Climate Science Proviso

Interim Survey Report

February 2019

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Introduction and Executive Summary

ClimeTime is facilitated by the Office of the Superintendent of Public Instruction (OSPI) through a Washington State budget proviso of $4 million in 2018-2019 originally requested by Governor Inslee. OSPI manages the network and the grant funding flows through all nine Educational Service Districts (ESDs) in Washington and seven community-based organizations (CBOs) which are launching programs for science teacher training linking the Next Generation Science Standards (NGSS) and climate science. In addition to teacher professional development, the project supports the 16 grantees to develop instructional materials, design related assessment tasks and evaluation strategies, and facilitate student events.

This interim survey report discusses data from two surveys about ClimeTime professional development of science teachers across Washington between September 1 and December 15, 2018. The first survey—the Climate Science Survey--addressed trainings open to educators across the state related to the Washington state budget proviso. The second survey gathered feedback from educators participating in the Washington State Fellows Network.[1] The Network is a group of instructional leaders convened by OSPI and the ESDs to support district and community implementation of state learning standards in mathematics, English Language Arts (ELA), and science, and the Early Learning Guidelines. The report includes data collected from the first two Science Fellows convenings held in fall 2018. While Regional Science Coordinators focus on teacher leadership in the Fellows Program, they provide support for climate science instruction through these convenings.

Climate Science Survey Findings

Overall, participants rated trainings very highly with more than 86 percent stating that aspects of the session were good or very good. More than nine in ten participants reported that they were introduced to useful resources and that they were motivated to recommend these types of sessions to colleagues.

Most participants (88 percent) shared that they have broadened or deepened their knowledge of topics related to climate science. Practically all the participants (99 percent) agreed or strongly agreed that participation prepared them with the necessary skills to try something new or different in their professional practice. Over ninety percent agreed that they have broadened or deepened understanding of research-based instructional practices and over 80 percent reported increased knowledge of the content standards and how to share the information they learned with colleagues. A smaller proportion (between 63 and 79 percent) agreed or strongly agreed that the training increased their knowledge of practices to make learning experiences more inclusive for students of color, English learners and students with disabilities. Over half (55 percent) reported that they are confident or very confident about teaching the Next Generation Science Standards (NGSS) climate science-related topics at their current level.

Participants reported on the frequency of their instructional practices in science and STEM teaching. While close to four out of five plan for multiple ways to access learning most or all of

[1] Please visit http://k12.wa.us/CurriculumInstruct/Fellows.aspx to learn more about the Washington State Fellows Network.

the time, a smaller proportion (42percent) survey students about their interests or experiences relevant to science ideas. Over three-fourths of the participants claimed that they prompted students to explain and revisit their understandings. Close to two-thirds reported employing other practices including using data to inform students' thinking and engaging in conversations around science and engineering findings.

The Climate Science Surveys provided information about participants in professional development supported by the Governor's Proviso. Trainings drew primarily elementary (39%) percent and middle school teachers (31 percent) with remaining percentages serving high school and multi-grade teachers. Most stated they had relatively little training with over two-thirds (67 percent) noting they had engaged in six or fewer hours of climate science training.

Fellows Survey Findings

Overall, participants in the Science Fellows Trainings gave strong ratings to their professional development. More than 86 percent stated that aspects of the sessions were good or very good. More than nine in ten participants reported that the sessions used engaging activities, introduced them to useful resources, and provided timely, relevant information.

The vast majority of the participants (96 percent) agreed or strongly agreed that participation prepared them with the necessary skills to try something new or different in their professional practice. Over ninety percent agreed that they have broadened or deepened understanding of research-based instructional practices (95 percent) and leadership practices to provide equitable access to high quality instruction (92 percent). A smaller proportion (between 76 and 85 percent) agreed or strongly agreed that the training increased their knowledge of practices to make learning experiences more inclusive for students of color, English learners and students with disabilities.

Climate Science Surveys

Table 1: Response to Question: Thinking about your professional learning session, how would you rate it for the following?

		Very Good	Good	Fair	Poor	Does Not Apply
Meeting the stated learning objectives of the session.	%	**66.4**	**30.8**	**2.5**	**0**	**0.3**
	#	*239*	*111*	*9*	*0*	*1*
Use of engaging and useful activities to facilitate your learning.	%	**65.3**	**28.6**	**5.8**	**0.3**	**0**
	#	*235*	*103*	*21*	*1*	*0*
Introducing you to useful resources such as curriculum materials, research articles, and practice information?	%	**62.8**	**30.3**	**6.1**	**0.6**	**0.3**
	#	*226*	*109*	*22*	*2*	*1*
Providing timely, relevant information that you will be able to apply in your work setting.	%	**61.1**	**34.7**	**3.9**	**0.3**	**0**
	#	*220*	*125*	*14*	*1*	*0*
Engaging you in discussion with other participants in ways to facilitate your learning.	%	**67.8**	**29.4**	**2.2**	**0.6**	**0**
	#	*244*	*106*	*8*	*2*	*0*
Providing sufficient time for you to process the information collaboratively with colleagues.	%	**50.3**	**36.9**	**11.7**	**1.1**	**0**
	#	*180*	*132*	*42*	*4*	*0*
Motivating you to recommend these types of sessions to your work colleagues.	%	**60.6**	**31.6**	**6.1**	**0.6**	**1.1**
	#	*217*	*113*	*22*	*2*	*4*

Table 2: Response to Question: As a result of participating in this Professional Learning Experience, I have broadened/deepened my existing knowledge of:

		Strongly Agree	Agree	Disagree	Strongly Disagree	Not Addressed
The content standards	%	**38.6**	**49.4**	**5.0**	**0**	**6.9**
	#	*139*	*178*	*18*	*0*	*25*
Research-based instructional practices	%	**48.3**	**46.9**	**1.9**	**0**	**2.8**
	#	*174*	*169*	*7*	*0*	*10*
Instructional practices to make learning experiences more inclusive for diverse student populations (e.g., special education,	%	**39.2**	**40.3**	**5.6**	**0**	**15.0**
	#	*141*	*145*	*20*	*0*	*54*

highly capable, migrant, students of color).						
Instructional practices to make learning experiences more inclusive for English language learners.	%	**29.8**	**40.7**	**9.7**	**0**	**19.8**
	#	*107*	*146*	*35*	*0*	*71*
Instructional practices to make learning experiences more inclusive for students with disabilities.	%	**25.6**	**37.3**	**10.3**	**0**	**26.7**
	#	*92*	*134*	*37*	*0*	*96*
A range of assessment and/or resources across the educational system such as state, local, and/or classroom assessments.	%	**33.5**	**43.3**	**6.1**	**0**	**17.0**
	#	*120*	*155*	*22*	*0*	*61*
How to share the sessions' information with others (teachers, administrators, parents).	%	**33.8**	**51.1**	**4.7**	**0**	**10.3**
	#	*121*	*183*	*17*	*0*	*37*

Table 3: Response to question: How frequently do you implement the below instructional practices in your science or STEM teaching?

		All of the time	Most of the time	Sometimes	Never or hardly ever	Not applicable
Provide opportunities for students use data to inform their thinking	%	**16.7**	**51.4**	**29.6**	**0.9**	**1.**
	#	*58*	*179*	*103*	*3*	
Test the ability of students to apply key science ideas to new situations	%	**10.9**	**47.7**	**37.4**	**2.9**	**1.**
	#	*38*	*166*	*130*	*10*	
Engage in conversations around science findings or engineering solutions	%	**20.1**	**45.8**	**30.6**	**2.9**	**0.**
	#	*69*	*157*	*105*	*10*	
Engage students in science-related computational thinking	%	**10.2**	**41.5**	**40.9**	**6.4**	**0.**
	#	*35*	*142*	*140*	*22*	
Ask students to explain their partial understandings and potentially incorrect ideas	%	**25.6**	**52.7**	**19.3**	**1.4**	**0.**
	#	*89*	*183*	*67*	*5*	

Have students make explanations and revise them in response to new evidence	%	**25.6**	**52.7**	**19.3**	**1.4**	**0.9**
	#	*74*	*166*	*92*	*9*	*5*

Table 4: Response to question: How frequently do you engage in the instructional practices in science and STEM teaching below?

		All of the time	Most of the time	Sometimes	Never or hardly ever	Not applicable
Ask students to explain their partial understandings and potentially incorrect ideas	%	**25.6**	**52.7**	**19.3**	**1.4**	**0.9**
	#	*89*	*183*	*67*	*5*	*3*
Have students make explanations and revise them in response to new evidence	%	**25.6**	**52.7**	**19.3**	**1.4**	**0.9**
	#	*74*	*166*	*92*	*9*	*5*
Provide opportunities for students use data to inform their thinking	%	**16.7**	**51.4**	**29.6**	**0.9**	**1.4**
	#	*58*	*179*	*103*	*3*	*5*
Engage in conversations around science findings or engineering solutions	%	**20.1**	**45.8**	**30.6**	**2.9**	**0.6**
	#	*69*	*157*	*105*	*10*	*2*
Test the ability of students to apply key science ideas to new situations	%	**10.9**	**47.7**	**37.4**	**2.9**	**1.1**
	#	*38*	*166*	*130*	*10*	*4*
Engage student in science-related computational thinking	%	**10.2**	**41.5**	**40.9**	**6.4**	**0.9**
	#	*35*	*142*	*140*	*22*	*3*

Table 5: Response to question: How confident are you about teaching the Next Generation Science Standards (NGSS) climate science-related topics at your current level?

		Very Confident	Confident	Somewhat Confident	Not Confident
How confident are you about teaching the Next Generation Science Standards (NGSS) climate science-related topics at your current level?	%	**13.1**	**41.8**	**38.1**	**7.1**
	#	*46*	*147*	*134*	*25*

Table 6: Grade level(s) currently teaching/current role

Elementary (P-5)	%	**38.6**
	#	*139*

Middle (6-8)	**%**	**30.8**
	#	*111*
High (9-12)	**%**	**23.9**
	#	*86*
Other (Multiple grades)	**%**	**6.7**
	#	*24*

Table 7: Response to Question: Are you a Washington State Fellow?

Yes	**%**	**17.8**
	#	*64*
No	**%**	**79.4**
	#	*286*
Fellow Emeritus	**%**	**2.8**
	#	*10*

Table 8: Response to Question: How many hours of climate science-related training have you completed in 2018-19?

zero-three	**%**	**33.5**
	#	122
four-six	**%**	**34.1**
	#	124
seven-nine	**%**	**8.8**
	#	32
ten-twelve	**%**	**8.2**
	#	30
thirteen-fifteen	**%**	**2.2**
	#	8
over fifteen	**%**	**13.2**
	#	48

Responses to Open-Ended Survey Questions

The Climate Science Surveys gathered feedback about steps participants would take after the trainings. Respondents also offered suggestions about opportunities to improve the professional development.

Open-Ended Responses

Response to Survey Question: What aspect of your learning today are you most likely to use in your classroom in the near future?

Participants discussed both activities and resources that they would use. They referenced utilizing local examples, guest speakers and classroom discussions as key strategies in their science classrooms. Many expressed they are excited about Argument-Driven Inquiry (ADI).[2]

- *I really like the walk sharing our boards. Having two partners doing the presenting and two partners traveling. What a great strategy for our ELL students and aren't all of our students English Learners?*
- *I plan to use the instructional techniques presented to help improve engagement, student interest and higher order thinking. I also plan to include experts in the field and select examples that are as close to the students' geographic location.*
- *I love the idea of story lines to connect the different standards and lessons in the kits. I will be using this immediately to help tie in some of the concepts especially with the field trips that we already use*.

Response to Survey Question: What suggestions do you have to make this professional learning experience better?

Participants offered suggestions for improving the professional development. They were interested in receiving training to adapt curriculum and instruction to students in different grade levels and they are eager to learn how to modify lessons for English learners and students with disabilities. Many recommended providing more time that could be used for peer discussion and planning instruction.

- *I am a social studies teacher who is partnering with our science teacher to implement the ADI model in both of our classrooms. I wish there was ADI/Inquiry training at the ESD that specifically addressed how to bridge ADI into other disciplines and/or use an inquiry model in those areas.*
- *Highlight ideas on how ADI can meet the needs of SPEDs, HCs, ELLs, and students of color*
- *Maybe turn this into a two day program so that we can get more in-depth and hands-on experiences*
- *Reiterate and remind us each session how to "break down" the NGSS standards in order for us to truly comprehend these standards. I know it is "old news" for some participants, but it is very useful for those of us that are newbies.*

[2] ADI is a multi-step process used in STEM classrooms to move from identifying a question to data collection to reporting. Please visit https://argumentdriveninquiry.com/instructional-model for more information.

Fellows Surveys

Table 9 Response to question: Thinking about your professional learning session, how would you rate it for the following?

		Very Good	Good	Fair	Poor	Very Poor	Does Not Apply
Meeting the stated learning objectives of the session.	%	**65.0**	**30.5**	**4.2**	**0.2**	**0.1**	**0**
	#	*832*	*390*	*54*	*3*	*1*	*0*
Use of engaging and useful activities to facilitate your learning.	%	**63.1**	**28.4**	**7.5**	**0.9**	**0.1**	**0**
	#	*808*	*364*	*96*	*11*	*1*	*0*
Introducing you to useful resources such as curriculum materials, research articles, and practice information?	%	**64.3**	**29.8**	**4.7**	**0.9**	**0.3**	**0.1**
	#	*823*	*381*	*60*	*11*	*4*	*1*
Providing timely, relevant information that you will be able to apply in your work setting.	%	**63.4**	**29.5**	**6.0**	**0.9**	**0.2**	**0.1**
	#	*812*	*377*	*77*	*11*	*2*	*1*
Engaging you in discussion with other participants in ways to facilitate your learning.	%	**74.5**	**21.3**	**3.6**	**0.3**	**0.1**	**0.2**
	#	*954*	*273*	*46*	*4*	*1*	*2*
Providing sufficient time for you to process the information collaboratively with colleagues.	%	**62.1**	**29.3**	**7.4**	**0.8**	**0.3**	**0.1**
	#	*795*	*375*	*95*	*10*	*4*	*1*

Table 10: Response to question: As a result of participating in this Fellows Session, please rate your agreement with the statement, I have broadened/deepened my existing knowledge of…

		Strongly Agree	Agree	Disagree	Strongly Disagree	Not Addressed
The content standards	%	**40.3**	**50.3**	**4.5**	**0.6**	**4.2**
	#	516	644	58	8	54
Research-based instructional practices	%	**49.3**	**45.2**	**2.1**	**0.3**	**3.0**
	#	631	579	27	4	39
Instructional practices to make learning experiences more inclusive for students of color.	%	**41.3**	**42.8**	**4.4**	**0.4**	**11.2**
	#	528	548	56	5	143
Instructional practices to make learning experiences more inclusive for English language learners.	%	**40.5**	**44.4**	**4.2**	**0.4**	**10.5**
	#	*518*	*568*	*54*	*5*	*135*

Instructional practices to make learning experiences more inclusive for students with disabilities.	%	**35.0**	**40.9**	**6.8**	**0.5**	**16.7**
	#	448	524	87	7	214
A range of assessment and/or resources across the educational system such as state, local, and/or classroom assessments.	%	**28.9**	**38.0**	**8.4**	**0.7**	**24.0**
	#	370	486	108	9	307
How to share the sessions' information with others (teachers, administrators, parents).	%	**39.8**	**47.2**	**6.4**	**0.5**	**6.2**
	#	*509*	*604*	*82*	*6*	*79*
Leadership practices to provide equitable access to high quality instruction.	%	**45.4**	**46.6**	**3.0**	**0.5**	**4.5**
	#	581	597	38	6	58
How to look at data to identify ways to adjust instruction.	%	**25.1**	**30.9**	**11.1**	**0.9**	**32.0**
	#	*321*	*395*	*142*	*12*	*410*
How to try something new or different in my professional practice.	%	**55.5**	**40.3**	**1.9**	**0.3**	**2.0**
	#	*711*	*516*	*24*	*4*	*25*

Responses to Open-Ended Survey Questions

The Fellows surveys gathered feedback about steps that science educators would take after the convenings. Respondents also offered praise and suggestions about opportunities to improve the professional development.

Response to Survey Question: What new or different thing(s) will you try in your professional practice in the coming months because of this Professional Learning Experience?

Survey responses indicated that Science Fellows will be focusing on the quality of student discourse in the classroom. They also valued certain approaches, like Claims, Evidence and Reasoning (CER), Talk Moves[3] and norm setting in both their teacher leadership and classroom activities. One Fellow noted that she would, "Incorporate strategies for student talk into professional development." The Fellows sessions also raised their awareness of the importance of equity in science teaching.

[3] Claims, Evidence and Reasoning (CER) is a framework for students' learning and assessment tasks. Designed to promote student ownership of learning, Talk Moves provide classroom conversation prompts so that students dialogue with one another.

- *I will work with my school's teachers on how to increase student participation and to ensure equitable student voice.*
- *Being intentional about implementing talk in my discussions with students. This is also a TPEP goal so this topic has branches into many important areas of teaching!*
- *I will try to implement more student discourse in my classroom, but first establish norms as a class.*
- *I will continue to push student discourse in our classrooms across all grade levels and work on ways to get students to lead each other in discourse.*
- *I will be more intentional about building norms for student talk, posting those norms, and reteaching them often. I will also look for protocols that support talk moves to ensure equity and safety.*

Response to Survey Questions: What worked well for you today? & What, if anything, would you change, edit, or add for the next session?

Participants' open ended responses were very positive. Science Fellows praised the strategies and resources Regional Science Coordinators shared in Network convenings. They expressed gratitude for meeting with grade-level and local groups. Their suggestions for improving the professional development included addressing the fast pacing of some of the sessions, and providing more time for collaboration and action planning.

- *I thought it was a great session! I was very engaged. I liked talking about the CBAM[4] and going through the teacher scenarios and what to do to address their concerns. I liked engaging in ADI a second time and feel like the concept is more solidified for me.*
- *I enjoyed the varied activities which made me critically look at the application of NGSS in lessons. Also, many strategies to promote student talk and shift pedagogy towards the teacher being a guide on the side. Getting to interact not only with colleagues in my ESD but also those from across the state was very useful and I feel that I have grown as a teacher from this experience. Thank you!*
- *I really like the way the gallery walk was done (having someone stay and explain the model) -- it felt more focused and kept me engaged in the content. I also liked the protocol for looking at the progressions for engaging in argument from evidence -- it strengthened my understanding of the practice and gave me some ideas for how I might help teachers navigate the progressions.*
- *… I was very happy with how things were laid out for this meeting. I was given many resources, time to discuss them, a connection to the big picture and the book we are reading, time to privately digest the information, and time to update my action plan. I feel like I learned something new, reviewed what I have already learned but may have forgotten, shared my own ideas, and have walked away with a plan of action.*

[4] The Concerns-Based Adoption Model (CBAM) is the Fellows Network' framework for supporting teacher leaders to support changes in classrooms and schools. CBAM provides tools that support individuals as they go through predictable stages of concern when adopting any innovation. Please visit http://www.nas.edu/rise/backg4a.htm for more information.

- *More time to learn from each other. We are our own best resource and we rarely get time to seek help from each other- especially from other school districts that may be in different places than we are in the implementation.*
- *More strategies! I love being "strategized" - the idea that I am actually doing an activity the way I would be using it in my classroom is seriously relevant and I tend to be more successful after going though it myself, first!*