From our perspective, ideally, these kinds of monies could get matched at NSF levels and other places, because I am thinking that this is truly pioneering to put these two together, that's why I am happy to be here. Normally the two wouldn't mix, but if you put them together it really works. I think that the younger teachers and the way they work with computers, a lot of art is in the computer, such as sketching, touch pad, it's converging into a single entity.

**Ch. Nathe:** Why not go get those funds from NSF.

**David DeMuth:** We are, we have been.

**Rep. Meier:** On the national scene, have you seen this effort being integrated into STEM; and if so, can you tell me about some of the results.

**David DeMuth:** Over the last couple years, STEAM is being lifted up to say, should we change the name from STEM to STEAM. I don't think any of us are in favor of that. STEM isn't truly STEM unless it includes these other skill sets. I don't want to debate a name change, which is what is going on nationally. Realistically we need to involve more of the other side of the brain and get things working together. You are now trying to solve the problem of whether some money for the pilot, just think about what is going on in your brain. It's such a dynamic process. When both sides come together, diversity is quite nice. I'm not here to change the name, I wanted to acknowledge that some of the best scientists are piano players and some of the best artists are science-minded. I am hopeful that ND will get behind this truly pioneering project and tell the rest of the nation, look to us if you want to do education right.

**Ch. Nathe:** Thank you. Further testimony in support. Testimony in opposition. We will close the hearing.

# 2013 HOUSE STANDING COMMITTEE MINUTES

House Education Committee  
Pioneer Room, State Capitol

HB 1334  
January 30, 2013  
18009

Conference Committee

Committee Clerk Signature



## Minutes:

**Ch. Nathe:** Let's take a look at HB 1334. What are the committee's wishes.

**Rep. Meier:** The ND Council on the Arts total budget for 2013-15 biennium is \$3,259,061.

**Rep. Schatz:** I move a Do Not Pass.

**Rep. Rust:** Second the motion.

**9 YES 4 NO 0 ABSENT**

**DO NOT PASS**

**CARRIER: Rep. B. Koppelman**

Date: 4/30/2013

Roll Call Vote #: 1

2013 HOUSE STANDING COMMITTEE  
ROLL CALL VOTES

BILL/RESOLUTION NO. 1334

House EDUCATION Committee

Check here for Conference Committee

Legislative Council Amendment Number \_\_\_\_\_

Action Taken:  Do Pass  Amended  Rerefer to Appropriations  
 Do Not Pass  Adopt Amendment

Motion Made By Rep. Schatz Seconded By Rep. Rust

Representatives	Yes	No	Representatives	Yes	No
Chairman Mike Nathe	✓		Rep. Bob Hunsakor		✓
Rep. Mike Schatz	✓		Rep. Jerry Kelsh		✓
Rep. Joe Heilman		✓	Rep. Corey Mock		✓
Rep. Brenda Heller	✓				
Rep. Dennis Johnson	✓				
Rep. Ben Koppelman	✓				
Rep. Lisa Meier	✓				
Rep. Karen Rohr	✓				
Rep. David Rust	✓				
Rep. John Wall	✓				

TOTAL (YES) 9 (NO) 4 (ABSENT) 0

FLOOR ASSIGNMENT Rep. Koppelman

If the vote is on an amendment, briefly indicate intent:

**REPORT OF STANDING COMMITTEE**

**HB 1334: Education Committee (Rep. Nathe, Chairman)** recommends **DO NOT PASS** (9 YEAS, 4 NAYS, 0 ABSENT AND NOT VOTING). HB 1334 was placed on the Eleventh order on the calendar.

**2013 TESTIMONY**

**HB 1334**

# The Washington Post [Print](#)

## Top 10 skills children learn from the arts

By Valerie Strauss , Updated: January 22, 2013

You don't find school reformers talking much about how we need to train more teachers in the arts, given the current obsession with science, math, technology and engineering (STEM), but here's a list of skills that young people learn from studying the arts. They serve as a reminder that the arts — while important to study for their intrinsic value — also promote skills seen as important in academic and life success. (That's why some people talk about changing the current national emphasis on STEM to STEAM.) This was written by Lisa Phillips is an author, blog journalist, arts and leadership educator, speaker and business owner. To learn about Lisa's book, ["The Artistic Edge: 7 Skills Children Need to Succeed in an Increasingly Right Brain World,"](#) click [here](#). This appeared on the [ARTSblog](#), a program of [Americans for the Arts](#).

By Lisa Phillips

**1. Creativity** – Being able to think on your feet, approach tasks from different perspectives and think 'outside of the box' will distinguish your child from others. In an arts program, your child will be asked to recite a monologue in 6 different ways, create a painting that represents a memory, or compose a new rhythm to enhance a piece of music. If children have practice thinking creatively, it will come naturally to them now and in their future career.

**2. Confidence** – The skills developed through theater, not only train you how to convincingly deliver a message, but also build the confidence you need to take command of the stage. Theater training gives children practice stepping out of their comfort zone and allows them to make mistakes and learn from them in rehearsal. This process gives children the confidence to perform in front of large audiences.

**3. Problem Solving** – Artistic creations are born through the solving of problems. How do I turn this clay into a sculpture? How do I portray a particular emotion through dance? How will my character react in this situation? Without even realizing it kids that participate in the arts are consistently being challenged to solve problems. All this practice problem solving develops children's skills in reasoning and understanding. This will help develop important problem-solving skills necessary for success in any career.

**4. Perseverance** – When a child picks up a violin for the first time, she/he knows that playing Bach right away is not an option; however, when that child practices, learns the skills and

techniques and doesn't give up, that Bach concerto is that much closer. In an increasingly competitive world, where people are being asked to continually develop new skills, perseverance is essential to achieving success.

**5. Focus** – The ability to focus is a key skill developed through ensemble work. Keeping a balance between listening and contributing involves a great deal of concentration and focus. It requires each participant to not only think about their role, but how their role contributes to the big picture of what is being created. Recent research has shown that participation in the arts improves children's abilities to concentrate and focus in other aspects of their lives.

**6. Non-Verbal Communication** – Through experiences in theater and dance education, children learn to breakdown the mechanics of body language. They experience different ways of moving and how those movements communicate different emotions. They are then coached in performance skills to ensure they are portraying their character effectively to the audience.

**7. Receiving Constructive Feedback** – Receiving constructive feedback about a performance or visual art piece is a regular part of any arts instruction. Children learn that feedback is part of learning and it is not something to be offended by or to be taken personally. It is something helpful. The goal is the improvement of skills and evaluation is incorporated at every step of the process. Each arts discipline has built in parameters to ensure that critique is a valuable experience and greatly contributes to the success of the final piece.

**8. Collaboration** – Most arts disciplines are collaborative in nature. Through the arts, children practice working together, sharing responsibility, and compromising with others to accomplish a common goal. When a child has a part to play in a music ensemble, or a theater or dance production, they begin to understand that their contribution is necessary for the success of the group. Through these experiences children gain confidence and start to learn that their contributions have value even if they don't have the biggest role.

**9. Dedication** – When kids get to practice following through with artistic endeavors that result in a finished product or performance, they learn to associate dedication with a feeling of accomplishment. They practice developing healthy work habits of being on time for rehearsals and performances, respecting the contributions of others, and putting effort into the success of the final piece. In the performing arts, the reward for dedication is the warm feeling of an audience's applause that comes rushing over you, making all your efforts worthwhile.

**10. Accountability** – When children practice creating something collaboratively they get used to the idea that their actions affect other people. They learn that when they are not prepared or on-time, that other people suffer. Through the arts, children also learn that it is important to admit that you made a mistake and take responsibility for it. Because mistakes are a regular part of the process of learning in the arts, children begin to see that mistakes happen. We acknowledge them, learn from them and move on.

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TESTIMONY FOR HB 1334  
01/29/13 - 9 a.m.  
House Education Committee - Pioneer Room

Chairman, Vice Chairman, committee members. For the record, I am Representative Mark Owens, District 17, Southern Grand Forks, ND. I stand before you today in support of HB 1334.

Science, technology, engineering and math have driven the development of America both in the past and as a focus for the future.

After WWII, the world depended upon America for just about everything. Now, We are merely a competitor to be beaten on the world market. STEM has focus our schools on the key development areas for the new world competitive environment in the past, but it may not be enough.

For years I heard that children who studied music were better at math, science, etc. I didn't believe this statement. I have witnessed for myself how much easier students that study music have it in understanding everything from science to language. I was shocked myself.

Across my experiences in a number states, working with a wide variety of State and federal agencies, the US military, my partnerships with corporate America from small to very large for profit and non-profits alike, the WHOLE PERSON Concept of an individual is growing in focus for hiring and career development.

A well rounded individual that understands both Science or technology and the Art of Life.

This WHOLE PERSON concept has become the key to long term employee relations, limiting turnover, and reversing if only in small measure for now the job hopping that has become a way of life in this age of technology.

Give serious consideration to providing our students the opportunity to develop as a WHOLE PERSON.

This concludes my testimony, I will stand for questions.

House Bill 1334

January 28, 2013

Testimony of Janine Webb

Mr. Chairman and members of the Education Committee, my name is Jan Webb and I'm the Executive Director for the ND Council on the Arts. Thank you for the opportunity to share with you my comments in support of House Bill 1334.

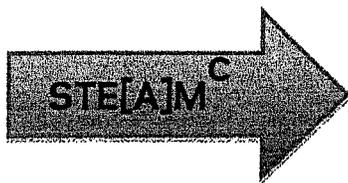
The North Dakota Council on the Arts supports this request for \$125,000 for an arts in education pilot project. The main element of this proposal is based on the premise that the inclusion of the creative sector (architects, graphic artists, designers, etc.) would enhance student learning in the fields of science, technology, engineering and math. NDCA believes ND has the opportunity to lead the nation in 21<sup>st</sup> Century learning and that the change from STEM to STEAM would give ND students a distinct advantage. This funding would support work in two STEM schools and also support a thorough evaluation of those programs, including a comparison to STEM schools outside of the project.

Students need educational programs that are stimulating, creative, and interesting. Programs that keep the attention of tech-savvy students, students entering a work world that has significantly changed in the past 5-10 years, is of utmost importance. ND has the resources to offer exciting changes in how we reach and teach students to give them the skills they will need to compete in the future. NDCA firmly believes the state needs to push the boundaries and explore new options, and we believe this is a project that fits that criteria. The agency has shared information on the proposed project with both the ND STEM network, DPI and numerous educators to obtain feedback.

The agency budget request is Senate Bill 2010 and an initial hearing was last Thursday with the Senate Appropriations Committee. During our budget hearing we did inform Senate Appropriations about House Bill 1334 and gave them information on the proposed pilot project.

Thank you for your time this morning and for your consideration of this funding request.

## NDCA PROPOSAL



### Fuel for 21<sup>st</sup> Century Teaching and Learning

$$\text{STEM} + \text{Art} + \text{Core} = \text{STE[A]M}^{\text{C}}$$

Recent studies clearly demonstrate that the integration of arts into STEM (Science, Technology, Engineering and Math) and Core Disciplines supports student achievement and success, develops 21<sup>st</sup> Century Skills and prepares students for careers yet to be imagined. Committed to using the power of the arts to enhance the vitality of North Dakota, NDCA proposes to expand its outreach to schools, teachers, students, museums and arts organizations, through grants and professional development opportunities that focus on **STE[A]M<sup>C</sup>**, innovation, creativity and collaboration.

- **STE[A]M<sup>C</sup> Pilot Program**
  - \$40,000 available to two middle and high schools for projects that integrate the arts into one or more of the STEM and Core Disciplines thereby transforming STEM to **STE[A]M<sup>C</sup>**.
    - Applications must:
      - Meet or exceed ND Standards in STEM, Core Disciplines and Art.
      - Articulate clear learning goals (including assessments.)
      - Apply creative uses (innovation, creativity and collaboration) of the arts and 21<sup>st</sup> Century Skills in STEM-based education.
      - Describe benefits to classroom learning in science, technology, engineering, math, and in one or more art discipline (music, dance, visual, performing, literary arts.)
      - Develop partnerships between schools, community artists, museums, arts groups, engineers, architects, designers, etc.
      - Document and provide evidence of teacher and student learning.
    - Funds may be used for:
      - Fees associated with consultants or creative services.
      - Planning and collaboration time for teachers, consultants and artists
      - Art materials, supplies, and consumables that directly relate to the described project proposal.
      - Fees associated with field trips that are art-based and relate directly to the project.
    - Ineligible Activities
      - Most costs related to permanent equipment (computers, cameras, ipads, ect.) In certain cases, funds may be used for software (please consult with Arts in Education Director.)
      - Costs related to performance-based residencies or school lyceums.
      - Costs related to social entertainment and receptions.
      - Costs related to prizes and awards.
    - Support for project assessment and documentation provided by NDCA Instructional Coach

- **Summer Intensive STE[A]M<sup>C</sup> Workshop (2 day)**
  - Professional development for K-12 teachers, museum educators, art coordinators and teaching artists.
  - Presentations and hands-on workshops designed to build **STE[A]M<sup>C</sup>** and **21<sup>st</sup> Century Skills** through innovation, creativity and collaboration.
  - Option for 1 ND Multi-Campus Graduate PD credit
  
- **STE[A]M<sup>C</sup> TEAMS (Teacher + Teaching Artist + Instructional Coach )**
  - 3-year grant program that provides funding, support and expertise to teacher/teaching artist teams to create and implement units of study that incorporate the arts, STEM and core disciplines.
  - Encourages and supports collaborations that build capacity, change teaching practice and ultimately improve student learning.
    - Teachers develop comfort and confidence with an art-form, learn to think like an artist, and find connections between the arts, STEM, and core disciplines.
    - Artist learns how to share their craft with students, work effectively in schools, and support teaching goals.
  - Expertise and support from Instructional Coach that focuses on:
    - Teaching for Understanding Unit Development
    - Visible and Artful Thinking Strategies
    - 21<sup>st</sup> Century Skills
    - Project documentation and evaluation
  - 2-3 ND Multi-Campus Graduate PD credit available to participants

<b>Funding for STE[A]M<sup>C</sup> Pilot Program (2 schools - 2 years)</b>	<b>=\$40,000</b>
<b>Funding for STE[A]M<sup>C</sup> Summer Intensive (2 years)</b>	<b>=\$19,000</b>
<b>Training for 2 Instructional Coaches</b>	<b>=\$ 4,500</b>
<b>Instructional Coach support services (2@\$6,000 per year -2 years)</b>	<b>=\$24,000</b>
<small>(Coaches provide support services for STE[A]M<sup>C</sup> Pilot Program and STE[A]M<sup>C</sup> Teams)</small>	
<b>STE[A]M<sup>C</sup> Teams (2 teams@\$6,000 per year – 2 years)</b>	<b>=\$24,000</b>
<b>Program Assessment and Evaluation</b>	<b><u>=\$13,500</u></b>
<b>2 year project total</b>	<b>\$125,000</b>

**ORAL TESTIMONY****ND COUNCIL ON THE ARTS****JANUARY 29, 2013****HB #1334**

Chairman Nathe and members of the Education Committee:

My name is Rebecca Engelman, I have the pleasure of being the Arts in Education Director for North Dakota Council on the Arts (NDCA), and I am here today to provide information and insight into our proposal requesting additional funding for our Arts in Education programs.

Over the past year, conversations concerning the future of education in the state of North Dakota have been extensive. Most of these conversations have focused on preparing our students for the new global economy by developing the creative and innovative workers required for careers yet to be imagined.

To accomplish these goals, however, we need to be willing to reinvent our schools and programs, and meet this challenge in new and innovative ways. The ND Department of Public Instruction (ND DPI), ND Science, Technology, Engineering and Math (STEM) Network, ND Council on the Arts and schools and educators across the state are currently building collaborative relationships, thinking out of the box and seeking ways to address this challenge.

Our countries current emphasis on scores and testing has forced many schools to narrow their curriculum and focus on teaching and learning that is predominately left-brain, linear and logically driven. This runs contrary to recent research that indicates the need for right brain activities, such as the arts, to foster creativity, flexibility, critical thinking, collaboration, and problem solving—all essential 21<sup>st</sup> Century Skills. It also runs contrary to the fact that we as humans are smart in a multitude of different ways and that it is this diversity of thought that will empower our students to create solutions to future problems.

The biggest myth about creativity is that it can't be learned, yet it will be one of the most important skills required in the workforce of tomorrow. I am here to tell you that creativity can be learned. Not by sitting in a lecture, recalling facts, or filling in a bubble on a test — but by experiencing, learning and applying creative thinking processes on a regular and repetitive basis. Creativity is putting our imaginations to work, creativity is applied imagination.

I believe that by integrating the arts, STEM and core disciplines we create a powerful combination that uses a whole, rather than a half brain approach, embraces rather than crushes diversity, and takes something that is good and makes it excellent.

Multi-disciplinary projects in math and science, fueled by the arts are already taking place in our programs. For example: Three second grade teachers at Roosevelt School in Jamestown, ND, noticed that their students were struggling with the concepts of halves, thirds, fourths and fractions. Through an NDCA grant, these three teachers teamed up with teaching artist Bonnie Tressler over a three year period to develop a unit of study that explored the following questions:

- What are the attributes and properties of shape?
- How are shapes (geometry) and numbers connected?
- What tools can be used to create shapes?
- And, how can shapes be combined or divided to create more complex shapes, patterns and designs?

With thoughtfully designed, scaffold, aligned and assessed arts integrated lessons, these teachers provided entry into these complex questions in a way that met the needs of all students. Whether they were left or right brain, visual/spatial, linear, or kinesthetic learners, all students were able to enter the work from a position of strength, confidence and joy.

One can only image the excitement of second grade students using compasses and right angles — tools reserved for architects, designers and engineers — to construct, divide, and combine shapes to create complex representations of their environment. As an observer of this process, I can attest that these students have developed bridges between disciplines, exercised their creative skills and truly understand the interconnectedness between shape, geometry, fractions and their world.

There are several other projects under consideration and waiting in the wings to be developed. These include: a high school biology instructor hoping to partner with a visual artist to assist students in creating a visual journal or interpretation of their experience with the process of dissection; a summer school project that would bring high school students, engineers, and a ceramic artist together to design, build, and test model bridges made from clay for strength and stability; and a team of fourth grade teachers hoping to collaborate with a musician to make connections between music and science.

These are all examples of the power the arts bring to STEM and other core disciplines. The time for revolutionizing education in our state by acknowledging and harnessing the power of art—the secret sauce for creativity, imagination, and innovation—is here.

Through this proposal, NDCA will focus on the following:

- NDCA will continue the process of building and supporting collaborations (artists, community arts organizations, ND DPI, ND STEM Network, experts in the fields of design, engineering, technology and schools and teachers) to develop multi-disciplinary K-12 projects that foster creativity and innovation through deep and intentional arts integration.
- The complex reality of arts-integrated classrooms requires a clear framework to hold it up and keep it centered. NDCA has, and will continue to develop and refine frameworks for arts-integration that include learning goals, standards and assessment. In addition, we will provide trained instructional coaches, tools and expertise to schools and teachers to help keep the work focused and meaningful.
- NDCA will also provide professional development for K-12 teachers, teaching artists, and museum and arts educators. This professional development will provide tools and strategies for integrating the arts in STEM and core disciplines — and for surfacing and making visible the science, technology, engineering, and math in the arts — removing the mystery behind the creative process and sharing it in way that makes sense to students.

Thank you for this opportunity to offer my testimony and to share with you NDCA's vision and commitment for meeting the needs of all students in North Dakota.

#### RESOURCES

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Good morning Mr. Chairman and committee members, for the record, my name is David DeMuth, and I serve as Executive Director of the Great Plains STEM Education Center at Valley City State University, and represent the ND STEM Network.

I spoke in support of this effort by the North Dakota Council on the Arts as part of a budget request to the Appropriations committee last week, that testimony recorded, and I invite your read.

I understand that there are five bills related to STEM at this 63rd Legislative Assembly, and worry that many struggle with a conception of STEM, seeing it as an amalgam of Science, Technology, Engineering, and Mathematics, which it is, but if I may, clarify that there are no periods in STEM (not S.T.E.M.).

STEM education develops a skill-set in our students required, even mandated by industries such as John Deere and Sanford Medical to remain dominant and competitive, but it is more than work-force development.

STEM is about project-based learning, it is trans-disciplinary, that is relying uniquely on each of the S, T, E, M, not separately, an approach necessary for the solutions to the complex problems our State and Nation face.

STEM is standards-based, collaborative, and focused on problem solving, utilizing scientific inquiry and a tested engineering design process, a process that is common to both the scientist and the artist.

As I testified previously, scientist and artist share qualities of curiosity, constant questioning, asking the right questions, willingness to make mistakes, refusal to fail, hard work, tenacity, imagination, creativity, diverse minded.

In fact, STEM is not truly STEM, unless it embodies the holistic; science and the arts, its not in a name, but the content. It is this synergy between the scientist and artist that motivates my support of the North Dakota Council on the Arts STE[A]M<sup>c</sup> program as a pilot STEM project that relies on the resources of the North Dakota STEM Network for guidance, particularly its professional development capacities it coordinates for in-service teachers.

Coupled with a ND STEM Network whose utility is indeed collaboration, projects such as STE[A]M<sup>c</sup> evidence to the Nation that North Dakota's pioneering spirit remains. Thank you kindly for your time this morning.