APPLICATION FOR GRANTS UNDER THE

2015 Enhanced Assessment Grant (EAG)

CFDA # 84.368A

PR/Award # S368A150019

Grants.gov Tracking#: GRANT11950906

OMB No., Expiration Date:

Closing Date: Jun 29, 2015
## Table of Contents

<table>
<thead>
<tr>
<th>Form</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Application for Federal Assistance SF-424</td>
<td>e3</td>
</tr>
<tr>
<td>2. Assurances Non-Construction Programs (SF 424B)</td>
<td>e6</td>
</tr>
<tr>
<td>3. Disclosure Of Lobbying Activities (SF-LLL)</td>
<td>e8</td>
</tr>
<tr>
<td>4. ED GEPA427 Form</td>
<td>e9</td>
</tr>
<tr>
<td>Attachment - 1 (1235-GEPA_statement)</td>
<td>e10</td>
</tr>
<tr>
<td>5. Grants.gov Lobbying Form</td>
<td>e11</td>
</tr>
<tr>
<td>6. ED Abstract Narrative Form</td>
<td>e12</td>
</tr>
<tr>
<td>Attachment - 1 (1234-ONPAR_EAG_Abstract)</td>
<td>e13</td>
</tr>
<tr>
<td>7. Project Narrative Form</td>
<td>e15</td>
</tr>
<tr>
<td>Attachment - 1 (1240-ONPAR_EAG_Narrative)</td>
<td>e16</td>
</tr>
<tr>
<td>8. Other Narrative Form</td>
<td>e80</td>
</tr>
<tr>
<td>Attachment - 1 (1237-Part_6_letters_and_CVs)</td>
<td>e81</td>
</tr>
<tr>
<td>Attachment - 2 (1238-ONPAR_EAG_References)</td>
<td>e168</td>
</tr>
<tr>
<td>Attachment - 3 (1239-Indirect_Cost_Rate_Agreement_FY2014-15)</td>
<td>e174</td>
</tr>
<tr>
<td>9. Budget Narrative Form</td>
<td>e178</td>
</tr>
<tr>
<td>Attachment - 1 (1236-Budget_Narrative)</td>
<td>e179</td>
</tr>
<tr>
<td>10. Form ED_524_Budget_1_2-V1.2.pdf</td>
<td>e196</td>
</tr>
<tr>
<td>11. Form ED_SF424_Supplement_1_2-V1.2.pdf</td>
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This application was generated using the PDF functionality. The PDF functionality automatically numbers the pages in this application. Some pages/sections of this application may contain 2 sets of page numbers, one set created by the applicant and the other set created by e-Application's PDF functionality. Page numbers created by the e-Application PDF functionality will be preceded by the letter e (for example, e1, e2, e3, etc.).
**Application for Federal Assistance SF-424**

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<td>Application</td>
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**State Use Only:**

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**8. APPLICANT INFORMATION:**

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<tr>
<th><em>a. Legal Name:</em> Michigan Department of Education</th>
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<tr>
<th><em>b. Employer/Taxpayer Identification Number (EIN/TIN):</em> 88-60001134</th>
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<th><em>c. Organizational DUNS:</em> 8053366410000</th>
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<table>
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<th><em>Zip / Postal Code:</em> 48909-7508</th>
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<th>e. Organizational Unit:</th>
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<th>Division Name: Accountability Business Servic</th>
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<th>f. Name and contact information of person to be contacted on matters involving this application:</th>
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<table>
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<tr>
<th>Prefix: Mr.</th>
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<table>
<thead>
<tr>
<th><em>First Name:</em> Andrew</th>
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<table>
<thead>
<tr>
<th>Middle Name:</th>
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<table>
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<tr>
<th><em>Last Name:</em> Middlestead</th>
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<table>
<thead>
<tr>
<th>Title: Office Director</th>
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<table>
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<tr>
<th>Organizational Affiliation: MDE - Office of Standards and Assessment</th>
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<tr>
<th><em>Telephone Number:</em> 517-241-2694</th>
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<table>
<thead>
<tr>
<th>Fax Number:</th>
</tr>
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<table>
<thead>
<tr>
<th><em>Email:</em> <a href="mailto:MiddlesteadA@michigan.gov">MiddlesteadA@michigan.gov</a></th>
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**PR/Award # S388A150019**

Page 63
Application for Federal Assistance SF-424

9. Type of Applicant 1: Select Applicant Type:
- State Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

10. Name of Federal Agency:
- U.S. Department of Education

11. Catalog of Federal Domestic Assistance Number:
- 84.368

CFDA Title:
- Grants for Enhanced Assessment Instruments

12. Funding Opportunity Number:
- ED-GRANTS-042815-002

* Title:
- Office of Elementary and Secondary Education (OESE): Enhanced Assessment Instruments Grants Program: Enhanced Assessment Instruments CFDA Number 84.368A,

13. Competition Identification Number:
- 84-368A2015-1

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

15. Descriptive Title of Applicant’s Project:
- Dynamic Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring Challenging Concepts and Skills of Diverse Middle School Students

Attach supporting documents as specified in agency instructions.

PR/Award # S388A150019
Page 64
Application for Federal Assistance SF-424

16. Congressional Districts Of:
   * a. Applicant: MI-008
   * b. Program/Project: MI-all

Attach an additional list of Program/Project Congressional Districts if needed.

17. Proposed Project:
   * a. Start Date: 10/01/2015
   * b. End Date: 09/30/2019

18. Estimated Funding ($):

   * a. Federal: 4,476,512.00
   * b. Applicant: 0.00
   * c. State: 0.00
   * d. Local: 0.00
   * e. Other: 0.00
   * f. Program Income: 0.00
   * g. TOTAL: 4,476,512.00

19. Is Application Subject to Review By State Under Executive Order 12372 Process?
   ✗ a. This application was made available to the State under the Executive Order 12372 Process for review on 06/29/2015.
   ☑ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
   ☑ c. Program is not covered by E.O. 12372.

20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)
   ☑ Yes
   ☑ No

   If "Yes", provide explanation and attach

   Add Attachment  Delete Attachment  View Attachment

21. "By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

   ✗ ** I AGREE

   ** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Mr.  * First Name: Michael
Middle Name: P.
* Last Name: Flanagan
Suffix: 

* Title: State Superintendent

* Telephone Number: 517-373-2313  Fax Number: 517-373-4022

* Email: BurgessJ@Michigan.gov

* Signature of Authorized Representative: Michael Flanagan  * Date Signed: 06/28/2015
ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE:Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM’s Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1688), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§255d-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

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PR/Award # S368A150019
Page 66

Funding Opportunity Number: ED-GRANTS-042815-002
Tracking Number: GRANT11950906
Received Date: Jun 29, 2015 04:18:39 PM EDT

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11968; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).


14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.

16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, “Audits of States, Local Governments, and Non-Profit Organizations.”

18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

19. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

Michael Flanagan

APPLICANT ORGANIZATION

Michigan Department of Education

DATE SUBMITTED

06/29/2015
**Disclosure of Lobbying Activities**

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

1. *Type of Federal Action:*
   - a. contract
   - b. grant
   - c. cooperative agreement
   - d. loan
   - e. loan guarantee
   - f. loan insurance

2. *Status of Federal Action:*
   - a. bid/投标 application
   - b. initial award
   - c. post-award

3. *Report Type:*
   - a. initial filing
   - b. material change

4. **Name and Address of Reporting Entity:**
   - **Prime**
   - **SubAwardee**

   - *Name:
     - [Michigan Department of Education]*

   - *Street 1:*
     - [P.O. Box 36008]*

   - *City:
     - [Lansing]*

   - *State:
     - [Mich] 

   - *Zip:
     - [48903]*

   - Congressional District, if known:
     - [ ]

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

   - [ ]

6. **Federal Department/Agency:**
   - [n/a]

7. **Federal Program Name/Description:**
   - Grants for Enhanced Assessment Instruments

   - **CFDA Number, if applicable:**
     - [14.368]

8. **Federal Action Number, if known:**

9. **Award Amount, if known:**
   - [$ ]

10. **Name and Address of Lobbying Registrant:**

   - a. Individual Performing Services (including address if different from No. 10a)

   - *Prefix:
     - [n/a]*

   - *First Name:
     - [n/a]*

   - *Middle Name:
     - [n/a]*

   - *Last Name:
     - [n/a]*

   - *Street 1:
     - [n/a]*

   - *Street 2:
     - [n/a]*

   - *City:
     - [n/a]*

   - *State:
     - [n/a]*

   - *Zip:
     - [n/a]*

   - [ ]

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

   - **Signature:**
     - [Michael Planagen]

   - **Name:**
     - Mr.*

   - **First Name:**
     - Michael

   - **Middle Name:**
     - [n/a]*

   - **Last Name:**
     - Planagen

   - **Suffix:**
     - [n/a]*

   - **Title:**
     - [State Superintendent]

   - **Telephone No.:**
     - [517-373-2313]

   - **Date:**
     - [6/29/2015]

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Federal Use Only:

PR/Award # S388A150019

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Standard Form - LLL (Rev. 7-97)
NOTICE TO ALL APPLICANTS

The purpose of this enclosure is to inform you about a new provision in the Department of Education’s General Education Provisions Act (GEPA) that applies to applicants for new grant awards under Department programs. This provision is Section 427 of GEPA, enacted as part of the Improving America’s Schools Act of 1994 (Public Law (P.L.) 103-382).

To Whom Does This Provision Apply?
Section 427 of GEPA affects applicants for new grant awards under this program. **ALL APPLICANTS FOR NEW AWARDS MUST INCLUDE INFORMATION IN THEIR APPLICATIONS TO ADDRESS THIS NEW PROVISION IN ORDER TO RECEIVE FUNDING UNDER THIS PROGRAM.**

(If this program is a State-formula grant program, a State needs to provide this description only for projects or activities that it carries out with funds reserved for State-level uses. In addition, local school districts or other eligible applicants that apply to the State for funding need to provide this description in their applications to the State for funding. The State would be responsible for ensuring that the school district or other local entity has submitted a sufficient section 427 statement as described below.)

What Does This Provision Require?
Section 427 requires each applicant for funds (other than an individual person) to include in its application a description of the steps the applicant proposes to take to ensure equitable access to, and participation in, its Federally-assisted program for students, teachers, and other program beneficiaries with special needs. This provision allows applicants discretion in developing the required description. The statute highlights six types of barriers that can impede equitable access or participation: gender, race, national origin, color, disability, or age. Based on local circumstances, you should determine whether these or other barriers may prevent your students, teachers, etc. from such access or participation in the Federally-funded program or activity. The description in your application of steps to be taken to overcome these barriers need not be lengthy; you may provide a clear and succinct description of how you plan to address those barriers that are applicable to your circumstances. In addition, the information may be provided in a single narrative, or, if appropriate, may be discussed in connection with related topics in the application.

Section 427 is not intended to duplicate the requirements of civil rights statutes, but rather to ensure that, in designing their projects, applicants for Federal funds address equity concerns that may affect the ability of certain potential beneficiaries to fully participate in the project and to achieve high standards. Consistent with program requirements and its approved application, an applicant may use the Federal funds awarded to it to eliminate barriers it identifies.

What are Examples of How an Applicant Might Satisfy the Requirement of This Provision?
The following examples may help illustrate how an applicant may comply with Section 427.

(1) An applicant that proposes to carry out an adult literacy project, serving among others, adults with limited English proficiency, might describe in its application how it intends to distribute a brochure about the proposed project to such potential participants in their native language.

(2) An applicant that proposes to develop instructional materials for classroom use might describe how it will make the materials available on audio tape or in braille for students who are blind.

(3) An applicant that proposes to carry out a model science program for secondary students and is concerned that girls may be less likely than boys to enroll in the course, might indicate how it intends to conduct “outreach” efforts to girls, to encourage their enrollment.

(4) An applicant that proposes a project to increase school safety might describe the special efforts it will take to address concern of lesbian, gay, bisexual, and transgender students, and efforts to reach out to and involve the families of LGBT students.

We recognize that many applicants may already be implementing effective steps to ensure equity of access and participation in their grant programs, and we appreciate your cooperation in responding to the requirements of this provision.

Estimated Burden Statement for GEPA Requirements

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. Public reporting burden for this collection of information is estimated to average 1.5 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit (Public Law 103-382). Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20210-4537 or email ICCDocketMgr@ed.gov and reference the OMB Control Number 1894-0005.

Optional - You may attach 1 file to this page.

GEPA_statement.pdf

Add Attachment Delete Attachment View Attachment

PR/Award # S388A150019
Page e9
GEPA (General Education Provisions Act)

Dynamic Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring Challenging Concepts and Skills of Diverse Middle School Students

The Michigan Department of Education (MDE) believes that barriers to equitable access to or participation in activities undertaken with funds from this program (title noted above) are being addressed through practices and strategies implemented to ensure equity in all programs. The Michigan State Board of Education has adopted Vision and Principles for Universal Education – an over-arching set of guidelines to ensure that all educational opportunities are readily available and easily accessible to all children and families.

For the activities and partners associated with this Grant, the following potential barriers and related solutions to equal access are presented:

- Any participant in this grant, and programmatic intervention, training, meeting, or program administrations with a need for special accommodation due to health status, language barrier, visual or hearing impairment, other physical disability, or age will be assisted through reasonable accommodation and meeting sites being held in publicly accessible buildings. MDE has included resources for translation services to provide materials in numerous languages other than English.

- Any published reports, training, plans or materials will be made available through a variety of means to meet the access needs of constituents. Materials will be available via the MDE, and W or website, by request through written mail, or by calling a main phone number.

Historically, Michigan has been sensitive to equity needs and has responded with practices as listed below.

- Through the programs administered by MDE, there exist a variety of assurances, in different forms and at numerous levels, which guarantee equitable access for all participants, and other key stakeholders in the state, which apply to all state and federal programs.

- All participants submitted to the MDE will contain a statement assuring the applicant/contractors will take steps to provide equitable access to, all participation in this grant addressing special needs of participants to overcome barriers based on gender, race, color, national origin, limited English proficiency, disability, and age.

- MDE has worked to ensure the most diverse pool of candidates for employment or contracted services are considered.

- The MDE website at www.michigan.gov/mde has been established to ensure that barriers to equitable participation resulting from geographic isolation are overcome.
CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

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* APPLICANT'S ORGANIZATION

Michigan Department of Education

* PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Prefix: Mr.  * First Name: Michael  Middle Name: P.

* Last Name: Flanagan  Suffix:

* Title: State Superintendent

* SIGNATURE: Michael Flanagan  * DATE: 06/29/2019
Abstract

The abstract narrative must not exceed one page and should use language that will be understood by a range of audiences. For all projects, include the project title (if applicable), goals, expected outcomes and contributions for research, policy, practice, etc. Include population to be served, as appropriate. For research applications, also include the following:

- Theoretical and conceptual background of the study (i.e., prior research that this investigation builds upon and that provides a compelling rationale for this study)
- Research issues, hypotheses and questions being addressed
- Study design including a brief description of the sample including sample size, methods, principals dependent, independent, and control variables, and the approach to data analysis.

[Note: For a non-electronic submission, include the name and address of your organization and the name, phone number and e-mail address of the contact person for this project.]

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* Attachment: ONPAR_EAG_Abstract.pdf  [Add Attachment]  [Delete Attachment]  [View Attachment]
Abstract

Michigan (lead), Wisconsin, Maryland, New Jersey, Nevada, and the Wisconsin Center for Education Research at the University of Wisconsin–Madison (managing partner), propose to develop an operational set of performance-based, technology-interactive, formative assessment tasks, end-of-unit assessment modules, and related teacher tools aligned to the Next Generation Science Standards (NGSS) and the Framework of K–12 Science Education. Activate Learning Curriculum and the WIDA Consortium (in kind partners), will join the lead and supporting states and managing partner in this project. The project will work with districts using NGSS aligned curriculum Investigating and Questioning our World through Science & Technology (IQWST) to control for opportunity to learn. The tasks and assessments will use a multi-semiotic performance- and progression-based assessment methodology called ONPAR that measures challenging science knowledge and abilities of widely diverse students including English learners, students with learning disabilities, and mainstream students. This proposal will address two absolute priorities, Collaboration and Use of Multiple Measures of Student Academic Achievement, two competitive preferences, Implementing Internationally Benchmarked College- and Career-ready Standards and Assessments and Leveraging Technology to Support Instructional Practice and Professional Development, and invitational priorities, Developing Innovative Item Types and Leveraging Technology to Support Personalized Learning and to Improve Assessment Tools.

The goal of the project is to improve the assessment of challenging science learning for all middle-school students. Six objectives address this goal: Objective 1. Produce 12 technologically interactive, technically defensible, end-of-unit performance diagnostic assessments using 36 extended tasks (Outcomes: documentation of ECD methods to develop test modules and tasks within modules; successful classroom pilots with selected tasks and refinement of tasks, and successful field testing of modules with analyses of data). Objective 2. Produce 35–40 additional classroom-embedded extended performance assessment tasks designed for on-demand teacher
use as they teach the 12 IQWST science units (Outcomes: documentation of ECD methods to develop classroom-embedded interactive tasks; successful classroom tryouts and refinement of tasks; successful piloting of classroom-embedded tasks and data analyses; observation, and post-task surveys and interviews with teachers to investigate the effectiveness of the learning tasks). **Objective 3.** Produce individualized diagnostic student- and classroom-level reports generated immediately after students complete the tasks and tests (Outcome: successful development and programming of scoring algorithms for measuring status and processes of intended knowledge and skills). **Objective 4.** Produce and evaluate associated materials and related PD for teachers to support and inform task use, interpretation, and differentiated learning based on individualized results (Outcomes: development of task-specific teacher interpretative materials; 3-day face-to-face PD institutes and PD modules; development of a community-of-practice website with resources and chat space for participants; ongoing webexes to discuss the tasks and formative assessment; and surveys to evaluate the PD institute and online PD). **Objective 5.** Investigate the relationships between traditional and innovative item types that measure similar content and depth (Outcomes: identify ONPAR performance-and IQWST traditional-items that measure similar content; analyses of ONPAR-IQWST item dyads by type and group). **Objective 6.** Investigate two types of multiple-measure aggregation schemes using ONPAR tasks and tests at the classroom- and state-level (Outcomes: design multiple aggregation weighting schemes; conduct preliminary and final analyses of weighting schemes and methods).

Approximately 60 teachers will take part in external reviews of task and teacher materials and in bias reviews. Further, about 400 students and six teachers (assuming about 67 students per teacher) will take part in the three pilot tests, and approximately 3000 students and 60 teachers will participate in the field tests for a grand total of about 126 educators and 3400 students participating. Activate Learning is committed to recruiting geographically and demographically stratified sites for all data collections, including Chicago, Baltimore, Los Angeles, and Palm Beach and districts in lead and supporting states (MI, MD, NJ, NV and WI).
* Mandatory Project Narrative File Filename: CNPAR_EAG_Narrative.pdf

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Dynamic Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring
Challenging Concepts and Skills of Diverse Middle School Students
Goals, Objectives, and Outcomes ................................................................. 4

A. Need for Project ....................................................................................... 6
   Magnitude and Severity of Problem Addressed ........................................ 6
   Magnitude of Need for the Activities ...................................................... 7
   Nature and Magnitude of Gaps Addressed .............................................. 8

B. Significance .......................................................................................... 8

C. Project Design ....................................................................................... 15
   Development Procedures ........................................................................ 23
   Data Collection and Analysis .................................................................. 26
   Dissemination ......................................................................................... 29

D. Project Services ................................................................................... 30

E. Personnel .................................................................................................. 32

F. Resources .................................................................................................. 33

G. Management Plan .................................................................................. 35
   Management Team .................................................................................. 35
   Goal, Objectives, Tasks, and Milestones ............................................... 36
   Ensuring Continuous Improvement ....................................................... 37
   Ensuring High Quality Products and Services ....................................... 37

H. Project Evaluation .................................................................................. 38

I. Strategy to Scale ...................................................................................... 39
Dynamic Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring

Challenging Concepts and Skills of Diverse Middle School Students

Michigan (lead), Wisconsin, Maryland, New Jersey, Nevada, and the Wisconsin Center for Education Research (WCER) at the University of Wisconsin-Madison (UW) as managing partner, propose to develop an operational set of performance-based, technology-interactive, formative assessment tasks, end-of-unit assessment modules, and related teacher tools aligned to the Next Generation Science Standards (NGSS) and the Framework of K–12 Science Education (hereafter, The Framework). Activate Learning Curriculum and the WIDA Consortium (in kind partners), will join the lead and supporting states and managing partner (WCER) in this project. This proposal will address two absolute priorities, Collaboration and Use of Multiple Measures of Student Academic Achievement, as well as the two competitive preferences, Implementing Internationally Benchmarked College- and Career-ready Standards and Assessments and Leveraging Technology to Support Instructional Practice and Professional Development. In addition, the project will address the invitational priorities, Developing Innovative Item Types and Leveraging Technology to Support Personalized Learning and to Improve Assessment Tools.

The tasks and assessments will use a progression-based and empirically-proven methodology called ONPAR. ONPAR's multi-semiotic methodology measures challenging science knowledge and abilities of widely diverse students, including English learners (ELs), those with learning and other disabilities, and literate, high performing native English speakers with no individualized education program (IEP). The sophisticated scoring algorithms underlying the tasks and modules will support differentiated learning by providing immediate, real-time diagnostic reports to students and their teachers and generating classroom-level reports for teachers about how and where their students may struggle. Associated materials and teacher professional development (PD) will provide detailed information to teachers about learning progressions and target middle school NGSS associated with all tasks, score interpretation guidance, and exemplar learning activities for students demonstrating different learning profiles. In addition, assessment activities geared to improving academic English language skills will be developed for each task and made
available to teachers. Rubrics associated with these activities will differentially evaluate student progress within their targeted zones of language achievement. All project tasks and materials will align with and act as exemplars of internationally benchmarked college- and career-ready standards and be broadly accessible to the diverse population of middle school students in U.S. schools.

In total, approximately 75 extended, performance assessment tasks, including learning-embedded tasks and tasks for the end-of-unit tests, along with their attendant tools and resources, will be developed, researched, and ready for operational use across 12 spiraled middle school science units. A series of technical studies associated with the tasks and tests will be conducted, and evaluations, educator feasibility, usefulness, and viability data associated with the test and assessment materials will be collected and analyzed. While the materials will not be associated with any one learning approach, the project will be conducted within the context of students learning one science curriculum—Activate Learning’s Investigating and Questioning our World through Science and Technology (IQWST)—so student opportunity-to-learn can be held as constant as possible. This will allow researchers to more clearly determine when assessment results are more likely a factor of the ONPAR instruments and materials, as compared to broad curricular differences.

Goals, Objectives, and Outcomes

The goal is to improve the assessment of challenging science learning for all middle-school students. We have six objectives with associated outcomes.

**Objective 1.** Produce 12 technologically interactive, technically defensible, end-of-unit performance diagnostic module assessments using 36 extended tasks (approximately three per unit) covering earth-, life-, physical-science, and chemistry, that use innovative item types, span Grades 6–8, are aligned to the NGSS, and are ready for operational use. **Outcomes:**

- documentation of evidence centered design methods to develop modules, tasks within modules, and items within tasks,

- successful classroom pilots with selected tasks, and refinement of tasks as warranted, and

- successful field testing of end-of-unit modules, with psychometric and statistical analyses of data.
Objective 2. Produce approximately 35–40 additional technology-based classroom-embedded extended performance assessment tasks that measure the same constructs as the module tasks, are designed for on-demand teacher use as they teach the 12 middle school science units, use innovative item types, have been empirically validated, and are ready for classroom use. Outcomes:

- documentation of evidence centered design methods to develop classroom-embedded interactive tasks and items within tasks,
- successful classroom tryouts with selected tasks, and refinement of tasks as warranted,
- successful piloting of classroom-embedded tasks and data analyses, and
- post-task interviews with teachers to probe the effectiveness of the learning tasks.

Objective 3. Produce individualized diagnostic student- and classroom-level reports generated immediately after students complete the tests and tasks. Outcomes:

- successful development and programming of scoring algorithms for measuring status and processes of intended knowledge and skills within and across items.

Objective 4. Produce and evaluate associated materials and related PD for the teachers to support implementation of tasks and additional formative assessment techniques and inform the interpretation and differentiated learning based on individualized results from the tasks and tests. Outcomes:

- development of task-specific teacher interpretative guides and 12 end-of-unit guides,
- development of a 3-day face-to-face PD institute and 12 online PD modules where teachers can preview the tasks and modules on their own,
- development of a community-of-practice space on the project website with resources, regular ongoing webexes with project staff to discuss tasks, and an online chat space for participants,
- development and implementation of teacher surveys to evaluate the institute and online products, and
- analysis of data.
Objective 5. Investigate the relationships between traditional and innovative item types that measure similar content or skills. Outcomes:

- science experts and staff identify ONPAR innovative items that measure similar content as IQWST traditional multiple-choice and constructed response items, and
- analyses of ONPAR-IQWST item dyads by type and group.

Objective 6. Investigate two types of multiple-measure aggregation schemes using the ONPAR end-of-unit modules. This will include studying the usefulness and validation of aggregating data at the (a) end-of-unit classroom-based level, combining scores from ONPAR module tests associated with a particular unit with relevant IQWST end-of-unit test counterparts, and (b) state accountability level, aggregating scores from the end-of-unit ONPAR tests with the end-of-year state test science results.

Outcomes:

- design multiple aggregation weighting schemes for both classroom and state purposes,
- conduct preliminary analyses of weighting schemes and methods and adjust as needed, and
- conduct analyses with final methods and weighting schemes.

A. Need for Project

Magnitude and Severity of Problem Addressed

Across the United States, the newly adopted college and career readiness standards have set forth rigorous educational goals for all students. In science, the NGSS promote the three dimensions of deep science learning: disciplinary core ideas, cross cutting concepts, and scientific practices, which includes development of increased conceptual understanding and critical thinking, as well as participation in challenging and authentic real-world behaviors as a critical and valued route to learning. Adopting curriculum that mirrors the key foci and spirit of NGSS is just the first step in promoting this type of learning and readiness, however. For all students to meet the rigor of the new standards, a variety of other resources are needed, such as newly-crafted, flexible accessible instructional resources, including aligned formative assessment tools, practices and materials to monitor ongoing learning, support for teachers and
students alike, and provide effective differential information and targeted activities so students can continue to make progress toward the standards. Further, PD programs that both prepare teachers for the instructional shifts associated with this type of challenging curriculum and build their capacity to properly assess today’s diverse students as they learn are also necessary.

**Magnitude of Need for the Activities**

Research shows that the most effective districts and schools use student assessment data on an ongoing basis to inform and guide plans for student growth; these districts also train teachers to thoughtfully interpret and use those data to plan for targeted future instruction (Datnow, Park, & Wohlstetter, 2007; Pellegrino, Wilson, Koenig, & Beatty, 2014). However, most teachers don’t know how to collect or make inferences from classroom evidence in order to inform instructional decisions for their students. As such, they need to understand how to collect data from ongoing classroom interactions that are part of learning, and access to effective formative assessment materials that can collect effective diagnostic data while they teach (Pellegrino et al., 2014; Morrison, 2009). It is also essential that teachers understand how to use tools often provided, such as learning maps. Two articles stress the importance of helping teachers effectively use these maps (Furtak & Heredia, 2014; Furtak, Morrison, & Kroog, 2014).

This need is compounded for today’s diverse students for whom there exist pronounced achievement gaps in all content areas. For example, on the most recent (2011) National Assessment of Educational Progress (NAEP) science assessment at Grade 8, the average scale score for the national sample of students identified as ELs was 48 points lower than that of students who were not ELs. Similarly, the average 2011 NAEP science scale score for 8th-graders classified as having a disability was 31 points lower than that of students without disabilities (2011 Nation’s Report Card, Science). The magnitude of these gaps illustrates both the severity of the problem and the relevance of the project. A key issue is that a large portion of these students express their knowledge in ways that are nonstandard. This is almost certainly due in part to the test accessibility issues, but also seems to be due to their creative ways of compensating for challenges they face (Kopriva & Wright, in press; Schleppegrell, 2004). Equipped with formative assessment resources and the PD needed to hear how these students interpret instruction and
express their abilities, teachers can identify students’ learning needs so they can respond effectively. Further, student-friendly formative assessment resources can help students understand their own learning progress and learning needs and take charge of their own pathway to college and career readiness.

**Nature and Magnitude of Gaps Addressed**

The proposed project is well positioned to address these needs. It will use the proven ONPAR methodology to produce the performance-based and interactive, diagnostic end-of-unit tests and learning tasks teachers will use during instruction. Novel techniques using multi-semiotic screen designs will present the problems and questions, and a wide variety of innovative item types will be automatically scored using sophisticated algorithms. Interpretive student and classroom score reports will be immediately available and will provide individual, targeted understandings of student performance. The ONPAR approach has been found to be effective to measure challenging skills and concepts for diverse students, and associated tools will provide activities and guidance for differential instruction of these learners. By focusing on timely classroom assessment aimed at rigorous standards, this project will accelerate the iterative interplay between enhanced teaching and learning to improve the ability for all students to participate competitively in challenging middle school coursework.

**B. Significance**

The proposed project has the potential to provide highly relevant, timely, and useful information and strategies to the assessment and science education fields. For years, science, measurement, and cognitive scientists have argued that the deep learning that prepares students for college and careers involves exposure at all grade levels to activities explicitly designed to elicit complex reasoning and metacognitive skills (e.g., NGSS, Appendix C, 2013; Duschl, Schweingruber, & Shouse, 2007; National Research Council, 2005). For students to learn effectively, these experts argue, ongoing classroom assessment reflecting the range of cognitive principles need to be seamlessly integrated into learning activities so teachers and students can track true progress over time (Pellegrino, Wilson, Koenig, & Beatty, 2014; Pellegrino, Chudowsky, & Glaser, 2001).
Some evidence indicates that ongoing formative assessments, progress monitoring, and formal embedded classroom assessments such as the instruments proposed in this project may be positively related to student achievement (Faria et al., 2012). Models of such classroom-embedded formative assessment tasks—and assistance in building and using them—have developed in the past few years (American Association for the Advancement of Science [AAAS], 2007; Black & Wiliam, 2009, 2004; Mislevy, Steinberg, & Almond, 2003; Pellegrino et al., 2014; Quellmalz & Haertel, 2004; Quellmalz et al., 2008; Wilson, 2004). However, exemplar tasks presented in static environments tend to carry a heavy linguistic load even as they refer to concepts and reasoning that can be demonstrated in multiple ways (e.g., AAAS, 2007; Hansen & Zapata-Rivera, 2010; Mislevy & Haertel, in press;). Further, technology-rich environments tend to require text-based constructed or selected-response even though the problem presentation and development of the assessment tasks is depicted multi-semiotically (Fife, Graf, & Ohls, 2011; NCES, 2011, 2012; Quellmalz & Silberglitt, 2010).

By focusing on using computer capabilities of animation, stimuli manipulation, and interactivity, as well as novel response screens, in order to present problems and harvest student responses, the ONPAR methodology reflects the varied ways students learn and reason in deep-learning science classrooms where the concepts and implications of the three dimensions are interwoven. In addition, this approach addresses access needs of students who face challenges with the language or literacy components of assessments because it simultaneously uses multiple stimuli to convey meaning. This is accomplished by presenting questions in virtual “real time,” using text as only one tool in an arsenal of semiotic ways of meaning-making. It also uses a wide variety of item types aligned to the ways learning tasks are presented in the classroom and how students might show or explain what they know.

These techniques are especially appropriate for considering challenging, cognitively complex, science questions and assessment scenarios that simulate authentic problems where students are allowed to progressively make choices and experience the consequences, respond to further stimuli, and demonstrate their solutions in a broader set of ways. These kinds of tasks, as well as the procedures used by the project to build, and score conceptual understandings as well as processes, represent significant advances in the
critical areas of inclusive, complex, performance-based, and authentic formative science assessment at the middle school level—undoubtedly an area in which a great deal more capacity is needed.

**Contribution to the advancement of theory, knowledge, and practices in three fields.** Within educational measurement the standard argument for common inferences has been made on procedural grounds: common content in tasks and a common approach for synthesizing and summarizing tasks and response data over tasks. The latter part of this argument required standardized conditions of observation. However, based on developments in instructional and cognitive psychology, evidentiary reasoning, and statistical modeling, we can now develop, implement, and test an alternative conceptual argument for common inferences. Rather than requiring standardized conditions of observation, the conceptual argument can be built on evidencing appropriate relationships among target inferences, the knowledge and skills of interest, necessary observations, the properties of tasks designed to elicit the observations, and situations where students interact with assessment requests. This approach suggests that data leading to common inferences may be collected under alternate conditions for different types of problems and solution requirements in a given assessment, for different students within an assessment system at a point in time, and by changes in conditions over time. However, the response opportunities to allow this flexibility must be present in the tasks and tests. The theoretical framework for this project draws on work in educational measurement, science learning and assessment, semiotics, and linguistics pertaining to the ways students comprehend and derive meaning from various semiotic representations.

The theoretical framework in measurement for accomplishing the defensible variation of task presentation conditions or novel response spaces is Mislevy and colleagues’ (2003) evidence centered design. While this approach has generally been used to build principled items of the same type that can be interchanged in tests (i.e., Quellmalz et al., 2006, 2008) or design tests using the inference-based approach as a starting point (for instance, see the new AP science frameworks), some researchers have used this argument as a starting point to include variable testing approaches for special populations within testing systems (i.e., Elliott & Thurlow, 2005; Kopriva et al., 2001, 2006). It has been used less often to demand a principled way to adapt the assessment of performance-driven learning, often a necessary
vehicle to teaching more complex and challenging subject matter and skills. To date it does not appear
that there has been a comprehensive evaluation of how different types of items supposedly measuring the
same construct targets affect inferences over measurement purposes, or over students, yet it stands to
reason that evidence centered design, properly implemented, can be the foundational basis for projects
such as the one we propose.

The second conceptual foundation is based on science learning and assessment. Since the 1980s, best
practices for K–12 science teaching and learning have evolved in accordance with various standards-
based reform movements (Lederman & Abell, 2014). These best practices recently underwent significant
shifts due to The Framework (2012) and resultant NGSS (2013). The conceptual shifts include teaching
science as the nexus of key science concepts (core ideas), the ways in which scientists work (practices),
and ideas that bridge disciplinary boundaries within the sciences (crosscutting concepts). This “three-
dimensional” learning eschews memorization of facts in favor of providing students with opportunities to
understand how science knowledge is generated and apply it while carrying out “real-world” science
practices (e.g. developing models, designing and carrying out investigations, and arguing from data).
Previous standards documents individually addressed these dimensions, giving students a fragmented
understanding of scientific pursuits and few opportunities to carry out the practices. The Framework also
emphasizes that for deep, connected learning, students focus on fewer core ideas critical for college,
career, and citizenship. To support students in building these understandings, the NGSS coherently
organizes a small set of performance expectations for students that span grade bands and increase in
sophistication over time. Thus, NGSS-aligned science teaching provides students the time necessary to
engage in core ideas through multiple practices while making crosscutting concepts apparent. In contrast,
attempting to address the number and breadth of standards in previous documents required more
superficial learning experiences (NGSS, Appendix A, 2013). In considering how to properly assess
science learning, experts recognize the need for coherent instructional systems that rest on aligned
standards, curricula, and assessments (Pellegrino et al., 2014; Duschl et al., 2007; Tucker, 2004). They
argue that greater alignment and content-measurement coherence can be realized when assessments
emulate students' firsthand activities in the classroom and are designed to provide information about students' conceptual, reasoning, and performance skills as evidenced over items. Classroom or "internal assessments" are used as an integral part of classroom instruction and include teacher-student interactions, observations, and end-of-unit tests. They also include student products Pellegrino (2013) and Ruiz-Primo and others (2002) refer to as "immediate assessments" that result directly from instructional activities, and "close assessments" that are closely tied to the learning experiences but not part of it. This project argues that using interactive student-task stimuli methods to evaluate the skills and conceptual sophistication of students is superior when direct demonstration of their strategies and understanding is possible.

The third foundation rests on literature from the fields of linguistics and semiotics regarding how students comprehend meaning. Within linguistics, researchers posit that discipline-specific academic registers may make it difficult for students to access content (Schleppegrell, 2004). Linguistic analyses that focus on the materials and interactions used in science education establish that language is central to learning science but other semiotic modalities are also play canonical roles in conveying meaning (Lemke, 1990). Students who struggle with academic registers have benefitted from systematic approaches using alternative semiotic representations, along with efforts to promote communication using innovative means of interaction (Echevarria, Vogt, & Short, 2007; Wright, 2015).

Semiotic research is focused on how different signs are used to convey meaning. Research in classrooms has shown that communication in educational contexts is inherently multimodal and relies upon visual, mathematical, and actional modalities for the expression of complex ideas (Kress, Jewitt, Ogborn, & Tsatsarelis, 2001; Lemke, 1991; O’Halloran, 2004). Investigations in science classrooms have shown that the patterned use of multiple modalities has become so established that the ways in which different signs are used are canonical. For example, science relies upon models (e.g., solar system, food chains, etc.) to express how the natural world operates in patterned ways. The array of non-linguistic signs and their conventionalized usages are powerful ways of communicating and representing concepts in classroom contexts. Drawing from linguistics (Saussure, 1983) and semiotic theory (Barthes, 1983; Kress, Jewitt, Ogborn, & Tsatsarelis, 2001; Kress & van Leeuwen, 2001, Peirce, 1931–1958), ONPAR
capitalizes on the affordances of different semiotic signs to create a grammar of task and item design that allows test developers to successfully communicate with test takers in novel ways. From a theoretical perspective, ONPAR strategically uses a variety of semiotic signs to capitalize on each sign's potentiality to best communicate with the diversity of test takers. The systematic usage of different signs within the assessment context results in the creation of a grammar of item design, which includes what signs are used and how (e.g., static visuals, movement, international symbols or other symbol systems such as in mathematics; interactional sequences, animations and simulations; access to native and non-native language via written text or sound), what support features are needed, how individual screens are laid out, how items unfold across screens, what types of interactive opportunities are needed for continuous engagement to achieve cohesion and coherence, and what tools test takers need to convey meaning. Successful communication with test takers is rooted in an understanding of different semiotic signs' potentialities and constraints, as well as profiles of diverse test takers and how the signs' potentialities and constraints interact with different diverse test takers' strengths and needs. Creating a consistent grammar of item design provides students the potential to access and create meaning within the assessment.

**Potential for generalizing from the findings of the proposed project.** The results of this project have the potential to yield several generalizable findings. First, the ONPAR formative assessment methods developed and researched have the potential to be applied to other content areas. Because these assessment methods aim to measure cognitively complex disciplinary knowledge and practices, they may translate (with relevant adaptations) to other content areas that also aim to measure challenging new college and career readiness standards (e.g., mathematics). Findings from this project will inform future work in other content areas.

Second, the assessment methods researched and developed here are likely to be generalizable in that they can be applied to meet needs of diverse students in other assessment contexts. The prior research grants that led to the ONPAR methodology investigated specifically how the measurement of challenging concepts and reasoning can be captured for diverse students (Kopriva et al., 2009, 2011, 2013; 2014, in press; submitted). This project will extend this work to study how the classroom learning tasks and end-
of-unit tests developed using the ONPAR methods are accessible for these students. Other publishers may, in turn, take up these methods to create accessible assessments that better communicate with a broad range of students.

Third, the field of formative assessment is in flux and in need of successful examples of how to use assessment methods to guide the teaching and learning process. The project proposes to design assessment tasks that ask questions about and track diagnostic underpinnings of more challenging concepts and skills, using research-based learning progressions. Well-crafted assessment opportunities that have specific multi-source characteristics can gather evidence pointing the way to future instruction (see Bell & Cowie, 2001; Black & Wiliam, 2009, 2004; Heritage, Jones, & White, 2010).

Finally, the PD program developed alongside the formative assessment tasks will help the field better understand the kinds of supports needed for teachers to better support diverse students. These types of performance tasks are used in the classroom and will complement such PD as The Next Generation Science Exemplar Learning System for Science Educators. The foundational underpinnings associated with ONPAR’s formative assessment work and the PD approach proposed here are based in much of the same classroom assessment and cognitive science literature and findings used to undergird the summative ONPAR approach.

**Extent to which the proposed project involves the development of new strategies.** The project will leverage previous work using the performance-based ONPAR methodology initially developed in three federally-funded experimental projects that investigated how to improve summative items measuring challenging knowledge and abilities for elementary and middle school ELs and non-ELs in science classes (Kopriva et al., 2009; Kopriva & Wright, submitted), elementary and middle school students with and without learning disabilities in mathematics classes (Kopriva et al., 2011), and ELs, students with learning disabilities, and native English speakers with no IEPs in high school Biology and Chemistry classes (Kopriva et al., 2013). Findings demonstrated that the methods significantly closed the gaps between how focal students performed on the ONPAR tests versus tests using traditional items measuring the same content and depth of cognitive demand, and also kept the control groups interested.
and performing better on the performance items but with much smaller differences between the two test types. In total, 156 cognitive labs were conducted during these grants and a summary of these findings can be found in Kopriva & Wright (in press). Currently, an ONPAR grant is beginning to research how these methods might be adapted to the classroom arenas. The project proposed here will build on this latest research grant, extending the development of diagnostic-effective tasks and more sophisticated scoring algorithms as well as developing useful teacher materials and PD.

C. Project Design

In this proposal, the first absolute priority, Collaboration, is met by state partners working with a university and a curriculum organization to develop research-grounded and empirically-based products measuring challenging content and skills learning of all students. The second absolute priority, Use of Multiple Measures of Student Academic Achievement, is addressed by including multiple item types in all tasks and tests, and researching how to combine assessment scores using traditional formats with those from the proposed standardized performance-based products. The first competitive priority, Implementing Internationally Benchmarked College- and Career-ready Standards and Assessments, is met by using industry-recognized evidence centered design methods to develop the proposed products to be firmly aligned with The Framework and NGSS. The second competitive priority, Leveraging Technology to Support Instructional Practice and Professional Development, is met by, first, developing the performance-based tasks and modules with electronic scoring algorithms to produce individualized student and teacher reports. The reports differentially interpret student performance relative to the relevant learning progressions, identify misconceptions or lack of skills, and present guidance about further instruction based on the individualized reports. Second, a blended model of presenting PD and the development of a breadth of teacher materials covering different topics supports teachers in learning the multiple semiotic ways of assessing students, and encourages them to build capacity to formatively assess their students using techniques shown in the tasks, discussed during PD, and/or available on the website. The face-to-face PD institute will provide extended learning time with teachers, and the online PD
modules, webex meetings, resources on the community of practice website, and chat space will also support and provide ongoing resources for participants. The two invitational priorities, *Developing Innovative Item Types and Leveraging Technology to Support Personalized Learning and to Improve Assessment Tools*, are met by using the empirically-supported ONPAR innovative item design, item response space methodology, and novel scoring techniques to improve assessment tools and products, while also delivering individualized student and teacher reports geared to differentially targeting future instruction for relevant students.

This proposal will focus on six objectives associated with the primary goal of improving the assessment of challenging science learning for all middle-school students. All products, tools, and materials will be empirically investigated by working with districts and schools that use the IQWST curriculum, a middle school science curriculum aligned with the three dimensions of NGSS and The Framework. For this project, the publisher of the IQWST curriculum—Activate Learning—has committed to identifying participating districts, schools, and teachers. The chief academic officer, one of the PIs of the grant that wrote the IQWST curriculum and former University of Michigan professor, also serves on the project leadership team. To determine accessibility of the tasks and module tests for students, all qualitative and quantitative student data will be analyzed by student group: native English speakers with no IEPs, lower and higher English proficiency ELs, students with learning disabilities, and other students with disabilities that teachers think might benefit from an alternative form of assessment. Also data from students from lower and higher supplemental educational service schools (as defined by percentage of free and reduced-price lunch participants), and struggling and good native English speaker readers with no IEPs, will be investigated.

**Objectives 1-3: Development of tasks, module tests, scoring, and reporting.** This project will build approximately 75 technology-based, extended performance-based tasks, collecting technically-defensible validity, reliability, and fairness data to support their use both in the end-of-unit tests and as classroom-embedded stand-alone tasks teachers can use while they are teaching. All ONPAR assessments will use multiple measures to collect data about students’ knowledge and abilities, including different
innovative item types as well as multiple- or dichotomous-choice item types. The tasks and end-of-unit tests will measure focal knowledge and abilities within the curriculum of IQWST’s 12 science units, and as aligned with NGSS (see Table 1).

The extended classroom learning tasks will use the empirically-proven ONPAR assessment methodology, include 7–12 items each (yielding 20–30 score points), and provide specific diagnostic feedback about content and processes. The tasks for the end-of-unit assessment are expected to be shorter so they can be completed within a class period. Approximately half of the extended tasks will be created to fit NGSS task specifications specially designed for this project within each of the 12 units. The other half will mirror similar specifications and task and item targets, but within different contexts relevant to each unit and most likely with additional or adapted items. The focus of the classroom-embedded learning tasks and the end-of-unit tasks will differ in that the former will collect smaller grain building block data while the latter will be looking for trends over as well as within tasks. The extended task design allows for adequate breadth of content coverage per task while also providing rich contexts of shared interactive stimuli and targeted diagnostic data.

*Table 1: The 12 IQWST and Project Units*

<table>
<thead>
<tr>
<th>Life Science</th>
<th>Physical Science</th>
<th>Earth Science</th>
<th>Introduction to Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where Have All the Creatures Gone?</td>
<td>Can I Believe My Eyes?</td>
<td>How Does Water Shape Our World?</td>
<td>How Can I Smell Things from a Distance?</td>
</tr>
<tr>
<td></td>
<td>Stop While Others</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Keep Going</td>
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The item writers will use established research-based learning progressions to design tasks to pinpoint how well students understand, reason and demonstrate focal knowledge and abilities, as well as to capture process data and provide insight about why and how students may misunderstand or struggle to use effective skills. A few tasks will use immediate feedback screens while students take the formative assessment. We plan this feedback to be interactive, indicating to students whether their response is correct or insufficient, and, if insufficient, asking more pointed questions and/or suggesting a skill or piece of knowledge to consider. Students will be able to change their response(s) based on this feedback, and both responses will be tracked.

Programmers will build sophisticated scoring rubrics that prior ONPAR research has shown to function well. These algorithms will undergird the tasks and modules to provide immediate results. In both classroom tasks and end-of-unit assessments, detailed student reports provide both numerical results by subsection of the tasks and individualized diagnostic interpretations of what different scoring patterns may suggest, for instance apparent misconceptions, process skills that appear to be weak or misguided, or areas where students seem to understand more deeply. Teachers will also receive classroom reports detailing how and where students are collectively doing well or having trouble. Student and classroom reports will be supported with teacher materials explaining the relevant learning progressions, suggesting further activities to use with different student profiles, and giving other guidance aimed at successfully differentiating future instruction.

**ONPAR methodology.** The ONPAR methodology was built to create dynamic and interactive technology-based tasks that measure challenging concepts and reasoning in science and mathematics for a wide range of students in elementary, middle school, and high school. To communicate authentic, rich contexts and questions, ONPAR uses multi-semiotic methods and stacked, integrative techniques to clearly convey meaning about problems that embrace the fullness of inquiry-based performance while also facilitating meaning for students with different communication strengths and challenges. Innovative item types then measure knowledge and abilities in ways consistent with and aligned to the more
cognitively complex targets arising from the innovative problem and question environments. Four aspects of the ONPAR methodology are significant.

First, in individual research labs and larger experimental clinical trials (Kopriva et al., 2009, 2011, 2013, and 2014 submitted; Kopriva & Wright, in press) researchers have learned how to design item and task scenarios that use multiple stimuli to convey meaning without crowding computer screens or cognitively overwhelming students. The methodology uses an engaging environment punctuated by the purposeful unfolding of the problem “story,” continuous interaction among students, stimuli and queries, and various seamless supports that complement each other and add richness to the task without compromising the integrity of the item targets. **Attachment I** shows a brief example of how typical problems unfold in an animation. In order to engage and deepen the students’ connection with the problem “story,” it is not unusual for scenarios to puncture the problem development with brief interactive questions or ask students to, for instance, propose and view the effects of simulated possibilities. To maintain precision in what the items intend to measure, task questions are presented in full sentences of written English text with oral English and native language translations. Animated and static visuals, symbols, and/or halo rollovers support non-target language without cueing responses. Each screen that uses some multi-semiotic stimuli to convey meaning includes a text box (opened by clicking), which provides in academic English text the full meaning of what is occurring on screen for those who prefer or want to confirm their understanding via this communication mode.

Second, the methodology has developed and empirically validated a broad set of innovative item types deliberately designed so students can engage with interactive, multi-semiotic performance settings to demonstrate and explain their knowledge and skills with multi-step, thoughtful, and provocative problems in ways that do not rely on traditional item formats. Concurrently, IT software engineer researchers have been working with ONPAR response spaces to build sophisticated scoring algorithms that do not depend on hotspots (where specific element must fit into a specific pre-assigned spot on the screen). These advances allow the ONPAR response spaces to automatically score much more fluid responses. From the wide range of innovative item types, see **Attachment II** for sample screenshots from
different grades and content areas. While the questions associated with the exemplar item types may or may not be especially complex, they are representative of the innovative item types that researchers have developed and tested.

Third, the methodology values being able to ferret out and measure depth of knowledge and skills with relatively high probability of certainty (i.e., minimize the effects of guessing and other irrelevant reasons students might respond correctly). Figure 1, for example, shows a compact ONPAR elementary science item that measures if students understand the effects of light and gravity on plant roots and shoots. On one screen the item requires students to correctly pair and place pictures of roots and shoots in three different situations within a carefully designed response environment. Triangulation of student responses strengthens the test’s ability to correctly gauge the students’ depth of knowledge, minimizes the impact of guessing, and suggests where they might have difficulties.

**Figure 1: Roots and Shoots**  
**Figure 2: Input Output**

The formative tasks proposed will gather a mix of diagnostic building-block data as well as data about students’ mastery of challenging concepts, concept formation, and reasoning skills. This will allow test and task users to point to how, where, and why the students may struggle. The tasks will also collect process information. This involves how they move between screens, respond within screens, and build and demonstrate their response, including how they complete multistep problems. This generates insight
into differences in student processes not apparently related to group or ability status. Figure 2 depicts one of a few related screens on a middle school math task where algorithms track how students complete the table, how and when they complete the function “rule,” and if and how these sequences are similar or different on the different screens. Process information gleaned from tasks like this can show how students problem solve and provide information to teachers about preferences or skill concerns so further instruction for the students can be most efficiently targeted.

Fourth, as noted, this multi-faceted approach has been found to be valid and effective for conveying meaning about complex content and cognitive abilities over several experimental and qualitative studies. It is also been found to be valid, effective, and accessible for conveying meaning about challenging content and skills to and from a wide variety of students. These include students with high content and high literacy abilities, as well as those who struggle with the language of traditional assessments, such as struggling readers, ELs, students with learning disabilities, other students with speech and language and attention-deficit problems, and students in at-risk schooling (Kopriwa and others, 2009; 2011, 2013, in press, and submitted). The results have been remarkable, demonstrating that a large number of students who struggle showing what they know on tests with typical item formats can and are learning complex skills and subject matter. Using innovative presentation and response formats, the ONPAR methodology seems to improve the measurement capabilities for diverse students unable to access typical standardized tests. At the same time, the studies have shown that the methodology not only does not disadvantage students who do well on traditional language-based tests but facilitates the broader measurement of students’ challenging concepts and skills. The researchers argue that making challenging assessment questions accessible to most students, in classroom tasks and tests such as those proposed here, should encourage and improve the active teaching of more complex concepts and abilities to these populations, not limiting them to learning primarily basic knowledge and skills.

**Objective 4: Development and Evaluation of Task Related Materials and PD.** Teacher materials will consist of interpretive guides for all extended classroom learning task and materials for the 12 end-of-unit tests. Guides will include a description of the learning progression set within the standard’s context
and its relevance for the tasks, how the report interpretations fit into these progressions for individual students, and differential learning activities for different patterns of item scores in the task.

The learning task assessment guides will be produced with the following format: (1) background on standards assessed in each task and related learning progressions, along with recommendations on when to implement the task instructionally, (2) screenshots of each task with explanations of the graphics and animations and notes on how the tasks convey meaning so teachers will feel comfortable with the novel presentations and response formats, (3) interpretive guidance relative to the differential patterns of scores within the tasks that were part of the individualized student reports, and 4) specific science activities aimed at addressing students with different score patterns, and academic language development activities associated with task targets to support language development.

The end-of-unit teacher guide will focus more on the “gestalt” of the unit and target standards, as well as how each test task contributes to the meaning in the end-of-unit test. The materials will also provide more information about informal formative assessment techniques teachers can use on an ongoing basis (e.g., guiding questions for individual and group use and why and how these might be appropriate for various purposes). The guide will include a broader set of academic language development activities associated with the science targets to provide exemplars to both science and language teachers regarding how to support academic language skills within the contexts of the specific science targets.

To encourage and support teachers to more fully understand and use the assessment tasks and what they say about the learning of their students, the educators will participate in a blended model of PD including a PD institute, and a community of practice website with resources, online PD modules, and online project meetings and chats. These activities are discussed in the services section of this proposal.

The teacher materials, PD activities, and meetings will be evaluated through short surveys asking teachers to rate their quality; usage data will be collected on the online PD modules to determine how often teachers use individual materials; and attendance in district webex meetings will be collected. This information will be used to refine the materials and activities, and to gauge effectiveness of materials and tools in supporting teachers.
Objectives 5 and 6: Multiple Measures Mini-study and Aggregation Schemes. Multiple item type measures will be used in all ONPAR assessments, including a range of innovative item types and some multiple- or dichotomous-choice item types. The studies identified in Objectives 5 and 6 will lay validity groundwork for building defensible tests using multiple measures and for multiple test measures aggregation arguments if and as the assessment products completed for this grant are used in that capacity. By studying the relationships between the items using traditional item types and the ONPAR items or tasks for each of the identified groups, results can inform the role of item type and how they might interact with target content/processes/dimensions of NGSS, and the role of item type in measuring targets with certain content and cognitive specifications. Further, the study results can add to the discussion of how to improve item selection in tests, including computer adaptive tests, when criteria for making decisions include not only item difficulty but student profiles, cognitive and content complexity of the item or task targets, how item type affects the interaction between student profiles and content/cognitive complexity. Findings can also inform the weighting of item types that measure certain targets or otherwise influence how aggregation schemes may be built to fairly improve the measurement of all students. Studying aggregation schemes at both the classroom and state accountability levels should help inform how teachers, schools, and districts can interpret data collected from multiple types of item measures to make sound differential instructional decisions for their students, and if and how aggregating end-of-unit scores from performance-based ONPAR type tests can enhance results from the state tests where most of the data are collected using traditional item types.

Development Procedures

See Attachment III for the timeline outlining the flow of the task and end-of-unit test development, materials and PD development and implementation, and research activities over the 4-year project. Once the grant is awarded, project leadership will review and finalize project design and components and undertake hiring staff. We anticipate in-person partner leadership meetings twice in Years 1 and 2, and once in Years 3 and 4. Each year, we will conduct one in-person and one webex with the technical advisory committee (TAC); additional consultations with TAC members will be as needed. The external
evaluation will consist of formative data collection and analyses each year, with results presented to leadership in order to refine or readjust schedules or activities. A summative evaluation report will be presented to the partners at the end of the project period. The evaluator and a member of the TAC will be given access to all segments of the project.

To produce the tasks and final end-of-unit tests, project staff will identify assessment targets for the 12 project units in light of the IQWST curriculum, NGSS standards, and available learning progression maps. The task and module development team will consist of science education, assessment, educational linguistics, and IT staff, with guidance from external content and formative assessment educators, partner staff, and consultants. As unit targets are finalized, staff will outline module assessment targets and their task targets, valued points in each unit where individual classroom learning assessment tasks might be useful for the teachers, and the assessment targets for those tasks.

The project will use evidence centered design procedures (Mislevy et al., 2003) to develop the tasks. This begins with designing construct validation arguments and documenting the target content and construct alignment links among the NGSS, intended test and task targets, and the tasks and tests developed in this project. We will develop the extended tasks for the end-of-unit tests and learning tasks in three cycles. For each, task writers, using conceptual targets identified previously, will specify target evidence at the module and task levels and then explore how to convey meaning within and across task item designs to produce tasks that meet the stated claims of the intended targets. Following these guidelines, comprehensive storyboards for end-of-unit field-test module tasks and learning tasks will be constructed, along with detailed scoring rubrics involving both content and process, and aligned with the learning progressions and consistent with with task building. Storyboards will lay out the design and specifications of what and how the problems unfold on the main screens, rollovers associated with text, visuals or symbols, with contextual and response space tools on the relevant screens, and with instructional pop ups as relevant. For all screen particulars, writers will specify directions for developing the movement-based elements such as simulations, animations and interactive sequences, or elements such as other visual stimuli, symbology, or sound. Text, audio, visual, or response stimuli from earlier
screens will carry forward onto later screens as relevant so students have what they need on the current screens. Screens have a standardized organization to keep students focused on the focal content rather than the screen layout. Standardizing aspects include a dashboard with directional controls; oral, translation, and screen text buttons; pop-up instructions or animated help icons that demonstrate how the functions of the response screens operate; a standard screen organization (color coded or placement specific) where new, previous screen, and response spaces and response tools are located; and standard pacing lengths and speeds, palletes, type fonts, and cohesive visual “look,” “feel,” and styles. The balance of focal and facilitative elements on the screens is critical: the focal aspects present the problems, questions, and response environments, while the facilitative aspects retain the coherence of the task. Researchers have spent extensive time learning how to concurrently introduce multiple semiotic devices so students can “hear” what the screen is saying in multiple ways while at the same time not being confused and overstimulated.

As the storyboards are completed, designers, software programmers, and engineers will mock up the screens and animate or otherwise produce programming language to allow all the pieces on each screen within a task to coalesce. Audio files of the oral item questions will be developed in English and at least three other languages. Engineers will also develop comprehensive scoring algorithms to reflect the detailed rubrics and provide data to students and teachers immediately as students complete the assessments. Regular internal reviews will maintain the integrity of all parts of the tasks and scoring and the warrants and claims. Short interactive tutorials, available throughout the project, will introduce students to various elements on the screens, how they work, and why they are there.

To determine if the tasks function as intended, we will conduct small pilots within each cycle, reviews by the external educator early and late in each task development cycle, and external bias reviews once during each cycle. Data will help us refine tasks and assemble modules for field testing.

 Concurrently, the associated teacher materials and PD will be designed, developed, and evaluated by external educators within the first cycle and then refined and adapted to address the tasks and modules in later cycles. Student and classroom interpretative reports of scoring algorithms for both the learning tasks
and the end-of-unit modules will be developed within each cycle and vetted for use in field tests. Materials will include interpretative task and module criteria and explanations from associated learning progressions, as well as conceptual science-based and pedagogical resources. They will also include relevant instructional activities related to different scoring profiles and designed to inform differential instruction.

**Data Collection and Analysis**

To produce assessments that are operational we need to perform a series of industry standard reviews, data collections, and psychometric and statistical analyses. We also will evaluate science assessment teacher materials, PD associated with the science tasks, and the relational study among item types. We will use the validation study focusing on different aggregation schemes at the classroom and state accountability levels to investigate if aggregation schemes improve how well aggregated and unaggregated student scores compare with an independent measure of teacher ratings of students' knowledge and skills of target topics.

**Task and test module data collection and analyses.** We will follow standard methods for making operational tests to document the technical quality of the ONPAR end-of-unit assessments and learning tasks. This includes using evidence centered design for the tasks, internal reviews, IT programming, external reviews of selected tasks by science teachers, external bias reviews, small pilots from different geographical regions and districts with scores and feedback from teachers about student and teacher reactions, revising tasks based on the reviews and pilots, and assembling tasks into end-of-unit modules for field testing.

There will be four rounds of field tests: one for each cycle of task development and one for tasks needing revision. We will field test the tasks and evaluate the effectiveness of the materials and PD. Participating field test sites will be stratified geographically, by supplemental educational services, and by urban/suburban/rural (sensitive to diversity over race and ethnic groups, including ELs and students with learning disabilities). We will select final sites from the districts currently using IQWST. During field testing, we will collect data from IQWST items and tests, as well as related student, school, and state
science test data, and teacher rating data documenting their students’ knowledge and skills based on classroom observation. Teacher and IT training will be completed after schools and teachers agree to participate in the field tests, teachers and students will receive log-in instructions, and field testing will be conducted online within a rolling testing windows as agreed upon with schools/districts. A help desk will be available. Student reports will be available to students and teachers immediately after students complete the tests. Classroom reports for the teachers will be available after the data are available, although the operational assessments will be able to deliver these data immediately after classrooms complete testing.

We anticipate that approximately 30 teachers will review task and teacher materials during development, and about 30 educators will participate in three bias reviews (10 educators/ review) prior to field testing. Further, approximately 400 students and six teachers will take part in piloting, and about 3,000 students and 60 teachers will participate in field testing for a grand total of about 126 educators and 3,400 students participating in the project. Locations for piloting will likely be in Wisconsin and Maryland. Locations for field tests will be stratified geographically and demographically. In preliminary discussions with Activate Learning and Chicago, Baltimore, Los Angeles and Palm Beach, Florida district personnel, it is expected that these districts as well as ones in participating states (Michigan, Maryland, Nevada, New Jersey, and Wisconsin) will take part.

Field test data will be cleaned and placed in usable datasets. For the ONPAR tasks the 2-parameter item response methodology will equate, scale, and analyze the information functions, and then psychometric analyses of these data, such as difficulty and discrimination parameters and reliability tests, will take place. We anticipate conducting hierarchical linear modeling (and possibly other statistical analyses) to determine the impact of district, school, and teacher on the results.

In the mini-study regression analyses, pairs of ONPAR innovative item types and IQWST traditional items measuring similar content will be compared to investigate the relationships between these formats for different student groups and science content. District and school effects will also be studied. Further, the ONPAR and IQWST end-of-unit scores will be differentially weighted to study aggregation schemes
for improving classroom-level measurement, and the ONPAR test module scores will be differentially weighted with the state science test scores to investigate how classroom end-of-unit scores might provide value adjusting student state scores for accountability purposes. Evaluation data from the teacher materials and the PD activities will be coded and analyzed as well to document the effectiveness of these project components. The task usability and interview data from participating teachers will be analyzed also to determine the feasibility and viability of the classroom learning ONPAR tasks that are available for teachers to use as they teach the relevant units. After preliminary analyses are completed, final tasks will be placed into operational end-of-unit tests, and the teacher materials, PD, and website resources will be refined as necessary and packaged for operational use to support the task and tests.

**Evaluation of task/module teacher materials, and PD.** We will administer detailed surveys to teachers following each PD institute to examine how prepared teachers feel to implement the assessment tasks and modules, and to examine what other institute information was useful. A second survey after field testing will query participants about the quality of the teacher materials and the extent to which they felt that the face-to-face institute, website, online PD, and webexes supported the implementation of the tasks and modules and added to their formative repertoire. We will interview a few teachers from different districts to obtain additional qualitative information. The surveys and interviews will ask teachers to rate quality, identify materials and resources that were useful or not and why, and provide evidence of how they used or were planning to use formative suggestions discussed in the materials or various PD and chat space interactions. Usage data will be collected on the online modules to determine how often teachers use individual materials; attendance in district webex meetings will also be collected. We will code and analyze the data to examine the effectiveness of the various materials, tools, and PD components in supporting teachers to implement the tasks and modules.

**Mini study of item type relationships.** This study will use regressions to inspect relationships between different item types measuring similar content or skills, using one of the item scores, group, grade, school, and other student demographics as independent variables, and one of the item scores as the dependent variable. We are interested in how a traditional item type relates to item types found in the
ONPAR tasks. Potential item dyads will first be inspected by intended item targets to determine which dyads can be studied. The students’ IQWST and ONPAR item data will be collected during field testing, and the school and student data will be collected during the same semester. To evaluate the discrimination of items within the item dyads, researchers will also examine the item discrimination parameters from the 2-parameter IRT analyses completed after field testing. Results will be completed by group.

**Studying multiple measures aggregation schemes.** A pair of validation studies will investigate different multiple measures aggregation schemes at the classroom and state accountability levels. One study will examine if aggregation schemes between select IQWST and ONPAR end-of-unit tests at the classroom level can improve how well student scores from differently-weighted aggregation schemes compare to scores from an independent measure. The other study will inspect how well aggregation schemes of student scores on the state test and scores on the ONPAR end-of-unit tests compare when weights from the state and end-of-unit tests are varied. The independent measure proposed here is the teacher rating approach validated by Trends in International Mathematics and Science Study researchers. This approach has been found to be effective in successfully differentiating mid-grain content topic knowledge and abilities with regularity, and will be used here for teachers to rate their students’ knowledge and skill levels on identified topics based on observation of their classroom work throughout the year. The ONPAR and IQWST data will be collected during field testing, and the state data will be collected from participating districts the same year as the field testing occurs. Methods and differential weighting schemes will be discussed with the TAC and a preliminary analyses of the techniques and schemes conducted. After adjustments, if any, the analyses will focus on improvement between the aggregation scores and the comparison measure, and also on if there are group differences associated with the aggregation schemes. We anticipate that sample sizes by group and cell will be sufficient so that generalizability claims can be made.

**Dissemination**

We plan several streams of dissemination. First, we will hire science-education staff active in science reform who have like-minded networks and who are interested in writing white papers throughout the
project and presenting at professional conferences. Along with the key personnel from measurement and educational linguistics, this brings together a suite of staff that value writing early and often during the project, including compiling findings and drafting articles, and who value disseminating results to their respective professional research and applied settings. Second, partnership with Activate Learning and WIDA offer rich opportunities for dissemination. Activate Learning is active in highlighting classroom assessments in alignment with the curricular aspects of three dimensions in NGSS and The Framework at professional educator meetings, through networking with companies and clients, and while connecting with districts and schools nationwide. We have access to WIDA’s network communications and meetings, and therefore can engage WIDA’s member states and its content, assessment, and EL staff. Third, the project website will include white papers, project information, materials, updates, and associated resources. We will build and maintain a listserv and connections on social media. Fourth, we plan for two rollout meetings with WIDA and the Council of Great City Schools, with which we share ongoing work and results.

D. Project Services

The project proposes to provide services through a blended model of PD including face-to-face meetings prior to using the learning tasks and field testing, and online meetings while tasks are being used. Research indicates that effective PD is ongoing and sustained over time (Wei, et al., 2009), and, as such, the PD will be offered over several months totaling 40-50 hours of instruction and support. The PD will include both group and individual learning opportunities; teachers opting to obtain seat hours (graduate credit) will also complete a reflection activity. Through the PD program teachers will:

- participate in a 3-day face-to-face PD institute to prepare them to use project materials

(approximately 24 hours). Teachers need foundational knowledge about new teaching strategies, ideally through hands-on experience (Roy, 2005). The project PD institute will consist of (1) hands-on learning related to the relevant NGSS covered in each task and end-of-unit assessment, (2) trying out formative assessment techniques for diverse learners, (3) hands-on interaction with ONPAR tasks,
(4) guidance on reading and using the differential student and teacher classroom score reports, and (5) re-teaching and enhancement strategies, including guidance on academic language development associated with the assessment tasks. The PD institute will be led by an experienced member of the project staff; after cycle 1 field testing, past participants will also be asked to participate as mentors.

- **Utilize online PD modules (approximately 6 hours).** Online PD modules will provide a synopsis of the NGSS covered, examples of tasks with guidance on how to interact with them, related formative assessment techniques, scoring information, and suggestions for re-teaching and enhancement. The modules, hosted on the project website, will be available for viewing on-demand.

- **Attend online coaching meetings during implementation and download additional science and formative assessment resources (approximately 10 hours).** Studies indicate that coaching supports teachers as they develop a new practice (Batt, 2010; Knight & Cornett, 2009; Stephens et al., 2007). As such, the project will host regular webex meetings so participants can meet with a mentor to discuss how to align formative techniques to deep science learning. The meetings will focus on teacher use of ONPAR materials, troubleshooting, and answering questions. The website will also have an ongoing chat space where educators can post articles, resources, questions, or concerns. Project staff will respond to inquiries from the chat space.

- **Reflection Activity (option for those obtaining seat hours; approximately 5-8 hours).** Teachers will write a final paper on formative assessment techniques with diverse students to reflect on their experience with the project and what they have learned from it as a culminating activity. Participants will be encouraged to post their papers on the project website; teachers who write reflection papers during early cycles of field testing will be invited to present at webex meetings in subsequent cycles. Providing foundational knowledge and ongoing support through the PD services will help ensure that teachers have a deeper understanding of the standards, materials, formative assessment techniques, and gain better insight into how to best work with diverse learners to support their unique learning needs.
E. Personnel

Andrew Middlestead, Michigan Department of Education (MDE), serves as the Director of the Office of Standards and Assessment and oversees the development, design, administration, and reporting of all statewide student assessments. He will oversee personnel at MDE who coordinate grant activities.

Dr. Rebecca Kopriva, UW, PI, is a measurement specialist who will oversee all aspects of the project’s development, research, data collection, and data, devoting 25% of her time per year to the project. Dr. Kopriva has served as PI on many federally-funded grant projects of similar size and scope, including the four prior ONPAR projects. In addition, Dr. Kopriva is a tireless advocate for assessment reform to improve the measurement of challenging knowledge and abilities, and doing so for all students. A former state assessment director overseeing innovative classroom as well as summative testing, she has authored many articles, chapters, and books.

Laura J. Wright, UW, co-PI and Project Manager, will devote 80% time managing day-to-day aspects, including task and PD development, recruitment, and communication among staff and partners. Dr. Wright is an educational linguist and qualitative expert. She has worked for more than 10 years on federally-funded science and language education grants as a researcher and project manager, including four ONPAR grants.

Kathryn Drago, UW, will be the lead science task writer, devoting 100% of her time to the project. She is ABD in science education where she worked with primary writers of NGSS and science reform curriculum materials, and she currently works as the lead science writer on the ONPAR formative assessment project. Her deep knowledge of NGSS has translated into building creative, defensible ONPAR tasks, as has her middle school science teaching experience and research methods expertise.

ONPAR project personnel will also consist of a full-time science assessment task developer and a full-time science education specialist with experience identifying activity resources and developing and implementing the PD. We will also hire a full-time researcher with background in qualitative and quantitative research methods, one graduate student with teaching experience, and a quantitative expert in psychometrics and statistics. We will contract with WCER Technical Services, which has extensive experience working with the ONPAR projects, to design, engineer, and program the ONPAR tasks, modules, scoring algorithms and interpretative reports.
Activate Learning’s staff will participate in the project, in kind. **LeeAnn Sutherland, PhD**, chief academic officer at Activate Learning, will serve as a member of the leadership and TAC. Dr. Sutherland was a **PI** on the NSF grant that developed the IQWST curriculum. Activate Learning staff will cover recruiting and participate in developing materials and services. **WIDA** staff will participate in kind as well, advising on the development of PD materials, plans and services, and operational test development.

The **TAC** consists of experts with a high degree of experience in the disciplines informing this project’s conceptual and operational underpinnings. Once per year, members will meet and participate in a webex, with additional communication as relevant. Besides Dr. Sutherland, the members are Dr. Jim Pellegrino (UIC), cognitive-science expert and a primary writer of NGSS; Dr. Amelia Gotwals (MSU), science education expert and on the NGSS development committee; Dr. Steve Sireci (UM-Amherst), statistician and psychometrician; and Dr. Martha Thurlow (NCEO), expert on matters related to students with disabilities.

**Dr. Phoebe Winter** will be the external evaluator. She is a former Vice President at Pacific Metrics Corporation, was a state statistician, a technical expert with a national organization, and a nationally recognized expert in educational measurement research and development. Her work focuses on improving educational assessment and accountability programs, especially their validation efforts.

**F. Resources**

As lead state, Michigan, will act as fiscal agent for this proposal, using the staff resources within the state’s education agency to ensure that reporting and fiscal requirements are met. The MDE Director of Standards and Assessment will oversee two part-time employees; one employee will serve as a subject matter expert on assessment and the other will coordinate financial and reporting activities. The PI, co-PI, project manager, lead science task writer, and IT staff are housed within the managing partner, WCER, and have access to the resources of WCER at UW. WCER is one of the nation’s oldest and most highly esteemed university-based education research and development centers, with annual outside funding exceeding $40 million. Much of the research work at WCER focuses on improving teaching, learning, and assessment, and it is home to centers for research on the improvement of mathematics and science education from kindergarten through postsecondary levels, and the strategic management of human capital in public
education. A part of the School of Education, WCER projects are supported by WCER’s business and other grant administration services; technical services; and communication and dissemination services. The Business Office provides projects with budgeting, forecasting, accounting, and financial management. Technical Services provides multimedia services, custom software development, and computer support for more than 600 networked computer systems. Data warehousing and network operations are supported by more than 60 servers. This provides WCER with the capability to manage data sets containing sensitive student and school information.

The project team will benefit from a partnership with Activate Learning, the publisher of the IQWST curriculum for middle school. Activate Learning is being successfully enacted in 25 states and more than 50 school districts. IQWST tends to be the curriculum of choice in districts that emphasize students’ deep learning of core science concepts and engaging students in the work of scientists as they read, write, and do science in every lesson. The developers of IQWST had lead roles in developing The Framework and the NGSS, initiatives. The tenets that undergird The Framework and NGSS are those on which IQWST’s design and pedagogies and practices are based. Activate Learning’s close ties to and deep understanding of The Framework and NGSS, and its experience operationalizing the kinds of lessons within which the ONPAR tasks will be used, are vital to the success of this grant.

The team will also benefit from close proximity and collaboration with WIDA, a 36-state consortium housed in WCER. Foundational resources developed by WIDA include the English language proficiency assessment ACCESS for ELLs®, Spanish Language Arts Standards, and a thriving PD department. WIDA currently employs more than 100 staff, providing assistance, training, and support to improve EL language and content educational outcomes. WIDA staff will provide in-kind consultation regarding test development, PD, and EL expertise, and the marketing reach of WIDA Consortium’s 36 states and hundreds of districts makes it a valuable and welcome partner.

The budget outlined in this proposal is adequate to support the objectives of the project. We believe the costs of building the novel multi-semiotic classroom tasks and modules proposed here are inexpensive relative to the return on quality and depth of information about the students’ mastery of science.
knowledge and abilities, and on the diagnostic value of providing specific, individualized feedback to the broadest set of diverse students possible. Further, by producing standardized performance tasks that take advantage of tech-based innovative advances for conveying meaning, are technologically-delivered, auto-scored and immediately available individualized interpretative reports, the products are cost beneficial compared to hand-on tasks, hand-scored responses, and costs associated with transferring results into reporting structures. Finally, the accessibility of the products and the depth of information that can be obtained about learning for these students makes this project particularly significant and noteworthy.

G. Management Plan

Management Team

Core ONPAR project staff will comprise four teams: (1) partner leadership, (2) test development, (3) associated teacher materials and PD, (4) research, data collection and analysis. The leadership team will be responsible for overall management of the project and consists of Rebecca Kopriva, Laura Wright, Andrew Middlestead, LeeAnn Sutherland, and Tim Boals (Executive Director, WIDA). The test development team will comprise the science task developers and IT; the materials and PD team includes the science curriculum specialist and a graduate student; and the research team comprises a researcher, statistician, and graduate student (see Table 2).

Table 2. Positions, Responsibilities, Reporting Structure, Effort, and Funding Source(s)

<table>
<thead>
<tr>
<th>Position</th>
<th>Responsibility</th>
<th>Reports to</th>
<th>FTE</th>
<th>Funded by</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDE grant coordinator</td>
<td>Report to the federal grant officer; direct financial matters</td>
<td>State assessment director</td>
<td>.75</td>
<td>Grant/state</td>
</tr>
<tr>
<td>MDE finance coordinator</td>
<td>Report to the federal grant officer; direct financial matters</td>
<td>State assessment director</td>
<td>.25</td>
<td>Grant/state</td>
</tr>
<tr>
<td>PI</td>
<td>Supervise overall project; oversee evaluation, research, dissemination</td>
<td>WCER Director</td>
<td>.30</td>
<td>Grant/WCER</td>
</tr>
<tr>
<td>Co-PI/ project manager</td>
<td>Plan and coordinate activities; assist with their oversight and execution</td>
<td>PI</td>
<td>.8</td>
<td>Grant/WCER</td>
</tr>
<tr>
<td>Position</td>
<td>Responsibility</td>
<td>Reports to</td>
<td>FTE</td>
<td>Funded by</td>
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<tr>
<td>Assessment task developers (2)</td>
<td>Develop assessment tasks/modules; coordinate with IT on design and programming; develop score reports; write position papers</td>
<td>Co-PI/project manager</td>
<td>2.0</td>
<td>Grant</td>
</tr>
<tr>
<td>Science education specialist (1)</td>
<td>Develop teacher guides and PD materials; deliver PD</td>
<td>Co-PI/project manager</td>
<td>1.0</td>
<td>Grant</td>
</tr>
<tr>
<td>IT staff</td>
<td>Design, engineer, and program functionality and scoring of tasks and modules; conduct functional reviews</td>
<td>WCER IT Director, PI</td>
<td></td>
<td>Grant</td>
</tr>
<tr>
<td>Researcher (1)</td>
<td>Design/oversee research instruments; coordinate pilot and field tests with Activate Learning; oversee research activities; conduct analyses; participate in dissemination</td>
<td>PI</td>
<td>1.0</td>
<td>Grant</td>
</tr>
<tr>
<td>Quantitative expert</td>
<td>Design and conduct psychometric and statistical analyses; write results</td>
<td>PI</td>
<td></td>
<td>Grant</td>
</tr>
<tr>
<td>Graduate research assistant (1)</td>
<td>Help coordinate and implement PD; assist with research activities, analysis, dissemination</td>
<td>Science curriculum specialist; Researcher/PI</td>
<td>1.0</td>
<td>Grant</td>
</tr>
</tbody>
</table>

**Goal, Objectives, Tasks, and Milestones**

The goal is to improve the assessment of challenging science learning for all middle-school students.

Attachment III contains the timeline detailing the activities we will undertake to achieve this goal and the six objectives associated with it. Table 3 (pp. 39, 40) ties objectives to tasks, milestones, and staff.
Ensuring Continuous Improvement

To ensure continuous improvement in operation of the project, we will hold face-to-face partner leadership meetings every other quarter at UW; the external evaluator will provide informal formative feedback to the PI and co-PI twice each year and yearly formal reports to all partners. Leadership will meet once or twice weekly, with regular calls or webexes with partners as needed. A yearly in-person and yearly webex TAC meeting will provide the opportunity to review project activities and milestones and receive feedback from experts, who will also advise on design and project implementation. Leadership will meet with the internal teams they lead weekly or biweekly, and task developers will meet monthly with the PI and co-PI. Project staff will use WCER’s virtual “Sharepoint” site, a web-based collaborative environment to facilitate distributed work, track and report activities, and monitor project status. Task developers and IT will use “Basecamp” to organize, follow, and document progress. Assessment materials and project data will be stored on WCER’s secure server, which is also accessible virtually.

Continuous improvement will also be managed through feedback from external stakeholders through the iterative research and development cycles. Staff will receive informal feedback at multiple points from experts and end users, and feedback from formal task and bias reviews from science educators and those specializing in diverse student groups. These critiques, along with the analysis of pilot results, will serve as the basis for final refinement of materials. The PI and co-PI, in collaboration with the partner leadership team, will monitor this cycle at regular meetings. Additionally, project leadership will seek input through individual advising sessions and regular meetings from the TAC on any issues that arise.

Ensuring High Quality Products and Services

Several mechanisms will ensure high quality products and services. Assessment development will use the evidence centered design approach to ensure strong alignment between standards and assessment construct targets. During each cycle prior to and in preparation for finalizing items and modules for field testing, we will conduct iterative internal reviews, external educator reviews, bias reviews, analyses of pilot data, quality control of scoring algorithms, reporting, interface with other tasks in the modules, and IT testing for bugs and adaptability to various technology platforms and with internal UW servers.
Associated materials and tools, including task and module teacher guides, follow-up activities, the PD plan and implementation, webexes, online PD modules, institute materials, resources and website chat space, will follow similar procedures with an initial drafting stage, internal reviews, piloting, evaluation, revision, and final sign off. WIDA’s in-house educator resource staff will advise on graphics and formatting and review final products. Design for PD services will be drafted and revised with input from partner organizations. Results of evaluation surveys administered at each stage of implementation and post assessment interviews will inform refinements to subsequent services and materials.

H. Project Evaluation

The project evaluation will consist of regular formative feedback and summative end-of-year written reports in Years 1-3 with a project summative report in Year 4. Formative feedback to the PI and co-PI will occur in months 4 and 8 of each year. In Year 1 the formative feedback and end-of-year reports will focus on reviewing the final project design, unit, task, and item targets as relevant, evaluation of timely task development and scoring and reporting designs, and a review of the designs for the initial aggregation schemes. In Year 2 a review of the pilot implementation and external task reviews, and the processes staff use to evaluate tasks based on results from these sources, an evaluation of ongoing task development, review of the selection of ONPAR/IQWST item dyads, analysis design and any results to-date, review of the field test implementation and subsequent data analyses and revision strategies, and a review of educator results from their PD and associated materials evaluations will occur. Evaluation in Year 3 will continue to focus on task development as well as reviews of pilot, external task reviews, and teacher materials/PD evaluations, field test implementation and analyses, and qualitative and quantitative results to-date from the field test, aggregation and task type studies. In Year 4 the evaluation will focus mostly on results and interpretations of findings. To complete the formative and summative evaluations the evaluator will review process documents associated with each project objective, including implementation procedures as well as designs for data collection and analyses, conduct focus group interviews with staff, and review write-ups of findings and the analytic procedures used.
I. Strategy to Scale

The strategy for continuing to bring the ONPAR formative science products to scale beyond the grant is twofold. First, after maintenance costs of current products, we plan to reinvest most of the money from the sale of the science products to extend the suite of formative assessments and PD activities to other middle school units and to upper elementary units. Second, the remainder of the money will be used to extend marketing of the current products to increase sales.

**Table 3. Tasks and Milestones**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Activities</th>
<th>Milestones</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1:</strong> Produce 12 technologically interactive end-of-unit performance diagnostic assessment modules</td>
<td>Create prototype tasks</td>
<td>Prototypes complete</td>
<td>Task developers</td>
</tr>
<tr>
<td></td>
<td>Recruit schools/districts</td>
<td>Recruitment complete</td>
<td>Activate Learning</td>
</tr>
<tr>
<td></td>
<td>Try out prototypes</td>
<td>Tryouts complete</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>Finalize assessment tasks</td>
<td>Modules finalized</td>
<td>Leadership team</td>
</tr>
<tr>
<td></td>
<td>Assemble assessment modules</td>
<td>Assessment modules assembled</td>
<td>IT staff</td>
</tr>
<tr>
<td></td>
<td>Recruit for field test cycles</td>
<td>Recruitment complete</td>
<td>Activate learning</td>
</tr>
<tr>
<td></td>
<td>Field test assessment modules</td>
<td>Field testing completed</td>
<td>Researcher</td>
</tr>
<tr>
<td><strong>Objective 2:</strong> Produce classroom-embedded performance assessment tasks</td>
<td>Draft prototype classroom tasks</td>
<td>Prototypes complete</td>
<td>IT staff/ task developers</td>
</tr>
<tr>
<td></td>
<td>Recruit schools/districts</td>
<td>Recruitment complete</td>
<td>Activate Learning</td>
</tr>
<tr>
<td></td>
<td>Pilot prototype tasks</td>
<td>Pilots completed</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>Finalize tasks</td>
<td>Tasks finalized</td>
<td>Leadership team</td>
</tr>
<tr>
<td>Objective</td>
<td>Tasks</td>
<td>Milestones</td>
<td>Staff</td>
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<tr>
<td>Objective 3: Produce individual diagnostic student/classroom reports</td>
<td>Create score report template</td>
<td>Report template created</td>
<td>Task developers</td>
</tr>
<tr>
<td></td>
<td>Draft scoring narratives</td>
<td>Narratives drafted</td>
<td>Task developers</td>
</tr>
<tr>
<td></td>
<td>Pilot score reports</td>
<td>Tryouts complete</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>Finalize score reports</td>
<td>Score reports finalized</td>
<td>Leadership team</td>
</tr>
<tr>
<td>Objective 4: Produce/evaluate associated materials and related PD</td>
<td>Draft teacher guides</td>
<td>Teacher guides drafted</td>
<td>Science education specialist</td>
</tr>
<tr>
<td></td>
<td>Pilot teacher guides</td>
<td>Pilots conducted</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>Finalize teacher guides</td>
<td>Teacher guides finalized</td>
<td>Leadership team</td>
</tr>
<tr>
<td></td>
<td>Schedule/plan PD institute</td>
<td>PD institute planned</td>
<td>Science education specialist</td>
</tr>
<tr>
<td></td>
<td>Conduct PD institute</td>
<td>PD institute complete</td>
<td>Science education specialist</td>
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<tr>
<td></td>
<td>Evaluate PD institute</td>
<td>Evaluation complete</td>
<td>Researcher</td>
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<tr>
<td></td>
<td>Draft online PD modules</td>
<td>PD module drafts complete</td>
<td>Science education specialist</td>
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<tr>
<td></td>
<td>Pilot online PD modules</td>
<td>PD modules pilot complete</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>Evaluate online PD</td>
<td>Evaluation survey complete</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>Finalize online PD modules</td>
<td>PD modules finalized</td>
<td>Leadership team</td>
</tr>
<tr>
<td>Objective</td>
<td>Tasks</td>
<td>Milestones</td>
<td>Staff</td>
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</tr>
<tr>
<td></td>
<td>Meet with districts</td>
<td>Meetings held</td>
<td>Co-PI, Activate Learning, ONPAR staff</td>
</tr>
<tr>
<td><strong>Objective 5:</strong></td>
<td>Identify items dyads</td>
<td>Item dyads identified</td>
<td>Task developers</td>
</tr>
<tr>
<td>Investigate relationships</td>
<td>Collect field test data</td>
<td>Field test data collected</td>
<td>Researcher</td>
</tr>
<tr>
<td>between item types</td>
<td>Conduct regression analyses</td>
<td>Regression analyses conducted</td>
<td>Statistician</td>
</tr>
<tr>
<td><strong>Objective 6:</strong></td>
<td>Design multiple measures aggregation schemes</td>
<td>Multiple measures aggregation schemes identified</td>
<td>PI and statistician (TAC)</td>
</tr>
<tr>
<td>Investigate two types of multiple measures aggregation schemes using ONPAR end-of-unit formative test scores</td>
<td>Design analysis schemes</td>
<td>Method designed to analyze schemes</td>
<td>PI and statistician (TAC)</td>
</tr>
<tr>
<td></td>
<td>Collect teacher rating data</td>
<td>Teacher ratings collected</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>Collect state science test data</td>
<td>State science test data collected</td>
<td>Co-PI</td>
</tr>
<tr>
<td></td>
<td>Run preliminary analyses</td>
<td>Preliminary analyses run</td>
<td>PI and statistician (TAC)</td>
</tr>
<tr>
<td></td>
<td>Write results</td>
<td>Results written</td>
<td>Statistician</td>
</tr>
</tbody>
</table>
Attachment I: ONPAR Animation Screenshots for 1 task

Substance Separation
Attachment II. Screenshots of Selected ONPAR Item Type Response Spaces

Open Response Space

Show how you got your answer for 25 shapes.

Make a shape with a perimeter of 14 centimeters.

Make a shape that can fold into the prism.
Open Performance
Causal Chain
Open frame construction

(students construct their own statement frame design and then populate)
Construct a Model

Show that the key conducts electricity.

Show the energy exchange between roaches and grass.

Make a Bohr model of a helium atom.

Use the amino acid differences to make a cladogram for the bacteria.

PR/Award # S368A150019
Page e70
## Attachment III: Project Extended Timeline

<table>
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<tr>
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<td>Quarters</td>
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<tr>
<td><strong>Objectives 1-3 (develop 75 module tasks)</strong></td>
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<tr>
<td>Finalize design of development and implementation</td>
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<tr>
<td>Identify learning progressions for 12 units</td>
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<td>Identify valued foci for each task for all units</td>
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<tr>
<td>Set up 3 cycles of task development</td>
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<tr>
<td>Set up pilot seasons for tasks, contact districts/schools</td>
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<tr>
<td>Task development cycle 1 begins</td>
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<tr>
<td>Internal reviews and task development continues</td>
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<tr>
<td>Cycle 1 task development continues</td>
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<tr>
<td>IT begin programming of tasks</td>
<td></td>
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<tr>
<td>Identify schools/teachers for participating in pilots</td>
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<tr>
<td>Task development cycle 2 begins</td>
<td></td>
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<tr>
<td>IT programming of cycle 1 tasks continues</td>
<td></td>
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<tr>
<td>Finalize fall pilot sites in participating classrooms</td>
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<tr>
<td>External educator and bias reviews for cycle 1 tasks</td>
<td></td>
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<tr>
<td>Pilots of tasks begin</td>
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<tr>
<td>Cycle 2 task development continues</td>
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<tr>
<td>IT programming continues</td>
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<tr>
<td>Refining cycle 1 tasks from reviews and pilots</td>
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<tr>
<td>Finalize winter pilot sites in participating classrooms</td>
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<td>Identify participation in spring 2017 field-testing</td>
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<td>Pilots continue</td>
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<td>Analyses of pilot data</td>
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<tr>
<td>IT programming continues</td>
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<tr>
<td>Task development cycle 3 begins</td>
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<tr>
<td>Finalize late spring field-test sites</td>
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<td>Field-testing of cycle 1 task modules</td>
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<td>IT programming continues</td>
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<tr>
<td>Analyses of pilot data completed</td>
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<tr>
<td>Cleaning cycle 1 field-test data</td>
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<td>Analyze module data from field-test results</td>
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<tr>
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<tr>
<td>External educator and bias reviews for cycle 2 tasks</td>
<td></td>
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<td>External educator and bias reviews for cycle 3 tasks</td>
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<td>Finalize end-of-unit test for operational use</td>
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<td><strong>Objective 4 (associated materials and teacher PD)</strong></td>
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<td>Develop PD materials for late spring field-testing</td>
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<td>Evaluate teacher materials and PD from cycle 1</td>
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<td>PD summer institutes</td>
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<td>Finalize teaching materials and PD for operational use</td>
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<td><strong>Objectives 5-6 (multiple measure studies)</strong></td>
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<td>Develop aggregation schemes (classroom/state level)</td>
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<td>Educators identify dyad sets of ONPAR/IQWST items</td>
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<td>Analyses of mini-study data from cycle 1</td>
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<td>Preliminary presentations at professional conferences</td>
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Other Attachment File(s)

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Part 6

Letters of Commitment and Support

Michigan Department of Education, Lead State
Wisconsin Center for Education Research, UW-Madison, Managing Partner
Activate Learning, Collaborating Organization
WIDA Consortium, Collaborating Organization
Maryland State Department of Education, Supporting State
Nevada Department of Education, Supporting State
New Jersey Department of Education, Supporting State
Wisconsin Department of Public Instruction, Supporting State

Mariana Castro, WIDA, Project Advisor
Amelia Gotwals, Technical Advisory Committee
Jim Pellegrino, Technical Advisory Committee
Ed Roeber, Project Advisor

Stephen Sireci, Technical Advisory Committee
Martha Thurlow, Technical Advisory Committee

Phoebe Winter, Project Evaluator
Curriculum Vitae

Andrew Middlestead, MDE, Director, Office of Standards and Assessment
Rebecca Kopriva, WCER, Principal Investigator
Laura Wright, WCER, Co-Principal Investigator
Kathryn Drago, WCER, Science Task Developer
Bob Glover, WCER, Director of IT Services
LeeAnn Sutherland, Activate Learning, Technical Advisory Committee
Heather Milo, Activate Learning, Science Curriculum and PD Consultant
Mariana Castro, WIDA, Project Advisor
Amelia Gotwals, Technical Advisory Committee
Jim Pellegrino, Technical Advisory Committee
Ed Roeber, Project Advisor
Stephen Sireci, Technical Advisory Committee
Martha Thurlow, Technical Advisory Committee
Phoebe Winter, Project Evaluator
June 26, 2015

Monique Chism, Ph.D.
Office of State Support
U.S. Department of Education
Washington, D.C. 20202-0170

Dear Dr. Chism:

This letter is to express the Michigan Department of Education’s (MDE) commitment as the lead state to collaborate with the Wisconsin Center for Education Research (WCER) at the University of Wisconsin–Madison (UW), in partnership with Activate Learning Curriculum and the World-Class Instructional Design and Assessment (WIDA) Consortium on the Enhanced Assessment Grant Project titled Dynamic Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring Challenging Concepts of Skills of Diverse Middle School Students. We are very excited about this proposal because of the large and linguistically diverse population of its K-12 student population. This work will continue to build on Michigan’s current career- and college-ready instruction initiatives and move educators towards better usage of technology for classroom assessments.

As the lead, MDE has the capacity, expertise, and commitment to lead the implementation of this project. We understand that the federal grant funds will:

- Produce technologically interactive end-of-unit performance diagnostic module assessments in Grades 6-8 that cover earth-, life-, physical-science, and chemistry using innovative item types which are aligned to new science standards in states.

- Produce additional technology-based classroom-embedded extended performance assessment tasks that measure the same constructs as the module tasks, are designed for on-demand teacher use as they teach middle school science units, use innovative item types, have been empirically validated, and are ready for classroom use.

- Produce individualized diagnostic student- and classroom-level reports generated immediately after students complete the tests and tasks.
Dr. Monique Chism  
June 26, 2015  
Page 2

- Produce and evaluate associated materials and related professional development for the teachers to support implementation of tasks and additional formative assessment techniques and inform the interpretation and differentiated learning based on individualized results from the tasks and tests.

- Investigate the relationships between traditional and innovative item types that measure similar content or skills.

- Investigate two types of multiple-measure aggregation schemes using the end-of-unit modules.

The WIDA Consortium and WCER have an impressive foundation in focusing on the needs of English learners (ELs) and other special student populations. Their ability to establish working partnerships for other collaborative partnerships with states, districts, and educators sets them apart from other organizations.

Michigan is actively exploring new science standards that better prepare students for careers and college in science and other related fields. In doing so Michigan recognizes the importance of focusing on the learning and assessment needs of all students, particularly those historically under-represented.

Through the grant MDE plans to hire a project coordinator who will work collaboratively with WCER staff to lead, oversee, and manage all grant activities. The coordinator will ensure that all required activities are completed, grants and contracts are established in a timely fashion, evaluation and performance activities are conducted, and stakeholder agencies are working in tandem at the state, between states, and at local levels to support the achievement of the project goals and objectives.

Michigan looks forward to the opportunity to work with WIDA and WCER as the lead state on this proposed formative science assessment project. We look forward to being a part of innovation that has the potential to significantly impact students’ learning of science content.

Sincerely,

Venessa A. Keesler, Ph.D.  
Deputy Superintendent, Accountability Services  
Michigan Department of Education
June 26, 2015
Michigan Department of Education
PO Box 30008
Lansing, MI 48909

To Whom It May Concern:

This letter is to express the Wisconsin Center for Education Research’s (WCER) commitment to serve as managing partner for the EAG grant entitled Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students for which the Michigan Department of Education is lead. WCER is a center within the University of Wisconsin-Madison which is a state agency. WCER houses staff who will serve as the PI and Co-PI on this grant, Dr. Rebecca Kopriva and Dr. Laura Wright. As the managing partner, WCER will oversee the work that is undertaken to accomplish the goals and objectives of the proposed project, if funded.

We understand that the goal of this project is to improve the assessment of challenging science learning for all middle-school students. The project will develop approximately 75 extended, performance assessment tasks, including learning-embedded tasks and tasks for the end-of-unit tests using the ONPAR assessment methodology, along with their attendant tools and resources. In addition, a series of technical studies associated with the tasks and tests will be conducted, and evaluations, associated with the test and assessment materials will be collected and analyzed.

WCER commits to serving as the managing partner for the duration of the grant period, which we anticipate to be four years. WCER looks forward to the opportunity to work with the proposed formative assessment project and being part of this collaborative effort to create innovative accessible formative science assessments that will provide meaningful guidance and support for teachers who need accurate knowledge of all students’ science content knowledge.

Sincerely,

(b)(6)

Tim Boals, PhD
WCER
Executive Director, WIDA
Dear Drs. Kopriva and Wright:

This letter is to express Activate Learning’s commitment to partnering in the Enhanced Assessment Grant Project entitled Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students. We are very excited about this proposal because innovative, accessible science formative assessments based on the Framework for K-12 Science Education and aligned to the Next Generation Science Standards (NGSS) are needed for all students.

We believe these technology-enhanced formative assessments will complement the existing research-based IQWST science curriculum we publish. Formative assessment resources are needed for both teachers and students to monitor ongoing learning within the classroom. Past research conducted by your team has shown a great deal of promise in using this innovative assessment methodology to measure all students’ understanding of rigorous topics.

We commit to participating in the project in the following ways:

- Recruiting all districts to take part in the project’s pilot and field-testing. It is understood these districts will be geographically and demographically diverse, and that they will be using the IQWST curriculum.
- Working with the project to provide NGSS science expertise and how this expertise translates into aligned curriculum for middle school students.
- Providing advice about PD and IT matters as relevant.

We understand that the funds for this project will be provided solely by the grant and will not require additional funds from Activate Learning.
Activate Learning looks forward to the opportunity to work with the proposed ONPAR formative assessment project and being part of this collaborative effort to create innovative accessible formative science assessments that will provide meaningful guidance and support for teachers who need accurate knowledge of all students’ science content knowledge.

Sincerely,

Tom Pence

Tom Pence
Executive Vice President, Sales and Marketing
Activate Learning
June 25, 2015

Dr. Rebecca Kopriva, Principal Investigator
Wisconsin Center for Education Research
University of Wisconsin-Madison
1025 West Johnson Street, Suite 785
Madison, Wisconsin
53706

Dear Dr. Kopriva:

The WIDA Consortium is delighted to partner with you in undertaking the Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students project, if funded by the Enhanced Assessment Grant program through the U.S. Department of Education. As our ongoing close collaborations as colleagues within the Wisconsin Center for Education Research attest, we believe this project’s goal of applying the ONPAR methodology to the classroom has high potential to make an important contribution to the field.

The goal of the proposed project, to improve the assessment of challenging science learning for all middle-school students, is an important and timely one. We are confident that the proposed project’s end products and findings will help to inform assessment, instruction, and policy to improve academic outcomes for ELs, particularly given promising research results on the previous ONPAR investigations.

As a project partner, the WIDA Consortium commits to providing infrastructure and expertise on issues related to English language proficiency and formative assessment. Our staff of stellar professionals has broad and deep expertise in all issues related to the academic achievement of ELs, including and especially English language proficiency (ELP) standards and assessments, ELP and content standards alignment, academic language and professional development.

We appreciate the opportunity to continue partnering in our shared research endeavors related to valid academic content-area assessment for ELs, as part of WIDA’s mission to provide high-quality, empirically based interventions such as this one with proven success for ELs. We look forward to contributing our expertise and resources on the proposed grant.

Sincerely,

(b)(6)
Timothy J. Boals,
Ph.D. Executive
Director WIDA
Consortium (608)
263-4326
tjboals@wisc.edu
June 25, 2015

Dr. Rebecca Kopriva, Principal Investigator
Wisconsin Center for Education Research
University of Wisconsin-Madison
1025 West Johnson Street, Suite 785
Madison, Wisconsin 53706

Dear Drs. Kopriva and Wright:

This letter is to express the Maryland State Department of Education’s (MSDE) support of the Enhanced Assessment Grant Project entitled *Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students*. We are very excited about this proposal because innovative, accessible science formative assessments based on the Framework for K-12 Science Education and aligned to the Next Generation Science Standards (NGSS) are needed for our diverse students.

Research is clear that formative assessment is a key support in ensuring students’ college and career readiness. Formative assessment is needed for both teachers and students to monitor ongoing learning within the classroom. Furthermore, the research conducted by previous ONPAR projects has shown a great deal of promise in using this innovative assessment methodology to measure not only EL and other students who struggle with the language of traditional assessments, but *all* students. Formative science assessments designed with the ONPAR methodology that are valid and reliable for the broad range of diverse Maryland students will be a critical component in preparing all of our students to meet NGSS.

We understand that the federal grant funds will be used to:

- Develop technology and innovative item types to create formative science assessment modules and tasks in Grades 6-8.
- Ensure an enhanced link to NGSS
- Include all students, including ELs and students who struggle with the language of traditional assessments
- Develop a more engaging test-taking experience for all students
- Reduce the test administration burden required compared to the current paper-based assessment by providing automatically scored performance tasks

The MSDE and representatives from school systems in the state recognize the need for better, more innovative science formative assessments and look forward to working with the ONPAR project to develop these science formative assessments.

We understand that the funds for this project will be provided solely by the grant and will not require additional funds from Maryland. We also understand that the formative assessments designed by this project will be available for use by schools within Maryland and that they need not use the

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*PR/Award # S388A150019*

MarylandPublicSchools.org
Investigating & Questioning our World Through Science & Technology (IQWST) curriculum from Activate Learning in order for the assessments to be useful for instructional purposes. Maryland looks forward to the opportunity to work with the proposed ONPAR formative assessment project and being part of this collaborative effort to create innovative accessible formative science assessments that will provide meaningful guidance and support for teachers who need accurate knowledge of all students’ science content knowledge.

Sincerely,

Ilhye Yoon
Title III/ELL Specialist
Division of Curriculum, Assessment and Accountability
Maryland State Department of Education
Laura Wright, PhD  
Associate Director, Content Assessment and Learning  
Wisconsin Center for Education Research  

Rebecca Kopriva, PhD  
Senior Scientist  
Wisconsin Center for Education Research  
University of Wisconsin-Madison  
1025 W Johnson St. MD 1263  
Madison, WI 53706-1706  

Dear Dr. Kopriva and Dr. Wright,

This letter is to express the Nevada Department of Education’s support of the Enhanced Assessment Grant Project entitled Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students. We are very excited about this proposal because innovative, accessible science formative assessments based on the Framework for K-12 Science Education and aligned to the Next Generation Science Standards (NGSS) are needed for Nevada’s diverse students.

Research is clear that formative assessment is a key support in ensuring students’ college and career readiness. Formative assessment is needed for both teachers and students to monitor ongoing learning within the classroom. The research conducted by previous ONPAR projects has shown a great deal of promise in using this innovative assessment methodology to measure not only English Learners (EL) and other students who struggle with the language of traditional assessments, but all students. Formative science assessments designed with the ONPAR methodology that are valid and reliable for the broad range of diverse Nevada students will be a critical component in preparing all of our students to meet the NGSS.

We understand that the federal grant funds will be used to:

- Develop technology and innovative item types to create formative science assessment modules and tasks in Grades 6-8
• Ensure an enhanced link to NGSS
• Include all students, including ELs and students who struggle with the language of traditional assessments
• Develop a more engaging test-taking experience for all students
• Reduce the test administration burden required compared to the current paper-based assessment by providing automatically scored performance tasks

The Nevada Department of Education and representatives from school districts in the state recognize the need for better, more innovative science formative assessments and look forward to working with the ONPAR project to develop these science formative assessments.

We understand that the funds for this project will be provided solely by the grant and will not require additional funds from Nevada. We also understand that the formative assessments designed by this project will be available for use by schools in other LEAs within Nevada and that they need not use the IQWST curriculum from Activate Learning in order for the assessments to be useful for instructional purposes.

Nevada looks forward to the opportunity to work with the proposed ONPAR formative assessment project and being part of this collaborative effort to create innovative accessible formative science assessments that will provide meaningful guidance and support for teachers who need accurate knowledge of all students’ science content knowledge.

Sincerely,

[b](b)(6]

Steve Canavero
Deputy Superintendent for Student Achievement

SC:ms
June 24, 2015

Dr. Rebecca Kopriva and
Dr. Laura Wright
Wisconsin Center for Education Research
1025 W. Johnson Street
Madison, WI 53706

Dear Drs. Kopriva and Wright:

This letter is to express the New Jersey Department of Education’s (NJDOE) support of the Enhanced Assessment Grant Project entitled Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students. As a member of the 36-state, non-profit WIDA Consortium, New Jersey is very excited about this proposal because innovative, accessible science formative assessments based on the Framework for K-12 Science Education and aligned to the Next Generation Science Standards (NGSS) are needed for our SEA’s diverse students.

Research is clear that formative assessment is a key support in ensuring students’ college and career readiness. Formative assessment is needed for both teachers and students to monitor ongoing learning within the classroom. Furthermore, the research conducted by previous ONPAR projects has shown a great deal of promise in using this innovative assessment methodology to measure not only EL and other students who struggle with the language of traditional assessments, but all students. Formative science assessments designed with the ONPAR methodology that are valid and reliable for the broad range of diverse New Jersey students will be a critical component in preparing all of our students to meet NGSS.

We understand that the federal grant funds will be used to:

- Develop technology and innovative item types to create formative science assessment modules and tasks in Grades 6-8;
- Ensure an enhanced link to NGSS;
- Include all students, including ELs and students who struggle with the language of traditional assessment;
- Develop a more engaging test-taking experience for all students, and
- Reduce the test administration burden required compared to the current paper-based assessment by providing automatically scored performance tasks.
The NJDOE and representatives from school districts in the state recognize the need for better, more innovative science formative assessments and look forward to working with the ONPAR project to develop these science formative assessments. The NJDOE understands that the funds for this project will be provided solely by the grant and will not require additional funds from New Jersey. We also understand that the formative assessments designed by this project will be available for use by schools in other LEAs within New Jersey and that they need not use the IQWST curriculum from Activate Learning in order for the assessments to be useful for instructional purposes.

As indicated by submission of the annual WIDA Consortium Memorandum of Understanding, which outlines the terms and conditions of states’ participation in the Consortium, New Jersey is committed to collaborating on the “research, design and opportunities for English language learners in pre-kindergarten through grade twelve.” The NJDOE looks forward to the opportunity to work with the proposed ONPAR formative assessment project and being part of this collaborative effort to create innovative accessible formative science assessments that will benefit students in 36 states by providing meaningful guidance and support for teachers who need accurate knowledge of all students’ science content knowledge.

Sincerely,

[b][6]

Karen L. Campbell, Director
Office of Supplemental Educational Programs

KLC\WkKem2015\WIDAA\Letters of Support\NJ letter of support for ONPAR 6-22-15 (2).docx

c: Susan Martz
   Jeffrey Hauger
   Kenneth Bond
June 23, 2015

Drs. Rebecca Kopriva and Laura Wright  
Wisconsin Center for Education Research  
University of Wisconsin-Madison  
1025 West Johnson Street  
Madison, Wisconsin 53706

Dear Drs. Kopriva and Wright:

This letter is to express the Wisconsin Department of Public Instruction’s support of the Enhanced Assessment Grant Project entitled Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students. We are very excited about this proposal because innovative, accessible science formative assessments based on the Framework for K-12 Science Education and aligned to the Next Generation Science Standards (NGSS) are needed for our state’s diverse students. While we have not adopted these standards as a state, several of our largest and most diverse districts are moving ahead with these standards and are in desperate need of instructional supports such as assessment materials.

Research is clear that formative assessment is a key support in ensuring students’ college and career readiness. Formative assessment is needed for both teachers and students to monitor ongoing learning within the classroom. Furthermore, the research conducted by previous ONPAR projects has shown significant promise in using this innovative assessment methodology to measure not only EL and other students who struggle with the language of traditional assessments, but all students. Formative science assessments designed with the ONPAR methodology that are valid and reliable for the broad range of diverse Wisconsin students will be an important component in preparing all of our students to meet college and career ready standards in science.

We understand that the federal grant funds will be used to:

- Develop technology and innovative item types to create formative science assessment modules and tasks in Grades 6-8.
- Ensure an enhanced link to contemporary, research-based science practice
- Include all students, including ELs and students who struggle with the language of traditional assessments
- Develop a more engaging test-taking experience for all students
- Reduce the test administration burden required compared to the current paper-based assessment by providing automatically scored performance tasks

The Wisconsin Department of Public Instruction and representatives from school districts in the state recognize the need for better, more innovative science formative assessments and look forward to working with the ONPAR project to develop these science formative assessments. We understand that the funds for this project will be provided solely by the grant and will not require additional funds from Wisconsin. We also understand that the formative assessments
designed by this project will be available for use by schools in other LEAs within Wisconsin and that they need not use the IQWST curriculum from Activate Learning in order for the assessments to be useful for instructional purposes.

Wisconsin looks forward to the opportunity to work with the proposed ONPAR formative assessment project and being part of this collaborative effort to create innovative, accessible formative science assessments that will provide meaningful guidance and support for teachers who need accurate knowledge of all students' science content knowledge.

Kevin Anderson, Consultant
Science Education
University of Wisconsin-Madison  
1025 West Johnson Street, Rm 1263  
Madison, WI 53706-1706

Dear Drs. Kopriva and Wright,

I enthusiastically submit this letter of commitment for your proposed Enhanced Assessment Grant initiative, Dynamic-Interactive Formative Assessment Tasks and End-of-Unit Modules for Measuring Challenging Concepts and Skills of Diverse Middle School Students.

I believe that my interests in educational equity, cognitive science, professional development, and curriculum and instruction of English language learners will be useful to your project. In particular, I look forward to advising your project to help ensure that the assessment tasks and related materials will be effective for a wide range of teachers and students.

I will be available for advising and evaluation activities throughout the duration of the project. I look forward to working with you on this valuable effort to expand the learning opportunities for diverse students in science.

Sincerely,

Mariana Castro, PhD
Director of Academic language and literacy initiatives
June 25, 2015

Dr. Rebecca Kopriva
Principal Investigator
Wisconsin Center for Education Research
School of Education
University of Wisconsin-Madison
1025 West Johnson Street, Suite 785
Madison, Wisconsin 53706

Dear Dr. Kopriva:

I look forward to serving as the expert science consultant for the proposed Dynamic Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring Challenging Concepts and Skills of Diverse Middle School Students, if funded by the U.S. Department of Education Enhanced Assessment Grant (EAG) program. The project will develop approximately 75 extended, performance assessment tasks, including learning-embedded tasks and tasks for the end-of-unit tests, along with their attendant tools and resources. A series of technical studies associated with the tasks and tests will be conducted, and evaluations, associated with the test and assessment materials will be collected and analyzed. The project’s multi-faceted focus on effective, valid, and rigorous classroom formative assessment practices and an innovative professional development program to support teaching and learning will yield products and results with great potential to improve academic outcomes for all students.

I understand that my commitment entails attending one or two in-person or virtual meetings per year and consulting (mainly via WebEx, email, and phone) with project staff and TAC members regarding topic selection for ONPAR formative tasks and the selection of learning progressions. I will also iteratively review tasks as they are being developed for content and standards alignment, provide input on the design and structure of the professional development program, and review the PD modules and associated materials. I will also be available to consult with TAC members as needed. I believe that my expertise in learning progressions for science and assessment development positions me well to provide feedback on your project.
Thank you for the opportunity to participate as the expert science consultant on this endeavor. I look forward to working together on this timely and important project to develop accessible assessments for all students.

Sincerely,

(b)(6)

Amelia Gotwals, Ph.D.

Gotwals@msu.edu
June 24, 2015

Dr. Rebecca Kopriva
University of Wisconsin-Madison
1025 West Johnson Street
Room 1263
Madison, WI 53706-1706

Dear Drs. Kopriva and Wright,

I enthusiastically submit this letter of commitment to serve on your Technical Advisory Committee for your proposed Enhanced Assessment Grant initiative, Dynamic-Interactive Formative Assessment Tasks and End-of-Unit Modules for Measuring Challenging Concepts and Skills of Diverse Middle School Students.

I believe that my experience in investigating the use of dynamic representations to help all students, including students from cultural and language minority backgrounds, learn complex and important science will be useful to your project. In particular, I look forward to advising your project to ensure that the science content, pedagogy, and the use of interactive multimedia will be effective for a wide range of students.

I will be able to attend an in-person TAC meeting each year as well as one webex per year. In addition, I will be available for advising and evaluation activities throughout the duration of the project. I look forward to working with you and your colleagues at the University of Wisconsin-Madison in this valuable effort to expand the learning opportunities in science for diverse students.

Respectfully yours,

James W. Pellegrino
Liberal Arts and Sciences Distinguished Professor
Distinguished Professor of Education
Co-director, Learning Sciences Research Institute
June 25, 2015

Dr. Rebecca Kopriva  
Principal Investigator  
Wisconsin Center for Education Research  
School of Education  
University of Wisconsin-Madison  
1025 West Johnson Street, Suite 785  
Madison, Wisconsin 53706

Dear Rebecca:

Thank you for inviting me to participate as a project advisor for the proposal to the U.S. Department of Education for the Enhanced Assessment Grant application titled Dynamic Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring Concepts and Skills of Diverse Middle School Students. The project’s goal of applying the ONPAR methodology to building innovative classroom assessments has substantial potential to make an important contribution to the field of measurement. Specifically, by developing and investigating the validity, utility, and feasibility of the proposed middle-school classroom assessment prototypes and associated materials, this project will permit educators to assess academic performance of all students, including English language learners (ELLs) and students with disabilities in a manner that reduces the interference of unnecessary language, and thus encourages higher levels of academic performance. The results of your work will continue to inform assessment and instructional policies and practices of participating states, thus leading to improved academic outcomes for these students.

I understand that my commitment to serve as a project advisor entails attendance at one in-person meeting and one virtual meeting each year, over the course of the project period, during which I will provide expert guidance on formative assessment and policy to the project leadership team and staff.

Thank you for the opportunity to participate as part of the project. I look forward to working together with you and the others on this timely and important project for states.

Sincerely,

Edward Roeber,  
Assessment Director  
Michigan Assessment Consortium

1001 Centennial Way, Suite 300, Lansing, MI 48917  
michiganassessmentconsortium.org
June 25, 2015

University of Wisconsin-Madison
1025 West Johnson Street, Rm 1263
Madison, WI 53706-1706

Dear Drs. Kopriva and Wright,

I enthusiastically submit this letter of commitment to serve on your Technical Advisory Committee for your proposed Enhanced Assessment Grant initiative, *Dynamic-Interactive Formative Assessment Tasks and End-of-Unit Modules for Measuring Challenging Concepts and Skills of Diverse Middle School Students*.

I believe that my experience in investigating issues of validity, cross-lingual assessment, standard setting, and computer-based testing will be useful to your project. In particular, I look forward to advising your project to ensure that the assessment design will be effective for a wide range of students.

I will be able to attend your one in-person TAC meeting per year and one webex per year. In addition, I will be available for advising and evaluation activities throughout the duration of the project. I look forward to working with you and the University of Wisconsin-Madison in this valuable effort to expand the learning opportunities for diverse students in science.

Sincerely,

Stephen G. Sireci, Ph.D.
President
June 22, 2015

Dr. Rebecca Kopriva and Dr. Laura Wright
University of Wisconsin-Madison
1025 West Johnson Street, Rm 1263
Madison, WI 53706-1706

Dear Drs. Kopriva and Wright:

I enthusiastically submit this letter of commitment to serve on your Technical Advisory Committee for your proposed Enhanced Assessment Grant initiative, Dynamic-Interactive Formative Assessment Tasks and End-of-Unit Modules for Measuring Challenging Concepts and Skills of Diverse Middle School Students.

I believe that my experience working in assessment and decision making, learning disabilities, effective classroom instruction, and integration of students with disabilities in general education settings will be useful to your project. In particular, I look forward to advising your project to ensure that the assessments and the use of interactive multimedia will be effective for a wide range of students.

I will be able to attend your one in-person TAC meeting per year and one webex per year. In addition, I will be available for advising and evaluation activities throughout the duration of the project. I look forward to working with you and the University of Wisconsin-Madison in this valuable effort to expand the learning opportunities for diverse students in science.

Sincerely,

[Signature]

Martha L. Thurlow, Ph.D.
Director and Senior Research Associate
June 25, 2015

Dr. Rebecca Kopriva, Principal Investigator
Wisconsin Center for Education Research
University of Wisconsin-Madison
1025 West Johnson Street, Suite 785
Madison, Wisconsin 53706

Dear Dr. Kopriva and Dr. Wright:

I look forward to participating as the external evaluator for the proposed grant, Dynamic Interactive Science Formative Assessment Tasks and Modules for Measuring Challenging Concepts and Skills of Diverse Students project, if funded by the Enhanced Assessment Grant program through the U.S. Department of Education.

The goal of the proposed project, to improve the assessment of challenging science learning for all middle-school students, is an important and timely one. Specifically, by developing and investigating the validity, utility, and feasibility of the proposed middle-school science classroom assessment prototypes and associated materials, this project will yield results that will help to inform assessment, instruction, and policy to improve academic outcomes for ELs.

I understand that my commitment to serve as the project evaluator will consist of regular formative feedback and summative end-of-year written reports in Years 1-3 with a project summative report in Year 4, and formative feedback to the PI and co-PI two times each year over the course of the four-year project period. I will provide expert evaluation to the project leadership team and staff intended to inform the grant’s implementation and end products.

Thank you for the opportunity to participate as part of the project evaluation. I look forward to working together on this timely and important assessment project.

Sincerely,

[Redacted]

Phoebe C. Winter
OBJECTIVE:
To apply my interest and knowledge in education, curriculum, assessment, and measurement to a position to lead in policy and operations development to create student assessment systems and nurture business to successfully measure student ability and to prepare all students for career and college readiness.

EDUCATION:
MASTER OF ARTS
Michigan State University, College of Education
Major: Measurement & Quantitative Methods

BACHELOR OF SCIENCE
Michigan State University, College of Social Science
Major: Psychology
Specialization: Health & Humanities

RELATED COURSEWORK:
- Quantitative Methods in Education Research I & II (CEP 932-933)
- Psychometric Theory I (CEP 921)
- Educational Inquiry (CEP 930)
- Instrument Construction (CEP 920)
- Motivation & Learning (CEP 910)
- Item Response Theory (CEP 923)
- Elementary & Middle School Administration (EAD 852A)
- Psych Development Learning Diff. & Commonalities (CEP 801)
- Learning in School & Other Settings (CEP 800)
- Adolescent Development
- Data Analysis & Psychological Research
- Psychological Measurement

SYSTEMS ABILITY:
- Microsoft Office – (Word, Excel, PowerPoint, Access)
- Microsoft SQL Server 2008
- SAS
- SPSS
- Online Assessment Item Authoring & Banking Systems
WORK EXPERIENCE:

Mar. 2014 – Present  Director, Office of Standards & Assessment, Michigan Department of Education (MDE)

- Serve as Assessment Director for the State of Michigan
- Direct a cohesive assessment office of 30 assessment experts for six different state-wide assessment programs
- Provide leadership and mentoring for a management team covering areas of test development, administration/scoring/reporting, and test composition and design services.
- Serve as contract compliance lead for all assessment contracts for the state of Michigan, including lead in RFP development.

Jan. 2011 – Present  Michigan State Lead & Co-Chair, Item Development Work Group, Smarter Balanced Assessment Consortium

- Represent the State of Michigan as a governing state in the consortia.
- Facilitate a work group of item development experts from around the nation in creating a rich robust item bank of items for the 25-state consortium
- Provide policy and procedure input to consortium test development
- Facilitate bi-monthly work group webinars
- Lead in contract management of consortia contracts.


- Manage a cohesive test development team of 8 full-time consultants for six different state-wide assessment programs. Including 3-8 & 11 summative assessments, English Language Learners assessments, Assessments for students with disabilities, and interim assessments.
- Provides directions and leadership for all test development processes. Such as Item Writer Training, Item Content/Bias/Sensitivity Review, Item Statistic Review, Test Blueprint and Form development
- Act as contract manager for Michigan item development contract. This includes frequent collaboration with vendors.
- Oversees quality control of item writing for selected-response, constructed-response, and technology-enhanced item types.
Andrew J. Middlestead

- Coordinates with other offices within MDE (Curriculum Office, Superintendents Office, Office of Special Education, Teacher Preparation Office)


- Calculate CTE Core Performance Indicators for federal reports
- Coordinate the annual CTE Follow-Up Survey
- Monitor seven grants
- Chair data issue committee
- Coordinate with other offices within MDE


- Collaborated in the planning and implementation of education research
- Performed data analysis using statistical software
- Managed data collection from various research instruments
- Developed methods to create tailored data reports
- Supervised student employees


- Coordinate survey feedback and input
- Archive old material to a Web based database system
- Create data tables and reports
- Developed methods to create tailored data reports
- Supervised student employees

PERSONAL DEVELOPMENT:

- Fellow – Education Policy Fellowship Program (2011-12)
- Photographer – Part-Time Photography Business
- Boy Scouts – achieved Eagle Scout

REFERENCES:

- Additional available upon request
Professional Experience

2007–present   Senior Research Scientist, Director of the Institute of Innovative Assessment, Wisconsin Center for Educational Research, School of Education, University of Wisconsin Madison.

2000–2006   Research Professor, Founder and Director, Center for the study of Assessment Validity and Evaluation, University of Maryland College Park


1998–2000   Independent Consultant

1995–1997   Director, Student Assessment, Delaware Dept. of Public Instruction, Dover, DE

1993–1995   Coordinator of Research, Statistics Faculty, California State University Fresno

1992–1995   Associate Professor, California State University Fresno

1989–1992   Assistant Professor, California State University Fresno

Recent Federal Grants


2006–2010   Developing Structured Task Design Models To Assess Middle School Science in Context: Making Comparable Inferences about Embedded Tasks Across a Diverse Population, Rebecca Kopriva, PI. National Science Foundation. Award amount: a) $1,695,168.00; b) $2,033,149.


2003–2005   Taxonomy for Testing English Language Learners, Rebecca Kopriva, PI. USED, Office of Elementary and Secondary. Award amount: $1,547,971.

2001–2005   Valid Assessment for English Language Learners, Rebecca Kopriva, PI, Robert Mislevy, Co-PI. Grant awarded by U.S. Department of Education, Office of
Educational Research and Improvement, Grant No. R305T010846-03. Award amount: $1,979,219.00.


**Educational History**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Major</th>
<th>Degree and Year</th>
</tr>
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<tbody>
<tr>
<td>University of California Irvine</td>
<td>Studio Art</td>
<td>B.A., 1979</td>
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<tr>
<td>Colorado State University</td>
<td>Counseling</td>
<td>M.S., 1986</td>
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<tr>
<td>University of Northern Colorado</td>
<td>Applied Statistics</td>
<td>Ph.D., 1989</td>
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**Recent Publications, selected**

Kopriva, R.J., Wright, L. Triscari, R. (2015 submitted). Examining a multisemiotic approach to measuring challenging content for English learners and others: Results from the ONPAR elementary and middle school science study. Submitted.


Kopriva, R.J., Gabel, D., Merow, K. and Carr, T.G. (in preparation). How technology and multisemiotic methods work together to successfully assess complex mathematics for students with literacy and attention challenges in grades 4 and 7.


Presentations at Professional Meetings, selected


2009 It’s about time: Matching English learners and the ways they take tests by using an online tool to properly address individual needs. Presentation at the annual meeting of the National Council on Measurement in Education, San Diego CA. With T.G. Carr.

2009 Building comparable computer-based science items for English learners: Results and Insights. Presentation at the annual CCSSO National Conference on Student Assessment. Los Angeles, CA. With T.G. Carr, C. Cameron.

2009 Comparability methodology: Past and future. Presentation at the annual CCSSO National Conference on Student Assessment. Los Angeles, CA.

2008 Where are we REALLY at with building comparable items for ELs and students with disabilities? Invited presentation at the National Council of Measurement in Education Annual Meeting, NY, NY.

2008 The limits of DIF: Why this item evaluation tool is flawed for LD students, hearing impaired, and English learners. Presentation at the National Council of Measurement in Education Annual Meeting, NY, NY.

2008 Testing for the future: Addressing the needs of low literacy English learners by moving beyond the use of common item types in large-scale testing. Presentation at the American Education Research Association Annual Meeting, NY, NY.

2007 Comparing standard and enhanced access items for diverse students: Item analyses in six grades and four subjects. Presentation at the CCSSO Large Scale Assessment Conference, Nashville, TN. With C. Cameron.


2006 Building accessible tests: Developing access-based items and associated materials. Invited presentation at the American Association of the Advancement of Science, Washington, D.C.
LAURA J. WRIGHT

EDUCATION
Ph.D., Linguistics
Concentration in sociolinguistics
Georgetown University, Washington, DC
US Department of State Foreign Language Area Studies (FLAS) Fellow: Turkish
Dissertation: Doing, talking and writing science: A discourse analysis of the
resemiotization of laboratory activities in a middle school science class

M.A., Linguistics
Concentration in TESOL
Northeastern Illinois University, Chicago, IL
Thesis: Sarcasm: An invitation to realign

B.A., International Ministries
Moody Bible Institute, Chicago, IL

PROFESSIONAL EXPERIENCE
University of Wisconsin-Madison, Madison, WI
Project Director, 2014–present

Center for Applied Linguistics, Washington, DC
Educational Linguist, 2008–2014

The George Washington University, Washington, DC
Assistant Research Professor, 2008–2012
Courses taught: Language and Education, Ethnography of Speaking.

Georgetown University, Washington, DC
Adjunct Instructor, 2008
Course taught: Language and Multimedia.

The George Washington University, Washington, DC
Research Assistant, 2005–2008

Marymount University, Arlington, VA
Adjunct Instructor, 2004–2005
Courses taught: Principles of Language, Perspectives on Language Acquisition.

Language Analysis Systems, Herndon, VA
Onomastics Consultant, 2002–2005
NORTHEASTERN ILLINOIS UNIVERSITY, Chicago, IL
ESL Teaching Assistant and Writing Tutor, 1999–2000
Courses taught: ESL Writing III, ESL Listening and Speaking.

INTERFAITH REFUGEE AND IMMIGRATION MINISTRIES, Chicago, IL
ESL Instructor, 1996–1999

EDUCATIONAL SERVICES INTERNATIONAL, Alhambra, CA
EFL Teacher & Central Administrator, Liceul Teoretic Octavian Goga, Miercurea Ciuc, Romania, 1994–1996

PROJECTS (SELECTED)

TECHNOLOGY-INTERACTIVE, CLASSROOM-EMBEDDED MODULES FOR MEASURING
CHALLENGING MATH AND SCIENCE SKILLS OF ENGLISH LEARNERS (ELs)
U.S. DEPARTMENT OF EDUCATION
Project Director, 2014–present

NATIONAL CLEARINGHOUSE FOR ENGLISH LANGUAGE ACQUISITION (NCELA)
US DEPARTMENT OF EDUCATION
Senior Research Associate, 2013–2014

WIDA ASSESSMENT SERVICES SUPPORTING ELs THROUGH TECHNOLOGY SYSTEMS
(ASSETS)
US DEPARTMENT OF EDUCATION
Senior Research Associate, 2012–2014

PROJECT FIREBIRDS ARE STEM TEACHERS (FAST) CAPACITY
NATIONAL SCIENCE FOUNDATION
Project Director, 2012–2014

ARGUMENTATION AND ACHIEVEMENT IN MIDDLE SCHOOL SCIENCE: AN ANALYSIS OF
A VIDEO DATABASE
NATIONAL SCIENCE FOUNDATION
Co-Principal Investigator, 2010–2013

VOCABULARY INSTRUCTION AND ASSESSMENT FOR SPANISH SPEAKERS (VIAS),
NATIONAL INSTITUTE OF CHILD HEALTH & HUMAN DEVELOPMENT
Research Associate, 2010–2013

OBTAINING NECESSARY PARITY THROUGH ACADEMIC RIGOR (ONPAR) MATH &
SCIENCE
US DEPARTMENT OF EDUCATION
Research Associate, 2008–2012

Laura J. Wright
PUBLICATIONS (SELECTED)


Wiley, T. & Wright, L.J. (in press). How has the concept of academic language been defined (and by whom) and interpreted (and by whom)? How can educators draw on this work in ways that enable linguistically and culturally diverse students to develop language and literacy for academic purposes across content areas? In G. Valdés, K. Menken, & M. Castro (Eds.), Common Core and ELLs/emergent bilinguals: A guide for all educators. Philadelphia: Caslon Publishing.


**INVITED PRESENTATIONS**


Wright, L.J.. (2012). Academic Literacy as Social Practice. Presentation for World Class Instruction Design and Assessment Sociocultural Contexts of Academic Literacy Development for Adolescent English Learners October, 2012, Madison, WI.


**PRESENTATIONS (SELECTED)**


**EDUCATION**

**ABD. Educational Studies: Science Education**, University of Michigan,
Dissertation Title: Contextualization in Middle School Science Curriculum, Enactment, and
Student Learning
Dissertation chair: Joe Krajcik

**M.A. Educational Studies: Research Methods**, University of Michigan, *December 2009*

**M.S. Cancer Biology**, Stanford University, *January 2006*

**B.S. Biochemistry, Spanish minor**, University of Maryland, Baltimore County, *May 2001, cum laude*

**RESEARCH EXPERIENCE**

**Research Associate, 2015-present**

*University of Wisconsin-Madison, Wisconsin Center for Education Research*
- Lead developer for middle school formative science assessment tasks aligned to Next
  Generation Science Standards.
  
  *Principal Investigator: Rebecca Kopriva*

**Researcher Investigating Inquiry-based Middle School Science Curricula, 2012-2014**

*East Carolina University*
- Investigated the adoption and adaptation of the Investigating and Questioning our World
  Through Science and Technology (IQWST) curriculum at a rural charter school.

**Developer of Inquiry-based Middle-School Science Curricula, 2006-2011**

*University of Michigan, Center for Highly Interactive Classrooms, Curricula, and Computing in
Education (HICE), Investigating and Questioning our World through Science and Technology
(IQWST) curriculum*
- Developed teacher and student curricular materials and student assessments for an
  8th grade chemistry inquiry-based unit through five design cycles.
  
  *Principal Investigator: Joseph Krajcik*

**Cancer Immunology Laboratory Researcher, 2001-2004**

*Stanford University, Bone Marrow Transplant group*
- Investigated the use of specific subsets of bone marrow cells to cure hematological
  cancers in mouse models.
  
  *Principal Investigator: Robert Negrin*

**SCHOLARLY PUBLICATIONS**


Krajcik, J. S., Sutherland, L. M., Drago, K., & Merritt, J. (2011) The promise and value of

the energy to do things?. In Krajcik, J. S., Reiser, B. J., Sutherland, L. M., & Fortus, D. (Eds.), *Investigating and Questioning our World through Science and Technology*. NY: Sangari Global Education.

**SCHOLARLY PRESENTATIONS**


Krajcik, J., Sutherland, L., Choi, S., Drago, K., & Merritt, J. (2012, March) The effects of coherent curriculum on middle school students' understanding of key chemistry ideas. Paper presented at the NARST Annual International Conference, Indianapolis, IN.


**Drago, K.** (2011, March). Middle-schoolers’ learning about photosynthesis and cellular respiration. Presented at the GSCO Student Research Conference, Ann Arbor, MI.


**Drago, K.** (2008, March) The role of contextualization in students’ science learning. Talk presented at the School of Education Graduate Student Research Symposium, Ann Arbor, MI.


**IN-SERVICE TEACHER EDUCATOR EXPERIENCE**

**Professional Development Facilitator, 2012-2013**

*East Carolina University*

- Designed and provided professional development for rural middle school teachers enacting the Investigating and Questioning our World through Science and Technology (IQWST) curriculum for the first time

**Teach For America-Detroit Corps Program Manager and Designer, 2010-2012**

*University of Michigan*

Performance Assessment/EPortfolio Manager, 2011-2012

- Developed and managed the ePortfolio assessment environment for over 100 corps members
- Facilitated workshops and created handbooks, webpages, and instructional sequences supporting corps members, field instructors, seminar instructors, ePortfolio graders, and ePortfolio coaches in using the ePortfolio
- Coordinated assignment articulation, support, submission, and grading Design Team Member, 2010-2011
- Created science specific program outcomes for corps members

**Project Manager: Kendra Hearn**

**Professional Development Facilitator, 2006-2009**

*University of Michigan, Investigating and Questioning our World through Science and Technology (IQWST)*

- Designed and conducted workshops to introduce in-service teachers to the activities and pedagogies of the 8th grade IQWST chemistry unit

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**UNIVERSITY TEACHING EXPERIENCE**

**High School Teacher Candidate Supervisor, 2014**

*East Carolina University, Internship in Science Education (SCIE 4324), Undergraduate face-to-face course*

- Observed enactments of three teacher candidates at their internship placements
- Provided timely, targeted feedback to teacher candidates regarding professionalism, classroom management, science content knowledge, and reform-based science teaching practices

**Middle School Science Methods Instructor, 2013**

*East Carolina University, Teaching Science in the Middle Grades (SCIE 4319), Undergraduate asynchronous distance education and face-to-face methods courses*

- Guided teacher candidates during practicum experience that included development, rehearsal, revision, and enactment of an inquiry-based 5E unit plan
- Prepared teacher candidates for their edTPA certification tasks by engaging them in critical analysis of how standards, meaningful scientific phenomena, evidence-based explanations, academic language, and student characteristics should inform their teaching practice
- Supported teacher candidates in becoming reform leaders through use of the disciplinary core ideas, science practices, and crosscutting concepts of the Next Generation Science Standards

**Life and Environmental Science Methods Instructor, 2013**

*East Carolina University, Life and Environmental Science Methods (SCIE 3604), Undergraduate asynchronous distance education methods course*

- Engaged middle and high-school teacher candidates in improving their life/environmental science content knowledge through inquiry investigations of topics such as geologic timeline, evolution, structure/function relationships, biodiversity, sustaining organisms/ecosystems, renewable/non-renewable resources, and climate change
- Supported teacher candidates in improving their science pedagogy through investigating misconceptions, the Next Generation Science Standards, 5E lesson planning, and online synchronous peer teaching events

**Secondary Science Methods Instructor, 2012-2014**
East Carolina University, *Introduction to Teaching in the High School Science Classroom (SCIE 3323), Undergraduate face-to-face methods course*
- Engaged teacher candidates in their first experiences with classroom management, investigation into equitable teaching practices, 5E lesson planning, teaching rehearsals, and reflection on practice
- Guided teacher candidates during practicum experience that included multiple focused classroom observations, interviewing high school students, enacting individual lessons, and reflection upon teaching and assessment quality

**Elementary Science Methods Instructor, 2012-2013**
East Carolina University, *Teaching Science in the Elementary School (SCIE 3216), Undergraduate face-to-face methods course*
- Engaged teacher candidates in activities highlighting key elementary science content while introducing modern learning theory, 5E lesson planning, teaching rehearsals, and reflection on practice
- Guided teacher candidates during practicum experience that included observing a practicum teacher, interviewing elementary students, enacting individual and group lessons, and reflection upon teaching and assessment quality

**SECONDARY SCIENCE TEACHING EXPERIENCE**

**Science Course Designer and Instructor, 2005-2007 Duke University, Talent Identification Program** Cancer biology, 2006-2007; Genetics, 2005
- Developed and taught 3-week summer science courses providing the equivalent of a semester of university level instruction to talented and gifted high school students

**High School Science Teacher, 2004-2006**
Delaware Valley Charter High School, Philadelphia, PA
- Twelfth-grade physics and earth science teacher; lead science teacher; twelfth-grade lead teacher, 2005-2006
- Biology, physics, and earth science teacher for all grades, 2004-2005

**PROFESSIONAL TRAINING**

**edTPA Local Evaluator Update**
East Carolina University, College of Education
- Reviewed new scoring procedures and graded sample artifacts for the teacher performance assessment portfolio for licensure of science teachers

**Distance Education Professional Learning Community Participant**
East Carolina University, College of Education
- Participated in sessions introducing best practices and technologies for distance education classes

**Tegrity Training**
East Carolina University
- Learned how to capture lectures and add them to Blackboard for distance

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PR/Award # S388A150019
Page e121

Kathryn Drago
education classes

Using the Learning Center as Your e-Textbook with Pre-Service Teachers
National Science Teachers Association
- Learned how to compile NSTA resources to supplement or replace textbooks in science education courses

NVivo Consultancy
QSR International
- Practiced advanced features of nVivo qualitative analysis software specific to my research

GRANTS
GCRT Grant, 2012
East Carolina University, MSITE Executive Advisory Council
- Received funding for research related scientific probes for use with the IQWST curricula ($2,900)
Start Up Grant, 2012
East Carolina University, Division of Research and Graduate Studies
- Received funding for the first three years of research at ECU ($36,570)

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS
National Science Teachers Association, 2013-2014
NARST, 2007-present
American Association for the Advancement of Science, 2007-present

SERVICE TO PROFESSIONAL ORGANIZATIONS
NARST
- Outstanding Paper Award Committee member, 2013-present
- Graduate student forum co-organizer, 2010-2013
- Graduate student forum panelist, 2009-2010
- Membership and Election Committee member, 2008-2009, 2010-present
- Conference proposal reviewer, 2008-present

International Society of the Learning Sciences
- Conference proposal reviewer, 2011

American Educational Research Association
- Conference proposal reviewer, 2008
Solution Architect/Director Technical Services

Mr. Glover is an information technology strategist and manager with over 20 years of experience in providing innovative technology solutions. Converts research or business requirements into an architecture and design that becomes the blueprint for technology solutions; motivates and guides developers to take ownership of their portion of the technology architecture; and continuously reinforces best practices that result in the delivery of high quality and novel technology solutions.

Career Highlights

- Defined the design and constructed a longitudinal student information database implemented on a relational database system for the SCALE project (System Wide Change for All Learners and Educators) encompassing data from Los Angeles Unified School District, Denver Public School District, Madison School District, and Providence RI School District
- Defined the design and constructed a longitudinal student information relational database and a secure web based report delivery for the Value Added Research Center's student value added reporting applications
- Initiated and implemented WCER's transition from VB6 to a Microsoft.NET C# environment that utilizes state of the art technology
- Collaborated with the WCER Business Office and the School Of Education Dean's Office to create the WCER personnel/proposal funding management system and the financial reporting tool that accesses data from disparate data sources including UW Shared Financial System and the PayData system managed by the Engineering School
- Provided substantive input to external projects including the design of a value added reporting system for the New York City School District, Chicago Public School District, and Milwaukee Public School System utilizing the University Wisconsin High Throughput Computing (CONDOR) system hosted within the Computer Sciences Department
- Participated in University Wisconsin-Madison campus wide policy setting groups including the Madison Information Security Team and Guidelines for the Use of Personal Equipment and Services To Conduct University Sponsored Activities, and School of Education IT Policy Advisory Committee
- Designed and implemented for Pacific Gas and Electric an web based invoicing and payment system that supported secure online delivery and payment of customer utility bills
- Designed and implemented a data warehouse for American Family Insurance that supported underwriting and actuarial decision making and data mining of policy holder loss experiences and agent performance that accessed data from numerous legacy mainframe systems and the delivery of real time ad hoc reports.
Career History

November 2003 to Present: Wisconsin Center for Education Research, University of Wisconsin - Madison
Director Technical Services (Current Title): Manage the Technical Services staff of WCER to ensure effective and responsive delivery of information technology services to multiple research centers housed within the School of Education. Responsibilities include management of technical support (help desk), technology purchases, software development (web and client server), and graphics design (web and print). Additional responsibilities include the design, implementation, and management of the information technology infrastructure for multiple centers within the School of Education. Involvement includes technology selection, configuration and administration of networks and servers, development and implementation of security, database design and administration, web server administration, and desktop and web application design frameworks based primarily on C# and Microsoft .NET framework. Support and participate through direct effort the research initiatives of principal investigators internal and external to the School of Education. Additional responsibilities include definition and implementation of software development best practices and software life cycle management.

October 2001 to June 2003: CUNA Mutual Insurance Agency, Madison WI
Business Systems Consultant: Lead Developer for a CRM system for the use of CUNA Mutual independent sales representatives utilizing Siebel 7.04 eFins application. Main project responsibilities included design and implementation of systems to clean and load data feeds of credit union and member information from legacy systems utilizing web services written in VB.NET, Java2, WIN32 API, XML, XSL, and MQ Series. Other duties included system security and user interface customization.

April 2000 to January 2001: Utility.COM, Emeryville, CA
Senior Programmer/Analyst: Lead developer for a web based invoicing system for electric and gas utilities and a high volume data transfer system to support a web based electric and gas utility signups, invoicing, and payments. Project utilized COM objects developed in Visual C++ (ATL), XML, stored procedures and triggers running on Oracle Si, Java2, and the Vitria Messaging environment.

March 1997 to April 2000: American Family Insurance, Madison WI
Senior Database Developer: Design, implement and manage a data warehouse that supported underwriting and actuarial decision making and data mining. Data sources included Customer Billing, Agent Quality Management, Inforce Policies, and Casualty Risk Management. Project involved migrating data from legacy mainframe systems (DB2 and ADABASE) to AIX UDB running on a 25 node IBM Symmetric Parallel Processing system. Project required extensive data modeling, complex SQL queries, and data cleaning strategies. Responsibilities also included development of user interfaces using Business Objects and Crystal Reports.

April 1994 to February 1997: Heurikon Corporation, Madison WI.
Lead Operating System Developer/Integrator: Design, implemented the integration of Wind River Systems real time operating system VxWorks with custom designed hardware used primarily in telecommunication systems.
applications. Additional responsibilities included project management and implementation of hardware based monitors developed in CPU specific assembly language and microcode.

January 1998 to Present: Consultant, Sterling Software Solutions, Madison WI.

Provide consulting services to insurance and power utility companies. Clients included American Family Insurance, Sentry Insurance, and Alberta Canada Power and Light. Provide design and implement decision support and data mining applications including databases, data cleaning and loading, and reporting interfaces.

Publications and Education

Publications

Education
Bachelor Science Chemistry/Biochemistry, Wake Forest University, Winston-Salem NC - May 1977 Masters Business Administration, Edgewood College (Cumulative GPA 4.00/4.00; Graduation date August 2011)

References

Excellent professional and personal references will be provided upon request.
Dr. LeeAnn M. Sutherland

Education
Doctorate (Ph.D., 2002). The University of Michigan, Ann Arbor; Educational Studies; Literacy, Language and Culture (Adolescent Content Area Literacy)
Master in the Art of Teaching: Reading (M.A.T., 1991). Aquinas College, Grand Rapids MI
Added both elementary education and reading endorsements to teacher certification
Bachelor of Arts: English/Sociology (B. A., 1979, cum laude). Alma College, Alma MI.
State of Michigan secondary teacher certification

Graduate and Professional Experience
Chief Academic Officer, Activate Learning, Greenwich, CT. (January 2013-present)
(Publisher of IQWST, science curriculum developed while full-time at UM)
Research Scientist, Center for Highly Interactive Classrooms, Curricula & Computing in Education (hi-ce), University of Michigan (2003-present).
Faculty affiliate, Center for Curriculum Materials in Science (CCMS).
Post Doctoral Research Fellow, hi-ce, University of Michigan (2002-03)
Graduate Student Research Assistant—University of Michigan (1996-2002)
- Pls: Ronald Marx, Phyllis Blumenfeld, Joseph Krajcik, Elizabeth Moje.
- PI: Pamela A. Moss
- Supervisor of ELA teacher interns. Director: Dr. Frederick Goodman.
Academic Skills Specialist, Multicultural Services Dept., Aquinas College, Grand Rapids, MI.
Career Education Instructor—Godwin Heights Public Schools, Wyoming MI; Middle School
and High School Guidance Departments.
High School English Teacher—Montabella Community Schools, Edmore MI; Alma High
School, Alma MI

Related Grants


Publications (Selected)


http://www7.nationalacademies.org/DBASE/Research_on_21st_Century_Competencies.html


**Professional Papers and Presentations**

Sutherland, L. M. (August, 2014). *Connecting Science and Literacy with NGSS & Common Core: Middle School.* NSTA Virtual Conference.


http://www7.nationalacademies.org/dbasse/Research_on_21st_Century_Competencies.html

Workshops
Sutherland, L. M. (Repeated 2013-present). Connecting the Next Generation Science Standards and the Common Core State Standards for Science. (Several state and national conferences, as well as individual school districts in WI, MO, NY, TX, MA, SC, FL, MI, IL).
Sutherland, L. M. & Krajcik, J. S. (December, 2009) A Successful Professional Development Model for Preparing Teachers to use Reform-Based Curriculum Effectively. DRK-12 workshop for the Washington, D.C.: National Science Foundation

Memberships in Professional Organizations
American Educational Research Association (AERA), International Society of the Learning Sciences (ISLS), National Association for Research in Science Teaching (NARST), Association for Supervision and Curriculum Development (ASCD), Learning Disabilities Association of America (LDA), National Reading Conference (NRC), International Reading Association (IRA).
HEATHER MILO

OBJECTIVE
Science curriculum and instruction specialist looking for opportunities to engage learners in reflective dialogue centered on student thinking and the scientific practices, concepts, and language of the Next Generation Science Standards.

ACADEMIC PREPARATION

M.S. 2013-2015 University of Wisconsin - Madison Madison, WI
• Curriculum & Instruction: Science Education
• Academic Interests: student sense-making, model-based inquiry, classroom discourse practices, teacher education, and science curriculum development.

B.S. 2004-2008 University of Wisconsin - Madison Madison, WI
• Secondary Education: Biology
• Harvey Meyerhoff Excellence Award for Leadership, Scholarship and Service, 2007

GRADUATE APPOINTMENTS

Wisconsin Center for Education Research (WCER) Science Education Project Assistant 2014-present University of Wisconsin – Madison, WCER Madison, WI
• Collaborate with Co-Principal Investigator, Dr. Leema Berland, on the National Science Foundation funded project, “Supporting scientific practices in elementary and middle school classrooms.” Explore the development of dialogic patterns that support and inhibit students’ ability to make sense of phenomena through explanatory models.
• Identify specific teacher and student discourse practices that linguistically position students as sense-makers, and that attend to and advance each other’s scientific ideas.

Education Portfolio & Career Services (EPCS) Consultant and Liaison 2013-2015 University of Wisconsin – Madison, EPCS Madison, WI
• Foster professional identity development through ongoing critical self-reflection and collaborative dialogue designed to raise critical awareness of their implicit values and assumptions about teaching and learning.
• Proceduralize assessment protocol to gather qualitative and quantitative feedback data from surveys, job fairs, e-portfolio, and workshops in order to evaluate office services, calculate job placement, and re-design future data gathering procedures.

TEACHING AND RELATED EXPERIENCE

Science Education Consultant 2015-present Activate Learning Nation-wide
• Develop middle school science curriculum using 4 design principles built on coherence: learning goal coherence; intrunit coherence between content learning goals, scientific practices, and curricular activities; interunit coherence between disciplines; and coherence between science literacy and general literacy skills.
• Conduct professional development that examines the 3 dimensions of NGSS and models instructional strategies that position students as science sense-makers.

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PR/Award # S388A150019
Page e131
Summer Cooking Camp Coordinator 2014  Atlanta Botanical Garden (ABG)  Atlanta, GA

- Budgeted grant funds to plan, coordinate, and implement a two-week long summer nutritional program with 16 middle school children who lacked access to fresh local foods. Practiced gardening and cooking techniques that could be replicated at home.
- Collaborated with the Afterschool All-Stars Program, Atlanta Public Schools, Georgia State University’s Dept. of Nutrition, the ABG chef, the ABG horticulturist, and two middle schools to recruit students, provide transportation to and from the garden, collect assessment data, plan a menu and healthy eating goals, integrate gardening techniques, and coordinate GSU nutrition internship experiences.

Middle School Science Teacher (Grades 6-8) 2012-2013  The Epstein School  Atlanta, GA

- Collaborated weekly with three science teachers, two support staff, and principal to develop essential questions, assessment methods, and learning plans for 6th, 7th, and 8th grade science courses using Understanding by Design (UbD) framework.
- Restructured 15 science units to align with the cross-cutting concepts, disciplinary core ideas, and scientific practices outlined in the Next Generation Science Standards.
- Designed and implemented curricula for three five-week-long health & sex education programs in grades 6-8 and evaluated programs via discussion and survey feedback.

Lead Middle School Science Teacher (Grades 6-8) 2009-2012  Sophia Academy  Atlanta, GA

- Ordered, inventoried, and facilitated the integration of three inquiry science units into each K-8 grade and met with teachers every trimester to evaluate progress.
- Prepared individualized accommodations and modifications for all middle school students based on psychological evaluation and annual testing data.
- Organized monthly professional development sessions on formative assessment strategies using technology such as iPads, flipcharts, and student response systems.
- Designed and implemented middle school study skills curriculum to provide our special needs population with strategies for organization and note-taking using interactive science notebooks.

JHU’s Center for Talented Youth (CTY) Summer Teacher Assistant 2007-2008  Johns Hopkins’ University CTY  Los Angeles, CA; Loudenville, NY

- Co-taught “Introduction to Biomedical Sciences,” and “Fast-Paced High School Biology” two three-week courses for 8th–10th graders interested in pursuing higher education opportunities in medical and/or biotechnology fields.

Nutrition Educator 2007  Amigos de las Americas  Oaxaca, MEX

- Fundraised $4200 to travel to an underdeveloped Oaxacan community and reduced malnutrition by planting 30+ personal gardens and one community garden of locally-grown amaranth and taught weekly cooking and English classes.

TEACHING, LICENSURE.

Georgia

- Biology [FLD 750] grades 6-12; Clear Renewable, valid 3/2013 - 7/2017
- Science (Broad Field) [FLD 748] grades 6-12; Clear Renewable, valid 3/2015 - 7/2017
MARIANA CASTRO

SUMMARY

National leader in the education of emergent bilinguals with experience in standards-based curriculum, instruction and assessment. Passionate and committed to equitable education of all children with a focus on English Language Learners and Emergent Bilinguals.

EXPERIENCE

2014-Present
Director of Academic Language and Literacy Initiatives, WIDA at Wisconsin Center for Education Research
- Development of English and Spanish Language Development Standards for pre-K-12 grade
- Research on issues related to language development, bilingualism and instruction and assessment
- Consultation, technical expertise, and participation in national panels and initiatives related to second language development and bilingualism representing WIDA

2013-2014
Director of Teaching and Learning, WIDA at Wisconsin Center of Education Research
- Directed professional development activities, educator resources and professional development programs across and beyond the WIDA Consortium
- Consulted and provided technical assistance to assessment development and research
- Presented at national conferences and events

2006-2013
Coordinator of Professional Development, WIDA at Wisconsin Center of Education Research
- Directed professional development activities, educator resources and professional development programs across and beyond the WIDA Consortium
- Consulted and provided technical assistance to assessment development and research
- Presented at national conferences and events

2006-2013
Coordinator of Professional Development, WIDA at Wisconsin Center of Education Research
- Managed and coordinated professional development opportunities for the WIDA Consortium
- Managed, trained and supervised consultants and outreach specialist that deliver professional development across our Consortium
- Provided technical support to State Educational Agencies, administrators and teachers across the fifteen states in the Consortium.
- Presented at local, regional, and national professional conferences
2005-2015  Adjunct Faculty,  Edgewood College
· Developed and delivered courses in ESL methodology, assessment, and language development for ESL, bilingual, science and mathematics teachers
· Guest lectured for Elementary and Secondary Education courses

Summer 2012  Adjunct Faculty,  Whitewater
· Delivered courses on assessment and ESL methodology

2003-2006  Program Support Teacher,  Madison Metropolitan School District
· Coordinated bilingual programs in 4 elementary schools and 2 middle schools
· Developed and delivered professional development on second language acquisition, working with ELLs and bilingual methodology
· Developed and trained ELLs and Bilingual Education summer teachers
· Consulted on School Improvement Plans and Special Education Identification
· Participated in the Equity Team for the Division of ESL and Student Services

2000-2003  Science, ESL and Bilingual Education Teacher,  Madison Metropolitan School District
· Developed and taught courses: Newcomer Science, ESL Biology, Chemistry in the Community, Latino American Language and Culture
· Participated as a member of the School Improvement Team, Professional Learning Communities Initiative, and Equity Team

2000-2002  Adjunct Faculty,  Madison Area Technical College (AKA Madison College)
· Developed and taught courses for adults in conversational Spanish

Summer 1999, 2000 and 2001  Biology and Chemistry Instructor,  PEOPLE Program, UW Madison
· Designed, developed and delivered enrichment and preparatory courses for minority students entering high school

· Provided linguistic and academic support to English Language Learners in general education and ESL classes
· Provided small group and individual instruction to students
· Served as liaison for families and the Latino Community
· Translated and interpreted in daily and legal documentation, IEP meetings and parent-teacher conferences
· Taught Spanish Classes to general education teachers

- Planned, designed and taught Enrichment Spanish courses to elementary school children as an after-school program
- Planned, designed and taught conversational Spanish to middle school teachers

1991-1994  Special Education Assistant, Madison Metropolitan School District
- Provided support to students with severe cognitive and physical disabilities, autism and Down syndrome at elementary school level
- Worked with students in classroom and during Physical and Occupational Therapy

1990-1991  Child Care Practitioner, Safe Heaven, Madison, WI
- Developed curriculum and worked with 2 and 3 year old children

1988-1990  Teacher of English as a Foreign language, Centro Cultural de Lenguas Modernas
- Developed curriculum and taught English as a foreign language to 3-4 years old children and adults

EDUCATION

2015  PhD in Education, Curriculum and Instruction with an emphasis in Teacher Education UW Madison

2003  Master of Science in Education, Curriculum and Instruction with an emphasis on ESL and Bilingual Education UW Whitewater

2000  Bachelor in Science, Education UW Madison

1997  Bachelor in Science, Chemistry UW Madison

CERTIFICATES AND LICENSES

Wisconsin  Chemistry Licensure (610) – NCATE Accredited
Wisconsin  Bilingual Secondary Licensure (028) – NCATE Accredited
Wisconsin  Bilingual Elementary License (044) – NCATE Accredited
Wisconsin  English as a Second Language License (395) – NCATE Accredited
PUBLICATIONS


CONTRIBUTIONS TO THE FIELD

Contributor to and co-authored the following publications:

WIDA English Language Development Standards, 2.5-5.5 Years © 2014. Board of Regents of the University of Wisconsin System, on behalf of the WIDA Consortium - www.wida.us.

WIDA Spanish Language Development Standards, K-12 © 2013. Board of Regents of the University of Wisconsin System, on behalf of the WIDA Consortium - www.wida.us.


WIDA English Language Development Standards, K-12 © 2012. Board of Regents of the University of Wisconsin System, on behalf of the WIDA Consortium - www.wida.us.

CONFERENCE PRESENTATIONS

2015 Language Policy Implications of the Common Core State Standards for ELLs/Emergent Bilinguals, Toronto, Canada, May, 2015


2013 Castro, M., Ibarra-Johnson, S., Mancilla, L. Pedagogia con respeto: Construyendo junto con nuestros estudiantes una educación basada en estándares, La Cosecha Conference, Albuquerque, NM.
LANGUAGES

English, Spanish and French

AWARDS

2005-2006    Aristo Scholar, Teacher Recognition at Madison Metropolitan School District
1998-2000    Morgridge Grant Recipient

MEMBERSHIPS

American Educational Research Association (AERA)
American Association for Applied Linguistics (AAAL)
Association for Supervision and Curriculum Development (ASCD)
National Association for Bilingual Educators (NABE)
National Association for Multicultural Education (NAME)
State Collaboratives on Assessment and Student Standards (SCASS)
TESOL International Association (TESOL)
AMELIA WENK GOTWALS, PH.D.
Michigan State University
325 Erickson Hall
620 Farm Lane East Lansing, MI 48824
gotwals@msu.edu

EDUCATION

Ph.D., Educational Studies, University of Michigan, 2006
M.S., Ecology and Evolutionary Biology, University of Michigan, 2005
M.S. Science Education, University of Michigan, 2004
B.A. Biology, Brown University, Providence, R.I., 1998

PROFESSIONAL EXPERIENCE

2014-present: Associate Professor of Science Education, Department of Teacher Education, College of Education, Michigan State University, East Lansing, MI

2006-2014: Assistant Professor of Science Education, Department of Teacher Education, College of Education, Michigan State University, East Lansing, MI

2001-2006: Research Assistant, NSF-Funded Project BioKIDS: Kids Inquiry of Diverse Species, School of Education, University of Michigan, Ann Arbor, MI

1999-2001: Middle School and High School Science and Biology Teacher, The Pingry School, Martinsville, NJ.

1998-1999: Middle School Science Teacher, West Nottingham Academy, Colora, MD.

SELECTED PUBLICATIONS


Educational Assessment Journal.


RECENT SELECTED PRESENTATIONS


GRANTS

LPF-CMP2 Innovation Grant, CREATE for STEM Institute, Michigan State University August 2013-August 2014 (co-PI)
SOLID Start: Designing Curriculum to Promote Science, Oral language, and Literacy Development from the Start of School
$100,000

Michigan Department of Education August 2010-August 2014 (PI)
FAME: Formative Assessment for Michigan Educators
$699,764

The National Science Foundation
*Learning Progressions in Science*
*(LeaPS)* August 2008-August 2011 (PI)
$99,998

The National Science Foundation
*Deep Think: Thinking Deeply about Biodiversity through Inquiry*
August 2006-August 2010 (co-PI)
$3 Million (MSU sub-contract, $208,607)

The Spencer Foundation
*Spencer Dissertation Fellowship* 2005-2006
$30,000

**RECENT NATIONAL PROFESSIONAL SERVICE**

2013: Michigan State Network of Educators for Smarter Balanced Digital Library, Michigan Department of Education
2013-present: Publication Advisory Committee, National Association of Research in Science Teaching
2013: Planning committee and co-leader of breakout session for Next Generation of Science Standards (NGSS) rollout, Michigan Department of Education and CREATE for STEM Institute
2009-2013: Expert Reviewer, STEM Scopes Assessment Team, Rice University. 2012-present: Editorial Board Member, *Journal of Research in Science Teaching*
2012-present: Michigan representative for the Council of Chief State School Officers, State Collaborative on Assessment and Student Standards (SCASS), Formative Assessment for Students and Teachers (FAST).
2012: Advisory Board for the Science Cognitively Based Assessment of, for, and as Learning (CBAL) group, Educational Testing Service.


**James William Pellegrino**

**Present Position**  
Liberal Arts & Sciences Distinguished Professor  
Distinguished Professor of Education  
University of Illinois at Chicago  
Chicago, IL 60607

**Office Address**  
Learning Sciences Research Institute (M/C 057)  
1240 W. Harrison Street  
University of Illinois at Chicago  
Chicago, IL 60601  
(312) 413-2320

**Education**  
Colgate University: Bachelor of Arts; Major: Psychology; 1965-1969  
Univ of Colorado: Master of Arts; Experimental & Quantitative Psychology; 1969-1970  
Univ of Colorado: Doctor of Philosophy; Experimental & Quantitative Psych; 1971-1973

**Professional Experience**  
2001- Liberal Arts and Sciences Distinguished Professor & Distinguished Professor of Education, Co-Director, Learning Sciences Research Institute, University of Illinois at Chicago

1992-1998 Dean, Peabody College of Education and Human Development, Vanderbilt University

1989-2001 Frank W. Mayborn Professor of Cognitive Studies, Peabody College, Vanderbilt University

1987-1989 Chairman, Department of Education, University of California at Santa Barbara

1979-1989 Associate Professor and Professor of Education and Psychology, University of California at Santa Barbara

1973-1979 Assistant and Associate Professor in the Department of Psychology and Research Associate in the Learning Research and Development Center, University of Pittsburgh

**Selected Publications**


Perspectives on technology and testing (with E. Quellmalz). Science, 2009, 323, 75-79.


The Jasper series: A generative approach to improving mathematical thinking (with the Cognition and Technology Group at Vanderbilt). In K. Sheingold, L. Roberts, & S. Malcom (Eds.), This Year in Science Series 1991: Technology for Teaching and Learning (pp. 108-140), Washington, DC: American Association for the Advancement of Science.

Synergistic Activities
• National Academy of Sciences/National Research Council Committee on the Evaluation of the National and State Assessments of Educational Progress (Committee Chair);
• National Academy of Sciences/National Research Council Committee on Cognitive Science Foundations of Assessment (Committee Co-chair);
• National Academy of Sciences/National Research Council Committee on Learning Research and Educational Practice (Committee Co-chair);
• National Academy of Sciences/National Research Council Committee on Strategic Education Research Partnerships: Panel on Learning and Instruction (Committee Chair);
• National Academy of Sciences/National Research Council Committee on Deeper Learning and 21st Century Skills (Committee Chair);
• National Academy of Sciences/National Research Council Committee on Developing Assessments of Science Proficiency in K-12 (Committee Co-chair);
• National Academy of Sciences/National Research Council Board on Testing and Assessment (Board Member)
• Co-developer with other members of the Cognition and Technology Group at Vanderbilt of “The Adventures of Jasper Woodbury” a multimedia mathematical problem solving series (educational product for K-12).
Collaborators (last 48 mo.)
Susan Goldman (UIC), Kimberly Lawless (UIC), Tom Moher (UIC), Donald Wink (UIC), Lou DiBello (UIC),
Kim Gomez (UCLA), Joe Krajcik (Michigan State), Mark Reckase (Michigan State), Jeanne Pemberton
(Arizona), Bob Chang (NU), Jim Minstrell (FACET Innovations), Angela DeBarger (SRI), Neil Heffernan
(WPI), Jodi Davenport (WestEd).
EDWARD D. ROEBER

Academic History

University of Michigan 1966 A.B. Psychology
University of Michigan 1967 A.M. Educational Psychology (Measurement and Evaluation)
University of Michigan 1970 Ph.D. Measurement and Evaluation

Recent Work Experience

8/12 - Assessment Director, Michigan Assessment Consortium, Lansing, MI
1/10 - Managing Partner, Assessment Solutions Group
1/11-8/14 Senior Assessment Policy Advisor, Wisconsin Center for Education Research/WIDA, University of Wisconsin, Madison, WI
8/12 -8/14 Consultant, Michigan State University Formative Assessment for Michigan Educators Research Project, East Lansing, MI
9/07-9/12 Adjunct Professor, Counseling, Education Psychology and Special Education; Teacher Education, Michigan State University College of Education, East Lansing, MI
11/03-9/07 Senior Executive Director, Office of Assessment & Accountability, Michigan Department of Education
7/98-11/03 Vice-President, External Relations, Measured Progress, Dover, NH.
4/91-7/98 Director, Student Assessment Programs, Council of Chief State School Officers, Washington, D.C.
5/69-6/72 Consultant, Exercise Development, National Assessment of Educational Progress/Education Commission of the States, Ann Arbor, MI and Denver, CO.

Selected Consultation (Since 1993)

1993 National Assessment Governing Board. Developed guidelines for the administration of NAEP below the state level.
Co-authored paper on the impact of reporting the state NAEP program
Member, Michigan English Language Arts Framework Advisory Committee
Member, Technical Advisory Committee, Michigan Department of Education (1994-98)
National Evaluation Consultant, Massachusetts Assessment Advisory Committee (1994-95)
1995  Chair, External Review Committee, Illinois State Board of Education
       Member, RFP National Advisory Committee, Kentucky Department of Education (1995-96)

       Chairman, Oregon Content and Performance Standards Review Team, Oregon Department of Education

1997  Consultant, Minnesota Department of Education (1997-98)
       Consultant, Alaska Department of Education (1997-98)


2003  Education Commission of the States, Developed concept papers on accountability.
       USED Blue Ribbon Schools Reviewer (2003 to 2012)


2006  National Assessment Governing Board, Wrote Paper on the Motivation of Twelfth Grade Students for the NAEP
       Idaho Technical Advisory Committee (2006 to 2012)
       Review of the Performance of the Utica (MI) Community Schools

2007  Panel Member, Washington Office of Superintendent of Public Instruction, Assessing English Language Learners (2007)
       Member, RFP Review and Selection Committee, National Board of Professional Teaching Standards

       Member, Technical Work Group, National Clearinghouse for English Language Acquisition (2008-2010)

2009  Contractor to the Idaho State Department of Education for the ISAT-Alt alternate assessment program (2009-2010)
2010 Senior Partner, Assessment Solutions Group (2010 to present)

Assist the MS Department of Education to revise its RFP for the alternate assessment program, and assist in the conduct of competitive bidding on the project.

2011 Dynamic Learning Maps Technical Advisory Committee

2011 Consultant, Wisconsin Center for Education Research/WIDA, University of Wisconsin, Madison, WI (2011-2012)

2014 Member, Quality of English Language Proficiency Assessments (2014-Present)

Member, Idaho Technical Advisory Committee (2014-Present)

2015 External Consultant, Indiana State Board of Education

Selected Publications (Since 1991)


Selected Presentations (Since 1993)

1996 U.S. Senate, Education and Labor Committee, Testimony on Title I (IIASA)

Kentucky State Board of Education
Louisiana State Board of Education


2008 Oregon State Board of Education
2009  Webinar on assessment in the arts for NASDAE

2010  CCSSO Meeting on the Costs of Using Innovative Assessment Models
       NRC BOTA Meeting on the Costs of Using Innovative Approaches to Assessment

2015  Presentation to the Indiana State Board of Education
STEPHEN G. SIRECI, PhD
College of Education—Center for Educational Assessment
University of Massachusetts
Amherst, MA 01003-4140
413-545-0564
sireci@acad.umass.edu
http://www-unix.oit.umass.edu/~sireci

Education
Ph.D. in Psychology (Psychometrics), Fordham University, Bronx, NY
Master of Arts in Psychology, Loyola College, Baltimore, MD
Bachelor of Arts in Psychology, Loyola College, Baltimore, MD

Professional Experience

September, 1995 to Present:

Professor, School of Education, University of Massachusetts Amherst
Director, Center for Educational Assessment, University of Massachusetts Amherst
Adjunct Associate Professor, Psychology Department (11/02), University of Massachusetts Amherst
June, 1992 to August, 1995:
Senior Psychometrician, American Council on Education, Washington, D.C.
August, 1990 to July, 1992:
Psychometrician, American Institute of Certified Public Accountants, New York, NY
June, 1990 to August, 1990:
Predoctoral Fellow, Educational Testing Service, Princeton, NJ
May, 1989 to June, 1990:
Research Supervisor of Testing, Newark Board of Education, Newark, NJ
(Promoted from Senior Research Assistant in January, 1990).

Selected National Commissions, Blue-Ribbon Panels, and Advisory Committees

2010-present Florida Alternate Assessment Technical Advisory Committee
2004-present Puerto Rico Technical Advisory Committee (Chair, since 2010)
2004-present Texas Technical Advisory Committee
2005-2011 National Center on Educational Outcomes, Research-to-Practice Panel
2006-2011 National Alternate Assessment Center, Expert Panel
2006-2010 Psychometric Oversight Committee, American Institute of CPAs
2006-2009 Assessing multiple sources reading comprehension, Advisory Board
2007-2009 Massachusetts Teacher Educator Licensure Pass Rate Study Group
2004-2009 Designing Accessible Reading Assessments Technical Advisory Committee
2004-2009 Partnership for Accessible Reading Assessment Technical Advisory Committee
2003-2009 Graduate Management Admissions Council Technical Advisory Committee
2003-2009 Federation of State Boards of Physical Therapy Technical Advisory Committee
2004-2008 New Hampshire Assessment Technical Advisory Committee
2005-2007 National Board of Professional Teaching Standards Assessment Certification Advisory Panel (Chair), resumed 2013-present
2003-2006 Montana Comprehensive Assessment System Technical Advisory Committee
Selected National Commissions, Blue-Ribbon Panels, and Advisory Committees (continued)
2003-2006  Graduate Records Exam Technical Advisory Committee
2005-2006  Technical Adequacy of Assessments for Alternate Student Populations, WestEd
2002-2004  National Assessment of Educational Progress Quality Assurance Panel
2002-2003  Maine Comprehensive Assessment System Technical Advisory Committee
2003  Committee on Diagnostic Methodology (The College Board)
2001-2002  College Board’s Blue Ribbon Panel on the Flagging of Test Scores
2001-2002  Commission on Instructionally Supportive Assessment
2001-2002  Massachusetts Comprehensive Assessment System Blue Ribbon Panel

Recent Awards/Honors
Outstanding Teacher Award, School of Education, University of Massachusetts, 2002-2003
Chancellor’s Award, University of Massachusetts Amherst, 2007
Fellow, American Educational Research Association, 2009
Outstanding Accomplishments in Research and Creative Activity, UMass Amherst, 2009
Thomas Donlon Award for Distinguished Mentoring (Northeastern Educ. Research Assoc.), 2010
Samuel F. Conti Faculty Fellowship Award, University of Massachusetts Amherst, 2012

Consulting
Currently or formerly consulted with a wide variety of national testing organizations, local boards of
education, professional licensure organizations, federal government agencies, and other educational
research or service organizations since 1987. Current and former clients include the American Institute
of Certified Public Accountants, Association of American Medical Colleges, the College Board,
Educational Testing Service, Federation of State Medical Boards, the Gallup Organization, the
Graduate Management Admissions Council, Microsoft, National Academy of Sciences, Newark (NJ)
Board of Education, Novell, and Westfield Public Schools.

Selected Publications
Chakwera, E., Khembo, D., & Sireci, S. G. (2004). High-stakes testing in the warm heart of Africa:
The challenges and successes of the Malawi National Examinations Board. Education Policy
Analysis Archives, 12(29) (see http://epaa.asu.edu/epaa/v12n29/).
Hauger, J. B., & Sireci, S. G. (2008). Detecting differential item functioning across examinees tested in
their dominant language and examinees tested in a second language. International Journal of
Testing, 8, 237-250.
Educational Measurement: Issues and Practice, 25 (1), 4-12.

Selected Publications (continued)
PR/Award # S388A150019
Page e153


2007-2008).


May 2008  Editorial Board, Applied Measurement in Education, since

January 1996  Editorial Board, Psicothema, since November 2000


2008  Editorial Board, Educational and Psychological Measurement, since

December 2004  Editorial Board, European Journal of Psychological Assessment,

since 2005

VITA
Martha L. Thurlow

SUMMARY OF RELATED EXPERIENCE
Dr. Thurlow has spent 25 years conducting research and technical assistance on the inclusion of all students, including students with disabilities and English learners, in appropriate instruction and assessments, and in policies that support successful progress through school for college and career readiness. Her areas of focus have been participation criteria, accommodations policies and practices, universal design of assessments, and the development of new assessment systems.

PRESENT POSITION
Director, National Center on Educational Outcomes (1999-present)
Senior Research Associate, Department of Educational Psychology (1999-present)
Senior Research Associate, Institute on Community Integration (1999-present)

EDUCATION
Ph.D., University of Minnesota, Minneapolis, MN; Educational Psychology; Special Education. Dissertation: A longitudinal study of instructional ecology and student responding for students with and without learning disabilities, 1993.
M.A., University of Minnesota, Minneapolis, MN; Educational Psychology; Special Education (Mental Retardation), 1971.
B.A., University of Minnesota, Minneapolis, MN; Psychology, 1968.

SELECTED PUBLICATIONS/PRESENTATIONS

Thurlow is an author of 17 books, one test bank, 2 instructor's manuals, and more than 50 book chapters. Among her recent books and chapters are:


**Thurlow has been an author of more than 175 articles in refereed journals and numerous articles in other outlets. Among these are:**


Thurlow, M.L. (2014). Dispelling misperceptions: Shifting focus from whether standards-based reforms result in better outcomes to how they can result in better outcomes! A response to Ryndak et al. Research and Practice for Persons with Severe Disabilities, 39(2), 154-155.


Thurlow has been an author of more than 175 reports from federally funded projects and other sources. Some of these reports are:


Minnesota, Improving the Validity of Assessment Results for English Language Learners with Disabilities (IVARED).


Thurlow has made presentations at more than 200 international, national, regional, state, and local conferences. Some of these reports are:


SELECTED PROFESSIONAL ACTIVITIES

Editorial Activities – Selected Examples
Assessment for Intervention, 2010-
Journal of Disability Policy Studies, 2008-
Journal of Special Education, 1999-

Technical Advisory Committees – Selected Examples
SMARTER Balanced Assessment Consortium Technical Advisory Committee, 2010-
CCSSO-NGA Common Core Standards Validation Committee, 2009-2010
Technical Advisory Panel on Uniform National Rules for NAEP Testing of Students with Disabilities, 2009
National Center for Learning Disabilities Growth Model Task Force, 2009
NAEP Full Population Estimates Workgroup, 2007

Professional Affiliations – Selected Examples
American Educational Research Association
Council for Exceptional Children (2009-2012 Chair of Honors Committee)
National Council on Measurement in Education (2014 Chair of Diversity and Testing
Committee)

Funded Projects – Selected Examples
Accessible Reading Assessments (2004-2009, extension to 2010)
Universally Designed Assessments (2005-2006, completed for Thompson)
Technology Assisted Reading Assessments Subcontract (2006-2011)
Minnesota Accommodations Training (2007-2008)
Multi-State GSEG (2007-2010, extension to 2011)
Alabama GSEG (2008-2010)
Accommodations Monitoring (2008-2009)
Minnesota Accommodations Evaluation (2009-2010)
GSEG to Support Alabama (2010-2011)
Improving the Validity of Assessment Results for ELLs with Disabilities (2011-2013)
Disability Advisory Panel for SMARTER Balanced Assessment Consortium (2011-2012)
Smarter Balanced Assessment Consortium (2013-2014)
PHOEBE C. WINTER

EDUCATION
B.A. Psychology, magna cum laude, Clemson University, Clemson, SC

PROFESSIONAL EXPERIENCE
INDEPENDENT CONSULTANT (CURRENT)
Consulting projects include
- Serving on state and national technical advisory committees for large-scale assessment programs.
- Providing advice on task and test development, automated and hand scoring, and establishing and evaluating score/inference validity for research projects in online assessment.
- Working with groups of state education staff members and researchers to develop an innovative online assessment of English language proficiency.

PACIFIC METRICS CORPORATION, MONTEREY, CA (2009–2014)
EXECUTIVE VICE PRESIDENT FOR EDUCATION POLICY
- Sat on the Executive Team and oversaw the work of the Research Department.
- Monitored and interpreted federal and state policy, national trends, and innovations in assessment and accountability.
- Designed and implemented research and development strategies and projects to improve the quality of assessments and enhance the validity of results.
- Advised Pacific Metrics’ clients on the implications of federal legislation and polices related to assessment and accountability.
- Served as a consultant and advisor regarding federal policy on large-scale assessment; served on state technical advisory committees and as an advisor to national research projects.
- Advised Pacific Metrics’ Executive Team and Directors on national assessment decisions, issues, needs, and upcoming changes in the external environment.
- Developed and delivered presentations to state department of education staff, federal education staff, researchers, and other stakeholders.

CONSULTANT IN EDUCATIONAL ASSESSMENT DESIGN AND POLICY, STATISTICAL ANALYSIS, AND EDUCATIONAL RESEARCH AND EVALUATION (1994–2009)
Consulting projects included
- Coordinating CCSSO’s state consortium on Technical Issues in Large-Scale Assessment (TILSA).
- Serving on state and national technical advisory committees.
- Working with the U.S. Department of Education as a peer reviewer for state assessment and accountability and as a technical consultant.
- Designing and developing state and district level assessments.
- Working on university-based research projects and conducting analyses of assessment data.
- Reviewing and developing proposals and requests for proposals for large-scale assessment programs.
- Conducting and developing program evaluations.

RESEARCH DIRECTOR
- Directed research projects in large-scale assessment and evaluation focusing on accessibility and validity, including design and instrument development, and managed all aspects of project implementation, from development of proposals to analysis and reporting of results.
- Coordinated the dissemination of results and wrote and edited articles and papers related to Center studies.


PROJECT DIRECTOR
- Worked with national experts, state department of education staff, and U.S. Department of Education staff to address technical and policy issues associated with the use of large-scale assessment.
- Directed two consortia in the State Collaborative on Assessment and Student Standards: Technical Issues in Large-Scale Assessment and Comprehensive Assessment Systems for Title I.
- Served as author for the 2005 NAEP Mathematics Test and Item Specifications.


PRINCIPAL, QUANTITATIVE ANALYSIS
- Worked on the development and implementation of Virginia's assessment programs; responsibilities included designing, coordinating, and conducting statistical analyses of assessment data; coordinating the revision of the assessment program; designing and carrying out assessment-related research; training readers in Virginia's six-domain writing scoring model; managing the technical and financial aspects of contracts; preparing reports and making presentations describing the results of complex psychometric procedures for lay and technical audiences.
- Assisted with the design and implementation of Virginia's educational accountability system. Served on departmental teams, providing both technical and policy advice on student assessment and served as Virginia's representative to national organizations.


EDUCATION PROGRAM SPECIALIST
- In the Teacher Assessment Unit, coordinated the development and implementation of a pre-service teacher assessment program; responsibilities included coordinating all aspects of test development; planning and conducting psychometric analyses of test data; developing publicity materials; coordinating contractual services and budgets; training readers in a holistic writing scoring process; making presentations to legislative and State Board of Education committees.
- Worked on other teacher assessment projects, including the development of teacher licensure tests and the development of in-service teacher evaluation programs.
- In the Student Assessment Unit, designed new student assessment programs and implemented existing programs. Responsibilities included coordinating the development of mathematics and early childhood assessment programs; assisting in the development of language arts assessments; training readers in a holistic writing scoring process; working with schools in the development of innovative forms of assessment; designing and implementing psychometric analyses; advising department staff on assessment-related policy; preparing and presenting reports for lay and technical audiences.
PUBLICATIONS, PRESENTATIONS, AND PAPERS


PROFESSIONAL SERVICE
- American Educational Research Association: Proposal reviewer, Divisions D and L, ongoing
- American Educational Research Association: Division D Secretary-Elect, 2014
- American Educational Research Association: Division D Mentoring Committee, 2012-2014; Chair, 2013
- American Educational Research Association: Division D Significant Contributions to Educational Measurement and Research Methodology Committee, 2008-2010; Chair, 2009-2010
- National Council on Measurement in Education, Outreach and Partnerships Committee, 2008-2011; Chair, 2008-2010
- National Conference on Student (formerly Large Scale) Assessment: Planning Committee, 1994-2009
- Manuscript reviewer, Educational Assessment, ongoing
References


Kopriwa, R.J., Wright, L. Triscari, R. (2015 submitted). Examining a multisemiotic approach to measuring challenging content for English learners and others: Results from the ONPAR elementary and middle school science study. Submitted.


Kopriwa, R.J. (2001). Issues and possibilities in on-line assessment technology for racial, language and
cultural minority students and students with disabilities. Invited presentation to the U.S.
Department of Education’s Conference on On-line Student Assessment: The Future of State
Testing, Washington D.C.

results for students with learning disabilities in reading and other SWDs who struggle with
language and literacy: Findings from the ONPAR elementary and middle school mathematics

Kopriva, R. J., Gabel, D., & Cameron, C. (2009). *Overview of results from the ONPAR elementary and
middle school science experimental study with ELs and non-ELs: A promising new approach for
measuring complex content knowledge of English learners with lower proficiency levels.*
Retrieved from [http://www.onpar.us/research/reports.html](http://www.onpar.us/research/reports.html).

knowledge, skills, and abilities of ELs, selected SWDs and controls on challenging high school
science content: Results from randomized trials of ONPAR and technology-enhanced traditional

approach for making individualized test accommodation decisions for English language learners.
Presentation at the National Council of Measurement in Education, San Francisco, CA.


Routledge.


http://education.umn.edu/NCEO/OnlinePubs/Synthesis44.htm


INDIRECT COST RATE AGREEMENT
STATE EDUCATION AGENCY

Organization
Michigan Department of Education
P.O. Box 30008
Lansing, MI 48909

Date: SEP 2 2014
Agreement No: 2014-159

Filing Reference: Replaces previous
Agreement No. 2013-162
Dated: 9/30/2013

The approved indirect cost rates herein are for use on grants, contracts, and other agreements with the Federal Government. The rates are subject to the conditions included in Section II of this Agreement and issued by the U.S. Department of Education pursuant to the authority in Attachment A of Office of Management and Budget Circular A-87.

Section I - Rates and Bases

<table>
<thead>
<tr>
<th>Type</th>
<th>From</th>
<th>To</th>
<th>Rate</th>
<th>Base</th>
<th>Applicable To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>10/01/2014</td>
<td>09/30/2015</td>
<td>8.1%</td>
<td>MTDC</td>
<td>APwR</td>
</tr>
</tbody>
</table>

Distribution Base:

MTDC Modified Total Direct Cost - Total direct costs excluding equipment, capital expenditures, participant support costs, pass-through funds and the portion of each subaward (subcontract or subgrant) above $25,000 (each award; each year).

Applicable To:

APwR The rates herein are applicable to All Programs including those that require a restricted rate per 34 CFR 75.563 and 34 CFR 76.563.

Treatment of Fringe Benefits:

Fringe benefits applicable to direct salaries and wages are treated as direct costs. Pursuant to OMB Circular A-87-Attachment B Paragraph 8.d.(3), unused leave costs for all employees will be allocated as an indirect cost except for those employee salaries designated as a direct cost for the restricted rate calculation.

Capitalization Policy: Items of equipment are capitalized and depreciated if the initial acquisition cost is equal to or greater than $5,000.
Section II – Particulars

Limitations: Application of the rates contained in this Agreement is subject to all statutory or administrative limitations on the use of funds, and payments of costs hereunder are subject to the availability of appropriations applicable to a given grant or contract. Acceptance of the rates agreed to herein is predicated on the following conditions: (A) that no costs other than those incurred by the Organization were included in the indirect cost pools as finally accepted, and that such costs are legal obligations of the Organization and allowable under the governing cost principles; (B) the same costs that have been treated as indirect costs are not claimed as direct costs; (C) that similar types of information which are provided by the Organization, and which were used as a basis for acceptance of rates agreed to herein, are not subsequently found to be materially incomplete or inaccurate; and (D) that similar types of costs have been accoced consistent accounting treatment.

Accounting Changes: The rates contained in this agreement are based on the organizational structure and the accounting systems in effect at the time the proposal was submitted. Changes in organizational structure or changes in the method of accounting for costs which affect the amount of reimbursement resulting from use of the rates in this agreement, require the prior approval of the responsible negotiation agency. Failure to obtain such approval may result in subsequent audit disallowance.

Provisional/Final/Predetermined Rates: A proposal to establish a final rate must be submitted. The awarding office should be notified if the final rate is different from the provisional rate so that appropriate adjustments to billings and charges may be made. Predetermined rates are not subject to adjustment.

Fixed Rate: The negotiated fixed rate is based on an estimate of the costs that will be incurred during the period to which the rate applies. When the actual costs for such period have been determined, an adjustment will be made to a subsequent rate calculation to compensate for the difference between the costs used to establish the fixed rate and the actual costs.

Notification to Other Federal Agencies: Copies of this document may be provided to other Federal agencies as a means of notifying them of the agreement contained herein.

Audit: All costs (direct and indirect, federal and non-federal) are subject to audit. Adjustments to amounts resulting from audit of the cost allocation plan or indirect cost rate proposal upon which the negotiation of this agreement was based may be compensated for in a subsequent negotiation.

Reimbursement Ceilings/Limitations on Rates: Awards that include ceiling provisions and statutory/regulatory requirements on indirect cost rates or reimbursement amounts are subject to the stipulations in the grant or contract agreements. If a ceiling is higher than the negotiated rate in Section I of this agreement, the negotiated rate will be used to determine the maximum allowable indirect cost.

ORGANIZATION: Michigan Department of Education
Section III - Special Remarks

Alternative Reimbursement Methods: If any federal programs are reimbursing indirect costs by a methodology other than the approved rates in this agreement, such costs should be credited to the programs and the approved rates should be used to identify the maximum amount of indirect costs allocable.

Submission of Proposals: New indirect cost proposals are necessary to obtain approved indirect cost rates for future fiscal years. The next indirect cost rate proposal is due six months prior to the expiration dates of the rates in this agreement.

Section IV - Approvals

For the State Education Agency:  
Michigan Department of Education  
P.O. Box 30008  
Lansing, MI 48909

For the Federal Government:  
U.S. Department of Education  
OCFO / FIPAO / ICG  
550 12th Street, SW  
Washington, DC 20202-4450

Signature

Rose M. Zuker

Name

Chief Accountant

Title

Date

10-31-14

Signature

Frances Outland

Name

Director, Indirect Cost Group

Title

Date

SEP 30 2014

Negotiator: Frances Outland
Telephone Number: (202) 245-8082

ORGANIZATION: Michigan Department of Education
Budget Narrative File(s)

* Mandatory Budget Narrative Filename: Budget_Narrative.pdf

Add Mandatory Budget Narrative  Delete Mandatory Budget Narrative  View Mandatory Budget Narrative

To add more Budget Narrative attachments, please use the attachment buttons below.

Add Optional Budget Narrative  Delete Optional Budget Narrative  View Optional Budget Narrative
Dynamic, Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring Challenging Concepts and Skills of Diverse Middle School Students

Budget Narrative

The summary activities of the Lead State Grant Coordinator and Fiscal Specialist (key personnel) for the Michigan Department of Education

Lead State Grant Coordinator TBD (LSGC) – (Years 1-4, not to exceed 75% FTE) will be responsible for reviewing data, planning and implementation of the grant program in Michigan, and ensuring that state and federal legislative requirements and guidelines are followed, including the use of funds. The LSGC will utilize large scale assessment experience with K-12 students to coordinate all data collection, review and handling procedures specific to the pilot rollout in order to obtain high-quality data and information for research and administrative purposes. The LSGC will follow project management methodology (PMM) and State of Michigan regulations for handling sensitive data to coordinate data access to program participants and contractors. The LSGC will work closely with contract and finance staff to establish and update Memoranda of Understanding regarding network security as needed and to provide oversight of program coordination with the fiscal specialist, participants, and contractors.

Fiscal Specialist TBD - (Years 1-4, not to exceed 25% FTE) will be responsible for developing all contracts and MOUs for the grant program, oversee procurement; receive, review, and process all quarterly invoices over the course of the grant and develop annual financial reports. Also any reporting from the sub-recipients will be reviewed and routed for approval through this position. The fiscal specialist will also supervise ongoing monitoring of fiscal management and programmatic review. Any/all audits conducted with the federal/state agencies will be coordinated through this position.
Michigan Department of Education  
4 Year Summary (10/1/2015-9/30/2019)

<table>
<thead>
<tr>
<th></th>
<th>YEAR 1</th>
<th>YEAR 2</th>
<th>YEAR 3</th>
<th>YEAR 4</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10/15-09/16</td>
<td>10/16-09/17</td>
<td>10/17-09/18</td>
<td>10/18-09/19</td>
<td>BUDGET</td>
</tr>
<tr>
<td><strong>1. PERSONNEL - SALARY AND FRINGES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SME</td>
<td>$64,861</td>
<td>$66,158</td>
<td>$67,481</td>
<td>$68,831</td>
<td>$267,330</td>
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<tr>
<td>SME Fringes</td>
<td>$44,448</td>
<td>$45,337</td>
<td>$46,244</td>
<td>$47,169</td>
<td>$183,198</td>
</tr>
<tr>
<td>Fiscal</td>
<td>$18,796</td>
<td>$19,172</td>
<td>$19,555</td>
<td>$19,946</td>
<td>$77,469</td>
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<tr>
<td>Fiscal Fringes</td>
<td>$12,532</td>
<td>$12,782</td>
<td>$13,038</td>
<td>$13,299</td>
<td>$51,651</td>
</tr>
<tr>
<td><strong>TOTAL SALARIES AND WAGES</strong></td>
<td>$140,637</td>
<td>$143,449</td>
<td>$146,318</td>
<td>$149,245</td>
<td>$579,649</td>
</tr>
<tr>
<td><strong>SALARY</strong></td>
<td>$83,657</td>
<td>$85,330</td>
<td>$87,036</td>
<td>$88,777</td>
<td>$344,800</td>
</tr>
<tr>
<td><strong>FRINGES</strong></td>
<td>$56,980</td>
<td>$58,120</td>
<td>$59,282</td>
<td>$60,468</td>
<td>$234,850</td>
</tr>
<tr>
<td><strong>2. TRAVEL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic</td>
<td>$1,800</td>
<td>$1,800</td>
<td>$1,800</td>
<td>$1,800</td>
<td>$7,200</td>
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<tr>
<td><strong>TOTAL TRAVEL</strong></td>
<td>$1,800</td>
<td>$1,800</td>
<td>$1,800</td>
<td>$1,800</td>
<td>$7,200</td>
</tr>
<tr>
<td><strong>3. OTHER DIRECT COSTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSS&amp;M</td>
<td>$2,617</td>
<td>$2,670</td>
<td>$2,723</td>
<td>$2,778</td>
<td>$10,788</td>
</tr>
<tr>
<td>Rent</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$4,000</td>
</tr>
<tr>
<td><strong>TOTAL OTHER DIRECT CHARGES</strong></td>
<td>$3,617</td>
<td>$3,670</td>
<td>$3,723</td>
<td>$3,778</td>
<td>$14,788</td>
</tr>
<tr>
<td><strong>TOTAL DIRECT COSTS</strong></td>
<td>$146,054</td>
<td>$148,919</td>
<td>$151,841</td>
<td>$154,822</td>
<td>$601,636</td>
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<tr>
<td><strong>4. INDIRECT COSTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal Indirect Cost Rate (8.1%)</td>
<td>$11,830</td>
<td>$12,062</td>
<td>$12,299</td>
<td>$12,541</td>
<td>$48,733</td>
</tr>
<tr>
<td>Contractual Indirect</td>
<td>$2,025</td>
<td>$2,025</td>
<td>$2,025</td>
<td>$2,025</td>
<td>$8,100</td>
</tr>
<tr>
<td><strong>TOTAL INDIRECT COSTS</strong></td>
<td>$13,855</td>
<td>$14,087</td>
<td>$14,324</td>
<td>$14,566</td>
<td>$56,833</td>
</tr>
<tr>
<td><strong>TOTAL DIRECT &amp; INDIRECT</strong></td>
<td>$159,909</td>
<td>$163,006</td>
<td>$166,166</td>
<td>$169,388</td>
<td>$658,469</td>
</tr>
</tbody>
</table>

1. PERSONNEL

The following staff will be funded through this proposal to the grant. Position descriptions for grant-funded staff positions are in the appendices. Year 1 includes the %FTE times the yearly salary and fringe benefits. Years 2, 3, and 4 have a 2% increase.

<table>
<thead>
<tr>
<th>Annual</th>
<th>Fringe</th>
<th>%FTE</th>
<th>total Yr 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD SME</td>
<td>86,481</td>
<td>59,264</td>
<td>75%</td>
</tr>
<tr>
<td>TBD Fiscal</td>
<td>75,184</td>
<td>50,127</td>
<td>25%</td>
</tr>
</tbody>
</table>

Total Salary and Fringe

140,637

2. TRAVEL

Travel assumes 1 trip per year for the one principal employee assuming the DAS
maximum per trip allowance of $1,800/trip.

3. OTHER DIRECT COSTS

CSS&M is inclusive of supplies, telecommunication, postage, printing, IT support, services and materials.

4. INDIRECT COSTS

Rent is applied using the MDE standard rate of $4,000 per FTE. This is applied against the total FTE’s associated % with this grant budget.

The Michigan indirect cost rate agreement is currently 8.1 percent. The indirect costs cover general operating expenses for the Michigan Department of Management and Budget and the Michigan Department of Education offices that include the following services: accounting, terminal leave, budget office, communications, human resources, office of audits, and the information technology network.
WISCONSIN CENTER FOR EDUCATION RESEARCH

4 Year Summary (10/1/2015 - 9/30/2019)

<table>
<thead>
<tr>
<th>SENIOR PERSONNEL</th>
<th>YEAR 1 10/15 - 9/16</th>
<th>YEAR 2 10/16 - 9/17</th>
<th>YEAR 3 10/17 - 9/18</th>
<th>YEAR 4 10/18 - 9/19</th>
<th>TOTAL BUDGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kopriva, Rebecca, PI</td>
<td>$46,770</td>
<td>$48,348</td>
<td>$49,979</td>
<td>$51,664</td>
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<tr>
<td>Wright, Laura</td>
<td>$88,000</td>
<td>$90,970</td>
<td>$94,038</td>
<td>$97,209</td>
<td>$370,215</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER PERSONNEL</th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Post-doc Researcher</td>
<td>$32,010</td>
<td>$66,224</td>
<td>$62,275</td>
<td>$70,858</td>
<td>$231,367</td>
</tr>
<tr>
<td>Drago, Kathryn</td>
<td>$78,375</td>
<td>$81,020</td>
<td>$83,752</td>
<td>$86,576</td>
<td>$329,728</td>
</tr>
<tr>
<td>Science Task Developer</td>
<td>$75,625</td>
<td>$78,177</td>
<td>$80,815</td>
<td>$83,539</td>
<td>$243,252</td>
</tr>
<tr>
<td>Science Ed Specialist</td>
<td>$0</td>
<td>$80,815</td>
<td>$83,539</td>
<td>$83,539</td>
<td>$246,532</td>
</tr>
<tr>
<td>Graduate Students</td>
<td>$23,326</td>
<td>$24,123</td>
<td>$24,946</td>
<td>$25,796</td>
<td>$98,291</td>
</tr>
</tbody>
</table>

| TOTAL SALARIES AND WAGES | $344,106 | $467,038 | $476,619 | $415,642 | $1,703,487 |

<table>
<thead>
<tr>
<th>TRAVEL</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>$15,040</td>
<td>$18,238</td>
<td>$18,238</td>
<td>$18,238</td>
<td>$69,730</td>
</tr>
</tbody>
</table>

| TOTAL TRAVEL         |                     |                      |                      |                      |              |

<table>
<thead>
<tr>
<th>OTHER DIRECT COSTS</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials and supplies</td>
<td>$5,600</td>
<td>$2,100</td>
<td>$600</td>
<td>$600</td>
<td>$8,900</td>
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<tr>
<td>Consultant services</td>
<td>$30,000</td>
<td>$50,720</td>
<td>$60,000</td>
<td>$80,000</td>
<td>$220,720</td>
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<tr>
<td>Teacher/school stipends</td>
<td>$0</td>
<td>$8,000</td>
<td>$41,000</td>
<td>$80,000</td>
<td>$129,000</td>
</tr>
<tr>
<td>IT Services</td>
<td>$130,667</td>
<td>$130,667</td>
<td>$130,667</td>
<td>$20,300</td>
<td>$412,394</td>
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<tr>
<td>Tuition Remission</td>
<td>$12,000</td>
<td>$12,000</td>
<td>$12,000</td>
<td>$12,000</td>
<td>$44,000</td>
</tr>
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</table>

| TOTAL OTHER DIRECT COSTS | $178,267 | $203,487 | $244,267 | $112,900 | $738,924 |

| TOTAL DIRECT COSTS    | $537,413             | $688,763             | $739,124             | $546,780             | $2,512,088  |

<table>
<thead>
<tr>
<th>INDIRECT COSTS</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WCEER 0.23</td>
<td>$120,845</td>
<td>$155,655</td>
<td>$167,239</td>
<td>$122,999</td>
<td>$566,739</td>
</tr>
<tr>
<td>UW 0.30</td>
<td>$157,624</td>
<td>$203,029</td>
<td>$218,137</td>
<td>$160,434</td>
<td>$739,232</td>
</tr>
</tbody>
</table>

| TOTAL INDIRECT COSTS  | $278,469             | $358,684             | $385,376             | $283,433             | $1,305,968   |

| TOTAL DIRECT & INDIRECT | $815,882 | $1,047,447 | $1,124,500 | $830,213 | $3,818,048 |
## WISCONSIN CENTER FOR EDUCATION RESEARCH

### YEAR 1 (10/1/2015 - 9/30/2016)

<table>
<thead>
<tr>
<th>Senior Personnel</th>
<th>% of Effort</th>
<th>Amount</th>
<th>Fringe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kopriva, Rebecca, PI</td>
<td>25% 12 months</td>
<td>$34,014</td>
<td>$12,755</td>
<td>$46,770</td>
</tr>
<tr>
<td>Base Salary $136,057</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Wright, Laura</td>
<td>80% 12 months</td>
<td>$64,000</td>
<td>$24,000</td>
<td>$88,000</td>
</tr>
<tr>
<td>Base Salary $80,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Personnel</th>
<th>% of Effort</th>
<th>Amount</th>
<th>Fringe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postdoc Researcher</td>
<td>50% 12 months</td>
<td>$27,500</td>
<td>$4,510</td>
<td>$32,010</td>
</tr>
<tr>
<td>Base Salary $55,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drago, Kathryn</td>
<td>1 @ 100% 12 months</td>
<td>$57,000</td>
<td>$21,375</td>
<td>$78,375</td>
</tr>
<tr>
<td>Base Salary $57,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Task Developer</td>
<td>1@ 100% 12 months</td>
<td>$55,000</td>
<td>$20,625</td>
<td>$75,625</td>
</tr>
<tr>
<td>Base Salary $55,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Ed Specialist</td>
<td>0% 12 months</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Base Salary $55,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Student</td>
<td>1 @ 50% 12 months</td>
<td>$18,751</td>
<td>$4,575</td>
<td>$23,326</td>
</tr>
<tr>
<td>Base Salary $37,502</td>
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<td></td>
<td></td>
<td></td>
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</table>

### TOTAL SALARIES AND WAGES

$256,265 \text{ }$87,841 $344,106

### TRAVEL

1. Domestic

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Fringe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Trip(s) 3 overnights - Travel to Domestic Conference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Fare</td>
<td>$424</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodging</td>
<td>$675</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration</td>
<td>$300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meals</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$1,599</td>
<td>/Trip</td>
<td>$0</td>
</tr>
<tr>
<td>6 trips 3 overnights - Madison</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Fare</td>
<td>$424</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodging</td>
<td>$675</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meals</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$1,299</td>
<td>/Trip</td>
<td>$7,794</td>
</tr>
<tr>
<td>2 trips 3 overnights - SEA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airfare</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodging</td>
<td>$675</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meals</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$1,575</td>
<td>/Trip</td>
<td>$3,150</td>
</tr>
<tr>
<td>4 trips 2 overnights - Advisory Board</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Fare</td>
<td>$424</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodging</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meals</td>
<td>$150</td>
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</tr>
<tr>
<td>Total</td>
<td>$1,024</td>
<td>/Trip</td>
<td>$4,096</td>
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</tbody>
</table>

Total Domestic $15,040

### OTHER TRAVEL

TOTAL TRAVEL $15,040

### OTHER DIRECT COSTS

MATERIALS AND SUPPLIES
CONSULTANT SERVICES
Evaluator $10,000
Gotwals $4,000
Advisory Board $4,000 X 4 $16,000
Educator honorarium $
TOTAL CONSULTANT SERVICES $30,000

OTHER
School Stipends $0
IT Services $130,667
Tuition Remission $12,000
TOTAL OTHER $142,667

TOTAL OTHER DIRECT COSTS $178,267

TOTAL DIRECT COSTS $537,413

INDIRECT COSTS (53%)
WCER 0.23 X $525,413 $120,845
UW 0.30 X $525,413 $157,624
TOTAL INDIRECT COSTS $278,469

TOTAL DIRECT AND INDIRECT COSTS $815,882
WISCONSIN CENTER FOR EDUCATION RESEARCH

YEAR 2 (10/1/2016 - 9/30/2017)

<table>
<thead>
<tr>
<th>SENIOR PERSONNEL</th>
<th>% OF EFFORT</th>
<th>AMOUNT</th>
<th>FRINGE</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>Kopriva, Rebecca, PI</td>
<td>25% 12 months</td>
<td>$35,035</td>
<td>$13,313</td>
<td>$48,348</td>
</tr>
<tr>
<td>Base Salary $140,139</td>
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<td></td>
</tr>
<tr>
<td>Wright, Laura</td>
<td>80% 12 months</td>
<td>$65,920</td>
<td>$25,050</td>
<td>$90,970</td>
</tr>
<tr>
<td>Base Salary $82,400</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER PERSONNEL</th>
<th>% OF EFFORT</th>
<th>AMOUNT</th>
<th>FRINGE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-doc Researcher</td>
<td>100% 12 months</td>
<td>$56,650</td>
<td>$9,574</td>
<td>$66,224</td>
</tr>
<tr>
<td>Base Salary $56,650</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drago, Kathryn</td>
<td>1 @ 100% 12 months</td>
<td>$58,710</td>
<td>$22,310</td>
<td>$81,020</td>
</tr>
<tr>
<td>Base Salary $58,710</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Task Developer</td>
<td>1 @ 100% 12 months</td>
<td>$56,650</td>
<td>$21,527</td>
<td>$78,177</td>
</tr>
<tr>
<td>Base Salary $56,650</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Ed Specialist</td>
<td>100% 12 months</td>
<td>$56,650</td>
<td>$21,527</td>
<td>$78,177</td>
</tr>
<tr>
<td>Base Salary $56,650</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Student</td>
<td>1 @ 50% 12 months</td>
<td>$19,314</td>
<td>$4,809</td>
<td>$24,123</td>
</tr>
<tr>
<td>Base Salary $38,627</td>
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<td></td>
</tr>
</tbody>
</table>

TOTAL SALARIES AND WAGES  

$348,928  
$118,110  
$467,038

TRAVEL

1. Domestic

2 Trip(s) 3 overnights - Travel to Domestic Conference
Air Fare $424  
Lodging $675  
Registration $300  
Meals $200  
Total $1,599 /Trip  

6 trips 3 overnights - Madison
Air Fare $424  
Lodging $675  
Meals $200  
Total $1,299 /Trip  

2 trips 3 overnights - SEA
Airfare $700  
Lodging $675  
Meals $200  
Total $1,575 /Trip  

4 trips 2 overnights - Advisory Board
Air Fare $424  
Lodging $450  
Meals $150  
Total $1,024 /Trip  

Total Domestic $18,238

TOTAL TRAVEL

$18,238

OTHER DIRECT COSTS

MATERIALS AND SUPPLIES

PR/Award # S388A150019
Page e185
CONSULTANT SERVICES
Statistician $20,000
Evaluator $10,000
Gotwals $4,000
Advisory Board $4,000 X 4 $16,000
Educator honorarium $720
TOTAL CONSULTANT SERVICES $50,720

OTHER
School Stipends $8,000
IT Services $130,667
Tuition Remission $12,000
TOTAL OTHER $150,667

TOTAL OTHER DIRECT COSTS $203,487

TOTAL DIRECT COSTS $688,763

INDIRECT COSTS (53%)
W Carter 0.23 X $676,763 $155,655
UW 0.30 X $676,763 $203,029
TOTAL INDIRECT COSTS $358,684

TOTAL DIRECT AND INDIRECT COSTS $1,047,447
## Senior Personnel

<table>
<thead>
<tr>
<th>Name</th>
<th>% of Effort</th>
<th>Amount</th>
<th>Fringe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kopriva, Rebecca, PI</td>
<td>25% 12 months</td>
<td>$36,086</td>
<td>$13,893</td>
<td>$49,979</td>
</tr>
<tr>
<td>Wright, Laura</td>
<td>80% 12 months</td>
<td>$67,898</td>
<td>$26,141</td>
<td>$94,038</td>
</tr>
</tbody>
</table>

## Other Personnel

<table>
<thead>
<tr>
<th>Name</th>
<th>% of Effort</th>
<th>Amount</th>
<th>Fringe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-doc Researcher</td>
<td>100% 12 months</td>
<td>$53,045</td>
<td>$9,230</td>
<td>$62,275</td>
</tr>
<tr>
<td>Drago, Kathryn</td>
<td>1 @ 100% 12 months</td>
<td>$60,471</td>
<td>$23,281</td>
<td>$83,752</td>
</tr>
<tr>
<td>Science Task Developer</td>
<td>1 @ 100% 12 months</td>
<td>$58,350</td>
<td>$22,465</td>
<td>$80,815</td>
</tr>
<tr>
<td>Science Ed Specialist</td>
<td>100% 12 months</td>
<td>$58,350</td>
<td>$22,465</td>
<td>$80,815</td>
</tr>
<tr>
<td>Graduate Students</td>
<td>1 @ 50% 12 months</td>
<td>$19,893</td>
<td>$5,053</td>
<td>$24,946</td>
</tr>
</tbody>
</table>

## Total Salaries and Wages

$354,092 / $122,527 / $476,619

### Travel

1. Domestic

- 2 Trip(s) 3 overnights - Travel to Domestic Conference
  - Air Fare: $424
  - Lodging: $675
  - Registration: $300
  - Meals: $200
  - Total: $1,599 / Trip

- 6 trips 3 overnights - Madison
  - Air Fare: $424
  - Lodging: $675
  - Meals: $200
  - Total: $1,299 / Trip

- 2 trips 3 overnights - SEA
  - Airfare: $700
  - Lodging: $675
  - Meals: $200
  - Total: $1,575 / Trip

- 4 trips 2 overnights - Advisory Board
  - Air Fare: $424
  - Lodging: $450
  - Meals: $150
  - Total: $1,024 / Trip

Total Domestic: $18,238

## Other Direct Costs

### Materials and Supplies

- PR/Award # S388A150019
- Page e187

Total Travel: $18,238
<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Evaluator</td>
<td>$10,000</td>
</tr>
<tr>
<td>Statistician</td>
<td>$30,000</td>
</tr>
<tr>
<td>Gotwals</td>
<td>$4,000</td>
</tr>
<tr>
<td>Advisory Board</td>
<td>$16,000</td>
</tr>
<tr>
<td>Educator honorarium</td>
<td>$</td>
</tr>
<tr>
<td>TOTAL CONSULTANT SERVICES</td>
<td>$60,000</td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
</tr>
<tr>
<td>School Stipends</td>
<td>$41,000</td>
</tr>
<tr>
<td>IT Services</td>
<td>$130,667</td>
</tr>
<tr>
<td>Tuition Remission</td>
<td>$12,000</td>
</tr>
<tr>
<td>TOTAL OTHER</td>
<td>$183,667</td>
</tr>
<tr>
<td>TOTAL OTHER DIRECT COSTS</td>
<td>$244,267</td>
</tr>
<tr>
<td>TOTAL DIRECT COSTS</td>
<td>$739,124</td>
</tr>
<tr>
<td>INDIRECT COSTS (53%)</td>
<td></td>
</tr>
<tr>
<td>WCER</td>
<td>0.23 X $727,124 = $167,239</td>
</tr>
<tr>
<td>UW</td>
<td>0.30 X $727,124 = $218,137</td>
</tr>
<tr>
<td>TOTAL INDIRECT COSTS</td>
<td>$385,376</td>
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<tr>
<td>TOTAL DIRECT AND INDIRECT COSTS</td>
<td>$1,124,500</td>
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</table>
## Year 4 (10/1/2018 - 9/30/2019)

### Senior Personnel

<table>
<thead>
<tr>
<th>Name</th>
<th>% of Effort</th>
<th>Amount</th>
<th>Fringe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kopriva, Rebecca, Pl</td>
<td>25% 12 months</td>
<td>$37,168</td>
<td>$14,496</td>
<td>$51,664</td>
</tr>
<tr>
<td>Base Salary $148,673</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Wright, Laura</td>
<td>80% 12 months</td>
<td>$69,934</td>
<td>$27,274</td>
<td>$97,209</td>
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<tr>
<td>Base Salary $87,418</td>
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<td></td>
<td></td>
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</tbody>
</table>

### Other Personnel

<table>
<thead>
<tr>
<th>Role</th>
<th>% of Effort</th>
<th>Amount</th>
<th>Fringe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-doc Researcher</td>
<td>100% 12 months</td>
<td>$60,100</td>
<td>$10,758</td>
<td>$70,858</td>
</tr>
<tr>
<td>Base Salary $60,100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drago, Kathryn</td>
<td>1 @ 100% 12 months</td>
<td>$62,285</td>
<td>$24,291</td>
<td>$86,576</td>
</tr>
<tr>
<td>Base Salary $62,285</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Ed Specialist</td>
<td>100% 12 months</td>
<td>$60,100</td>
<td>$23,439</td>
<td>$83,539</td>
</tr>
<tr>
<td>Base Salary $60,100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Students</td>
<td>1 @ 50% 12 months</td>
<td>$20,490</td>
<td>$5,307</td>
<td>$25,796</td>
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<tr>
<td>Base Salary $40,979</td>
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</tbody>
</table>

### Total Salaries and Wages

<table>
<thead>
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<th>Amount</th>
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<td>$415,642</td>
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### Travel

#### 1. Domestic

- 2 Trip(s) 3 overnights - Travel to Domestic Conference
  - Air Fare $424
  - Lodging $675
  - Registration $300
  - Meals $200
  - Total $1,599/Trip
  - Total $3,198

- 6 trips 3 overnights - Madison
  - Air Fare $424
  - Lodging $675
  - Meals $200
  - Total $1,299/Trip
  - Total $7,794

- 2 trips 3 overnights - SEA
  - Airfare $700
  - Lodging $675
  - Meals $200
  - Total $1,575/Trip
  - Total $3,150

- 4 trips 2 overnights - Advisory Board
  - Air Fare $424
  - Lodging $450
  - Meals $150
  - Total $1,024/Trip
  - Total $4,096

#### Total Domestic

- Total $18,238

### Total Travel

- Total $18,238

### Other Direct Costs

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<th>Description</th>
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<tr>
<td>Research Materials</td>
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<tr>
<td>Copying Services</td>
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</table>

### Total Materials and Supplies

- Total $500
CONSULTANT SERVICES
Evaluator $20,000
Statistician $40,000
Gotwals $4,000
Advisory Board $4,000 X 4 $16,000
Educator honorarium $80,000
TOTAL CONSULTANT SERVICES $80,000

OTHER
School Stipends $$
IT Services $20,300
Tuition Remission $12,000
TOTAL OTHER $32,300

TOTAL OTHER DIRECT COSTS $112,900

TOTAL DIRECT COSTS $546,780

INDIRECT COSTS (53%)
WCER 0.23 X $534,780 $122,999
UW 0.30 X $534,780 $160,434
TOTAL INDIRECT COSTS $283,433

TOTAL DIRECT AND INDIRECT COSTS $830,213
Wisconsin Center for Education Research at the University of Wisconsin – Madison

Dynamic, Interactive Formative Assessment Tasks and End-of-Unit Tests for Measuring Challenging Concepts and Skills of Diverse Middle School Students

Budget Narrative

PERSONNEL
All persons who work regularly for the Center are placed on the University of Wisconsin payroll in accordance with established University procedures. Titles and stipends are regulated and approved by Center management, the Dean of the School of Education, Madison Campus and University Central Administration. Salaries for professional staff are based on current salaries. Merit increments are calculated each year at 3% effective July 1st for professional staff. Rebecca Kopriva is the PI on the grant and will oversee the activities and otherwise manage the project personnel associated with the project. Laura Wright is the Co-PI and project manager and will oversee the day-to-day activities associated with the project.

Rebecca Kopriva, PI (Years 1 - 4 - 25%) Over the course of the grant, Dr. Kopriva will lead and guide the conceptual, implementation, and research work of all the partners so that each partner’s expertise blends with and contributes to the realization of the project goals. Additionally, she will oversee the measurement development aspects of the project, including the conceptualization of tests, tasks and items, the scoring strategies within and across tasks and items, the review of tests, task, and items, and the scoring programs. She will also oversee the development of research related materials, the quantitative analyses of the data collected from the pilot studies, field tests, task type and aggregation studies, questionnaires and interviews, as well as the interpretation of research findings. She will lead the partner leadership team composed of key personnel from Michigan and the University of Wisconsin, and the partners Activate Learning and the WIDA Consortium. Working with staff at the partner institutions, Dr. Kopriva will oversee the development of dissemination materials and be responsible for communicating with the fiscal agent, Michigan, and the EAG project directors as requested. Dr. Kopriva’s time will be spent for the duration of the grant overseeing the project activities as discussed above. Dr. Kopriva’s time will be charged to the project.

Laura Wright, Co-PI and Project Manager (Years 1 -4 - 80%) As Co-PI Dr. Wright will help Dr. Kopriva oversee the project and will be in charge of the qualitative portions of the project. As project manager, be the ongoing project liaison with partners at all relevant points in the project, and will oversee, manage and work with the internal staff on a day to day basis. This includes participating educators and consultants in order to ensure that the task development, materials development, pilot and field tests, qualitative and quantitative studies, and data retrieval are being completed in a high quality and timely manner. Dr. Wright will manage the writing of the reports and dissemination materials.

Kathryn Drago (Years 1 – 4 – 100%) Kathryn Drago will be the lead science task writer and will develop tasks and oversee the science drafts developed by the other writer and by IT. She will work with the project manager, Activate Learning, the expert consultants, and educator advisor/reviewers to identify and design end-of-unit targets for task development as well as task and item topics within IQWST units; identify and oversee the applicable learning progression
maps; construct the tasks, complete scoring schemes, develop the student and classroom interpretive reports, and oversee others work in these tasks; and take part in internal reviews. She will also oversee the revisions of the tasks based on external reviews, interviews, and pilot and field test findings; be available to work with qualitative and quantitative researchers as relevant; help interpret findings from the testing and studies; and is responsible for overseeing the packaging of the final tasks and tests for operational use. Ms. Drago will also complete white papers and article drafts, help to write up results, and make presentations at her professional conferences.

Science Task Developer (Years 1 – 3 – 100%). This developer will work with Ms. Drago and IT to complete all tasks. This includes helping to identify applicable unit learning progression maps; construct the tasks and complete scoring schemes, and take part in internal reviews. She will also oversee help with the revisions of the tasks based on external reviews, interviews, and pilot and field test findings; be available to work with qualitative and quantitative researchers as relevant; help interpret findings from the testing and studies, and help package final products. This person will also complete white papers and article drafts, write up results, and make presentations at this person’s professional conferences.

Post-doc Researcher (Year 1, 50%, Years 2-4, 100%). The post-doc researcher will be responsible for coordinating the external reviews, quantitative and qualitative data collections, drafting all survey questionnaires and protocols, identifying and delivering requests for district, school and student data that will be used as part of the project, and working with Activate Learning and the science education specialist to finalize data collections at the school sites. Working with the graduate student and the science education specialist the researcher will staff or otherwise oversee the various data collections, and be in charge of coding and otherwise analyzing the qualitative data, including completing basic quantitative analyses. This person will be available to work with the statistician to help complete data sets from the piloting, field tests, and item types and aggregation studies, and help interpret the data, and complete white papers and article drafts as relevant, write-up qualitative results, and make presentations at this person’s professional conferences.

Science Education Specialist (Year 2-4, 100%). The science education specialist will be responsible for developing all the teacher materials, activities, tools and the PD programs, including designing, populating, and maintaining the project website and chat space, designing and developing the online PD modules, and overseeing the webexes, with relevant help from the partners and the graduate student. Working with the researcher and graduate student, this person will oversee the data collections from the PD programs, webexes, the chat space, and teacher’s use and evaluation of the materials, activities, and tools available to them during the quantitative data collections and on an ongoing basis through their interactions with the website, webexes and during PD. The specialist will also be responsible for revising the materials, PD, and other tools, activities based on the relevant data collections and packaging the materials, activities, tools, and the PD program for operational use, and complete white papers, and draft and present findings at conferences.

Graduate Student (Years 1 – 4 – 50% of 1 FTE). The graduate student will work with the researcher and the science specialist, as well as the task developers as time permits, to complete
the tasks identified under these staff, and otherwise help complete the grant activities.

**FRINGE BENEFITS**
Fringe benefit rates vary by employee classification. Classifications and rates are established by the University. In recent years, fringe benefit rates have increased consistently on an annual basis and are increased slightly following June 30 each year.

**TRAVEL**
All reimbursements for transportation, lodging, meals, and related costs are included in this category. Travel expense reimbursements are made on the basis of actual and reasonable expenditures. Payments are governed by Wisconsin State Statutes and the University of Wisconsin System Travel Regulations. Travel estimates are based on past Center accounting experience, allowable travel expenses based on the University and State of Wisconsin travel regulations, and travel quotes from Fox World Travel.

Travel to Madison:
6 trips, 3 overnights
Years 1-4: air - $424; lodging - $675; meals - $200 = $1,299 x 6 trips = $7,794/year
In years 1-4 Kathryn Drago, who lives in Alabama, will go to Madison to work with the IT staff and/or PI or co-PI at WCER and to go to the yearly TAC meeting for a total of 3 times each year. The other developer, who will be hired, will most likely live around DC (which is where the ONPAR task and test development work is situated for this and other work) and will also travel 3 times to Madison to work with IT and grant principles in years 1-3. For year 4, the science education specialist will accompany Ms. Drago 3 times to work with IT and PI and co-PI to finalize teacher products for operational use, and to attend the TAC meeting.

Travel to SEA:
2 trips, 3 overnights
Years 1-4: air - $700; lodging - $675; meals - $200 = $1,575 x 2 trips = $3,150/per year
These trips are for the PI and Co-PI to meet with lead state representatives in years 1 and 4. In years 2 and 3 the researcher and science education specialist will go to Michigan to finalize details related to district participation in the various phases of the projects and oversee selected testing sites.

Advisory Board Travel:
4 trips, 2 overnights
Years 1-4: air - $424; lodging - $450; meals - $150 = $1,024 x 4 trips = $4,096/per year
The four members of the TAC advisory board will convene in Madison each year for 4 years to discuss technical, instructional and programmatic issues pertinent to the grant.

Travel to Domestic Conference:
2 trips, 3 overnights
Years 2-4: air - $424; lodging - $675; meals - $200; registration - $300 = $1,599 x 2 trips = $3,198/year
Two of the staff each year, beginning in year 2, will present findings about the project at a
science conference and the AERA conference.

OTHER
1. Materials and supplies
Research Materials: Funds have been budgeted for miscellaneous research materials and publications. Year 1 = $1000; Years 2 to 4, $500 per year.

Four laptops at $1500 each are budgeted to be used by the task writer, researcher, the science education specialist, and the graduate student. The task writer needs the computer because all tasks that are being created are technology-based, all documentation related to the tasks are created and stored in secure electronic folders, progress monitoring of the tasks that are being created between item writers and IT staff, with project manager and PI oversight is completed using an electronic software program, and educator reviews and revisions will all be done online. Regular communication and in-person meetings between task writers is expected which necessitates at least one person traveling (neither will live in Madison). The researcher is in charge of conducting all focal groups, external educator and bias reviews, working with Activate Learning to recruit and train educators and observe pilot and select field-testing sites. Some of this work will be done electronically, some will be done in-person across the country, with the researcher overseeing the logging of usage and related evaluation data. The scope of work for the science education specialist includes designing and populating the teacher and PD website for participants and conducting regular PD in-person institutes around the country, and working with educators to pilot the draft products before final implementation, and logging in revisions with documentation related to all changes. The graduate student will be working with both the researcher and the science education specialist, particularly in conducting training, overseeing implementation and recording qualitative data about these series of events at the various IQWST sites across the country.

Copying Services – Minimal funds have been budgeted for copying services. Years 1-4 = $100

3. Consultants
Amelia Gotwalls, the science task consultant, will be paid up to $4000 each year for years 1-4 to advise the task developers about learning progressions, help in designing tasks, NGSS alignment with task drafts, scoring algorithms and report interpretations, and final task and test revisions. She will also participate in the TAC meetings as relevant.

The statistician/psychometrician will be paid $20,000 in Year 2, $30,000 in Year 3, and $40,000 in Year 4, to complete the quantitative analyses.

Phoebe Winter, the external evaluator, will be paid $10,000 in Years 1-3, and $20,000 in Year 4 to complete the formative and summative evaluations and reports, participate in the TAC meetings and meet with partner leadership.

The four external technical advisory committee (TAC) members, Joe Krajcik, Steve Sireci, and Martha Thurlow, will each be paid $4000/year for 4 years.
Teacher/school stipends
School educators will participate in the project in several different ways. In Year 2 a small number of educators will review selected materials and receive an educator honorarium totaling $720. Further, in Year 2 $8000 will be spent for stipends for teachers to continue to review materials, participate during the summer in a PD institute, to participate in fall and winter pilots and in the spring field testing. In Year 3 $41,000 has been allocated for teacher and school stipends to participate in the pilot test, summer PD institutes, and the next three field tests.

IT Services
The IT staff at WCER will be paid a total of $412,301 from Years 1-4 to design and implement the web-based tasks, pilot and fieldtesting modules, and final end-of-unit tests. These items may include, depending on design, static images, hovers, dynamic graphing, dynamic placing of objects, open ended free text answers, and various related student aids. The responses to these items will be programmatically scored by the application, and reports will be programmed to be available to students and teachers after testing. Additionally, there will be an administrator portion that will allow management of student rosters and tracking of student results. The student results will be stored in a database for later retrieval.

Tuition Remission
$12,000 per year for Years 1-4 has been allocated for the graduate student’s tuition remission.

INDIRECT COSTS
Modified Total Direct Cost (MTDC) is used as the base for overhead calculations. The MDTC base includes all direct charges. The University negotiates with DH&HS Region 5 to establish indirect cost rates. The 53% rate in this proposal is the approved rate effective April 27, 2015.
# U.S. Department of Education
## Budget Information
### Non-Construction Programs

**Name of Institution/Organization**: Michigan Department of Education

Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.

## Section A - Budget Summary
### U.S. Department of Education Funds

<table>
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<tr>
<th>Budget Categories</th>
<th>Project Year 1 (a)</th>
<th>Project Year 2 (b)</th>
<th>Project Year 3 (c)</th>
<th>Project Year 4 (d)</th>
<th>Project Year 5 (e)</th>
<th>Total (f)</th>
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*Indirect Cost Information (To Be Completed by Your Business Office):

If you are requesting reimbursement for indirect costs on line 10, please answer the following questions:

(1) . . . Do you have an Indirect Cost Rate Agreement approved by the Federal government?  ☒ Yes  ☐ No

(2) If yes, please provide the following information:

- Period Covered by the Indirect Cost Rate Agreement:  From: 10/01/2014 To: 09/30/2015 (mm/dd/yyyy)
- Approving Federal agency:  ☒ ED  ☐ Other (please specify): 
- The Indirect Cost Rate is 8.19 %.

(3) For Restricted Rate Programs (check one) -- Are you using a restricted indirect cost rate that:

- ☒ Is included in your approved Indirect Cost Rate Agreement? or,  ☐ Complies with 34 CFR 76.564(c)(2)?  The Restricted Indirect Cost Rate is  ☐ %.
## SECTION B - BUDGET SUMMARY
### NON-FEDERAL FUNDS

<table>
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<tr>
<th>Budget Categories</th>
<th>Project Year 1 (a)</th>
<th>Project Year 2 (b)</th>
<th>Project Year 3 (c)</th>
<th>Project Year 4 (d)</th>
<th>Project Year 5 (e)</th>
<th>Total (f)</th>
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<tr>
<td>1. Personnel</td>
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## SECTION C - BUDGET NARRATIVE (see instructions)
1. Project Director:

Prefix: Ms.  First Name: Rebecca  Middle Name:  Last Name: Kopriva  Suffix: 

Address:

Street1: 21 Florida Ave.  Street2: 
City: Berkeley  County: 
State: CA: California  Zip Code: 94707  Country: USA: UNITED STATES

Phone Number (give area code)  Fax Number (give area code)  
202 744 2808  

Email Address: rkoopiva@wisc.edu

2. Novice Applicant:

Are you a novice applicant as defined in the regulations in 34 CFR 75.225 (and included in the definitions page in the attached instructions)?

☐ Yes  ☐ No  ☒ Not applicable to this program

3. Human Subjects Research:

a. Are any research activities involving human subjects planned at any time during the proposed project Period?

☐ Yes  ☒ No

b. Are ALL the research activities proposed designated to be exempt from the regulations?

☐ Yes  ☐ Provide Exemption(s) #: 

☐ No  ☐ Provide Assurance #, if available:

Add Attachment  Delete Attachment  View Attachment

PR/Award # S388A150019
Page e188