

Teacher Professional Development Practices

NOAA B-WET National Evaluation: <http://www.noaa.gov/office-education/bwet/grantee-resources/national-evaluation>

BACKGROUND

An important component of NOAA’s Meaningful Watershed Educational Experiences (MWEEs) is professional development (PD) for teachers to gain knowledge and confidence in environmental education and learn strategies to implement MWEEs as part of their teaching practices.

SUMMARY

- MWEE PD increases teachers’ watershed literacy, confidence and intention to implement MWEEs. There are specific PD practices that predict teacher confidence and teacher perceptions of student outcomes (Table 1).
- 75% of teachers implemented MWEEs with their students within 12 months of their PD. Teachers who were more confident in their abilities to implement MWEEs were more likely to do so within 12 months of their PD.
- Teachers who experienced ≥11 hours outdoors and a field trip/work were more confident in using the outdoors for instruction after their PD, and preliminary evidence suggests that teachers who implemented MWEEs had spent more time outdoors during their PD.
- More grantees offer one day PD workshops (75%) compared to multi-day PD workshops (48%) and teacher institutes (42%). Only multi-day workshops and teacher institutes were linked to student MWEE outcomes.

FINDINGS

Table 1. Overview of PD practices quantitatively linked to teacher confidence to implement MWEEs and higher perceptions of student MWEE outcomes

PD Practices Implemented	Teacher Confidence to Implement MWEEs	Perceived Student MWEE Outcomes
<i>Provided hands-on support (i.e. with field trips, equip/tech, stewardship projects, how to obtain funding)</i>	***	
<i>Focused on how NOAA data can be used</i>	***	
<i>Conducted scientific inquiry and place-based education</i>	**	
<i>Aligned PD with district, state, national education standards</i>		***
<i>Aligned PD with MWEE goals (i.e. teachers able to implement MWEEs w/o provider support, use outdoors for instruction, increase watershed literacy, etc.)</i>		***
<i>Offered institutes</i>		***
<i>Offered multi-day workshops</i>		***
<i>Offered PD over months vs. weeks</i>		*
<i>Longer outdoor contact time</i>		*
<i>Supported integration of MWEEs into teachers’ curricula (e.g., shared how MWEEs have been integrated, planned how teachers might be able to do so themselves, etc.)</i>		*
<i>Offered incentives to participate</i>		*

*** practices supported by strong evidence, ** practices for which there is a medium level of evidence, * practices for which there is preliminary evidence (i.e., results may change once more data is available).

Teacher Confidence

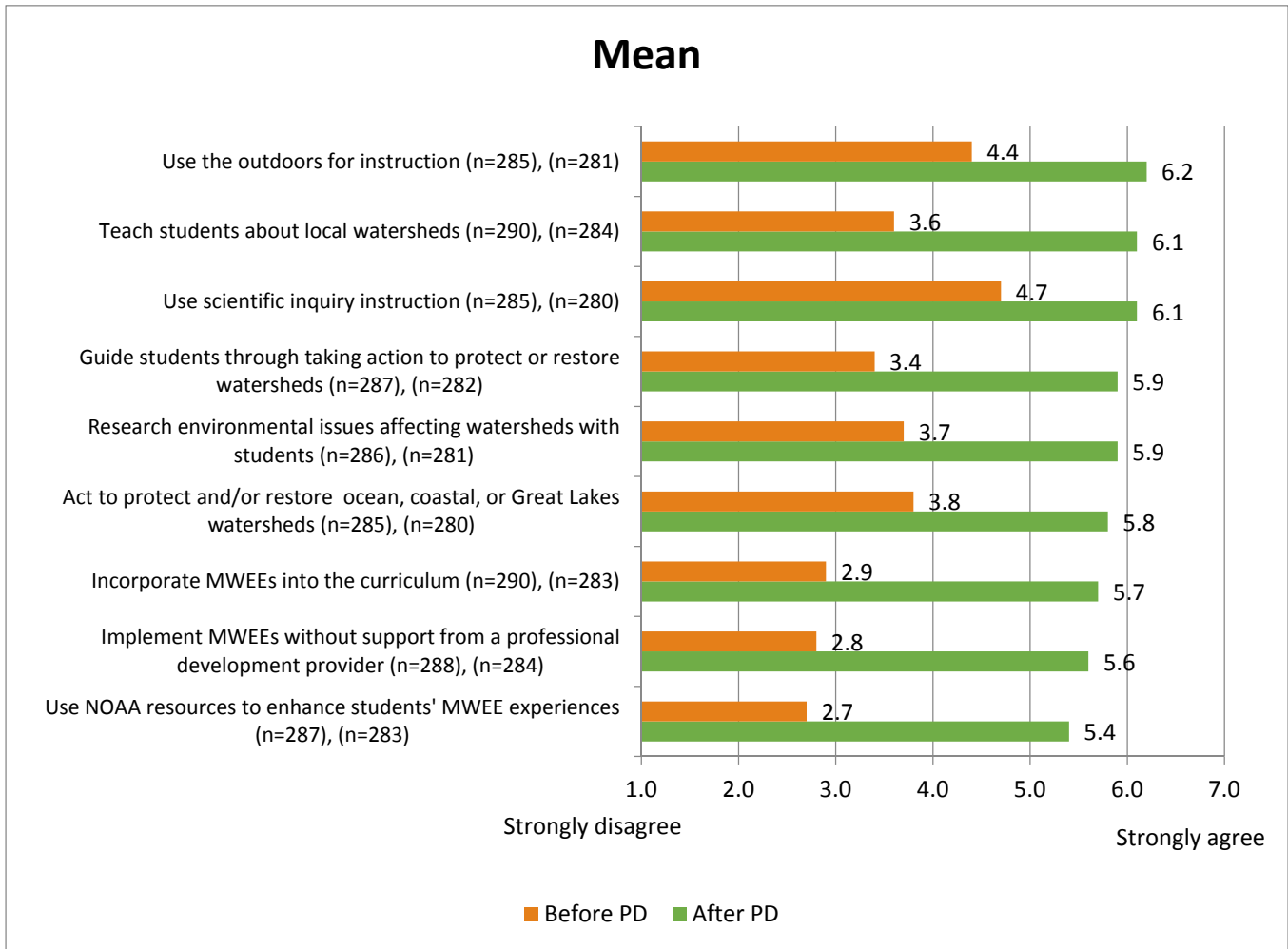


Figure 1. Teachers' self-reported change in confidence in using MWEE practices from before to after their B-WET funded professional development. All were statistically significantly different.

Evaluation system and existing research results suggest that grantees should be encouraged to implement the following PD best practices:

- Provide hands-on support, specifically assistance with field trips/work, the use of equipment/technologies, and conducting stewardship projects, and also share information about how to obtain funding for MWEEs.
- Focus on how teachers can use scientific data in ways that support student MWEE outcomes.
- Align PD with district, state, and national education standards as well as MWEE goals.
- Deliver the above through institutes and multi-day workshops versus for example, one day workshops.

DISCUSSION QUESTIONS

- Do the findings about PD best practices resonate with your experience and practice?
- Our analysis provided limited evidence that time outdoors (less vs. more than 11 hours) played a major role in teacher PD or their perceived student outcomes. In your experience, do you think time spent outside during PD impacts teachers' and students' outcomes? How so?

“MWEE outcomes”

This combined outcome consisted of a combination of environmental stewardship and science literacy measures.

As a result of participating in MWEEs, teachers agreed their students’ improved in these MWEE outcomes:

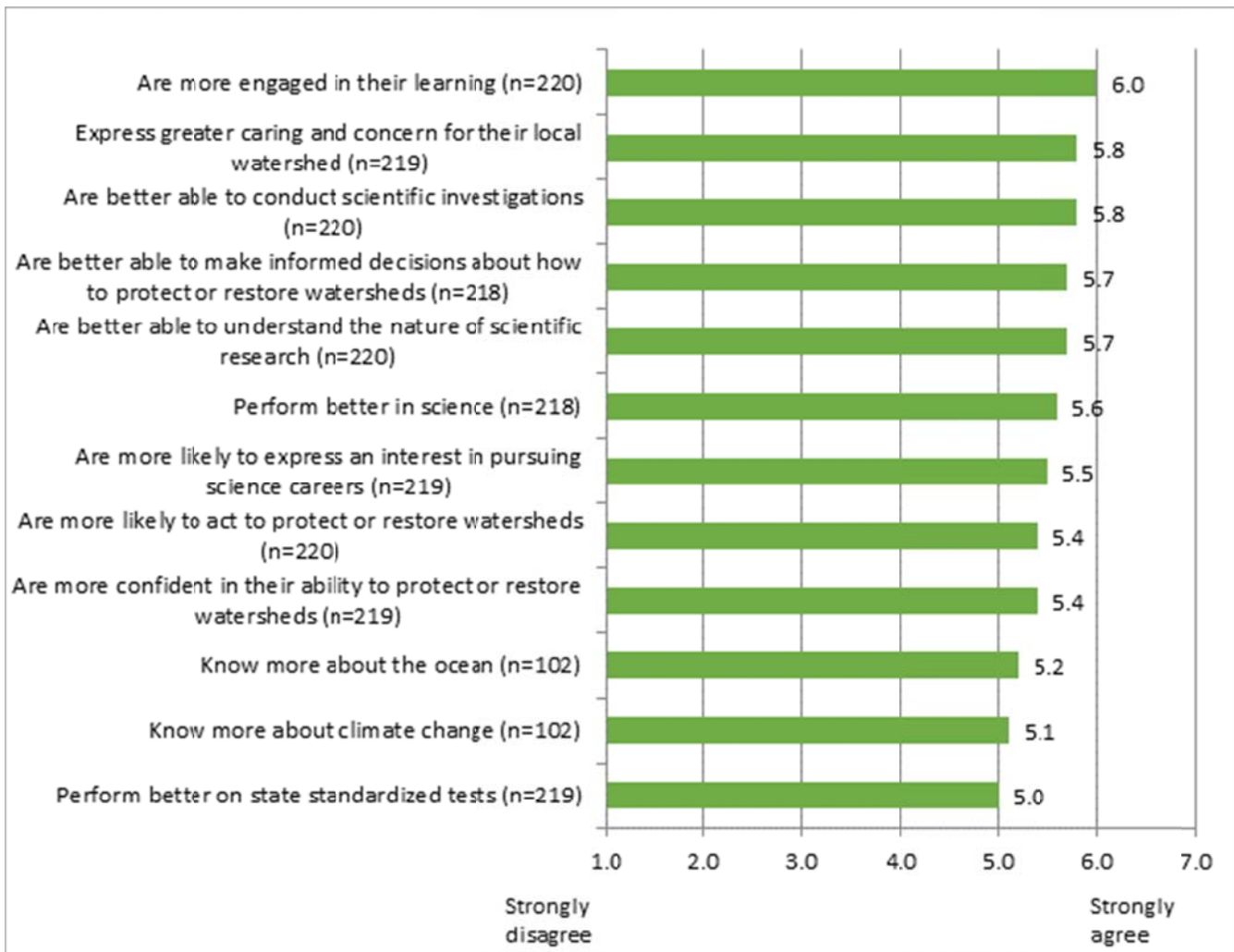


Figure 2. Teachers’ perceived improvements in student outcomes as a result of MWEEs