International Ocean Literacy Survey

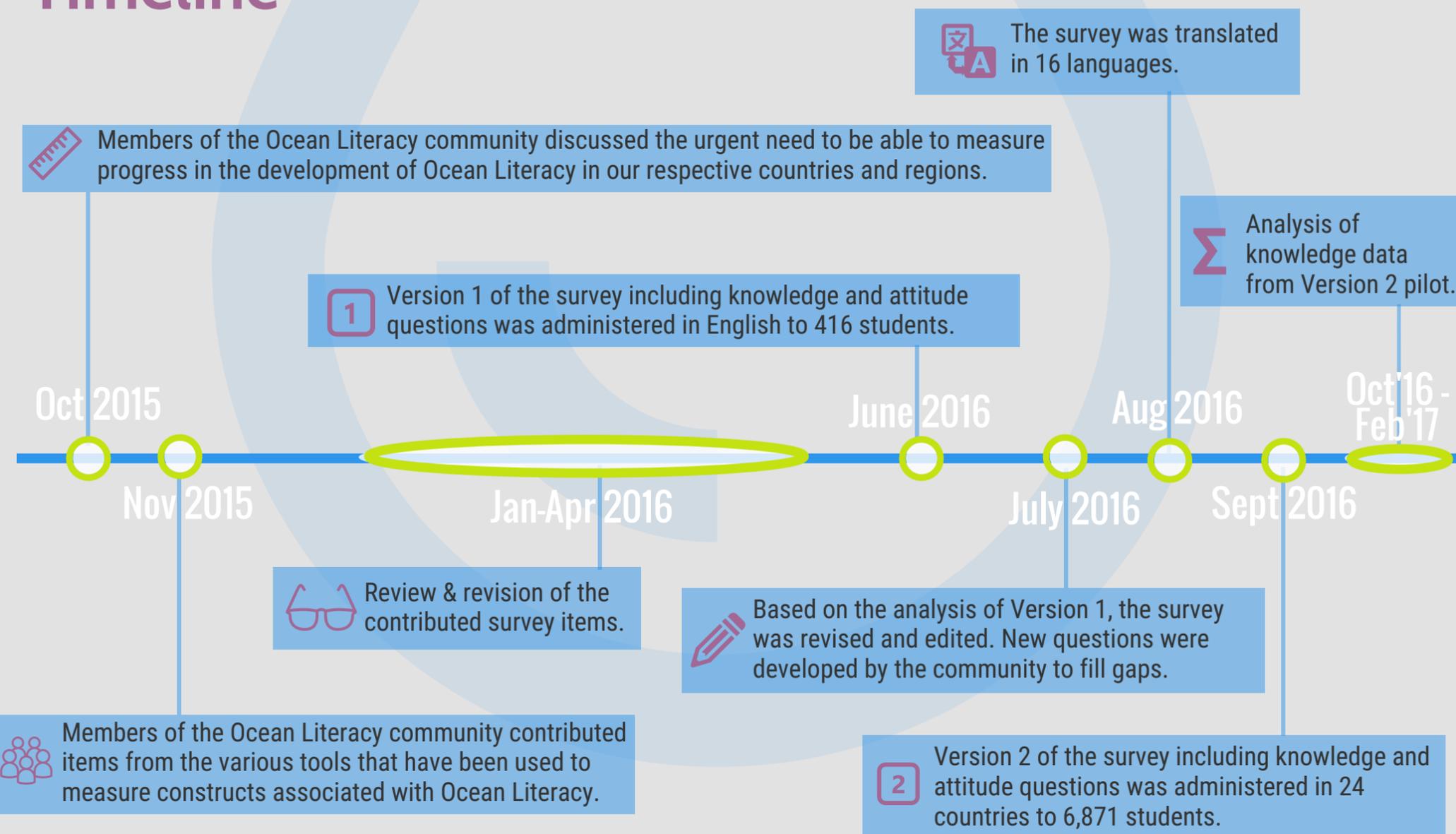## Report from Version 2 pilot: Knowledge items

Background

The International Ocean Literacy Survey (IOLS) is an unfunded, grassroots, collaborative effort to measure progress in building global Ocean Literacy (OL). The survey includes multiple choice questions for 16-18 year olds, addressing their knowledge and attitude about the ocean. The finished survey will be able to measure the impact of an education project, establish a baseline OL level in a community, detect change over time in OL levels in a community, and understand differences in OL levels across communities and countries.

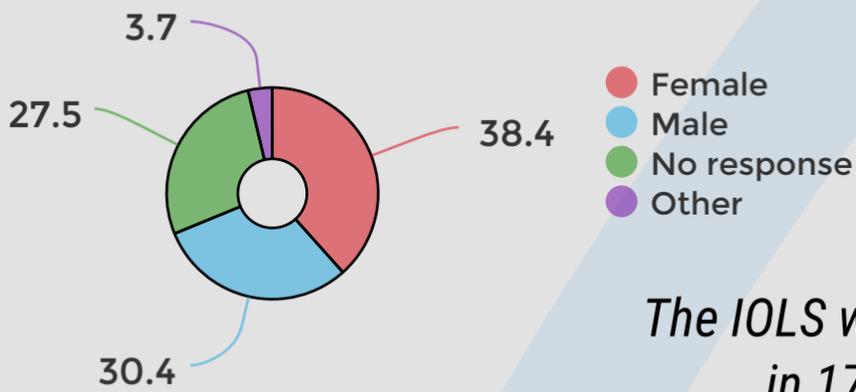**We have not yet begun to measure OL; we are currently testing the validity of the survey itself.**
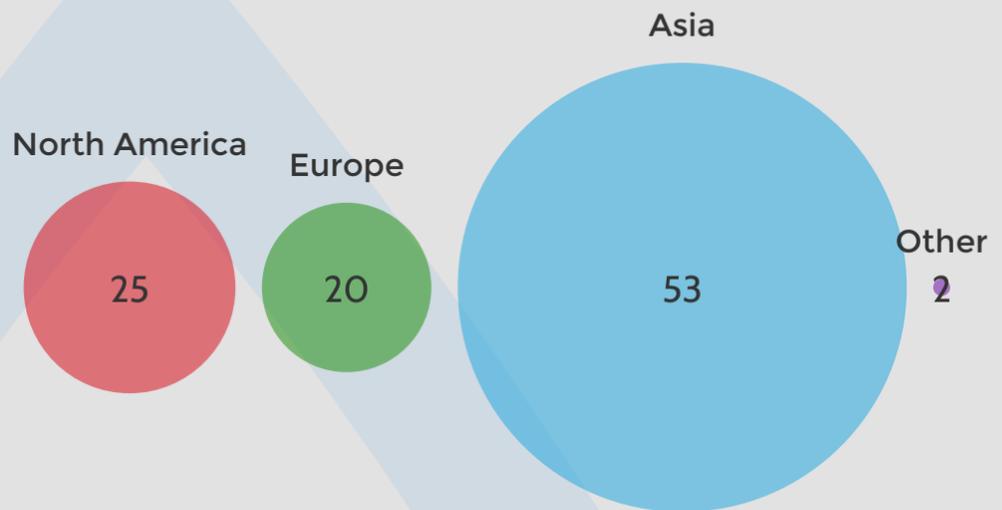
Timeline

The survey was translated in 16 languages.

Members of the Ocean Literacy community discussed the urgent need to be able to measure progress in the development of Ocean Literacy in our respective countries and regions.

Analysis of knowledge data from Version 2 pilot.

1 Version 1 of the survey including knowledge and attitude questions was administered in English to 416 students.

Oct 2015 — Nov 2015 — Jan-Apr 2016 — June 2016 — July 2016 — Aug 2016 — Sept 2016 — Oct'16 - Feb'17

Review & revision of the contributed survey items.

Based on the analysis of Version 1, the survey was revised and edited. New questions were developed by the community to fill gaps.

Members of the Ocean Literacy community contributed items from the various tools that have been used to measure constructs associated with Ocean Literacy.

2 Version 2 of the survey including knowledge and attitude questions was administered in 24 countries to 6,871 students.

Findings from Version 2 pilot

6,871 16-18 year olds responded to the survey in 24 countries

Demographic

Gender (%)

3.7
27.5
38.4
30.4

- Female
- Male
- No response
- Other

Continent (%)

North America — 25
Europe — 20
Asia — 53
Other — 2

The IOLS was administered in 17 languages

Traditional Chinese, Danish, French, Swedish, Japanese, Greek, Spanish, Dutch, Portuguese, Catalan, Polish, Croatian, Norwegian, Simplified Chinese, German, English, Italian

Statistical analysis

The IOLS had a Cronbach Alpha **Reliability** Coefficient of .85. This indicates that 85% of the score can be **consistently reproduced** using these assessment items. A score of .7 is considered acceptable; score of .9 is considered excellent. As we replace and rewrite items that did not test well we expect the IOLS reliability score to improve.

We found the responses to the IOLS to be **uni-dimensional**. This indicates that the responses to these items are driven by **a single latent trait**.
We call this trait **Ocean Literacy Knowledge**.

Example of our analysis

The ocean has a significant influence on climate change by absorbing, storing, and moving what? Select all that apply.

- Salts.
- Carbon.
- Heat.
- Fresh water.
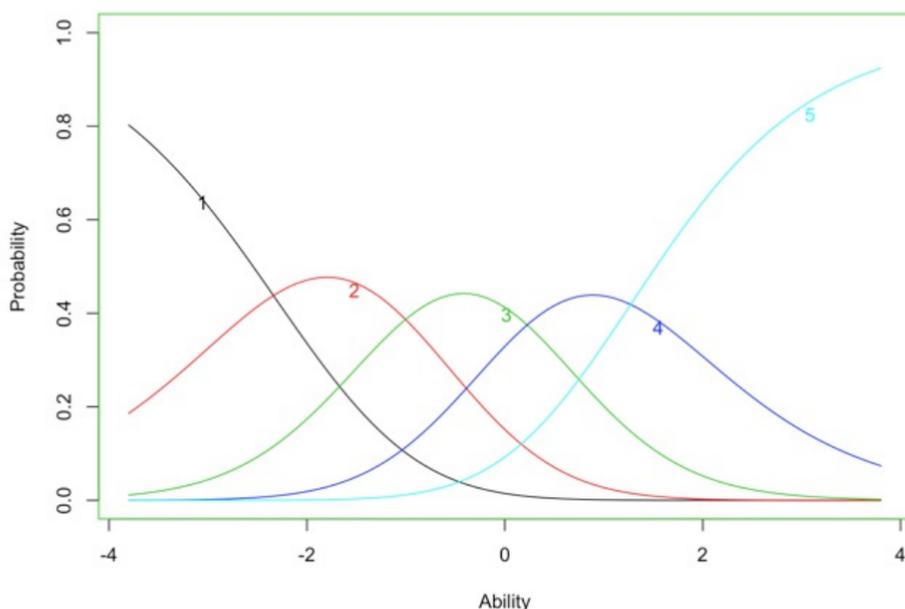
This question has four response options. Two of these options are correct (carbon & heat), two are incorrect (salts & fresh water). Each of these response options are scored separately, meaning not selecting "salt" is a correct answer and selecting "carbon" is also a correct answer.
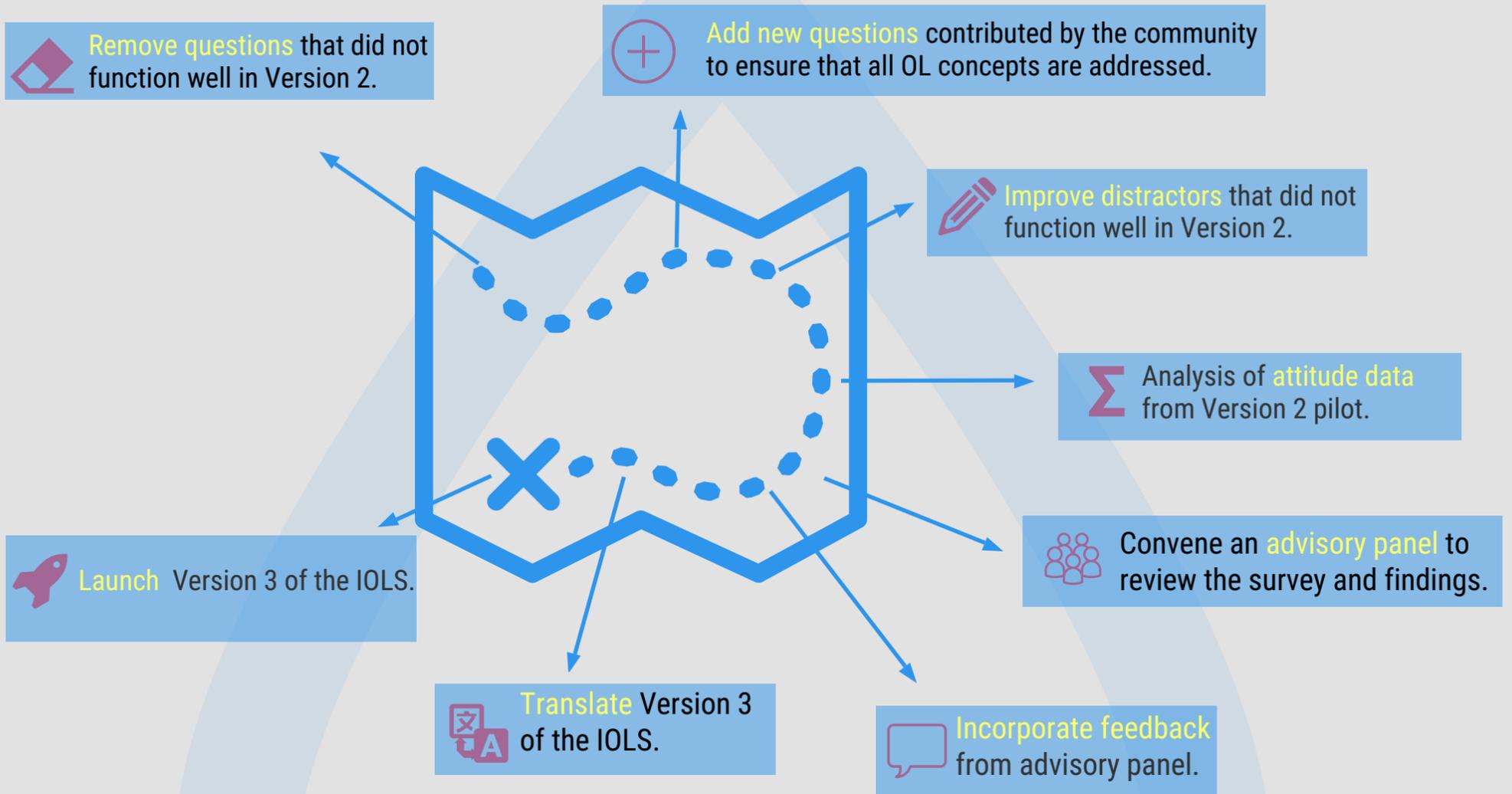
How to read the graph?

- X axis: respondents' "ability" or in this case ocean literacy knowledge calculated from their responses to the rest of the items on the survey. Higher scores on the survey indicate higher "ability", lower scores indicate lower "ability".

- Y axis: probability of the respondent receiving the following scores to this item.

- Curves: 1: no correct responses were given
2: one correct answer was given
3: two correct responses were given
4: three correct responses were given
5: four correct responses were given

An individual with an "ability" of -2 has the highest probability of achieving a score of 2 (one correct response) on this item. Conversely, an individual with an "ability" of +2 has the highest probability of achieving a score of 5 (all correct responses) on this item.
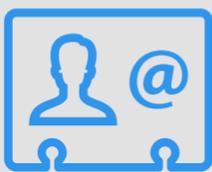
What's next?

Based on the findings from the Version 2 pilot and ongoing discussions among science educators, scientists and educational researchers, here are the next steps:

Remove questions that did not function well in Version 2.

Add new questions contributed by the community to ensure that all OL concepts are addressed.

Improve distractors that did not function well in Version 2.

Analysis of attitude data from Version 2 pilot.

Launch Version 3 of the IOLS.

Convene an advisory panel to review the survey and findings.

Translate Version 3 of the IOLS.

Incorporate feedback from advisory panel.

Want to join the effort?

Feel free to contact us for further information.

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Lead institutions

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

UNIVERSITY OF GOTHENBURG

Participating institutions *

AMEA Asian Marine Educators Association

CaNOE Canadian Network for Ocean Education

National Marine Educators Association
making known the world of water

marine conservation society

and the European Commission.

With assistance from over 200 individuals in the Ocean Literacy community worldwide.

* Supporting and involved in the development of the IOLS.