



Jacob K. Javits Gifted and Talented Students Education Program

Universal Plus: A Two-Step Process for Equitably Identifying Computer Talent

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A. Quality of the Project Design

(1) The goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.

Creating equitable gifted and talented identification systems and the provision of appropriate services is an ongoing challenge for school districts throughout the United States. The challenge is particularly acute in rural areas impacted by the nexus of race, language, culture, and poverty. These circumstances, when coupled with limited resources, have the potential to place additional barriers to identification and services.

The Minnesota Department of Education (MDE) is proposing the *Universal Plus: A Two-Step Process for Equitably Identifying Computer Talent (Universal Plus)* project to address these challenges and work toward our global goal of providing access and opportunity for all students, including identifying gifted and talented students and meeting their special educational needs. *Universal Plus* will use innovative strategies to provide services to gifted and talented students, promote effective instruction as well as computer science in classrooms and schools, and conduct evidence-based research in order to broaden the potential future impact of this important equity in education work.

The following related goals, objectives, and outcomes have been established for Universal Plus:

GOAL 1: Students will show increased interest in and positive attitude towards their learning in general and computer science in particular.

- Objective 1a: Create a measure of attitude toward computer science that is culturally and linguistically sensitive.
 - Outcome 1a: New instrument developed and field tested for construct validity and cultural sensitivity.
- Objective 1b: Assess pre- and post-project interest in and attitude toward computer science in students enrolled in participating districts.
 - Outcome 1b: Students will show a 50% increase in their awareness of computer science.
- Objective 1c: Assess student pre- and post-project perception of interest, challenge, choice, and enjoyment of school in general.
 - Outcome 1c: Students will show a 50% increase in their perception of interest, challenge, choice, and enjoyment of school.

GOAL 2: Participating sites will identify greater numbers of students as gifted, particularly in computer science.

- Objective 2: Create a teacher rating instrument to measure computer science aptitude that is culturally and linguistically sensitive and use it as part of a two-step identification procedure.
 - Outcome 2: Participating districts will show a 20% increase in the number of students identified as gifted.

GOAL 3: Participating sites will identify greater numbers of students who are limited English proficient, 2e, or are from a traditionally underrepresented racial/ethnic group identified as gifted, particularly in computer science.

- Objective 3: Create a teacher rating instrument to measure computer science aptitude that is culturally and linguistically sensitive and use it as part of a two-step identification procedure.
 - Outcome 3: Participating districts will show a 20% increase in the Representation Index (RI) of any underrepresented student population present in their district (e.g., low-income, EL, 2e, and/or racial/ethnic minority students).

GOAL 4: Teachers from participating districts will demonstrate a greater awareness of gifted student characteristics and effective instructional best practices.

- Objective 4a: Expand Project North Star instructional modules to include content on computer science and how to foster such talent in targeted student groups.
 - Outcome 4a: 75% of participating school district staff will complete the new North Star module on computer science with an 80% or higher proficiency on exit assessments.
- Objective 4b: Have teachers from participating districts complete selected Project North Star training modules and attend face to face Hormel Institute training.
 - Outcome 4b: 75% of district staff will complete selected North Star modules with an 80% or higher proficiency on exit assessments

The Universal Plus project's Grant Researcher/Evaluator and Data Analyst will work in coordination with the Project Coordinator and Project Director to ensure the necessary data is collected and analyzed in order to report on the above outcomes, as well as the Javits program performance measures as required by the U.S. Department of Education (ED).

The Universal Plus project addresses all three competitive preference priorities, as discussed more fully in the following narrative sections: *Priority 1—Identification of, and Provision of Services to, Gifted and Talented Students* (Section A.3); *Priority 2—Promoting Science, Technology, Engineering, or Math (STEM) Education, With a Particular Focus on Computer Science* (Section A.2); *Priority 3—Promoting Effective Instruction in Classrooms and Schools* (Section C.1).

(2) The design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.

MDE will use a state map detailing school districts, poverty centers, and demographics to determine which school district sites in southern Minnesota to invite to the two planned cohorts – 3 sites in southeast Minnesota and 3 sites in southwest Minnesota. MDE is just finishing a Javits project that focused on Northern Minnesota. Southern Minnesota is a well-suited part of the state for this project due to the populations to be targeted, particularly their English learner (EI) population growth. School site selection criteria includes:

- Located in a rural local educational agency area, as defined by ED
- High poverty school, as defined by ED
- Significant EI (as defined by ED) population

- Significant children with disabilities (as defined by ED) population
- Strong school leadership and support as evidenced in prior work with MDE and leadership roles in professional organizations
- Sufficient internet access available at school sites

Private as well as public schools will be considered for participation. Schools that are not selected (public or private) could still opt to participate in offered trainings and use materials that are developed as a part of the Universal Plus project.

Further discussion on the targeted populations and their needs, as well as an additional identified need in Minnesota for developing computer science talent, and how the Universal Plus program is designed to address those needs follows:

Rural Poor

Research on the rural poor is plentiful, but typically compares rural gifted learners to their urban counterparts emphasizing differences in access to resources and extracurricular experiences, talent recognition, and issues with appropriate identification. The exception to this has been the work of Jonathan Plucker (2013) in his synopsis of previous research on the gifted student in rural settings. For the most part, Plucker aligns the issue of poverty almost entirely with the issue of rurality in his synthesis. For the rural poor, Slocumb and Payne (2000) have defined poverty as the “extent to which an individual does without resources” (p. 12), a definition they applied equally to urban poor. When one looks at the opportunities that have been offered to the urban poor (e.g., Olszewski-Kubilius & Thomson, 2010), it is clear that true poverty can be defined by the absolute lack of out of school program opportunities that can be more readily offered in an urban environment where the issue may be more about access and

less about availability. In impoverished rural areas, long-standing community members as well as immigrants have few, if any, external resources for academic enrichment.

Identification is a key issue confronting both rural and urban gifted children in poverty (Slocumb & Payne, 2000a). Schools tend to apply rigid identification systems that take into account the experiences and backgrounds of the middle class, but do not focus on the inherent use of creative language and creative problem solving found in gifted children of poverty. As both Olszewski-Kubilius and Thomson (2010) and Slocumb and Payne (2000b) point out, gifted services for the poor need to include raising self-image, remediating missing skills, providing meaningful “real world” experiences, requiring less homework and projects to be completed outside of school time and resources, and helping children understand the value of academic learning.

Rural communities are the focus of the Universal Plus project. They are defined as areas outside urban areas, large and small towns, communities or areas with less than 2,500 residents. Rural communities do not have a high degree of commuting to a nearby larger town and typically have considerable agricultural acreage and farmhouses. Currently, 73% of Minnesota’s population of 3.95 million people live in urban geography. Eleven percent, or nearly 609,000 people, live in or near large towns (with population between 10,000-49,999 residents). Another 7%, or nearly 390,000 people, live in or near small towns (with 2,500-9,999 residents), while 8% of Minnesota’s population, representing more than 434,000 people, live in rural areas (Greater Minnesota Refined & Revisited, Minnesota State Demographic Center 2017). Universal Plus will provide academic enrichment opportunities for these students that are otherwise unavailable where they live.

English Learners (ELs)

The National Center for Research on Gifted Education (NCRGE) examined the underrepresentation of ELs in the U.S. by reviewing the literature related to evidence based practices for gifted education services in nomination, screening/assessment, services, and identification models. The NCRGE notes that though ELs are the fastest growing population of learners in the United States (2016) their representation in gifted identification and programming continues to lag behind not only traditional populations of learners (Adler, 1967; Callahan, 2005), but also other underserved populations of learners (Matthews, 2014). Further, the Javits Gifted and Talented Act asserts that “outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavor” (United States Department of Education, 1993, p. 3).

During the 2017-2018 school year, 862,160 K-12 students enrolled in Minnesota public schools with 73,128 students, or 8.5 percent identified as English learners. There was an enrollment of 71,919 in the previous year, representing an increase of 1.7 percent. Over the past five years, the number of identified ELs has continued to rise at a faster rate than total enrollment in the state. Though metro schools saw a slight decrease in ELs in 2013-2018, non-metro schools have seen a steady increase in EL student enrollment despite flat enrollment numbers (Minnesota Department of Education Data Center 2013-2014 and 2017-2019 Enrollment).

Immigrants living in rural Minnesota are concentrated in areas where they have found employment opportunities. When compared to other immigrants, a greater number of immigrants living in rural areas also live in poverty: 21 percent live below the

poverty level, as compared to 12 percent of all Minnesotans. Poverty rates range from four to 55 percent across the State’s largest immigrant groups. **The Universal Plus project will target this growing population and expose them to computer science opportunities that could open up new pathways to success.**

Twice Exceptional Learners (2e)

Project 2Excel, a Javits grant focusing on twice exceptional learners conducted in Minnesota in 2009-2012, defined a twice-exceptional individual as one who is above average in ability and exhibits a disorder or disability that prevents him or her from maximizing that intellectual potential. Principal investigator Karen Rogers identified the four forms of twice exceptionality educators of the gifted frequently encounter: Attention-Deficit With or Without Hyperactivity [GT/AD(H)D], Specific Learning Disability (GT/SLD), Autism Spectrum Disorder (GT/ASD), and Emotional or Behavioral Disorder (GT/EBD). Minnesota’s Javits Grant Project North Star (2015-2019) defines these in the chart below.

<p>Attention-Deficit With or Without Hyperactivity [GT/AD(H)D]</p>	<p>an individual with above average intellectual ability who exhibits an inability to focus or inability to control physical impulses, or both, to a degree that prevents him or her from maximizing that intellectual potential in expected performance</p>
<p>Specific Learning Disability (GT/SLD)</p>	<p>an individual with above average intellectual ability who shows a large discrepancy in academic performance in one or more domains to the point that he or she is unable</p>

	to maximize his or her intellectual potential due to this learning disability (e.g., dyslexia, dyscalculia, dysgraphia)
Autism Spectrum Disorder (GT/ASD)	an individual with above average intellectual ability who exhibits inappropriate social interactions, repetitive mannerisms, an inability to draw inferences or think abstractly, and/or an inability to filter stimuli in a complex environment that interferes with maximizing his or her potential into expected performance
Emotional or Behavioral Disorder (GT/EBD)	an individual with above average intellectual ability who shows maladaptive social interactions or behavioral disorders to such a degree that he or she cannot maximize intellectual potential into expected performance

Willard-Holt, Weber, Morrison, & Horgan (2013) studied perspectives of 2e gifted and talented learners and found that the students felt the overall school experience failed them by not helping them understand their potential and not giving them choices in how they would learn or how assessment of their outcomes might be measured. Bailey and Rose (2011) examined teacher perspectives of 2e students and described the discomfort many of these teachers felt in providing differently for a gifted student than they would for a “special needs” student without giftedness. In general, they felt unprepared to identify or handle any of their “special” students.

However, the number of “special” students is growing. Reports from MDE indicate the number of students receiving special education (SPED) services grew from

115,000 in 2003 to 147,000 in 2019. SPED students now represent 16.3 percent of the student population. All Minnesota schools, including rural schools have seen an increase in SPED populations. Moreover, schools report an increase in younger students who qualify for SPED with enrollment peaks around ages 10 and 11.

Rogers (2012) in her final Javits project report described the positive academic, self-efficacy, and motivational effects that appeared to be connected to well-trained 2e teachers in self-contained gifted classrooms. **The Universal Plus project will build on this work and assist both 2e teachers and students.**

Minnesota's Need for, and Commitment to, Developing Computer Science Talent

Minnesota's need for, and commitment to, identifying and growing computer science talent in the state aligns with Competitive Preference Priority Two: Promoting Science, Technology, Engineering, or Math (STEM) Education, with a Particular Focus on Computer Science. **The Universal Plus project will expand access to and participation in rigorous computer science coursework for traditional underrepresented student such as those described above.**

Minnesota school districts are required to put state standards into place so all students have access to high-quality content and instruction. Minnesota Statutes, section 120B.023, subdivision 2, requires technology and information literacy standards be embedded into the standards. Minnesota currently has standards in the arts, English language arts, mathematics, physical education, science, and social studies.

In addition to its academic standards in technology and information literacy, "Minnesota Legislative action in 2015 aimed to address skill gaps in the fields of science, technology, engineering and math (STEM) and information technology (IT)

fields. MDE awarded a contract to Mouse Inc. to engage up to 200 schools in Minnesota with an educational program leading to skills certifications for high school students in the STEM and IT fields. In just over a year's time, Mouse trained 166 educators and reached an estimated 1,000 students who collectively earned 130 certifications and submitted sufficient evidence of completion for 2,957 modules." (Excerpt from 2018 Report to the Legislature: Information Technology Certification Partnership, p. 6)

Mouse is a national educational nonprofit that offers a variety of project-based activities in the STEAM model (STEM + Art: emphasizing creativity within science and technology), all delivered via step-by-step instructions on an online learning platform. These activities are integrated into a badging certification system shareable on the Common App, LinkedIn, and several other websites. An overview of Mouse's content and learning design philosophy can be found at mouse.org/work. Member schools receive unlimited access to Mouse educational content, plus support and training from Mouse staff. **Building on this previously successful partnership to the benefit of targeted students will be an important part of the Universal Plus project.**

Minnesota's Department of Employment and Economic Development (DEED), reports the fastest growing sector of jobs in the state is technology. The jobs are there, but the candidates who are qualified to fill them are not. According to DEED, employers face big challenges in finding enough candidates with the right skills for the jobs. **In addition to nurturing talent, the identification and development of computer science talent through the Universal Plus project will provide Minnesota with an opportunity to work toward alleviating poverty while strengthening our workforce**

and empowering underserved communities to join the technology sector (DEED Commissioner Grove 2018).

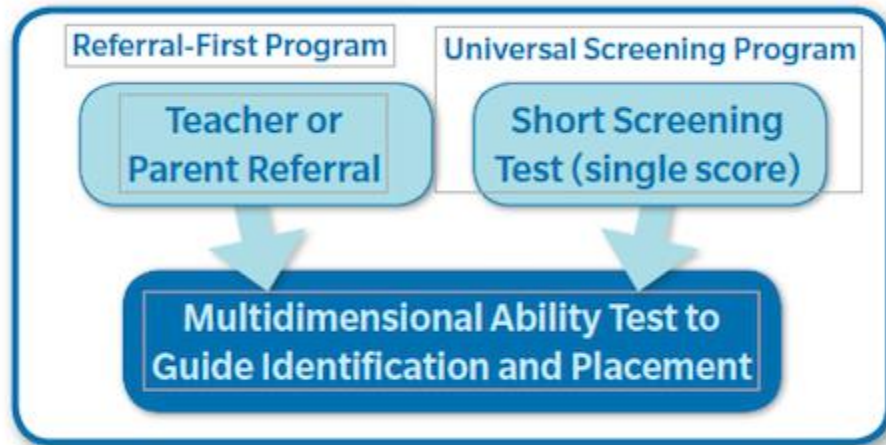
(3) The proposed project represents an exceptional approach for meeting statutory purposes and requirements.

The Universal Plus project will employ the innovative strategy of universal screening as well as develop a Computer Science Interest and Abilities Checklist in order to assist school sites to identify and provide services to gifted and talented students (including economically disadvantaged individuals, individuals who are English learners, and children with disabilities who might not be identified and served through traditional assessment methods). This approach is in alignment with Competitive Preference Priority One: Identification of, and Provision of Services to, Gifted and Talented Students.

Universal Screening, Equity, and Local Norms

Universal screening is an identification practice where all students in a targeted grade are administered an initial screening instrument. Scoring at or above a pre-determined cut-score on the screener leads to further consideration for placement and/or services in a gifted and talented program, usually involving at least one additional placement or confirmation assessment. The alternative to universal screening is often a referral process where parents or teachers recommend students for screening (or testing) for gifted services. Some research has suggested that a referral-only process introduces bias into the identification process and may lead to less representative gifted programs (Lakin 2016). Card and Guillano (2015) found that universal screening was more effective than previous teacher and parent referral

systems in addressing the under identification of traditionally underrepresented populations. Another key finding is the increased number of students referred for the second stage of placement assessment following universal screening.



Lakin (2016)

MDE intends to use the most current online version of the full battery Cognitive Ability (CogAT) test as a universal screener. All second and third grade students (CogAT is administered in a group setting) at each school site will take the assessment. Following receipt of the assessment reports, second and third grade teachers will review scores and form a pool of the top 25% of students at the site. In selecting the top 25%, they will focus their attention on the Quantitative and Non-verbal scores of the assessment, rather than the composite score.

Local norms will then be used to allow for within group comparisons. Students are compared against students who share similar characteristics such as grade, race, or school attended - rather than against the student body as a whole. Local norms are calculated using students with similar backgrounds from one or more districts in the region. **By using local norms, Universal Plus will be able to compare students to**

their peers who have had similar experiences and opportunities to learn and, after recognizing the potential of these students, provide appropriate levels of enrichment and accelerative instruction to meet their needs.

Computer Science Abilities and Interest Checklist

After the pool is formed, a site-based linked team of the second and third grade teacher(s), an EI, and SPED teacher (as well as a Gifted and Talented Teacher, if available) will complete a Computer Science Abilities and Interest Checklist for each of the students in the pool. Scoring in a range yet to be determined at this point will qualify students for additional computer science services. Ultimately, the goal of the checklist is to decrease underrepresentation by locating students with the following:

- Interest and aptitude for computer science
- Mathematical computation skills
- Problem solving skills
- Creative thinking skills
- Critical thinking skills
- Spatial intelligence skills
- Ability to learn concepts and apply knowledge

Identified students will then be offered enrichment opportunities such as differentiated instruction and acceleration in order to nurture early talent in computer science. Small schools such as those attended by our targeted students may not have the capacity or numbers to have formal gifted programs. However, MDE will work with school sites to ensure that all learners are provided an appropriate level of services to meet their needs.

Access and opportunity should be intrinsic in all aspects of education, including gifted education. Universal Plus addresses equity issues by providing professional learning for educators, universal screening for students, a newly developed check-list to identify student ability and interest in computer science, and enrichment opportunities and resources that can be adapted for all students.

All students at the schools sites will benefit from the information gathered by the screenings and checklists administered as well as the Mouse treatment. The computer science materials can be adapted for all students as well.

(4) The proposed project is supported by promising evidence.

While the research indicates that gifted learners exist in all populations (Van Tassel-Baska & Stambaugh 2007, Castellano & AD Frazier 2010, D Siegle, EJ Gubbins, P O'Rourke...2016, RF Subotnik, P Olszewski-Kubilius, FC Worrell 2011), **educators routinely miss students whose life experience differs from their own - specifically, students who live in poverty, are second language learners, have cultural differences, and are gifted, but also learning disabled.** Researchers have documented underrepresented students in gifted programs, due, in part, to their being: (a) culturally diverse (e.g., Baldwin, 2005; Ford & Grantham, 2003; Callahan, 2005; Card & Giuliano 2015), (b) economically disadvantaged (e.g., Slocumb & Payne, 2000; McBee 2006, VanTassel-Baska & Stambaugh 2007, Card & Giuliano 2015, or (c) presenting as twice exceptional (e.g., Foley Nicpon, Alimon, Sieck, & Stinson, 2010; Lovecky, 2004; National Education Association, 2006; Reis & Ruban, 2005; Rogers, 2011). The plight of these potentially underserved populations and the need to reduce gaps in services have been the focus of Jack Kent Cooke Foundation publications

(VanTassel-Baska & Stambaugh, 2007), Callahan and Hertberg-Davis multiple perspectives text (2013), the Cross and Cross special populations counseling text (2012), and Plucker, Peters, Schmalensee (2017). The literature indicates who these learners are, with some general suggestions for supporting their needs.

However, the research base on how to locate rural students living in poverty for talent development in specific areas (e.g. computer science and the STEM disciplines) is severely lacking at this time. This is a gap that will be filled by the Universal Plus project. According to the National Association for Gifted Children (NAGC), “Gifted children in poverty and from minority groups are 2.5 times less likely to be identified for, and in, gifted and talented programs in schools.”

A report by the Jack Kent Cooke Foundation (Plucker, J., Giancola, J., Healey, G., Arndt, D. & Want, C., 2015) focuses on low-income “excellence gaps.” According to the report, approximately half of the nation’s public school population consists of low-income students who are also racial minorities, speak a language other than English, and have a disability. The report focuses on state-level efforts to support academic talent via the policies states have in place as well as how extensively achievement is monitored for “excellence gaps” between high/moderate income and low income learners in each state. After considering nine inputs, Minnesota was the highest scoring state. The authors concluded that:

Minnesota is the highest scoring state, receiving a B- grade for both inputs and outcomes. It has statewide policies in place permitting early entry to kindergarten, acceleration between grades, and concurrent enrollment in middle school and high school (with credit received in high school). They require that

high-ability students be identified and supported with services and they report on the outcomes of their high-performing students. Minnesota is one of nine states that participated in an international assessment in recent years (the 2011 Trends in International Mathematics and Science Study). Administrators in Minnesota's Department of Education are clearly thinking about advanced education... Minnesota's B grade comes from the fact that it could do more to recognize its advanced students and hold its educators accountable for serving them... (Plucker et al, 2015).

The implementation of Universal Plus will allow Minnesota to do more in this identified area of need while developing resources that can be used by other states in need to do the same.

(5) Performance feedback and continuous improvement are integral to the design of the proposed project.

MDE is a partner with the State Implementation and Scaling-up of Evidence-based Practices (SISEP) Center and the National Implementation Research Network at The University of North Carolina at Chapel Hill's Frank Porter Graham Child Development Institute. **An implementation science framework will be applied to this project, leveraging data to adjust and refine the project approach along the way.** If an intervention or practice that has been demonstrated to be effective by research is not implemented properly with sufficient infrastructure to support fidelity to core effective components, the likelihood of success is low. MDE uses implementation science to prevent this outcome.

A cross division team called the MDE Implementation Team (MIT) meets twice a month to further advance their knowledge and use of implementation science by coming together as a community of practice. SISEP provides guidance and technical assistance to both the MIT and MDE's two Implementation Science Specialists. **MDE staff have extensive experience using effort, fidelity, and outcome data to remove barriers to implementation, increase capacity, and achieve outcomes.** This expertise will be leveraged for the Universal Plus project.

B. Quality of Project Personnel

(1) MDE encourages applications for employment from persons who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, or disability.

The State of Minnesota is working toward greater diversity and inclusion in state government and MDE is an active participant in this work. The Diversity and Inclusion Council was established by Executive Order 15-02 in January 2015 by then Governor Mark Dayton, "A government that serves all the people of Minnesota should reflect all of Minnesota. We must ensure that all of our citizens have equal opportunities to work for their state government, to do business with the state, and to participate fully in our democracy." It was renamed the One Minnesota Council on Diversity, Inclusion, and Equity in 2019 by Governor Walz.

Some of the outcomes of the Council thus far include the hiring of 50 new executives of which: 49 percent were women, 25 percent were racial or ethnic minority, 10 percent were veterans, and 4 percent identified as persons with a disability; increased state employment of people with disabilities from 3.7 percent to 5.7 percent;

improvements to the state hiring process with new tools and relevant policies; creation of the Office of Career and Business Opportunity at the Department of Economic and Employment Development to provide the focus and leadership necessary to help workers and businesses of color and people with disabilities find career paths and business opportunities in Minnesota; and appointing a state Director of Diversity.

(2) The qualifications, including relevant training and experience, of the project director or principal investigator.

A team of researchers and practitioners (resumes attached) will lead Universal Plus, with each having specific responsibilities for the project. Wendy Behrens, Gifted and Talented State Specialist and proposed Project Director, and Doug Paulson, Director of Academic Standards and Instructional Effectiveness, will provide leadership from MDE to ensure fidelity to the application and will facilitate the advisory committee for the grant. Paulson served as the STEM Specialist at MDE for seven years prior to becoming Director. He also spent ten years as a middle school science teacher, elementary teacher, curriculum integration coordinator, and interim principal. He is currently completing his E.D. in leadership, administration, and policy.

Scott J. Peters, Professor at the University of Wisconsin, Whitewater, will lead the research on the impact of the universal screening process to identify giftedness in computational thinking. He will co-develop the checklist, develop and carry out the research questions and the data collection procedures, and analyze the data. Cori Paulet, Independent Contractor, will manage the project. She has strong background managing two previous Javits grants and will coordinate the implementation of the screening and computational student experiences at each of the six sites. She will also

collect the data during the implementation. This team will meet by videoconference and face-to-face to plan and manage activities at the respective sites. The team will serve as co-designers of the screening process and student experiences.

Project Director: Wendy Behrens (in-kind)

Wendy A. Behrens, M.A Ed., serves as the Gifted and Talented Education Specialist (State Director) for the Minnesota Department of Education, providing leadership and consultation services for educators, administrators, and parents. Her work focuses largely on the identification and support of at-risk gifted and highly able learners, models of service, instructional strategies, and policy. She provides technical assistance to and collaborates with institutions of higher education, professional organizations, educator networks, and others interested in promoting rigorous educational opportunities. Behrens served as project director for Javits Grant *Project North Star*, a three-year grant designed to elevate identification and programming approaches provided for disadvantaged and underserved rural gifted learners.

Behrens has published several books of case studies and, most recently, *Developing Academic Acceleration Policies: Whole Grade, Early Entrance & Single Subject*. Expected in 2020 are *Understanding the Unique Needs of Twice Exceptional Learners: Building a Bridge from Research to Practice* and a chapter on acceleration in the *Methods and Materials for Teaching the Gifted* (5th ed.). She is an active member of the National Association for Gifted Children, currently serves as the past president of the Council of State Directors of Programs for the Gifted, secretary of the Council for Exceptional Children – The Association for the Gifted, and as a delegate to the World Council on Gifted Children. Behrens is an advisory board member for the Northwestern

University Center for Talent Development and The Grayson School. Prior to her service to the state, Behrens worked for 12 years as a district K–12 gifted services coordinator and a consultant for the Science Museum of Minnesota. She is a frequent presenter on instructional strategies, assessment, comprehensive service design and evaluation, and policies that support gifted education.

(3) The qualifications, including relevant training and experience, of key project personnel.

Project Manager: Cori Paulet (contracted)

Cori Paulet holds a M.A. in gifted, creative, and talented education from the University of St. Thomas in Minnesota. She recently worked as Project Manager on two successful Jacob K. Javits federal research grants focused on identifying and supporting underrepresented students in gifted and talented services: *Collaborative Planning: Utilizing a Technical Assistance Collaborative to Upscale the Identification Process and Programming for Gifted At Risk Learners* with Karen Rogers, Karen Westberg, and the Mankato Public School District and *Project North Star: Training Rural Teachers, School Leaders, and Families/Communities to Support Underserved Gifted Learners* with Wendy Behrens and the Minnesota Department of Education.

Paulet has also managed numerous national PBS educational multimedia productions including a series of CD-ROMS for *Newton's Apple* and the website creation for both *Right on the Money* and *Benjamin Franklin*. She presents and conducts professional development locally and nationally for teachers and administrators on gifted topics such as developing and upscaling identification and services for traditionally under-identified and underserved gifted students, creating and

teaching lessons for higher order thinking, understanding the social and emotional needs of gifted students, and engaging learners through video games. She is also a writing coach who designed and taught a highly successful curriculum for personal essay writing and college/career preparation skills to economically disadvantaged and culturally diverse learners in urban high schools.

Project Researcher/Evaluator: Scott Peters (contracted)

Scott J. Peters is an Associate Professor of Assessment and Research Methodology and the Richard and Veronica Telfer Endowed Faculty Fellow of Education at the University of Wisconsin – Whitewater. He received his Ph.D. from Purdue University specializing in gifted and talented education and applied research methodology. His research focuses on educational assessment, identification of student exceptionalities (particularly those from low-income or underrepresented groups), and gifted and talented programming outcomes. He has published in the *Australian Educational Researcher*, *AERA Open*, *Teaching for High Potential*, *Gifted Child Quarterly*, *Journal of Advanced Academics*, *Gifted and Talented International*, *Gifted Children*, *Journal of Career and Technical Education Research*, *Ed Leadership*, *Ed Week*, and *Pedagogies*. He is the recipient of the Fedlhusen Doctoral Fellowship in Gifted Education, the NAGC Research and Evaluation Network Dissertation Award, the NAGC Doctoral Student of the Year Award, the NAGC Early Scholar Award, the NAGC Paper of the Year Award, the NAGC Book of the Year Award, and the UW-Whitewater Innovation and Outstanding Research Awards.

Peters currently serves as the Association Editor for NAGC and has served as the Program Chair of the AERA Research on Giftedness, Creativity, and Talent SIG, on

the Board of the Wisconsin Association for Talented and Gifted, and as the National Association for Gifted Children Research and Evaluation Secretary. He is the first author of *Beyond Gifted Education: Designing and Implementing Advanced Academic Programs* (2013) and *Designing Gifted Education Programs and Services: From Purpose to Implementation* (2017), both from Prufrock Press, and the co-author (along with Jonathan Plucker) of *Excellence Gaps in Education: Expanding Opportunities for Talented Students* (2016), published by Harvard Education Press. He served as co-PI on two past Javits grants - one awarded to the State of Wisconsin and the other awarded to Purdue University.

Universal Plus Advisory Council (in-kind with required travels costs covered by grant funds)

An advisory council representing expertise in gifted education, computer education, child psychology, technology, teacher preparation, family engagement, ELs, twice exceptional learners, school administration, and classroom management has been formed to provide periodic review of progress toward grant goals and consultation on implement of the grant project. Committed members of the advisory council are:

1. John Alberts, Executive Director of Educational Services, Austin Public Schools
2. Dr. Teresa Argo Boatman, Psychologist, Counseling Center
3. Dr. Eric Calvert, Center for Talent Development at Northwestern University
4. Dr. Joy Davis, Diversity/Gifted Education/ Teacher Ed Scholar, Author, and Professional Development Expert
5. Dr. C. Matthew Fugate, University of Houston, Downtown

6. Dr. Claire E. Hughes, Associate Professor of Education and Teacher Preparation, College of Coastal Georgia. Hughes has written extensively on twice exceptional learners.
7. Melanie Olson, Classroom teacher, Teacher Representative on Minnesota Department of Education Gifted and Talented Advisory Committee
8. Dr. Jonathan Plucker, President-elect National Association for Gifted Children, Julian C. Stanley Endowed Professor of Talent Development at Johns Hopkins University
9. Cassie Scharber, Associate Professor: Learning Technologies, University of Minnesota
10. Dr. Ruslana Westerlund, Associate Researcher at WIDA, Wisconsin Center for Education Research
11. Marc Lesser, Chief Learning Officer at Mouse Inc.

Existing experienced and well-qualified MDE staff will provide a portion of their time to assist with Universal Plus data analysis, grant management, and federal program accounting tasks as further described in the attached Budget Narrative. Retired teachers with gifted education training will be recruited and contracted with as classroom observers during years two, three, and four of the project.

C. Quality of the Management Plan

(1) The management plan will allow MDE to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.

A year-by-year summary of the activities that will be completed by the above listed Project Director and project personnel in order to achieve the objectives of Universal Plus on time and within the proposed budget follows. **Prominently included in those activities is training on innovative strategies for educators at schools that are located in communities served by rural local educational agencies and high-poverty schools in order to increase the number of students who have access to effective educators** in alignment with Competitive Preference Priority Three: Promoting Effective Instruction in Classrooms and Schools.

Project staff will design an articulated scope and sequence of teacher competencies needed to provide appropriately for traditional gifted learners and underserved gifted learners including the rural, economically disadvantaged, other culturally or linguistically diverse, and twice exceptional in any or all combinations. Competencies will be aligned with previous research on what is required of an “effective” teacher of the gifted and with the National Association for Gifted Children programming standards and advanced teacher competencies. Teacher training will be provided during a large portion of the grant period through a series of lessons from Project North Star, a previous Javits grant in Minnesota. The lessons will be complemented by onsite workshops, attendance at the Hormel Foundation Gifted and Talented Education Symposium, twice per year site visits, and quarterly phone calls.

Year One

Project staff will work on the creation of materials, identification of schools, and identification of classroom observers during the first year of the grant. Universal Plus staff will begin to plan for sustainability following the life of the grant. Reviewing and

revising policies based on parent, staff, and family feedback, data and evidenced-based strategies will build sustainability and align use of existing federal and state funding sources. Through changes to policies, programs, and services delivered to each district, MDE will be building sustainability to a two-step identification process.

A significant amount of time will be spent in planning and research on existing checklists, computer skills, and talent development during this stage of the project. Staff will then develop a culturally responsive checklist to locate talented students with computer science interest and aptitude. Embedded within the checklist will be both traits and non-traits expected in students with computational talents. The checklist will have safe guards that reduce unintentional bias towards students who live in poverty, are EIs, and/or are 2e. The checklist will be field-tested in second and third grade classrooms during years two through four of the grant. Staff will also: create a “safety net” for the two-step identification process that provides an avenue for additional input on an individual student from other educators, students, family, and community members; identify resources for school staff intended to build their understanding of talent development in students with interest and aptitude in computer science; and identify resources and enrichment opportunities for students in computer science.

GIS mapping will be used to locate six rural southern Minnesota schools with a high student poverty rate, significant EI population, significant special education population, and internet access to participate in the grant. Additionally, the principal and superintendent must agree to support the project through the duration of the school’s three-year participation.

Following school site selection and confirmation of participation, identified school team members will attend a special pre-conference and the Hormel Foundation Gifted and Talented Education Symposium.

CogAT tests, soon to be available in approximately 20 languages, are ordered and assessment dates determined for the following school year in accordance with Minnesota requirements to publish assessment dates by September 1 of each year.

The advisory committee will meet quarterly, twice face-to-face and virtually two times during year one.

Year Two

Teachers will begin their professional learning using selected lessons from the Project North Star training modules. They will attend the Hormel Gifted and Talented Education Symposium, selected workshops at MDE, and receive Mouse Computer Science Educator training. Teachers will complete a survey to establish a baseline of gifted student characteristics and instructional best practices.

CogAT training for grades two and three classroom teachers on how to administer the most current iteration of the full-battery CogAT to all students within their classroom and site visits by program staff will occur in August and April.

The fall site visit will also include a brief presentation on the Universal Plus project for district staff and available school board and community members. A second visit to provide an update on progress toward project goals will occur in the spring.

Teachers will administer the CogAT test in October and review sub-test scores, focusing their attention on results from the quantitative and nonverbal batteries.

Following the review of scores, a linked team meeting will be scheduled for project

classroom teachers, an EI teacher, and a special education teacher to complete the checklist for the top 25% student scores. If the school employs a gifted education specialist/coordinator, he or she will also participate. All will receive training in gifted and talented development, socio-emotional needs of underserved populations, and providing instruction on curriculum adaptation and instructional differentiation. The team will work together implementing the new skills acquired and in peer coaching to improve their practices with gifted learners over a three-year training period. They will also review any additional information that can inform the identification process.

Field-testing of the newly created, culturally responsive checklist to locate talented students with computer science aptitude will begin. The checklist will have safeguards that reduce unintentional bias towards students who live in poverty, are English learners (ELs), and/or are twice exceptional (2e).

Weekly 30-40 minute Mouse curriculum class lessons begin in year two for students in grades two and three. Students may work on the curriculum individually or as a collaborative. Classroom observations, using standardized protocols to measure changes in the skill and practice of teachers and changes in student engagement and growth in computer skill for identified students, will be conducted in the fall and spring.

The project staff will facilitate virtual quarterly cohort meetings for linked teams during year two. Data collected includes student populations and identification, changes in teacher skill and practice, student engagement and growth, and changes in teacher attitudes on gifted student characteristics and instructional practices.

The advisory committee will meet quarterly, twice face-to-face and virtually two times during year two.

Years Three and Four

Years three and four will use the continuous improvement process of plan, do, study, and act. Teachers will continue their professional learning using selected lessons from the Project North Star training modules. They will attend the Hormel Gifted and Talented Education Symposium, selected workshops at MDE, and may choose to receive additional Mouse Computer Science Educator training.

Site visits by program staff will occur in August and April. Each site visit will include a brief presentation on the grant for district staff and available school board and community members. A second visit to provide an update on progress toward goals will occur in the spring.

Teachers will administer the CogAT test in October and review sub test scores, focusing their attention on results from the quantitative and nonverbal batteries. Following the review of scores, a linked team meeting will be scheduled for the project classroom teachers, an EI teacher, and a special education teacher to complete the checklist for the top 25% student scores. They will also review any additional information that can inform the identification process.

Weekly 30-40 minute Mouse curriculum class lessons will continue for students in grades two and three. Students may work on the curriculum individually or as a collaborative. Classroom observations, using standardized protocols to measure changes in the skill and practice of teachers and student engagement and growth in computer skill for identified students, will be conducted in the fall and spring.

The project staff will facilitate virtual quarterly cohort meetings for linked teams during year two. Data collected includes student populations and identification, changes

in teacher skill and practice, student engagement and growth, and changes in teacher attitudes gifted student characteristics and instructional practices.

During the spring site visit in year three, project staff identify strategies that promote project sustainability and funding beyond the grant period with participants and school leaders to be discussed again during the fall of year four.

During the fourth year, project staff create conference proposals and begin working on journal submissions.

The advisory committee will meet quarterly, face-to-face twice and virtually two times during year four.

Year 5

During the final year of the grant project, staff will compile data collected and analyze results. The outcome evaluation will focus on the following questions:

1. Did positive attitude by students towards computer science increase?
2. Did the number of students identified for gifted and talented services increase?
3. Did the number of students traditionally underrepresented as gifted in computer science increase?
4. Did teacher perception of characteristics of gifted learners and engagement in best practices increase?

Project staff will disseminate Universal Plus results and materials within the regions participating in the project, other interested Minnesota districts, and nationally during year five. The team will select appropriate venues for sharing project results with education groups via pedagogy research conferences (e.g., American Education

Research Association), professional organizations for teachers (e.g. International Society for Technology in Education, National Association for Gifted Children, STEM Education Conference), and teacher magazines (e.g., *Gifted Child Today*) and journals (e.g., *Gifted Child Quarterly*).

The project team will also determine appropriate venues for sharing project results with school leader groups via professional organization conferences at the state (Minnesota Elementary Principal conference) and national levels (e.g., Association for Supervision and Curriculum Development), and instructional leader magazines (e.g., *Administrator Magazine*) and journals (e.g., *Journal of Educational Leadership*). The project team will in addition determine appropriate venues for sharing project results with parent and community organizations holding conferences on gifted children (e.g., Early Childhood Conference) and underserved gifted population conferences at the state (e.g., Minnesota Council for the Gifted and Talented), and national levels (e.g., Supporting the Emotional Needs of the Gifted), parent and community newsletters, and related web sites (e.g., Hoagies Gifted).

(2) Procedures for ensuring feedback and continuous improvement in the operation of the proposed project.

The stages of implementation science (adapted from Blasé, Fixsen, and Duda 2011) include coaching, evidence-based practices, evaluation and feedback, continuous improvement, and eventually institutionalization. Implementation is synonymous with coordinated change at the system, organization, program, and practice levels. This is done by examining and understanding educational practices (*the what*) and developing

the capacity (*the how*) to support those practices system-wide (Fixsen, Blase, Horner & Sugai, 2009).

Universal Plus will use evaluation findings throughout the project to make adjustments to ensure implementation fidelity. The Grant Researcher/Evaluator and Data Analyst will assist the team to build lessons learned and initial evaluation findings into the project design, making changes as necessary and ensuring fidelity.

D. Quality of Project Services

(1) Strategies for ensuring equal access and treatment for eligible project participants who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, or disability.

The use of universal screening and the newly designed computer science abilities and interest checklist for this project will provide multiple pathways for students to be identified and served and “proactively mitigate unequal opportunity” (Peters, 2019) to ensure equal access and treatment for all students, with the overall goal of including more members of groups that have traditionally been underrepresented. This will remain a priority following the identification of students. For example, school sites will not schedule computer science lessons for identified students during pull-out EI or SPED service times. In addition, students will not be disqualified for receiving gifted and talented services due to their qualification for other interventions.

(2) The likely impact of the services to be provided by the proposed project on the intended recipients of those services.

MDE anticipates that Universal Plus will positively impact students in rural Minnesota who would not have otherwise: been identified and received gifted and talented services, been identified and received rigorous computer science coursework, and had access to the same level of effective educators. In order to measure these potential positive impacts, MDE will employ a quasi-experimental research design, collecting both quantitative and qualitative data in conjunction with data triangulation. Pre and post data comparison using a standardized template will document changes in teacher and student attitudes. Classroom and student observations will occur twice a year measuring challenge, choice, and enjoyment. Observations will occur in the fall and spring. Results of the research and the resulting resources will be shared widely in order to greatly broaden the impact of this project. Anticipated outputs include:

1. A 3-year professional development package of teacher competencies as professional learning. Using materials developed by the MDE Javits Grant Project North Star, educators will engage in professional learning to increase their understanding of the nature and needs of gifted and talented learners. Special focus will be given to characteristics of traditionally underrepresented populations, specifically students living in poverty, students that are EIs, and/or 2e.
2. A field-tested two-step process to identify traditionally underserved gifted learners with an interest and aptitude in computer science. Students with an interest and aptitude in computer science have not been identified previously. Using information from the CogAT in tandem with a newly created checklist of characteristics completed by a linked team of classroom teachers, EI and SPED teachers, and a gifted services coordinator will provide a more complete picture of student strengths

as well as interest in computer science. The checklist and linked team will be able to reduce the numbers of students frequently excluded from gifted services by disabilities or differences that impact their capacity to achieve at levels commensurate with their true aptitude.

3. Training materials that support classroom teachers in the administration of the CogAT assessment and interpretation of the results. Teacher will be trained in how to prepare students for testing. For many students, taking the CogAT will be their first experience with standardized testing in an online format. Teachers will be trained in test preparation, techniques intended to reduce anxiety among test takers, and how to interpret test results. Training will focus on looking for extreme discrepancies in subtest scores. Teachers will understand how to implement appropriate classroom interventions based on assessment results.
4. A culturally responsive checklist sensitive to the needs of students with an interest and aptitude in computer science who live in poverty, are EIs, and/or are 2e. The checklist will be informed by best practices in gifted education, Javits Project 2Xcel and Project North Star, and the recent work by the National Research Center on Gifted Children (NRCGC). The checklist, when used with universal screening, is intended to provide an alternative pathway to identification and increase communication by linked teams, two recommendations of the 2018 NRCGC report.
5. A process for gathering, organizing, and including additional information that informs identification of talents in individual students. A document yet to be developed to be use by linked team members and others as a safety net to ensure that all pertinent information on students is considered.

6. An observation tool to measure changes in the skill and practice of teachers. An observation protocol will be developed or adapted from Project North Star to be used to measure growth in the use of gifted education strategies, e.g. differentiation, grouping, and acceleration in student engagement and growth in computer science skills. The observation protocol will be used by classroom observers in the fall and spring.
7. Strategies for sustainability. Planning for sustainability will begin from day one of the project. These strategies will be shared with schools in an effort to continue to increase identification through use of universal screening and the checklist beyond the life of the grant. Strategies will include continued professional learning through online modules developed through Project North Star and the Hormel Foundation Gifted and Talented Education Symposium. Planning with district leaders will include identification of available funding streams to support the identification process and continuity of services through Title IV A grants, gifted and talented funds as allocated by the State of Minnesota, Rural Sparsity, and other yet to be identified funding.

The completion of the Universal Plus project will positively impact the equitable education of students in rural Southern Minnesota, but, through the completion of rigorous research and the development of a variety of resources and processes that can be replicated in many other locations, its impact will not end there, but rather just begin.