Open Educational Resources Project Grant

2018-2019 Final Report

GRANT AWARDS

Braiding Native Knowledge in Public Education	Central Valley School District
Conceptual Physics Course Development	Oak Harbor Public Schools
Dual Language Immersion Social Studies OER Project	Seattle Public Schools
Regional STEM Instructional Materials Collaborative	Educational Service District 112

Abstract of grant efforts

DIRECTLY IMPACTED STUDENTS AND TEACHERS

	Teachers Impacted	Students Impacted
Braiding Native Knowledge in Public Education	10	250
Conceptual Physics Course Development	10	0
Dual Language Immersion Social Studies OER Project	11	200
Regional STEM Instructional Materials Collaborative	240	6000
TOTALS	**271**	**6450**

POPULATIONS IMPACTED

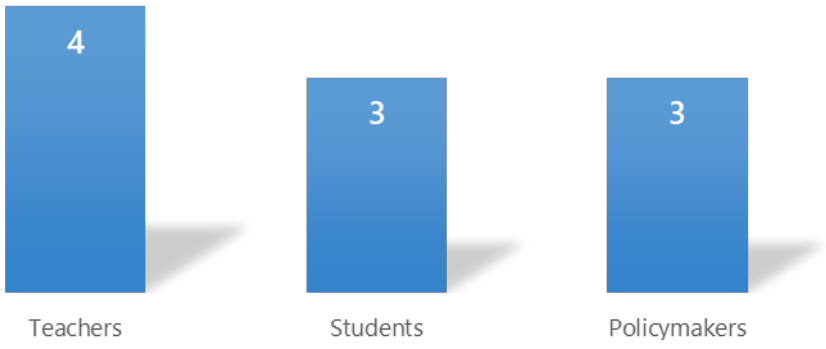

Figure 1: Number of grant projects serving each population of stakeholders.

SYSTEMS TO MAKE SURE LEARNING STANDARDS WERE MET

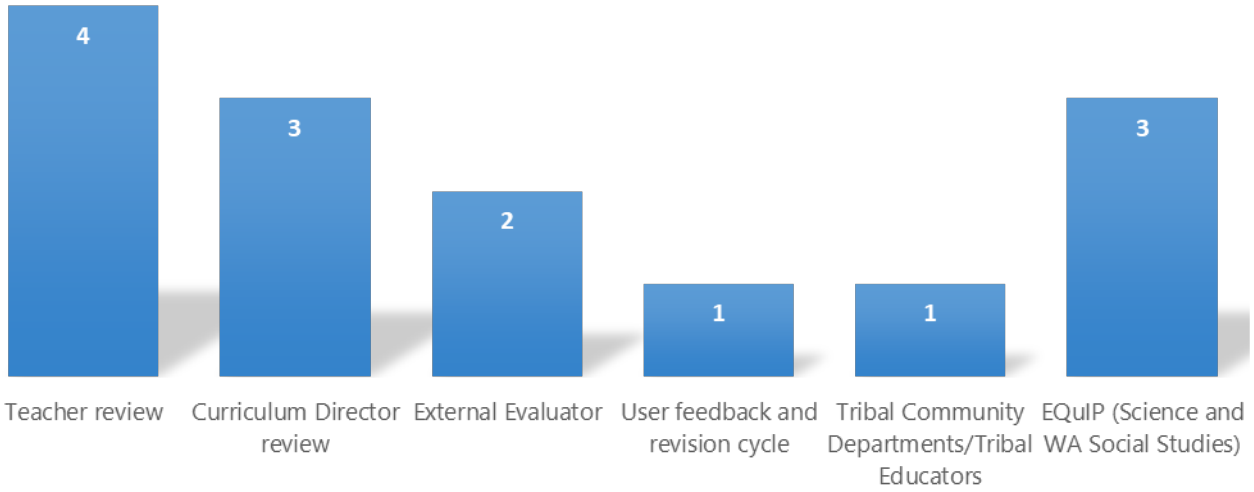

Figure 2: Number of grant projects using each system of review.

STUDENT OUTCOMES: How was efficacy measured?

Braided Native Knowledge in Public Education

We were hoping to see shifts in thinking and assumptions on Native Americans. Efficacy was measured by understanding of material learned and responsiveness and desire to learn subject matter (for example: how did it make you feel or what did you think?). What did you the student take away from the story or content delivered?

Conceptual Physics Course Development

Course in development stage so no student outcomes yet.

Dual Language Immersion Social Studies OER Project

We did not set up specific student outcomes for our first OER project this year because our focus was on translating and adapting OER Social Studies resources into partner languages for our DLI programs (in Mandarin and Spanish). So the learning outcomes for the program using these resources were both the Social Studies EALRs for 7th and 8th grade and language outcomes for students at the Intermediate Level of language proficiency in Mandarin or Spanish. (Japanese has not yet produced translations.) The teachers measured formatively whether the resources helped the students achieve the Social Studies learning targets. For language, we used the STAMP (Standards-based Measurement of Proficiency) to see if students were reaching our language proficiency targets for end of 8th grade (Intermediate Low-- Intermediate Mid). Overall, students did meet those language targets.

Regional STEM Instructional Materials Collaborative

Student outcomes using the OER materials developed through this project are still being calculated. Student outcomes are being measured through a variety of direct and indirect methods. Teacher implementation of the curricular unit impacts the quality of instruction that students are receiving, and data on how many teachers used the storyline units that accompanied our Science Kits this year is still being collected. There is often a tendency for teachers to overlook the new curriculum and continue to implement the FOSS teacher guides which are not aligned to the NGSS standards. A focus on outreach, professional development, and instructional coaching has been introduced this year to support teachers in various districts in teaching the OER units in conjunction with older FOSS activities. Teachers who have taught the instructional sequence as presented in our OER units report the following student outcomes through anecdotal observations:

- increased interest and engagement in science learning
- reduction of disruptive behaviors amongst students who are struggling learners
- increased career awareness and curiosity
- increased ability of students to articulate relevant questions about content
- increased involvement of parents in students science learning
- class discussions that cover more rigorous topics and delve deeper into science topics
- improvement in scientific models that students are creating and modifying throughout the unit.

This qualitative data was collected through feedback from teachers who were implementing the OER units produced through this grant.

TEACHER OUTCOMES: How was efficacy measured?

Braided Native Knowledge in Public Education

We wanted to see shifts in teacher thinking and bias when teaching and developing curriculum. Effectiveness was measured by assumptions, bias, and willingness to participate in indigenous learning models and desire to teach lessons. Through a Google Form, teachers were asked to reflect on the essential understandings of the OER project (our goals). Teachers were asked whether their change in knowledge decreased, remained the same or increased on these understandings. All teachers who responded to the survey reported an increase in:

- Building understanding of history through multiple perspectives (Native and non-Native)
- Increase tolerance, empathy, and acceptance towards indigenous cultures
- Dismantle commonly held misconceptions
- Become aware of Native ways of knowing and doing
- Filter these understandings to our students through teaching practices and content

Conceptual Physics Course Development

The project is currently in development. Deadlines for benchmarks during development have been met.

Dual Language Immersion Social Studies OER Project

We did not measure this in this first year of the project.

Regional STEM Instructional Materials Collaborative

Teachers were involved in this project in a variety of ways. A core team of teachers was recruited to:

- work on brainstorming during the early drafting of the unit
- aid in integration of the STEM unit with Common core ELA and mathematics
- review a selection of literature (picture books) that would be included with the unit
- aid in literacy integration
- review and provide suggested revisions with the sequence of activities after a draft was created

Teachers involved in any of these processes were given one-on-one coaching and PD on NGSS standards and various research-based best practices and instructional routines that promote equitable access to all students in STEM. After engaging in the initial stages of the process, teachers were able to understand and apply these elements to help in the planning of the unit as well as to modify their own instructional practices based on the science unit they were currently teaching.

ClimeTime Grant funds were leveraged in August 2018 to train approximately 160 teachers on 9 storylines that were released at this point. These teachers were trained on how to use the storyline to transform student learning for that particular bundle of NGSS standards. The main impact on teachers was the amount of support they received in shifting towards NGSS through the use of the resources that were included in these OER units. Teachers who participated in training or coaching expressed excitement to teach the unit, excitement about being able to use an engaging scientific phenomenon to teach the content, comfort and appreciation for NGSS-aligned materials that took off the pressure of creating lessons and curriculum to fulfill these needs.

Through the use of the units, which include a plethora of outside resources (videos and articles), prompts for engaging students in discussions, opportunities for engaging students in scientific modeling and argumentation, and various formative and summative assessments, teachers have been able to change the way science has originally been taught in the classroom (doing "hands-on" investigations with few anchoring experiences). One challenge has been to motivate teachers who are accustomed to the traditional way of teaching science to shift their practices and venture to teach in a different way. Although over 240 teachers will have new instructional materials as a result of our OER unit development this year, it is unclear when implementation will look like until our data collected.

BENEFITS

Braided Native Knowledge in Public Education

We were able to pilot curriculum development with non-tribal members while partnering with tribal community and developed lessons. We also piloted culturally responsive/relevant professional development for teachers. To accomplish this we were able to fund professional development for teachers and have them visit cultural sites, interact with and learn from tribal members, visit the Spokane Indian Reservation, co-develop lessons, deepen teaching culturally responsible teaching practices, and deliver lessons to students through a co-teach model with Braided Education helping to teach the lesson. Teachers responded positively to the professional development and overwhelmingly agreed that it was worthwhile and deepened their practice as educators.

Conceptual Physics Course Development

The ability to develop an NGSS-aligned physics curriculum for all students.

Dual Language Immersion Social Studies OER Project

The team was thrilled to have the opportunity to collaborate and identify resources from English Social Studies OER that they wanted to use in their DLI classes. They enjoyed the translation process and are eager to put the resources to use to a greater extent in the coming year. From the district (and state) point of view, we are excited to have our DLI teachers invest their very limited time into creating products that can be used by teachers throughout our state and beyond.

Regional STEM Instructional Materials Collaborative

By the end of June 2019, we will have 4 NGSS aligned storylines published for grades 1-2. The focus of this year was to provide support to early elementary school teachers by creating NGSS-aligned STEM units that are well integrated with English Language Arts.

The project has been very successful in several ways.

Firstly, a group of exceptional 1st and 2nd grade teachers from a variety of districts (Longview, White Salmon, Hockinson, Washougal) were closely involved with the development of these units.

In addition to working with these teachers, collaborators from several outside agencies were brought in to provide feedback and increase authenticity of the real-world problems being presented in the storylines.

Another benefit of the project, and a way that our work has improved since last year, is the strong literacy connection that is present in the 4 units that will be finished.

By leveraging funds through our Climate Science grant, we were able to purchase trade books to include in the unit that help the teacher to engage students in the storyline which providing them an opportunity to interact with these high-quality texts. Teachers of primary grades have repeatedly expressed frustration that it is difficult to find high quality and grade appropriate texts that help the teacher to engage students in deeper learning about a specific topic. The books that we have chosen

and the activities that are focused around students engaging with these texts help to build a bridge between STEM experiences and ELA instruction.

This year, involvement in the piloting of the OpenSciEd OER curriculum (middle school openly-licensed units) has given our team access to high leverage instructional routines that are research-based and promote equity and access to content. These instructional routines in addition to ongoing training and work around project based learning and career related learning experiences have created a format which will provide our students with experiences that are authentic, relevant, engaging, and rigorous.

One additional feature of this year's units is the amount of support provided to teachers through additional resources (slides presentations, handouts, assessments, and posters) that have been created for each unit. These resources are all posted on a google-drive folder so teachers can make a copy and modify to fit their needs.

In addition, a variety of formatting and aesthetic changes were made to make content more accessible and user-friendly for teachers (lessons were separated into sessions, with handouts for each session inserted behind for easy access).

The STEM initiatives team will be presenting this work at the NSTA STEM forum in July this summer. From August 2018-present, we have had 834 individuals access our units on the STEM materials website (www.stemmaterials.org). We will be continuing to collect data on the number of views and downloads on this page.

As stated earlier, teachers have responded positively to the structure and content of the units and have stated that student engagement in discussing scientific concepts, creating models, and working collaboratively has increased during science learning time in the classroom. As our OER units are being implemented by teachers, there is an increasing demand for more storyline based units to accompany our STEM kits.

CHALLENGES

Braided Native Knowledge in Public Education

1. Working with teachers who are experts in curriculum development and uncomfortable with subject matter that is sensitive. We had to ask teachers to remain patient while we worked closely with tribal members who helped develop the lessons, that all 10 teachers had eyes on, and watched the lessons unfold as they were developed.
2. We had to reassure teachers that it was all part of the process. Rather than rush through and work on quantity, we needed to work on the quality of lessons. That we can’t control bias and that Spokane Tribal members needed to be the one telling the story.
3. Encouraging teachers to reach past their comfort zone and grade band to see how they can work together to create a better understanding in their students. Using perhaps, a fresh perspective that comes from a familiarity with a student population other than the one they operate from on a daily basis.

Conceptual Physics Course Development

Lack of source material. The high school transitioning to a trimester schedule. Change of building leadership.

Dual Language Immersion Social Studies OER Project

1. Working out the process for producing high-quality translations and adapted versions of Social Studies texts originally written in English. We tried out a couple of approaches and then decided on the model of:
    - high school native speaker translates > second teacher reviews for language > middle school teachers review and adapt, as needed > all teachers meet for final sign-off.
2. Working with language teachers to develop the translator mindset.
    - The native speakers may be overly confident in their translation ability because they know the language, but they may not know the cultural context of the content (US and WA State History). So, the non-native experienced local content teachers have an invaluable role to make sure that the intent of the English is carried over into the Spanish or Chinese.
3. One of the biggest barriers is likely to be making new teachers aware of the OER resources being created, where to access them, when to use them, etc.
4. It's also a big cultural shift for teachers to think in terms of not just quickly creating resources for their own class, but to take the extra time to make them OER and sharable with a wider audience.

Regional STEM Instructional Materials Collaborative

There were several challenges, both internal and external that affected progress of this project this year.

1. The initial proposed plan was to have distinct development teams that worked on a specific facet of curriculum development. One team was to focus on brainstorming/development of units, another team to focus on revisions and support, and another to aid in integration across disciplines (ELA and Mathematics). Due to the late start of the school year, it was a difficult task to organize these distinct teams within the time frame that was proposed.

    Instead, the team of teachers who were working with the ICS (integrated curriculum specialist) on brainstorming and developing the units also became the consultants on providing suggestions for assessment and integration. This also seemed to be the most practical approach as opposed to recruiting additional teachers to look over a STEM unit that they are unfamiliar with. After the first task force had commenced their work, it was clear that these teachers were experts in identifying common core connections since these standards are often prioritized by districts (over NGSS). The structure of development had to change in the sense that fewer teachers were needed to complete the work.

2. Another major challenge where the outcomes will not be delivered as planned was revising preexisting units from the previous year.

   We were able to collect data through facilitated EQuiP meetings and online surveys for two of our new units. We hope to continue to collect evaluative data on the units as our teachers continue to implement and pilot the units. Data was valuable and the process of review was helpful to teachers who participated, but priority was given to the development of new units instead of the revision of previous units. A new plan is being devised for how to tackle the process of review and revision for our proposal next year.

   Since it is more difficult to recruit teachers to invest time in review and revision, next year, we are hoping to leverage the teachers on our Science Leadership Network team in grades K-5 to aid in this review and revision process. By August 2019, there will be 10 OER storyline units fully publish and ready for review and revision. The Science Leadership Network meetings will provide a place for the ICS to facilitate a day of both professional development and curriculum revision.

   Previously, the Regional Science Coordinator has facilitated the SLT group. For next year, the ICS will lead this group and focus their attention to supporting the development of the resources being created by our team. Teachers will be tasked with using tools to digest and evaluate elements of a storyline unit and propose needed revisions to improve alignment with NGSS and equitable access to all students.

3. One of the biggest barriers standing in the way of full-implementation of our OER units has been providing training to teachers and changing the mindset from teachers using what has been provide in their FOSS kits to actually using our storylines to teach the content with FOSS activities as a supplemental resource. It seems that teachers who have been teaching the FOSS investigations for several years can feel uncomfortable trying something new.

   This year, we will provide a free training in early August for teachers to attend and receive in-depth training on the curriculum, materials and best practices for storyline implementation. We will also be providing embedded coaching and support to districts who are interested (this usually involves the ICS visiting a building during PD time to model effective implementation of the storyline in addition to the intent and justification behind this approach to STEM education and how it is different from teaching using the FOSS curriculum).

   We also plan to create a series of videos that serve as an introduction to philosophy and structure of our OER storyline units and help teachers make sense of the materials that they are receiving. Creating videos that train teachers on specific storyline units are also in the plan for the future, since this would help support teachers who could not attend the trainings over the summer.

ADDITIONAL COMMENTS

Dual Language Immersion Social Studies OER Project

We are very happy with our experience on this project even though our deliverables are not all quite done yet (aiming for end of June). We have applied for a second year grant and believe we can take the work much further based on the collaborative foundation we have built. Other districts (and states) have expressed interest in using our work.

Regional STEM Instructional Materials Collaborative

We are so grateful to be a part of this OER development effort and to be working on this project with some our fellow grantees across the state. We aspire to continue our work with your support and to continue to adapt our products and processes to better fit the needs of our region.

FOR MORE INFORMATION

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