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# Center for Educational Transformation, Research and Development Center Annual Report, October 16, 2015

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## RESEARCH AND DEVELOPMENT ANNUAL REPORT

October 16, 2015

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### Research and Development Background

The University of Northern Iowa (UNI) is known for having its graduates hired as teachers, principals, and superintendents across the state, nation, and around the world. At UNI, students gain real world experiences through hands-on learning both in and out of the classroom. These experiences give them the skills and confidence they need to step right into their careers and excel. Annually more than 2,400 UNI students participate in PreK – 12 field experiences, and 500 new teachers graduate.

The University's priority for educating, serving, and leading our communities is established as one of the six goals in the University Strategic Plan (Goal 3: Lead the State and Nation in Pre K-12 Education). UNI's preeminence in Pre K-12 education is evidenced by faculty commitment to teaching, research and community engagement. The university's fundraising efforts resulted in two of the largest gifts ever to UNI. Businessman Richard O. Jacobson contributed \$11 million to create a literacy center in the College of Education and his most recent gift, the largest gift ever to UNI, \$15 million, is used to endowed professorships, scholarships, faculty research and an annual education summit.

The legislation creating the Iowa Research and Development Center for Education Innovation structure at UNI was initiated via Senate File 470, in Spring 2009. The goals outlined in Senate File 470 for the research and development initiative are:

- To raise and sustain the level of all Pre K-12 students' educational attainment and personal development through innovative and promising teaching practice.
- To enhance the preparation and professional competence of the educators in this state through collaborative inquiry and exchange of professional knowledge in teaching and learning.
- To focus on research that transforms teaching practice to meet the changing needs of this state's educational system.

In April, 2013, UNI received a \$2 million award from the Carver Trust to establish the Center for Educational Transformation (CET). On October 24, 2013, the Board of Regents, State of Iowa approved the Center for Educational Transformation. The CET fulfills the mission of the previously discussed Iowa's Research & Development Center for Education Innovation at the University of Northern Iowa. This report provides an update on CET activities since the last report was submitted. UNI remains committed to leading statewide efforts that optimize

resources, capitalize on existing research, leverage research funding, and build capacity for a community of scholars.

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## **Center for Educational Transformation**

### **Vision**

The Center for Educational Transformation (CET) is poised to redefine the face of educational research in Iowa and beyond. Founded upon the values of partnership and innovation, the CET responds to and is inclusive of all education stakeholders. This intrinsic connectivity allows the CET to become embedded in the Iowa educational landscape, so that partners not only “reach in” to access the CET’s expertise, but the CET “reaches out” to promote best practices from research results and to connect partners with one another. This model enables national research-based educational transformations to be situated in a local context. The transformation is evidenced through the CET’s commitment to learners, educators, and systems.

### **Mission**

The Center for Educational Transformation (CET) is a collaborative designed to transform PreK-12 education in Iowa and nationwide by conducting and disseminating research on emerging and critical education issues.

The CET builds capacity for improved student learning and teacher effectiveness; informs local, state, and national decision makers; and drives education policy. By developing partnerships, researching, and disseminating the results, the CET seeks to ensure an education culture where every child is able to engage and thrive.

### **Goals**

The Center for Educational Transformation balances stability and fluidity; stability as the hub for Iowa’s educational research and fluidity as research initiatives are tailored to schools’ needs. Overarching goals for the CET revolve around four key areas: Research, Practice, Policy and Innovation. These goals connect directly with the State of Iowa’s legislative intent for educational research and development. Research activities are a blend of both long-term solutions and opportunities to address an issue quickly and disseminate best practices across the state in a timely manner.

**GOAL #1 – Partnership Development:** Build and leverage partnerships across the state and nation to enhance the preparation and professional competence of educators.

**GOAL #2 – Research:** Conduct research on emerging and critical education issues aimed at transforming our current teaching, learning and educational systems.

**GOAL #3 – Dissemination:** Share innovative and best practices grounded in research to inform and drive policy and practice.

**GOAL #4 – Sustainability:** Build and sustain organization infrastructure and resources.

### **Infrastructure**

A university search committee initiated a national search for a Center Director during the fall of 2013. The Director’s role is to provide vision, build collaborations, and implement the strategic activities of the Center. Strong leadership and management skills are needed, as well as a depth of experience and understanding of PreK-12 education policy and practice. The search process was successful in attracting a pool of quality candidates; however, the search did not result in a final appointee. Thus, the position was not filled, and the search committee was charged with reopening the search.

The second search was successful, and Cindy Diehl Yang was selected as the director and scheduled to begin working for the CET on July 1, 2015. Yang has more than 20 years’ experience in the not-for-profit sector, with 15 years as an association senior executive. Previously, Yang served as Executive Director with the Executives’ Club of Chicago, a world-class senior executive’s organization focused on the development, innovation and connectivity of current and future business and community leaders. Prior to the Executives’ Club of Chicago, Yang served as Executive Vice President at the Associated Colleges of Illinois and served as Chief Operating Officer of ACI’s *Center for Success in High-Need Schools*, a new, multi-faceted initiative dedicated to improving teaching and learning in schools serving primarily low-income children.

As COO of ACI’s *Center for Success in High-Need Schools*, Yang directed Alternative and Accelerated Certification Programs that attract new talent to the teaching profession; Recruitment, Retention and Enrichment Programs designed to motivate more teachers to teach in high-need schools and provide them induction supports that sustain long-term commitment to high-need classrooms; and Curriculum Transformation Initiatives seeking to redesign teacher education curricula around the specific challenges of high-need schools. Yang has provided strategic direction to all these programs, while raising more than \$18 million in federal and private funding to support them.

## **Connections and Partnerships**

This year brought about several opportunities to meet with potential new PreK-12 education research partners and to deepen existing relationships with constituents already committed to supporting the transformational work of UNI’s CET. Listed below are descriptions of the groups and/or organizations and their connection to the CET.

### **CET Advisory Council Meetings**

The CET hosted CET Advisory Council Dinner Meetings on November 13, 2014, and May 12, 2015, at UNI’s Center for Multicultural Education and Georgian Lounge. During the meetings, Advisory Council members, CET staff, and research fellows discussed a variety of topics and issues related to critical research questions to explore, how best to collaborate with practicing teachers as research partners, and measures with which to assess the progress and success of the CET.

### **Education Summit 2015**

The first annual UNI Education Summit was held May 1, 2015, at the Schindler Education Center. This one-day event with a distinguished lecture by Jonathan Kozol the night before was a collaboration between the CET, the Iowa Academy of Education, the UNI Teacher Quality Partnership Grant, and the Richard O. Jacobson COE Strategic Program Endowment. The

purpose of the Summit was to provide an opportunity for discussion among institutions and individuals involved in, and necessary for, the systemic reform of Iowa education. Topics of focus included literacy, rural education, and STEM (Science, Technology, Engineering and Mathematics) education.

Presenters at the event ranged from Iowa educators to Iowa education faculty (including CET fellows Amy Hutchison, Sarah Boesdorfer, and Audrey Rule) to state and national experts. In addition to Mr. Kozol, national speakers included Dr. Louise Spear-Swerling, an expert in reading from Southern Connecticut State University; Dr. Kathleen Brown of the Utah Reading Clinic; David Byers, Administrative Director, Arizona Supreme Court; Dr. David Drew, a STEM expert from Claremont Graduate University; Dr. Robert Schwartz, formerly of the Michigan Reading Recovery program; and Dr. Cathy Zozakiewicz of the Stanford Center for Assessment, Learning, and Equity.

Approximately 200 people attended the Summit, including UNI students, staff, and faculty; faculty from other Iowa colleges of education; Iowa teachers and school administrators; and Iowa legislators.

### **K-12 Schools and Districts**

Identifying relevant and meaningful research topics and coordinating research partnerships between university faculty and education practitioners is a primary focus of the CET. The Iowa Practitioner Survey disseminated to all school districts in May 2015 was designed to collect information from educators in the field on potential research topics of interest and their professional interest in collaborating with the CET. The survey yielded 245 responses from school superintendents, principals, teachers, and counselors.

Respondents differed in their educational areas and/or topics of most importance to them. For example, the top areas of interest among superintendents and principals were teacher leadership, teaching strategies, and student engagement; whereas media specialists, counselors, and PreK-12 teachers indicated that student engagement, teaching strategies, and subject or content area(s) were most worthy of further research study and exploration. In addition, only 1 in 10 (9.87%) PreK-12 practitioners indicated that they had been involved in a research project/initiative with a university faculty member or group within the last two years; however, approximately 1 in 5 (18.75%) elementary educators and 1 in 3 (34.45%) secondary educators indicated that they were “Somewhat interested,” or “Very interested” in collaborating in future research opportunities.

Among those teachers and administrators who had been involved in a university research project, what they found valuable about that experience differed with their professional role. One principal said,

- *“We have received results and interpretation of the first study....It was data that we can share with our teachers to help validate their teaching and what they believe they know about their students.”*

Comments from certified staff included:

- *“Basing decisions and moving forward on quality research data.”*
- *“How I can see the growth of students as a result of what I do in the classroom when comparing it to other classrooms not in the [study].”*

- *“The collegial work with other teachers across the area, the visits from the [university] personnel to help implement, and the ability to risk take and fail!”*

And finally, some superintendents reported the following:

- *“Changing teaching/learning practices. Having outside people examine what we do.”*
- *“Support has been good with experts in the field giving us feedback on our teaching practices. Watching students become more engaged and excited about the new learning.”*
- *“To see to what extent our instructional practices and learning environments need to change.”*
- *“External eyes offering input to improve our system for students.”*

Such comments remind us of the ways in which involvement in education research can be of genuine benefit to Iowa’s teachers and administrators. These and other survey data will be more thoroughly analyzed and used by the CET staff and faculty partners to guide and direct future research questions and initiatives.

## Research

### 2014-15 Research Fellows and Projects

In 2014-15, the CET funded two Regents research fellows and four UNI internal research fellows. These faculty research projects support the CET’s connections to PreK-12 education in Iowa and promote the development of best practices and innovations in education. See Appendix A for a map reflecting the Iowa school districts involved in the 2014-15 CET research projects. These projects are completing their work or the first phase of their work and are in process of disseminating their findings. Below is a list of the projects. The completed project reports will be compiled when the dissemination work is conducted and reported.

#### **Carolyn Colvin, Ph.D.**

Associate Professor, Language, Literacy, and Culture, University of Iowa

Project Title: Exploring Models of Bicultural Parent Engagement to Address Academic Achievement for Immigrant Youth

Co-Investigator(s): Nancy Gardner, Ed.D.; Elizabeth Willmore (Graduate Student)

Cooperating School District: West Liberty Community School District

Participating Teachers: 3

Participating Parents: 3 immigrant parents of elementary-aged children

#### **Amy Hutchison, Ph.D.**

Assistant Professor, Literacy Education, Iowa State University

Project Title: Implementation and Evaluation of the Technology Integration Planning Cycle for Literacy and Language Arts

Cooperating School District: Ankeny School District

Participating Teachers: 35

Participating Students: 1,300

#### **Sarah Boesdorfer, Ph.D.**

Assistant Professor, Chemical Education, University of Northern Iowa

Project Title: Engineering Activities for Teaching Chemistry  
 Cooperating School District(s): 25  
 Participating Teachers: 25

**Shuaib Meacham, Ph.D.**

Associate Professor, Curriculum and Instruction, University of Northern Iowa  
 Project Title: The Hip-Hop and Higher Education Program (H3E)  
 Cooperating School Districts: Waterloo Community Schools  
 Cooperating Teachers: 3

**Audrey Rule, Ph.D.**

Professor, Science Education, University of Northern Iowa  
 Project Title: Highly Gifted Middle School Students Make Dioramas of Mammals that Explore Spatial Thinking Skills and Unifying Concepts of Science: Form and Function and Evidence, Models and Explanations  
 Co-Investigator(s): Denise Tallakson, Instructor, Department of Curriculum and Instruction, UNI  
 Cooperating School District(s): 1

**Brian Townsend, Ph.D.**

Associate Professor, Mathematics, University of Northern Iowa  
 Project Title: Assessing the Impact of the Waterloo Community Schools/UNI Mathematics Coaching Project  
 Cooperating School District: Waterloo Community Schools  
 Participating Teachers: 30

**2015 - 16 Research Fellows and Projects**

Through a campus-wide competitive solicitation process and review, the UNI faculty and projects listed below were selected as UNI internal research fellows for 2015-16. The two Regents research fellows from 2014-15—Carolyn Colvin from University of Iowa and Amy Hutchison from Iowa State—will continue their projects in 2015-16 with CET support. The CET has hired a postdoctoral external research fellow, who began in fall 2015 and will remain on campus for up to two years.

***Sustainable Inclusive Reform:***

***A University-School District Partnership for Equitable and Effective Schooling***

**RESEARCHERS:** Danielle Cowley, Deborah Gallagher, Amy Petersen (all from the UNI Special Education department)

**ABSTRACT:** A team of UNI faculty and 35 educators from the **Mount Pleasant Community School District** have taken up the urgent and critical task of becoming a more inclusive school district in order to ensure access and progress in the general education curriculum for *all* students. The faculty team has established an innovative Inclusive Education Teacher Preparation program at UNI for this cohort and will now begin a collaborative, participatory research project to examine the process and results of partnering for inclusive school reform.

Using an action-research framework and mixed methods from both qualitative and quantitative traditions, we will examine research questions related to:

- building capacity in educators as they work toward inclusive change;
- planning for systematic, inclusive restructuring; and
- the impact of inclusive policies and practices on educational outcomes for all students.

The proposed project addresses needs related to innovative research, policy, and practice.

Anticipated outcomes include:

- improving the knowledge, skills, and dispositions of inclusive educators;
- addressing the shortage of special education teachers in Iowa;
- improved Iowa compliance with LRE;
- narrowing the significant achievement gap experienced by Iowa's students with disabilities; and
- creating and evaluating a sustainable process for inclusive change.

### ***Motion Virtual Manipulatives in the Elementary Math Classroom***

**RESEARCHERS:** Sarah Diesburg (Computer Science, UNI), C. Adam Feldhaus (Math, UNI)

**ABSTRACT:** Manipulatives are a powerful tool to help students grasp the foundational concepts of mathematics. This is especially true of elementary school mathematics when it is integral that students learn mathematical concepts and how they can be used to solve problems and compute solutions. One way to introduce manipulatives into the elementary school classroom and increase student engagement with STEM-based technologies is through the use of motion-sensing input devices such as the Microsoft Kinect. These devices interpret user movements and translate the movements into a gaming environment displayed on a screen.

The researchers propose to create an environment where students use motion-sensing input devices to interact with mathematics manipulatives in an engaging environment. The goal of this project is to create a new toolset that will be called motion virtual manipulatives (MVMs).

MVMs will:

- introduce manipulatives into the elementary school classroom using motion-sensing input devices,
- be an effective tool for teaching core mathematical concepts, and
- potentially reach students who do not respond to typical mathematics instruction.

This software will be available at little to no cost to students or teachers. Once developed, the researchers will take the program into schools to evaluate it with the intent of improving the software and expanding implementation to other grade levels, mathematical manipulatives, and school settings.

### ***Literacy Through Science***

**RESEARCHERS:** Sohyun Meacham, Beth Van Meeteren (both from Curriculum & Instruction, UNI)

**ABSTRACT:** The current emphasis on literacy assessments in early childhood is driving many kindergarten classrooms to do away with science experiences for children to focus solely on literacy instruction. This study will use mixed methods to determine the effects of nature-based



science project work in preschool and kindergarten classrooms on student achievement in literacy.

This proposal reflects a unique opportunity to join a team dedicated to increasing science nature investigations with young children. The **Lakeside Laboratory Regents' Resource Center at Okoboji** asked the **Regents' Center for Early Developmental Education (RCEDE)** at UNI to examine the effects of their Young Investigators teacher professional development program. Young Investigators is an organization dedicated to facilitating early access to science inquiry through nature-based project work. It uses a method of teaching in which in-depth study of a particular topic is conducted by a child or a group of children. Activities engaged in during project work include drawing, writing, reading, recording observations, and interviewing experts (Katz, 1994).

***Diverse Female Elementary Students Learn About the Successful and Exciting Careers of Diverse Women in Mathematics***

**RESEARCHER(S):** Audrey Rule (Curriculum & Instruction, UNI)

**ABSTRACT:** To compete in a global market, America must increase production of highly-educated workers in STEM fields. There are few women and minorities in many STEM areas; therefore, it is urgent that girls have appropriate role models, be educated to resist cultural barriers, and be taught to develop a growth mindset toward STEM subjects.

This research project will teach a diverse group of elementary girls at an urban school about successful contemporary women of different races/ethnicities with careers in mathematics. The elementary girls will view illustrated PowerPoints of the women's lives and accomplishments, discussing the barriers they overcame and their interesting jobs. Students will gain spatial and creative skills as they construct dioramas of the women's lives and careers with a creative pop-up scene on the back illustrating the student's essay about career aspirations related to mathematics and connections to the role model. Lessons will include foundational practice in place value with numeral cards and manipulatives to improve understanding of mathematical concepts.

The impact of the lessons will be evaluated for mathematics self-efficacy, attitudes toward mathematics careers, place value understanding, math career content, and racial identity using a pretest-posttest design. Student comments during discussions, the dioramas they construct, and their essays will be analyzed for themes.

The CET is piloting a Post-Doctoral Research Fellows Program in the 2015-16 academic year. A university search was conducted to find a Post-Doc Research Fellow who could contribute to the work of the CET. The search was successful and Matthew Green, Ph.D. began working for the CET on August 17, 2015.

***Matthew Green, Ph.D.***

**Postdoctoral Research Fellow**

Dr. Green joins the CET as a Postdoctoral Fellow, having recently received his Ph.D. in Education from the University of North Carolina-Chapel Hill in the Culture, Curriculum, and Change program. His dissertation focused on the ways in which elementary-age students experience, understand, and practice national identity, specifically with regard to the intersection

of national identity, peers, and school. His research interests include the social context of schooling revolving around issues of race, immigration and identity, teacher education, and inequality. Dr. Green is particularly interested in how critical education research can translate into education and teacher education practices.

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## **Dissemination**

The CET staff is developing a dissemination plan to share the knowledge that is being developed through the research partnerships. The preliminary dissemination plan includes:

- co-sponsoring a Second Annual Education Summit that will be held in March 2016 in partnership with the Richard O. Jacobson COE Strategic Program Endowment;
- providing conference funding to CET Fellows and UNI Teacher Education faculty who have been accepted to present at regional and national conferences about the transformation of PreK – 12 education;
- developing a working paper series that will provide state and national education stakeholders with concise research findings with implications for implementation;
- identifying CET staff and partner faculty and teachers to participate on commissions and councils where the emerging and critical education initiatives are being discussed; and
- designing an Annual Colloquium where a National CET External Fellow is the keynote speaker and many results from the CET’s work are shared.

Currently the CET is presenting new knowledge on transforming PreK-12 education to national and regional professional organization conferences, including the American Association of Teacher Education (AACTE); Association for Supervision and Curriculum Development (ASCD); and American Educational Research Association (AERA). The CET Fellows have submitted several other conference proposals for review and are currently waiting to hear about their acceptance.

Cindy Diehl Yang, the new Director of the CET, has been asked to participate on AACTE’s National Clinical Practice Commission, which is charged with identifying a set of criteria that define clinical practice, lifting up exemplary models in the field and ultimately publishing a set of recommendations for teacher preparation programs nationwide.

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## **Budget**

UNI provides \$300,000 per year to the CET; these funds were reallocated following the Price Lab School staff restructuring. As stated earlier, a grant from the Roy J. Carver Trust was obtained to launch the Center and provides \$2 million in research funding and support over a 2-3 year period. The CET works in collaboration with the Office of Research and Sponsored Programs and the UNI Foundation in pursuit of strategic grant opportunities, contracts, and external foundation support to advance the mission of the Center.

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## **Next Steps**

The CET staff has developed an activity area document that is being shared with its Advisory Council, Steering Committee, partners, and other stakeholders (See Appendix B). The activity areas are divided into three main functional areas: 1) Partnership Development; 2) Research; and 3) Dissemination.

In the Partnership Development functional area, there are plans to begin monthly Ed Perspectives meetings inviting all Iowa education stakeholders (e.g., teachers, administrators, higher education representatives, business community members) to meet with a well-known regional/national speaker to inspire education dialogue in a collaborative manner. The focus of the meetings will be improving student learning and teacher effectiveness through the preparation of education leaders. The Ed Perspectives meetings will be one way that the CET will begin to build regional and national relationships with key education professionals.

Concurrently, the CET will be working to select a renowned CET National Education Fellow. The CET National Education Fellow will visit Iowa roughly four times per year – one time on each of the Regent’s campuses and one time as the keynote speaker for the CET Annual Colloquium. During the visits, the faculty, staff, students, teachers, and administrators partnering with the CET would be invited to work intensively on specific emerging or critical education issues that have been identified by the CET’s Research Council (See Below).

In the Research functional area, the CET has developed a Research Council that has a multi-organization membership including representatives from:

- University of Northern Iowa
- Iowa State University
- University of Iowa
- Rural Education District
- Urban Education District
- Suburban Education District
- Department of Education Staff

Two of the members of the Research Council have been identified and have agreed to serve on the Council. Other prospective members of the Council have been identified, contacted, but not yet confirmed. The goal is to have the completed Council identified and committed by the end of November.

CET Research projects will be classified differently during the Request for Proposals this upcoming proposal cycle. The research classifications will now be:

- CET Seed Funding – for research projects that are transforming a classroom or school.
- CET Implementation Funding – for research projects that are transforming multiple schools, whole district, or an AEA.
- CET Scale-Up Funding – for research projects with multiple partners from higher education, school districts, and the community that will transform multiple districts, the whole state, or multiple states.

In conclusion, the Center for Educational Transformation is moving forward with its mission to transform PreK-12 education in Iowa and nationwide by conducting and disseminating research on emerging and critical education issues.