ProBleu

Promoting ocean and water literacy in school communities

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Deliverable D5.1
Best Practices for Assessing Ocean and Water Literacy

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Preface

D5.1 Best practices for assessing ocean and water literacy [m12]

D5.1 stems from the work, that has been implemented under work package (WP) 5 "Assessment of learning outcomes and impacts" and its task "T5.1 Developing a methodology for the assessment of ocean and water literacy". Task T5.1 is aimed to develop a methodology to monitor the learning outcomes of the student and school projects. This task analysed best practices in assessing learning outcomes and adapting them to monitoring the change in ocean and water literacy. D5.1 will be further used in T5.2 "Creating a monitoring and evaluation framework and toolkit" and T5.3. "Monitoring the environmental literacy and the understanding of the value of oceans and waters among children and youth, teachers and schools".

This deliverable is public. As concerns the Horizon Europe Work Programme types of deliverables, it is classified as: Report.

List of Abbreviations

EU – European Union

NEBS – The Network of European Blue Schools

CAWI – Computer-assisted web interviewing

WP – Work package

1. Introduction

Progress in reaching good environmental status in inland and marine waters has been slow, and the 2020 targets of the EU (in the Marine Strategy Framework Directive, and the Water Framework Directive) have not been met. This means that more effective and novel ways to address this issue should be developed. Addressing these challenges the EU mission "Restore our Ocean and Waters by 2030" (hereafter referred to as Mission) was introduced. It aims to reverse the deterioration of oceans, seas and inland waters by protecting and restoring ecosystems, preventing and eliminating pollution, and making the blue economy circular. However, the successful implementation of this Mission and achievement of its goals highly depends on ocean and water literacy and the engagement of the young generation in the protection of the environment.

ProBleu project aims to expand and support the Network of European Blue Schools (NEBS), attracting a wide diversity of new members and improving ocean and water literacy across school communities, in this way contributing to the objectives of the Mission. This involves a special emphasis on environmental education, improving the water and ocean literacy among schools and schoolchildren, expanding awareness and encouraging behavioural change related to waters and oceans.

The school projects funded by ProBleu project, are focussing on fresh waters and oceans. These projects are expected to improve water and ocean literacy among schools, develop and offer a pool of innovative initiatives, that are based on methodologies of Open Schooling. The ProBleu project is developing a methodology to assess changes in water and ocean literacy, awareness and behaviours, achieved by school projects. This includes summarizing best practices of this assessment and building on them to produce the ProBleu approach towards monitoring the school projects' outcomes (including learning outcomes that these projects are achieving).

The methodology is based on several building blocks (see Figure 1):

- Describing the concept and dimensions of ocean and water literacy;
- Providing best practice cases in survey design for schoolchildren (i.e. children and adolescents);
- Designing the tools for water and ocean literacy assessment;
- Developing the strategy for monitoring and evaluation of learning outcomes from the schools' projects.

Strategies for water and ocean literacy assessment and monitoring and evaluation of learning outcomes from the schools projects might employ quantitative or qualitative perspectives:

- Quantitative approach: measuring water and ocean literacy and behaviours (pre-survey) and their change (post-survey). Target audience: schoolchildren. ProBlue survey

methodology is based on (1) the dimensions of ocean literacy defined by McKinley et al. (2023) and (2) International Ocean literacy questionnaire (IOLS) developed by Fauville et al. (2019). These two sources form the basis of the developed methodology for assessing water and ocean literacy, awareness and behaviours.

- Qualitative approach: monitoring and evaluation of learning outcomes, including open schooling approach, achieved by school projects. Target audience: teachers, school administration, other stakeholders in the schools' ecosystem. This part is based on using qualitative research methods, such as interviews (including computer assisted interviews) or focus group discussions.

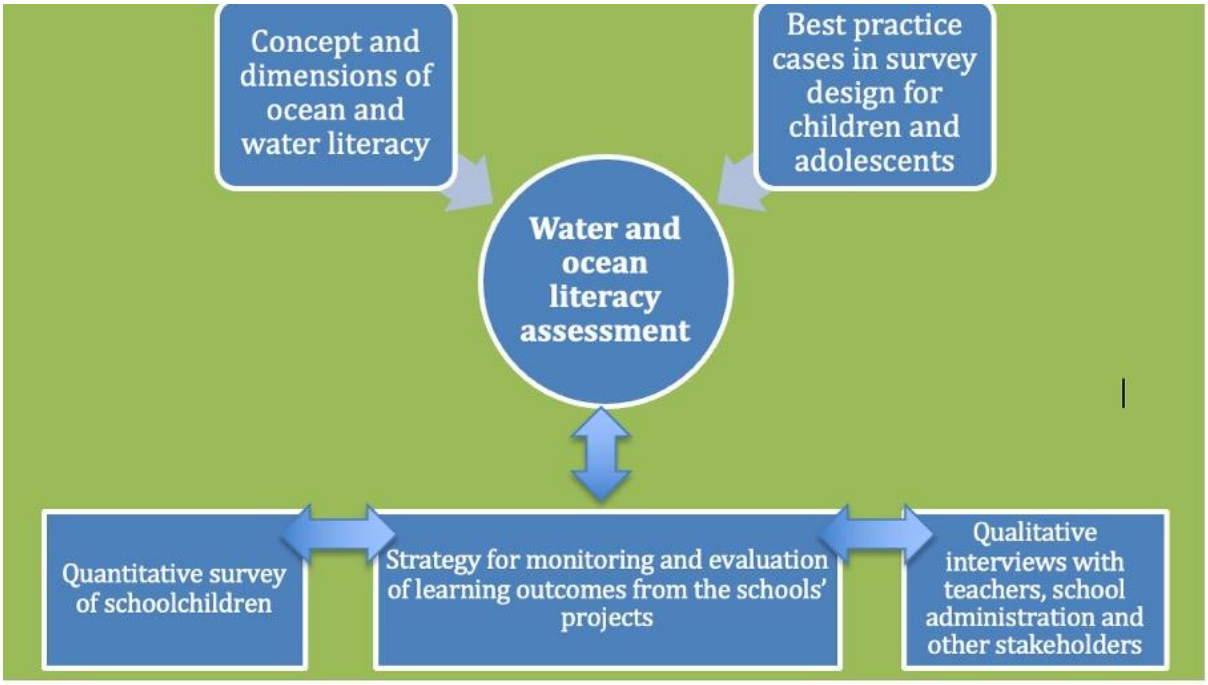

Figure 1: General strategy of assessing water and ocean literacy and its changes during the project implementation period

This report has 4 main sections, including all 4 pillars of the methodology: concept and dimensions of ocean and water literacy; best practice cases in survey design for children and adolescents; design of the tools for water and ocean literacy assessment; and the strategy for monitoring and evaluation of learning outcomes from the schools' projects, summarized by conclusions and appendixes, providing examples of the tools created.

2. Concept and dimensions of Ocean and Water literacy

Ocean literacy can be defined as "an understanding of the ocean's influence on you—and your influence on the ocean. An ocean-literate person: understands the essential principles and fundamental concepts about the ocean; can communicate about the ocean in a meaningful way; and is able to make informed and responsible decisions regarding the ocean and its resources." (NOAA, 2013)

The widely accepted essential principles of ocean literacy are (NOAA, 2013; Fauville et al., 2019:240): (1) Earth has one big ocean with many features; (2) The ocean and life in the ocean shape the features of Earth; (3) The ocean is a major influence on weather and climate (4) The ocean makes Earth habitable; (5) The ocean supports a great diversity of life and ecosystems; (6) The ocean and humans are inextricably linked; (7) The ocean is largely unexplored.

These principles were included in various questionnaires to assess ocean literacy of different age groups (e.g. Guest, 2015; Mogias et al., 2019; Fauville et al, 2019; Francisco, 2020).

McKinley et al. (2023) proposed a new comprehensive definition of ocean literacy, identifying 10 main dimensions. This conceptualisation of ocean literacy takes into account the diversity of social, cultural, economic and environmental contexts of the society's interaction with oceans and seas (ibid:6). ProBleu survey methodology is prepared based on this concept of ocean literacy and extended to freshwaters for assessing oceans and water literacy of schoolchildren in ProBleu project.

Concept of Ocean and Water Literacy is presented in Figure 2.

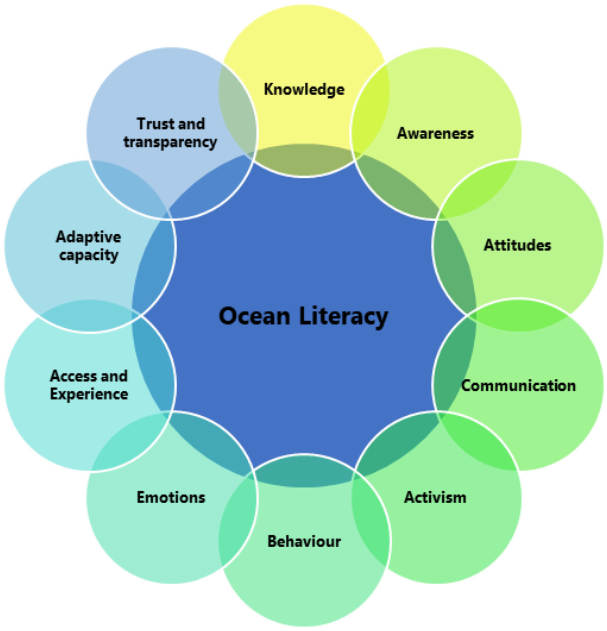

Figure 2: Dimensions of Ocean and Water Literacy (Source: McKinley, 2023)

Dimensions of Ocean and Water Literacy include (McKinley et al., 2023: 3-6):

- ***Knowledge*** is what a person knows about (1) an ocean related topic and the links between topics; (2) ocean decision-making, (3) opportunities to participate and engage in ocean decisions and behaviours and (4) where/ how to get information about ocean issues. Knowledge dimension should recognise and integrate local and indigenous knowledge.
- ***Awareness*** is the basic knowledge and understanding that a situation, problem, or concept exists. This dimension should not only focus on the definitions of a problem but awareness should also include knowledge and understanding of the solutions and behaviours that may exist to address these problems to encourage ownership and empower society to take action.
- ***Attitude*** is a level of agreement with or concern for a particular position. Attitude also includes consideration of perceptions, values, and views towards an ocean issue, and how these can lead to policy and societal change. The understanding of public perceptions informs policy makers about the social acceptability of conservation and management strategies and helps to maximise the impact of different initiatives.
- ***Behaviour*** relates to decisions, choices, actions, and habits with respect to ocean related issues, including from individual, sector and policy actors and institutions. This dimension includes private sphere behaviours (for example, daily behaviours in the household, like using and disposing personal and household products that have

impact on marine environment) and public sphere behaviours (for example, petitioning or donating to environmental organisations).

- ***Activism*** is the degree to which a person engages in a wide range of activities, which can constitute activism, such as campaigning (for example through social media, attending public rallies or writing to elected officials) to bring about changes in policy, attitudes, behaviour, etc. This dimension must also take account of who are the participants in activism and what the barriers might be. Ocean literacy initiatives must include people from local communities, it should be socially inclusive.
- ***Communication*** in the context of ocean literacy must be considered from multiple perspectives: (1) Communication is the extent to which a person communicates with others, such as family and peer groups, on ocean related topics; (2) consider how/ where people get their information about ocean issues from and what methods of communication are most effective; and (3) at organizational level, communication needs to consider how institutions and organizations are communicating to different audiences about ocean issues. Communication is a core component of ocean literacy. It is important to ensure that it is effective, and solution driven.
- ***Emotional connections*** are about how a person feels and emotionally responds when they think about, are near/ within, or consider issues relating to the ocean, coasts, and seas. Emotions can be positive, negative, or neutral and are all valid responses and will all contribute to behaviour change. If emotional connections are neglected, the behavioural change can be limited.
- ***Access and experience*** relate to a person's real or artificial experiences and engagement with the ocean and other waters. Barriers to ocean access and experiences should also be considered within this dimension. The access can shape individual attachment and connection to ocean. Here, virtual reality can be used as a tool for the access and experience the ocean.
- ***Adaptive capacity*** relates to a person's capacity to adapt and respond to changing conditions relating to the ocean. This response is proactive, and depends on different social, economic, political characteristics. The ability to adapt to a changing ocean, depends on other ocean literacy characteristics (like knowledge, awareness, behaviours).
- ***Trust and transparency*** relate to the level of trust a person places in sources of ocean information and knowledge, and their perception of how transparent information is. The sources of trust include formal education (e.g. schools) and informal knowledge sources (e.g. social media). It is important to consider perceived reliability and transparency of the source of information.

This concept of ocean literacy recognizes the complexity and multi-faceted realities of changing human – ocean interaction. The development of various measurements of ocean

literacy using survey research (one of the major ones being The International Ocean Literacy Survey (IOLS), Fauville, 2019) aims at the comparison of levels of ocean literacy in different locations and also allows to assess the changes over time.

3. Best Practices in Survey Design for Children and Adolescents

Understanding the developmental and cognitive stages of children and adolescents is crucial for developing effective survey methodologies for these groups. Piaget's theory of child development (Piaget, 1929) posits that as children grow, they progress through distinct stages of cognitive development, each characterized by unique abilities and limitations in understanding and processing information. These stages reflect the evolving cognitive functions related to language, literacy, and memory throughout childhood and adolescence. This developmental progression significantly influences how children and adolescents perceive and respond to survey questions, underscoring the importance of age-appropriate survey design (Borgers et al., 2003).

The feasibility of conducting survey research with children begins around age 7, grounded in the recognition that children at this age have developed sufficient language and literacy skills to comprehend and respond to survey questions, albeit within the limits of a carefully adapted questionnaire (Borgers et al., 2000; Scott, 1997). This adaptation is crucial because children and adolescents do not only differ from adults in their cognitive capabilities but also in how they are influenced by the content and context of questions, as well as by practical aspects of the survey environment such as the physical setting. From age 11 onwards, the need for adaptation decreases substantially, allowing for a smoother transition towards questionnaires that are more aligned with those used for adults (Borgers et al., 2000). By the age of 16, adolescents can generally respond to adult survey questions with minimal modifications needed.

However, it is important to note that chronological age serves as a proxy for average cognitive development when, in fact, cognitive development varies widely among individuals within the same age group, influenced by a combination of genetic, environmental, and socio-cultural factors (Borgers et al., 2000). Therefore, when designing surveys for children and adolescents, researchers must consider not only the average developmental stage associated with specific ages but also the variability in individual development.

Thus, designing surveys for primary and secondary school students requires careful consideration of their unique developmental stages, cognitive abilities, and social contexts. Table x highlights research-based considerations for designing questionnaires for children

(age group 7-11) and adolescents (11-16), with emphasis on the theoretical foundations and empirical findings that inform these best practices.

Table 1: Research-based considerations for designing questionnaires for children and adolescents

Column heading1	Children (age group 7-11)	Adolescents (11-16)
Question Length and Wording	Questions should be concise, with straightforward syntax to accommodate children's processing speeds, which are generally slower than adults (Gray, 2002; Kail, 1991). While keeping questions simple, incorporating clear and helpful introductory text can aid comprehension without sacrificing clarity, even if it results in a longer question (Borgers and Hox, 2000; Holaday and Turner-Henson, 1989; De Leeuw et al., 2002). Use unambiguous, direct language tailored to the child respondent. Avoid indirect formulations or references to generalized groups (e.g., "children in general") that may confuse younger respondents (Holaday and Turner-Henson, 1989; Scott et al., 1995). Avoid complex question structures, such as double-barrelled or hypothetical questions, which are particularly challenging for children.	Questions should be clear, understandable, and as concise as possible to accommodate the developing decisional and thinking skills of adolescents. The number of words in the introductory text within a survey has a positive effect on the reliability of responses in survey research with children and young adolescents; the more words used in the introductory text, the more reliable the responses will be (Borgers and Hox 2000, 2001). Therefore, it is recommended to use a clear and extensive introductory text (words ~ 100) with simple short sentences when surveying children and young adolescents (Borgers and Hox 2000). Avoid complex, double-barrelled items and ensure questions are short (less than 20 words) to maintain children's concentration and motivation, thereby improving data quality (de Leeuw 2011; DeVellis 2016; Dillman et al. 2014).

Type of Questions (Open Versus Closed Questions	The choice between open and closed questions significantly influences data quality in surveys targeting children. Closed-ended questions provide a set of fixed responses, simplifying the response process for children, while open-ended questions, though adding richness to data, demand higher cognitive and communicative skills, which can challenge young respondents (DeVellis 2016; Krosnick and Presser 2010; Rea and Parker 2005). Given that children may not recognize the complexity of open-ended questions, leading to higher item non-response rates and the use of satisficing strategies, closed-ended questions are generally recommended for this age group to minimize task difficulty and enhance motivation (Borgers and Hox 2000; Fuchs, 2005; Smith and Platt 2013).	
Format of Response Categories	Tailor the number of response options to the cognitive capabilities of children, with younger respondents typically handling fewer options effectively. Yes/no questions or scales with three to four options are preferable for this age group to avoid confusion and cognitive overload (Borgers and Hox, 2000; De Leeuw et al., 2002).	When selecting the format of questions, consider using dichotomous questions for ease and minimal cognitive load, though be aware of their lower psychometric properties compared to scales with more options (DeVellis 2016; Krosnick and Presser 2010). Multiple choice questions, while quick to answer, may lead to guessing and be perceived as less attractive due to their association with academic testing, potentially reducing motivation and response reliability (Cronbach 1988; Roediger and Marsh 2005). Likert scales, offering a balance between ease of understanding and depth of response, are recommended for adolescents, as they are more engaging and less likely to lead to satisficing compared to other formats (Borgers et al. 2000; Robson 2011). For young adolescents, a rating scale with around four response options is optimal, avoiding overburdening

		respondents while still capturing variability in responses.
Negative or Positive Wording	Negative formulations that require cognitive inversion for a positive response should also be avoided, as these can confuse young respondents (Amato and Ochiltree, 1987; De Leeuw et al., 2004; Borgers et al., 2000).	To reduce cognitive burden and enhance response reliability, questionnaires for young adolescents should avoid negatively worded questions. Positively worded questions are more straightforward for children to understand and respond to accurately, minimizing confusion and inconsistency in responses (Borgers et al. 2000, 2004; de Leeuw 2011).
Verbally Labelling Response Categories	When using scaled responses, fully labelled scales with verbal labels or visual aids like smiley faces tend to elicit better-quality responses from children than numeric scales or partially labelled ones (Borgers et al., 2003; Scott et al., 1995).	Fully labelling response categories with words rather than numbers can enhance understanding and reliability of responses for children. The 'ALL form' labelling, where each category is labelled, is shown to be more effective than 'END form' labelling for improving response stability and reliability, especially in children older than 10 years (Borgers and Hox 2000; de Leeuw 2011; Borges et al. 2003).
Neutral Mid-Point, “Don’t Know” and “No Opinion”	While “don't know” or “no opinion” can be valid, they may also encourage satisficing among children who are disengaged or seeking an easy way out. Such options should only be offered when genuinely applicable to the question's context (Borgers and Hox, 2000).	The inclusion of neutral mid-points should be avoided in order to increase response reliability and measurement quality, particularly for factual knowledge questions where a 'don't know' option may mask substantive understanding (Alwin 2007; Borgers and Hox 2000; Krosnick and Fabrigar 1997).
Measuring Behaviour	Given children’s limited recall capabilities, focus on questions that are rooted in the here-and-now rather than retrospective inquiries. If measuring behaviour retrospectively, ensure questions are clear and use	

	concrete reference periods to aid memory recall (Knauper et al., 1997; Otter, 1993; Borgers and Hox, 2000).	
Suggestion and Connotations	Young children often aim to please adults, which can lead to biased or overly positive responses. To mitigate this, avoid suggestively worded questions and consider question ordering to prevent suggestive contexts (Borgers et al., 2000; Maccoby and Maccoby, 1954).	Grouping related questions can give survey questions a meaningful flow (Rea and Parker 2005) and help respondents to focus and concentrate on specific issues without distraction (Bradburn et al. 2004; Dillman et al. 2014; Rea and Parker 2005) when measuring knowledge. However, attitude questions, especially those that ask for general attitude rating, are more susceptible to order effects (Bradburn et al. 2004; Schuman and Presser 1996). Therefore, survey researchers may prefer to randomly order the questions depending on the aim and purpose of their investigation. In order to reduce the likelihood of successful guessing in questions with the same topic, several questions in different formats focusing on one specific issue should be asked (Bradburn et al. 2004).
Survey length	The overall survey length should be brief to reduce participant burden and increase willingness to complete the survey, with a recommendation for surveys targeting young adolescents to be lesser than 10 min (Arthur et al. 2017; Borgers and Hox 2000).	

4. Designing ProBleu Surveys for Children and Adolescents in Ocean and Water literacy

When designing surveys for children and adolescents focused on measuring ocean and water literacy, it is important to choose dimensions that align with their developmental stages and cognitive capabilities. Among the dimensions outlined by McKinley et al. (2023), we selected Knowledge, Awareness, Attitude, Behaviour, Emotional Connections, and Communication, and added Open Schooling. These dimensions are particularly relevant as they directly align with educational goals of ProBleu school projects and are feasible to measure within the cognitive grasp of young respondents.

Specifically, Knowledge and Awareness allow for straightforward questions assessing students' grasp of water-related topics, fitting for ProBleu school projects. Attitude and Behaviour examine the impact of educational content of these projects on students' emotions and actions towards environmental conservation, directly linking learning to visible results. Emotional Connections explore the emotional effects of these projects, crucial for fostering enduring environmental commitment. Communication and Open Schooling assess how students share and apply their knowledge, highlighting the practical use of their learning.

Conversely, dimensions like Activism, and Trust and Transparency are less suitable for young respondents in short term educational interventions such as ProBleu school projects. Activism demands a level of engagement and maturity beyond children's typical scope, requiring long-term commitment not covered by brief interventions. Trust and Transparency entail abstract concepts like credibility and ethical considerations, challenging for younger students to understand or meaningfully reflect on in a survey setting. These concepts demand a deeper level of insight and judgment better suited to older respondents.

Moreover, to keep the survey duration under 10 minutes—as recommended by Arthur et al. (2017) and Borgers and Hox (2000)—we limit the dimensions and items per dimension. This ensures the survey remains manageable for children and adolescents, maintaining their attention and cooperation, thus maximizing data quality and ensuring meaningful engagement with the survey content.

In subsequent subsections, we detail each selected dimension for the ProBleu survey questionnaires for children and adolescents, describe the items proposed to measure these dimensions, and relate them to the methodological principles previously outlined.

4.1 Knowledge and awareness

The knowledge items are based on the International Ocean literacy questionnaire (IOLS) developed by Fauville et al. (2019) and full questionnaire with correct answers is available in Chen et al. (2020). Knowledge dimension in the ocean literacy surveys measure knowledge across 7 principles of Ocean Literacy and includes 44 items. Our survey does not have the possibility to include questions for all the principles, thus only subset of questions were selected for the knowledge dimension. These questions aim to trigger the interest and curiosity to find out more about oceans, seas and other water bodies. We later focus on other dimensions measuring concepts related to values and attitudes.

For the knowledge questions, two different versions are prepared for primary and secondary school children.

Correct answers are provided at the end of the questionnaire.

We have selected three knowledge items that reflect different aspects of ocean and water literacy and that are linked to its main principles:

- General knowledge about oceans and waters: (principle: *Earth has one big ocean with many feature*)
    - Both primary and secondary school: Where is most of the water on Earth?
- Knowledge about biodiversity in the oceans (principle: *The ocean supports a great diversity of life and ecosystems*)
    - Primary school: What is the largest animal ever to live on Earth?
    - Secondary school: Both land and ocean provide space for organisms to live. How much of Earth's living space is found in the ocean?
- Knowledge about interconnections of oceans and climate (principle: *The ocean is a major influence on weather and climate*)
    - Primary school: *What is the largest Ocean in the world?*
    - Secondary school: How is climate change impacting the Arctic?

Measuring awareness is an important dimension within ocean literacy research. Usually, questions are asked about individual having knowledge about a particular ocean topic (e.g., marine plastics or marine biodiversity). Also, it is important to understand the level of awareness about what can be done, of the actions that can be taken (McKinley, 2023).

In ProBleu survey, we will measure self-reported awareness on several dimensions in ocean literacy and include an item of awareness related to the solutions of the ocean/sea problems. After intervention (a school project) it will be possible to analyse the changes in the awareness.

We are using three items to measure the awareness about oceans and waters, which are related to (1) biodiversity, (2) pollution and (3) the protection of the oceans and waters. The

level of self-reported knowledge and awareness might help to influence "marine citizenship" and likeliness to act (Guest et al., 2015). The answer categories for primary school children included three-point answers and "nor sure" answer. Also, emojis, illustrating the answers were included in the questionnaire for primary schools. For the secondary school, the answers included 4-point Likert scales.

The items for awareness dimension are as follows:

- Awareness about biodiversity:
  - Primary school: *How much do you know about animals and plants in the rivers, lakes, oceans, and seas*?
  - Secondary school: *Please indicate, how much do you feel you know about: Biodiversity in rivers, lakes, oceans, and seas*
- Awareness about pollution:
  - Primary school: *How much do you know about pollution of the rivers, lakes, oceans, and seas?*
  - Secondary school: *Please indicate, how much do you feel you know about: Impact of human activities on rivers, lakes, oceans, and seas*
- Awareness about the protection of the oceans and waters:
  - Primary school: *How much do you know about what can be done by people to protect rivers, lakes, oceans, and seas?*
  - Secondary school: *Please indicate, how much do you feel you know about: Actions to protect rivers, lakes, oceans, and seas*

The pre-intervention and post-intervention surveys include the same items, which will allow to measure in which dimensions of the awareness the changes were significant.

4.2 Attitudes

These survey items are crafted to measure the attitude dimension, focusing particularly on internal efficacy among primary school children. Internal efficacy in this context refers to the belief in one's own ability to contribute effectively to environmental preservation, specifically water bodies like rivers, lakes, oceans, and seas. It involves the perception that through one's own actions, it is possible to make a difference in the environment. This could include behaviours like recycling, conserving water, reducing personal waste, or engaging in activism. A high sense of internal efficacy can motivate individuals to participate more actively in environmental conservation efforts because they feel their actions can lead to positive outcomes.

For primary school children, the first item, "I believe I can help keep rivers, lakes, and oceans clean by doing small things every day", aims to assess a child's sense of empowerment and

personal agency in contributing to environmental health. It taps into the core of internal efficacy by probing whether the respondent feels their individual actions can lead to positive environmental outcomes. The second item, "When I learn about ways to protect our water, I feel like I can make a difference", checks the impact of environmental education on the child's confidence in making a difference. This is crucial for understanding if educational interventions are effectively translating into a sense of capability and motivation to act pro-environmentally. The third item, "I can tell my friends and family why it's important to save water and protect our oceans and rivers", explores the child's confidence in their ability to communicate environmental issues, which is a vital component of both internal efficacy and broader environmental advocacy.

The phrasing of the questions actively engages children by prompting them to consider their personal impact on environmental health, thereby making the survey more relevant and potentially eliciting more reflective and accurate responses. The wording of the questions is straightforward and direct, catering to children's relatively slower processing speeds compared to adults (Gray, 2002; Kail, 1991). It avoids complex constructions, opting instead for simple, actionable statements that children can easily relate to and comprehend. The response options are straightforward and binary (Yes/No), suitable for young respondents to prevent confusion and cognitive overload (Borgers and Hox, 2000; De Leeuw et al., 2002). An additional option for uncertainty ("I'm not sure if I can", "Sometimes", "Maybe") is included to acknowledge the natural variability in children's confidence and understanding, even though it could potentially encourage satisficing among less engaged children (Borgers and Hox, 2000). This response format provides choices that accommodate varying degrees of confidence without overburdening the child's cognitive faculties.

For adolescents, the first item, "I feel confident in my ability to make positive choices that benefit the health of oceans, rivers, lakes, and seas", measures the respondent's self-assurance in making decisions that positively impact water bodies. This item assesses personal efficacy and empowerment related to environmental actions. The second item, "I believe my actions, no matter how small, can have a positive impact on protecting water environments", is intended to gauge whether adolescents feel that their individual actions can lead to meaningful environmental change. This reflects the core concept of internal efficacy where personal contributions to larger issues are recognized and valued. The third item, "I think I can effectively communicate the importance of water conservation to others and inspire them to take action", examines the respondents' perceived ability to influence others through communication. This is essential for understanding how adolescents view their role as advocates for environmental conservation.

The wording of the questions is appropriately tailored to adolescents, using language that challenges them to reflect on their roles and capabilities. The statements are constructed to

provoke thought about personal influence. The 5-point Likert scale (from "Strongly disagree" to "Strongly agree") allows for a detailed measurement of intensity in attitudes as adolescents are capable of understanding and articulating complex emotions and judgments at this developmental stage. This scale format is particularly effective as it engages respondents more deeply and reduces the likelihood of satisficing, thereby enhancing the reliability of responses compared to other, simpler formats (Borgers et al. 2000; Robson 2011). The focus on personal capability and influence in each statement aligns well with the developmental strides in autonomy and identity formation typical of adolescence. It taps directly into their growing awareness of their individual impact on the world around them.

4.3 Behaviour

Behaviour items assess are designed to capture a range of behaviours related to environmental awareness and responsibility, tailored to the cognitive abilities and developmental stages of children and adolescents. They also offer insights into the effectiveness of educational interventions aimed at fostering proactive environmental behaviours.

For primary school children, items that query actions such as turning off the tap and turning off the water while brushing teeth are crafted to gauge environmentally responsible behaviours in a tangible and straightforward manner. The use of a frequency scale ("Almost never", "Sometimes", "Almost always") is specifically designed to be clear and accessible for young children, thereby minimizing cognitive load and enabling accurate responses (Borgers and Hox, 2000; De Leeuw et al., 2002). For adolescents, these behaviours extend to include turning off faucets and taking shorter showers, assessed via a more detailed frequency scale ranging from "Never" to "Always". This graduated scale is suitable for adolescents, who are capable of a deeper reflection on their habits (Borgers et al., 2000; Robson, 2011).

The survey also explores discussions about oceans with friends or family, an important behavioural indicator for developing environmental awareness. For children, simple and clear three-point scale options ("Not at all," "A little," "A lot") are used to minimize confusion and ease response selection (Borgers and Hox, 2000; De Leeuw et al., 2002). For adolescents, the item is adjusted to a five-point scale to capture finer variations in frequency, aligning with their advanced cognitive abilities to distinguish their behaviours more precisely (Borgers et al., 2000; Robson, 2011).

Additionally, the frequency of visits to various water bodies is included to directly measure personal experience and interaction with natural water environments, indirectly gauging interest in such places. For adolescents, the broader response options ("0 times," "1-2 times,"

etc.) allow for more precise reporting (Borgers et al., 2000; Robson, 2011), providing deeper insight into their engagement with aquatic environments.

Lastly, the survey assesses responses to encountering trash in or near water. This item evaluates proactive environmental behaviour and decision-making in environmental contexts, crucial for understanding how children and adolescents respond to firsthand pollution. For adolescents, the item is crafted to promote self-reporting of independent behaviour and accommodates their autonomy and potential hesitancy, such as feeling unsure whether to intervene ("Didn't touch it, feeling unsure about whether I should"). While this response option might lead to satisficing among less engaged adolescents looking for an easy answer, it is included because it is relevant and realistic for the situation described (Borgers and Hox, 2000).

4.4 Emotional connection

The items measuring the emotional connection dimension are adapted from the short version of the Positive and Negative Affect Schedule (PANAS) (Mackinnon et al., 1999). This measure is designed to assess the range of emotions elicited by aquatic environments in young individuals. These items have been adapted for clarity and are suitable for children and adolescents, capturing positive emotions ("inspired", "excited", "enthusiastic") and negative emotions ("afraid", "upset", "nervous"). "Determined" and "alert", which are part of the short version of the PANAS questionnaire, were excluded because they involve concepts of readiness and alertness that may demand a deeper level of introspection that extends beyond the spontaneous emotional reactions usually observed in young individuals in relation to water bodies. Similarly, "scared" and "distressed" were also omitted from the short version of the PANAS questionnaire to maintain the focus of the scale as the inclusion of "afraid" and "upset" adequately encompasses the range of negative emotional reactions to environmental contexts, thus keeping the scale both concise and effective.

Additionally, given that emotional concepts, whether positive or negative, may be too abstract for young respondents, we have included clarifying notes for each emotion to make the emotional aspects more accessible to children, facilitating their ability to accurately reflect their feelings. This approach aligns with research recommendations that emphasize the importance of clear explanations to ensure understanding without compromising the clarity of the questions, even if it extends the question length (Borgers and Hox, 2000; Holaday and Turner-Henson, 1989; De Leeuw et al., 2002).

The response scales are adjusted to match developmental stages: a 3-point scale for children to minimize confusion and cognitive load (Borgers and Hox, 2000; De Leeuw et al., 2002), and a 4-point scale for adolescents to adequately capture response variability (Borgers et al., 2000;

Robson, 2011). This approach to measuring emotional responses helps illuminate how bodies of water can provoke a broad array of affective states. Understanding these emotional foundations is vital for enhancing our knowledge of the motivational drivers behind pro-environmental behaviours and attitudes, highlighting the critical role of nurturing positive emotional bonds with nature in educational and conservation initiatives.

4.5 Communication

McKinley (2023) considers communication as a fundamental dimension of ocean literacy, that is strongly related to such dimensions as knowledge, awareness, attitudes and behaviours. Brennan et al. (2019) differentiate between actual and intended communication. These authors present a study, where they have conducted pre-intervention and post intervention surveys. The interventions had highest impact on the dimension of *communication* (ibid: 15).

The main questions in this dimension in ProBleu survey are related to the preferable ways of communication for school children. These answers will help later to plan targeted activities to increase ocean literacy using the most effective methods.

For both surveys (pre-intervention and post-intervention) questions are the same, however there is a different wording for *time* in pre-intervention and post – intervention survey questionnaires. In the pre-intervention survey, we ask about a school- year (for the activities that were implemented at school), and for post- intervention survey we include "three months" to target the ProBleu school project period.

In the communication dimension we have considered different aspects, like the sources and means of information, the preferable ways to receive information and the level of interest to receive information on oceans and waters.

The answer categories for the communication dimension are tailored to the age groups, differentiating between primary and secondary school children and included variety of activities that are foreseen by ProBleu school projects. Post–intervention surveys include the closed and open questions about the evaluation of project activities and the identification of the activities that children liked the most.

4.6 Open schooling

The concept of open schooling is an approach to include stakeholders into the process of teaching/learning. This is a two-way process:

- Bringing stakeholders into the class;
- Bringing students outside the class.

Defining open schooling, the project follows two major sources:

- By Ecsite.eu: "Open learning and open schooling are broad terms which describe learning which is '**open**' in terms of **timing, location, teaching roles, instructional methods, modes of access, and any other factors related to learning processes**. Most schools already do some level of open learning, through off site trips, on site visits and remote learning." (https://www.ecsite.eu/activities-and-services/news-and-publications/what-open-schooling)
- By theopenschool: "The Open School is a K-12 self-directed democratic school. Instead of curriculum, classes, and assignments, **students learn through real life** and by authentically helping to run the school." (https://www.openschooloc.com/basic-info/).

Characteristics of the Open Schools include (https://www.openschools.eu/wp-content/uploads/2018/01/D2.1-Open-Schooling-Model.pdf):

- the collaboration with non-formal and informal education providers, enterprises and civil society enhanced to ensure relevant and meaningful engagement of all societal actors with science and increase the uptake of science studies and science-based careers, employability and competitiveness.
- schools to become an agent of community well-being.
- partnerships that foster expertise, networking, sharing and applying science and technology research findings and that bringing real-life projects to the classroom.
- focuses on Effective Parental Engagement.
- teaching science for difference: inclusion issues (such as gender, disabilities, ethnic and cultural groups, etc.).

The questions on open schooling in both surveys measure the inclusion of open schooling opportunities and methods (such as visits to museums, exhibitions, invitations of scholars into the class, etc.) in each school and the satisfaction of schoolchildren with these learning methods.

A table that presents the operationalization and the structure of ProBleu survey for primary and secondary school children is presented in Annex 1.

5. Monitoring and Evaluating Learning Outcomes

5.1 Empirical Research Design and Methods

This section describes the research design, stages, methods, and other important methodological aspects of the planned empirical research. The aim of this empirical research is to assess the change in ocean and water literacy of the school communities involved in the ProBleu funded projects, and the effectiveness of the educational interventions implemented by the schools.

Objectives for the empirical research:

- Monitor the ocean and water literacy of students participating in school projects before and after the implementation of these projects.
- Collect the necessary information from school administrators and teachers implementing school projects in order to assess the results and impact of school projects.

The NEBS - Network of European Blue Schools, has traditionally worked with a wide range of schools to support their initiatives and activities. These small-scale projects aim to apply open schooling methods and to extend and complement traditional curricula with ocean and water literacy activities. Although a large network of participating schools has been developed so far, and the NEBS-supported activities have involved a large number of teachers and pupils, there is a lack of scientific research on the impact of these actions. The need for such research is based on the fact that it is not known what level of ocean and water literacy pupils come to NEBS-supported activities/projects with, and whether this level of literacy changes over the course of the school initiatives/projects. Research methods (which have not yet been applied) are needed to answer questions of this nature.

This type of research has not yet been carried out with schools belonging to the NEBS network or aspiring to the membership. It is not possible to obtain such data for secondary analysis, so primary data collection is planned.

The research is based on a quasi-experimental research methodology that assesses ocean and water literacy before the implementation of educational projects in schools and monitors the impact after the project based educational activities have been implemented.

The main change that is being observed is the ocean and water literacy of students. It is a complex construct, that has been presented in previous sections of this report. In this research, the exposure/manipulation is assumed to take place under natural conditions, with schools planning their own activities under ProBleu funded educational projects. The activities planned by the schools, which are complementary to the activities typically planned for the students at schools, i. e. activities that are not part of the core curriculum - constitute the set of impact

variables. Relevant impact variables include: the nature of the activity (e.g. coastal field trips, art installations, visits to scientific laboratories, etc.), the massiveness of the activity (how many pupils in the school are involved in direct activities), the duration of the activity/project, the theme of the whole-school project (ocean flora and fauna, pollution of fresh water, coastal pollution by plastic, etc.), and the educational approaches used (e.g. a creative project, an enquiry-based activity, etc.). Schools plan activities according to their own ideas and needs, in line with the requirements of the ProBleu call (https://probleu.school/). In addition to the project activities, schools will organise the collection of data on children's ocean and water literacy (described below) and the completion of questionnaires by a teacher and a school administrator. The researchers are responsible for coordinating the timing of the research with the timing of the school project activities, operationalising the research variables, developing the instruments, managing, analysing and publicising the data.

Population studied and research participants. Primary and secondary schools from the 27 EU Member States and associated countries participating in ProBleu calls and receiving funding constitute the total studied population. The sampling is based on two principles: a) self-selection, as schools voluntarily apply for ProBleu funding; b) purposive sampling, as only participants directly involved in the implementation of the projects in schools are selected for the study. The research involves a representative of the school administration, the teacher in charge of the project and the students directly involved in the project activities. Participation in the research is part of the project activities for the pupils and is the responsibility and management of the teachers (or other designated project leaders). Around 100 schools are expected to carry out educational intervention projects on ocean and water literacy under ProBleu funding. The study is therefore expected to involve up to 100 school administrators, up to 100 teachers and up to 5000 pupils directly involved in the school projects' activities.

Data collection methods. A computer-assisted web interviewing (CAWI) will be carried out with school administrators, teachers and students. The survey will consist mainly of closed questions for students – a quantitative survey based on a structured questionnaire – and a semi-structured interview with open-ended questions for administrators and teachers. The surveys and interviews will be administered through the SurveyMonkey platform. The three instruments to be used are attached as separate annexes: the questionnaire for the school administration, the questionnaire for the teacher and the multiple language questionnaires for the students. The instruments for teachers and school administrators are provided in English, as this is the working language for managing ProBleu calls and school projects. The questionnaires for students are translated into their native languages.

Data analysis methods. Quantitative analysis of survey data (various methods) with SPSS/Stata/R and quantitative and qualitative content analysis of open-ended survey question responses and interview responses, employing MAXQDA qualitative data analysis software.

Research stages. Empirical research involves several stages of data collection and interaction with the participants.

Stage 1. Pre-intervention survey is carried out with students before the start of educational projects. Steps:

- Information about the research is communicated to the school administration and the teachers implementing the project (they receive "Scientific research information form" with all detailed information on the research, and the Instructions sheet for teachers with survey links; both documents are attached as Annex 2 and Annex 3 to this report).
- Teachers administer the pre-intervention survey questionnaires to students. Teachers use the guidelines prepared by the researchers and the survey link sent to them.

Stage 2. Implementation of the intervention. In this quasi-experimental study, the researchers do not control the process of the intervention. It is managed by the schools through the implementation of the educational activities planned in the ProBleu-funded projects. The researchers are responsible for describing and conceptualising the impact. This is possible because the schools' project proposals are structured in standardised sections where the schools have described what will be done and how. The intervention period varies depending on the school project and activity plan, between 3 and 12 months according to the funding requirements.

Stage 3. Post-intervention survey and interviews are carried out before the very end of the school projects, but only after all the planned educational activities are finalized. Steps:

- The "Information collection form for school administration" is completed by a representative of the school administration (usually the project lead or contact person of the organisation for ProBleu).
- School-appointed teacher completes the "Questionnaire for a teacher" - the online semi-structured interview.
- Teachers administer the survey to students using a post-intervention questionnaire. Teachers use the guidelines prepared by the researchers and the survey link sent to them.

The closing stage includes data managing, analysing datasets and preparing reports and presentations on the results of research.

The research is ongoing until all ProBleu participating schools have completed their planned research activities.

The first questionnaire, the pre-intervention questionnaire, will normally be administered before the start of the project activities, while the post-intervention questionnaire and the administrative and teacher questionnaires will be administered after the school has completed its project educational activities. The time interval between these two phases depends on each individual school project and varies between 3 and 12 months (see terms and conditions of

Call 2 https://probleu.school/wp-content/uploads/2024/02/Call-for-proposals_call2_finalVD.pdf).

It is anticipated that a representative of the school administration will spend ~0.5 hours completing the questionnaire. The teacher will spend a total of 2 hours on the study: 0.5 hours at the beginning of the project by administering the pre-intervention questionnaire to the students and waiting for them to complete it; 0.5 hours at the end of the project by administering the post-intervention questionnaire to the students and waiting for them to complete it; and 1 hour at the end of the project by completing the teacher questionnaire. The student will spend 0.5 hours: 15 minutes completing the pre-intervention questionnaire and 15 minutes completing the post-intervention questionnaire.

Instruments used to collect feedback from school administrators and teachers. Instruments used to monitor ocean and water literacy of the children and adolescents are described in detail in previous sections of the report. In order to monitor learning outcomes and to assess achievements and changes, it is important to draw on the characteristics of the educational interventions and to gather feedback from the actors who manage these interventions - school administrators and teachers. The ProBleu programme for school project funding essentially describes the reference features of the interventions, e.g. the use of open schooling methods, the reference themes of ocean and water literacy, the types of activities, the types of participants etc. This information is described in detail in other ProBleu Deliverables. This section further briefly characterises the instruments used to collect feedback from school administrators and teachers. This information allows us to respond to the second objective of the empirical study, which is to assess the results and impact of the ProBleu-funded projects on children and adolescents' ocean and water literacy.

The *questionnaire of the school administration representative* does not assess this participant's ocean and water literacy, but rather focuses on the main results of the project, the organisation and the participant's attitudes and evaluations.

The first section of the questionnaire is dedicated to collecting the basic information on the project, so that the researchers could identify the project.

The second section is devoted to collecting information on the activities actually carried out in the school (see Table 2). These activities were also described by the schools in their project applications, so the information could theoretically be taken from documents available to the researchers instead of asking for it. However, the applications only described the intentions, and changes could naturally occur during project implementation (project reports will also be used to the extent possible, to source the needed information). These activities constitute the content of the interventions and serve as impact variables for the purposes of the study, so it is important to collect the most accurate information.

The third and the fourth sections of the questionnaire ask for assessment of the school project results and general satisfaction.

Table 2: School administration representative interview questionnaire structure and preliminary questions

Section	Questions
General information about the project	Q1. Name of the school implementing the project. Q2. In which country is your school located? Q3. Title of the project Q4. Project duration in months
Information about project activities and participants	Q5. What activities were carried out? Q6. How many and which school staff have been involved in the project? Q7. Which external partners were involved in the project? Q8. Did you cooperate with other schools? If yes, how and which schools? Q9. How many students were directly involved in the project activities? If there were several activities, please indicate how many pupils took part in each activity (approximate numbers). Q10. If you have an estimate, how many pupils in your school participated indirectly? Q11. Have you involved students from other schools/educational institutions? If yes, approximately how many? Q12. Which, if any, open schooling methods were applied in the project? Q13. Which methods were employed to engage with the wider community?
Project results	Q14. In your own assessment, what are the most important results of the project? Q15. In your opinion, has the project increased the level of ocean and water literacy in your school community? (Yes, significantly; Yes, to a great extent; Yes, to some extent; Neutral / Unsure; No, not at all) Q16. Will the activities, materials or other practices developed in the project remain integrated into your school's curricula or activities? Please elaborate, how? Q17. Please describe where and how you made the results available to other schools or other organisations/stakeholders. Q18. Please describe any actions (for example, events) that you will further organise to promote the results and invite others to use them. Q19. Were students with fewer opportunities directly or indirectly involved in the project? Q20. How were the activities of your project made accessible to all types of students, regardless of gender, cultural background, or physical

	accessibility barriers, among others. Did you undertake any special measures to ensure equal access? Q21. What, if any, measures did you implement to reduce carbon footprint in any way or to combat other forms of pollution such as the use of plastic with regards to the project activities?
General satisfaction	Q22. Are you satisfied with the ProBleu funded project that you implemented? (Very satisfied; Satisfied; Neutral; Dissatisfied; Very dissatisfied) Q23. Please comment further on the main benefits of project implementation Q24. Please comment further on the main challenges of project implementation Q25. The schools are encouraged to become members of NEBS. How do you value NEBS? (Extremely Valuable; Very Valuable; Moderately Valuable; Slightly Valuable; Not Valuable at All) Q26. How do you assess the contribution of the ProBleu project to the development of ocean and water literacy in your school community? (Very important contribution; Important contribution; Moderately important contribution; Slightly important contribution; Not important) Q27. Additional remarks

In order to understand the nature of the interventions, it is crucial to get the insights of the teachers - the main coordinators of the activities. Their feedback is critical to understanding what happened, how it happened, how the children were involved, what difficulties were encountered, what schooling methods were implemented and how they worked.

The teacher interview questionnaire is attached as a separate annex and its structure, consisting of five parts – general information, feedback on how students participated in surveys, feedback on project activities and results, general satisfaction – is explained in the table below (see Table 3).

Table 3: Teacher interview questionnaire structure and preliminary questions

Section	Questions
General information	Q1. Name of the school implementing the project. Q2. In which country is your school located? Q3. Title of the project Q4. What disciplines or what type of teacher are you?
Feedback on how students	Q5. Your students took surveys before and after the project activities. Did they need support in providing their answers?

participated in surveys	Q6. Please comment on difficulties, if any, that the students encountered while filling in the surveys.
Feedback on project activities and results	Q7. What project activities did You carry out with the students? Q8. How do You feel about these activities? Did everything go smoothly? Please comment on aspects such as: (a) organisation of the activities; (b) motivation of the students; (c) involvement of partners; (d) administrative support; (e) general feedback. Q9. In your opinion, what was the most impactful aspect of the project for the students? Q10. Comment on the open schooling methods used in the project. Did they work? How do you assess the success of their use in the ProBleu-funded project? Q11. In your opinion, has the project increased the level of ocean and water literacy of the students who participated directly or indirectly in the project activities? Q12. Evaluate the importance of the following in developing your students' ocean and water literacy: activities outside usual school environment; meeting with external stakeholders, e.g. scientists, artists, fishermen, etc.; implementing activities in a team; working with school teachers; engaging in dissemination and outreach of project results (e. g. exhibition, school event, etc.); activities directly linked to oceans, seas, rivers or lakes. Q13. In Your own assessment, what are the most important results of the project? Q14. Will you uptake and integrate some aspects from the project to your usual school activities or curricula? If yes, please elaborate, how? Q15. Every project did some efforts to ensure that project activities were made accessible to all types of students [...]. Please provide your feedback on this. [...] Were there any challenges and how did you overcome them? Q16. Have you noticed any undesirable effects or consequences of the project activities?
General satisfaction	Q17. Are you satisfied with the ProBleu funded project that you to implemented? (Very satisfied; Satisfied; Neutral; Dissatisfied; Very dissatisfied) Q18. How do you assess the contribution of the ProBleu project to the development of ocean and water literacy in your school community? (Very important contribution; Important contribution; Moderately important contribution; Slightly important contribution; Not important) Q19. Additional remarks

The data collected during the teacher and school administration interviews will be processed and analysed using MAXQDA. The data will be checked to ensure that no personally identifiable information or other sensitive information about the people or schools involved remains in the data.

5.2 Ethical considerations

The Kaunas University of Technology Research Ethics Committee granted this research Approval on 29th April, 2024, protocol No. M6-2024-08. There are several important ethical considerations in the conduct of this research: dealing with sensitive or personal data, acquiring informed consent and avoiding negative impacts and having contingency plans for any risks.

The data collected does not include **personal data or sensitive issues**. The only identifying information collected is the name of the school. This is needed to link the school's project data to the answers, e.g. what type of activities were carried out, what were the themes of the activities, etc. The data matrix will be checked for data sensitivity (e.g. whether the answers to the open-ended questions contain sensitive data) and then the data will be shared with the project partners, based on good practice for describing metadata in datasets (based on the DDI standard). Once described according to international metadata standards, the students' survey data will be opened via a trusted repository – the Lithuanian Data Archive for SSH (LiDA) (https://lida.dataverse.lt/), with the removal of school-identifying responses. ProBleu partners and schools only receive links to the online questionnaires and do not have access to the data itself. The KTU research team will share with ProBleu partners the already aggregated and depersonalised survey and interview data.

Participating schools are also informed that the researchers plan to publish the results of the research in a separate report, research papers, a data repository, present the results to ProBleu partners and at scientific conferences, in the media and in other science promotion activities. Schools will be assured that only aggregated data will be used in the publication and dissemination of the results, without identifying individuals or specific schools.

The **research information form** is provided to schools as part of the information package that is sent to schools that have received ProBleu funding. The Research Information Form provides the participant with the name, telephone number and email address of the principal investigator, who can be contacted if they have any questions, as well as the email address of the Research Ethics Committee of Kaunas University of Technology. By implementing ProBleu funded projects schools consent to participate in this scientific research. Yet it is important to highlight that schools, or any individual participants **can withdraw from participation** with no consequences. Schools will be made aware that they can opt out of the study at any time,

or that they can accept such opt-outs from participating pupils and other community members. If the whole school opts out of the survey, which it can do by sending an email to the ProBleu school contact (probleucall@probleu.school) or to the KTU email addresses provided on the forms, its representatives and students will simply not complete the questionnaires. If a particular pupil or other community member refuses to take part in the survey - such refusals are managed by the school itself - the information form will indicate that the person should simply be excluded from the survey or the interview. If the participant opts out after starting the questionnaire, he/she is informed that he/she can simply stop completing the questionnaire and close the web browser. We cannot trace or delete the answers he/she has given because SurveyMonkey is programmed not to collect IP addresses or other personal information, so the researchers cannot know which person has filled in which questionnaire. However, all incomplete questionnaires will be discarded during data processing, on the understanding that this may have been a refusal to take part in the survey (even if it was done for other reasons), and that all responses from such a respondent will still not be used in the compilation of the final dataset. However, if a participant expresses a wish to stop participating in the survey after completing the questionnaire, this is no longer an option as completed questionnaires without identifying information are uploaded to the SurveyMonkey data platform. It will also be made clear that the data from the study will only be analysed in aggregation and that it will not be possible to identify the participants in the study, nor will it be possible to identify them from the results of the data analysis.

There are **no tangible risks to the participants** arising from the design and planning of the research. Schools should not face any specific risks. Importantly, schools are securing informed consent to carry out open schooling activities with pupils. These procedures vary from country to country and are generally the responsibility of schools, usually becoming part of the general educational contract.

There is a risk that students will not understand the survey questions or will not be able to complete the online questionnaire. The Teacher's Guide states that in this case, the teacher can support the pupil with further clarification or, in cases where the pupil's individual needs prevent him/her from completing the online survey, the teacher can complete the online survey for the pupil. To mitigate this risk, the questionnaires are translated into all native languages, e.g. Romanian, Spanish, etc.

The research team has also thought about how to document adverse events or effects observed during the research. The questionnaires for the school administration and the teacher will include open-ended questions, allowing them to make comments and to indicate any adverse events or consequences, if any, that have been observed. The question will go beyond the phenomena or consequences related to the completion of the questionnaires

(participation in the study) and will also include phenomena and consequences related to the implementation of educational projects.

5.3 Measuring the impact of intervention

As it was already mentioned, the main subject that is being studied here is the change in ocean and water literacy of students. The aim is to identify and measure the impact of educational projects that schools implemented under ProBleu funding schemes (interventions) on ocean and water literacy of students. Identification and measurement of the impact of interventions is based on a quasi-experimental[1] design (Shadish et al., 2002) that assesses student's ocean and water literacy before the implementation of educational projects in schools and monitors the student's ocean and water literacy after the projects are implemented (so called *One-Group Pretest-Posttest Design*). In addition, the intervention (manipulation) is assumed to take place under natural conditions, with schools planning and implementing their own activities under ProBleu funded educational projects (as described in section 6.1), in line with the requirements of the ProBleu call.

This type of design is not considered to be very powerful in terms of identifying and measuring impact of interventions, as it suffers from several invalidity problems, most importantly, history, maturation and testing (Campbell and Stanley, 1963). The major drawback to this design is that changes in the target may be produced by other events and not the intervention (Bingham and Felbinger, 2002), especially, in cases where manipulation is weakly controlled by researchers and the interval between pretest and posttest is relatively long (Shadish et al., 2002).

However, this type of design is used in cases where randomization and/or comparison with control group is difficult or impossible to implement. For example, for programs that involve most of the population under study, it may be impossible to locate non-participants. And other programs may be targeted at the whole population within a specific geographic area (Bingham and Felbinger, 2002). In these cases, the only possible way of identifying and measuring impact (albeit imperfectly) is to design pretest-post-test study. Moreover, this approach allows to provide "systematically derived evidence to measure desired phenomena or changes following an activity at one or more intervals of time" (DePoy and Gilson, 2008: 182). Following these considerations the study of the change in ocean and water literacy of students participating in the ProBleu funded educational projects is designed as a pretest-post-test study.

[1] Also called pre-experimental (Campbell and Stanley, 1963) and reflexive (Rossi et al., 2004) designs in other methodological literature on design of impact evaluations.

We include several statistical control factors that may improve validity of change estimates. First, we have interventions (ProBleu funded educational projects) in multiple sites (in multiple countries and schools), which allows us to indirectly control impact of varying conditions in between the pretest and post-test. If the impact of interventions appears to be similar in different countries and schools, having implemented different intervention programs, then our conclusions become more valid basis for identifying the impact of interventions. Second, we include various intervention level information (in addition to intervention descriptions, information about the intervention program implementation is collected from teachers and administrators, see section 6.1) in post-test studies. This information will allow us to design tailored statistical control studies for assessing impact of the interventions.

In addition, we also employ qualitative assessment measures. DePoy and Gilson (2008) report from their practical experience, that interviewing "participants themselves to report their opinion of the degree to which an action or entity caused an outcome" (p. 186) sometimes provides important information allowing to assess, whether intervention had a desirable impact. This approach does not allow to have quantitative estimates of the change, however, "it does address attribution through self-report" and "is particularly valuable in workshops or educational efforts where the desirable outcome is participant learning" (p. 186). Therefore, we included in all the post-test surveys open-ended questions about participants' self-evaluations of their participation (general and specific evaluations, activities liked/disliked etc.).

In terms of quantitative identification and measurement of impact of interventions, multiple statistical methods can be used. In pretest-post-test designs researchers aim to identify differences of studied phenomena between the measuring instances. Application of specific statistical methods depend on measurement levels of variables (Newcomer and Conger, 2010). Quantitative scales allow to investigate mean differences (with t-test for dependent samples or its non-parametric alternatives for identifying statistical significance), and qualitative scales usually involve calculations of percent differences (with chi-squared test for identifying statistical significance). Also, inclusion of control variables leads to applications of regression models (linear or non-linear, depending on measurement levels of dependent variables).

The main surveys employed to measure impact of interventions (ProBleu funded educational projects) are administered with students in primary and secondary schools. Surveys with school administration and teachers provide additional information which will be employed in constructing control conditions. In the student surveys several dimensions of ocean and water literacy are measured with multiple indicators: knowledge (3 items), awareness (3 items), attitude (3 items), behaviour (8 items), emotional connection (6 items), communication and open schooling (5 items).

The identification and measurement of intervention effect is planned on item and scale (dimension) level. For all items in the students' surveys percentage differences (and their

statistical significances) between pre-test and post-test estimates will be calculated. For knowledge (all 3 items), awareness (all 3 items), attitude (all 3 items), behaviour (3 items), and emotional connection (all 6 items) dimensions scales will also be constructed (using multivariate statistical methods, such as principal component analysis, multidimensional scaling or multiple correspondence analysis), and mean differences (with their statistical significances) between pre-test and post-test instances calculated. Regression models will also be employed to test different control conditions (derived from student, school (including administration and teacher level surveys) and country level information retrieved from survey data as well as intervention descriptions) for both impact items and scales (dimensions).

Qualitative analysis of open-ended survey questions included into student, school administration and teacher post-intervention surveys will be performed using MAXQDA software package, identifying participants self-reported views on the processes and challenges of interventions as well as their evaluations of the outcomes/impacts of the interventions.

6. Conclusion

Ocean and water literacy encompasses a broad range of interconnected dimensions, including knowledge, awareness, attitudes, behavior, activism, emotions, access and experience, communication, adaptive capacity, trust, and transparency. The ProBleu survey for primary and secondary school students focuses on the core dimensions of ocean literacy that align with the general concept and the learning outcomes of the ProBleu school projects. Specifically, we have selected Knowledge, Awareness, Attitude, Behavior, Emotional Connections, and Communication, and have added Open Schooling. These dimensions are particularly relevant as they directly align with the educational goals of the ProBleu school projects and are feasible to measure within the cognitive capabilities of young learners. Conversely, dimensions like Activism, and Trust and Transparency are less suitable for young learners in short-term educational interventions like the ProBleu projects. Furthermore, we limit the dimensions and items per dimension in our surveys to ensure that the duration remains under 10 minutes. This approach helps maintain the manageability of the survey for children and adolescents, keeping their attention and cooperation, thereby maximizing data quality and fostering meaningful engagement with the survey content.

We carefully review and apply the best methodological principles for designing surveys for children and adolescents. This involves adapting ocean and water literacy measures designed for adults and creating new items to cover dimensions that are less typically studied, such as Emotional Connections, Communication, and Open Schooling. Each dimension of ocean and water literacy in our survey is represented by at least three items, ensuring comprehensive

coverage. The surveys also place significant emphasis on the concept of Open Schooling, which involves integrating stakeholders into the teaching/learning process in two key ways: (1) Bringing stakeholders into the classroom and (2) Taking students outside the classroom. This approach enhances the educational experience by linking theoretical learning with practical, real-world activities.

A research approach is designed to empirically evaluate the ocean and water literacy within school communities participating in the ProBleu program, specifically examining changes resulting from the educational interventions implemented. This study has obtained ethical approval from Kaunas University of Technology. Employing a quasi-experimental design, the research will be conducted under natural conditions without experimental control. The participants will include school administrators, teachers, and students who are directly engaged in the ProBleu projects. Data collection will be executed using computer-assisted web surveys and interviews at two critical points: before the intervention (pre-intervention) and after the intervention (post-intervention). A key aspect of the research ethics involves ensuring the protection of participant data, avoiding sensitive topics, obtaining informed consent, and effectively managing any risks to participants. These ethical considerations are thoroughly discussed and communicated to all participating schools to maintain transparency and uphold ethical standards throughout the research process.

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Annexes

Annex 1. Structure of the questionnaire

Annex 2. Scientific research information form for schools

Annex 3. Instruction sheet for teachers with survey links

Annex 4. Questionnaire for interview with a school administration representative

Annex 5. Questionnaire for interview with a teacher

Annex 6. Pre-intervention survey questionnaire for primary schools

Annex 7. Pre-intervention survey questionnaire for secondary schools

Annex 8. Post-intervention survey questionnaire for primary schools

Annex 9. Post – intervention survey questionnaire for secondary schools

Annex 10. Example of feedback on knowledge questions in the questionnaire

Annex 1. Structure of the questionnaire

This questionnaire includes **Key Dimensions of Ocean and Water literacy:** Focus on dimensions like Knowledge, Awareness, Attitude, Behavior, Emotional Connections and Communication/ Open schooling, which are fundamental to ocean and water literacy and directly related to the actions and changes we hope to see as a result of the educational programs.

Dimension of Ocean literacy	Rationale	Number of Question in Questionnaire And question wording
Knowledge Knowledge has multiple aspects. In the first instance, knowledge is what a person knows about an ocean related topic and the links between topics. Knowledge also refers to the knowledge a person has about ocean decision-making, opportunities to participate and engage in ocean decisions and behaviours and where/ how to get information about ocean issues.	The knowledge items are based on the International Ocean literacy questionnaire (IOLS) developed by Fauville et al. (2019) and full questionnaire with correct answers is available at Chen et al. (2020). Knowledge dimension in OL surveys measure knowledge across 7 principles of Ocean Literacy and includes 44 items. As our survey does not have the capacity to include questions for all of the principles, only few key questions were selected for the knowledge dimension. These questions aim to trigger the interest and curiosity to learn more about oceans and seas. We later focus on other dimensions measuring concepts related to values and attitudes. Correct answers are provided at the end of the survey.	**Primary school Q3-5** **3. Where is most of the water on Earth** [ ] In the atmosphere [ ] In polar ice caps [ ] In rivers and lakes [ ] **In the ocean 4**. What is the largest animal ever to live on Earth?** [ ] Giant squid [ ] Woolly mammoth [ ]**Blue whale [ ] Gigantosaurus **5 What is the largest Ocean in the world?** [] Atlantic Ocean [] **Pacific Ocean [] Indian Ocean []Arctic Ocean

	*Note: correct answers in the questionnaire are marked with **	**Secondary school Q 3-5** **3.Where is most of the water on Earth?** [ ] In the atmosphere. [ ] In polar ice caps. [ ] In rivers and lakes. [ ] **In the ocean. **4.Both land and ocean provide space for organisms to live. How much of Earth's living space is found in the ocean?** [ ] Only a little bit (less than 10%). [ ] About half (40–60%). [ ] More than half (60–80%). [ ] **Nearly all (more than 90%). **5. How is climate change impacting the Arctic?** [ ] The impact on the Arctic is the same as on the rest of the planet. [ ]**The Arctic is warming faster than the rest of the planet. [ ] Glaciers are melting in some parts of the Arctic and growing in other parts. [ ] Tropical ocean fishes are migrating to the Arctic.
Awareness Awareness is the basic knowledge and understanding that a situation, problem, or concept exists. Awareness should also include knowledge and understanding of the	Measuring awareness is commonplace within ocean literacy research. Usually, questions are asked about individual having knowledge about a particular ocean topic (e.g., marine plastics or marine biodiversity). Also, it is important to understand the level of awareness about what can	**Primary school Q 6-8** **How much do you know about…?** **6. Animals and plants in the rivers, lakes, oceans, and seas** [] Know a lot 😊 [] Know something 😳 [] Nothing 😟 [] Not sure 😕

solutions and behaviours that may address these problems to foster ownership and empower society to take action.	be done, of the actions that can be taken (McKinley, 2023). We will meas ure self-reported awareness of some dimensions in ocean literacy and also include an item on awareness related to the solutions of the ocean/sea problems. After intervention (school project) it will be possible to analyse the changes in the awareness.	**7. Pollution of the rivers, lakes, oceans, and seas** [] Know a lot 😊 [] Know something 😐 [] Nothing ☹️ [] Not sure 😕 **8. What can be done by people to protect rivers, lakes, oceans, and seas** [] Know a lot 😊 [] Know something 😐 [] Nothing ☹️ [] Not sure 😕 **<u>Secondary school Q6</u>** **Please indicate, how much do you feel you know about:** **6a.Biodiversity in rivers, lakes, oceans, and seas** [] Nothing at all/ [] A little/ [] Quite a lot/ [] A great deal **6b. Impact of human activities on rivers, lakes, oceans, and seas** [] Nothing at all/ [] A little / [] Quite a lot/ [] A great deal **6c. Actions to protect rivers, lakes, oceans, and seas** [] Nothing at all/ [] A little / [] Quite a lot /[] A great deal
Attitude Attitude is related to a level of agreement with or concern for a particular position. Attitude should also include consideration of perceptions,	This item is straightforward, asking for the child's level of agreement with a specific conservation action, such as planting trees to protect water bodies. It directly measures attitudes by probing into children's support for environmental practices. The question is designed with simple language and a clear, direct format, which is	**<u>Primary school Q9-11</u>** **Thinking about rivers, lakes, oceans, and seas, we want to know what you feel you can do to help keep them clean and safe. For each statement below, choose the answer that best matches how you feel.**

values, and views towards an ocean issue, and how these can lead to policy and societal change.	crucial for young respondents (Borgers and Hox, 2000; de Leeuw, 2011). Offering a range of agreement levels allows children to express their attitudes without forcing a binary choice, accommodating their varying levels of understanding and opinion.	**9. I believe I can help keep rivers, lakes, and oceans clean by doing small things every day** - [ ] Yes, I believe I can - [ ] I'm not sure if I can - [ ] No, I don't believe I can **10. When I learn about ways to protect our water, I feel like I can make a difference** - [ ] Yes, I feel like I can make a difference - [ ] Sometimes I feel like I can make a difference - [ ] No, I don't feel like I can make a difference **11. I can tell my friends and family why it's important to save water and protect our oceans and rivers** - [ ] Yes, I can tell them - [ ] Maybe, I might be able to tell them - [ ] No, I can't tell them **<u>Secondary school Q7</u>** **Considering the importance of rivers, lakes, oceans, and seas, we're curious about your thoughts on contributing to their cleanliness and safety. For the following statements, please select the option that best reflects your opinion.** **7a. I feel confident in my ability to make positive choices that benefit the health of oceans, rivers, lakes, and seas** - [ ] Strongly disagree - [ ] Disagree - [ ] Neither agree nor disagree - [ ] Agree - [ ] Strongly agree

		7b. I believe my actions, no matter how small, can have a positive impact on protecting water environments - [ ] Strongly disagree - [ ] Disagree - [ ] Neither agree nor disagree - [ ] Agree - [ ] Strongly agree **7c. I think I can effectively communicate the importance of water conservation to others and inspire them to take action** - [ ] Strongly disagree - [ ] Disagree - [ ] Neither agree nor disagree - [ ] Agree - [ ] Strongly agree
Behaviour Behaviour relates to decisions, choices, actions, and habits towards the ocean and freshwaters related issues at a range of scales, including from individual, sector and policy actors and institutions with a view to bringing about whole system change.	Behaviour items assess concrete behaviours related to reducing water pollution, allowing schoolchildren to reflect on their personal contributions. It's designed with specific, actionable choices that are relevant and achievable for this age group, facilitating self-assessment of environmental stewardship behaviours. Offering a range of specific actions—as recommended for adolescents to minimize ambiguity and enhance data quality (Krosnick and Presser, 2010)—these questions tap into individual initiative and awareness, critical	**Primary school Q13-15; Q17-18** **13. In the past week, how often do you make sure to turn off the tap tightly after using it?** [] Almost never [] Sometimes [] Almost always **14. In the past week, how often did you turn off the water while you were brushing your teeth?** [] Almost never [] Sometimes [] Almost always **15. In the last month, how often have you talked about oceans, seas, rivers and lakes with your friends or family?** [] Not at all [] A little [] A lot

	aspects of behaviour towards ocean conservation. Q21-24 measure the direct encounters with the waters, that can be used as an explanatory variable for the other ocean literacy dimensions.	**How many times did you visit these places <u>in the last year</u>?** **17a. Ocean** [] Never [] Once [] Twice [] Three times or more **17b. River** [] Never [] Once [] Twice [] Three times or more **17c. Lake** [] Never [] Once [] Twice [] Three times or more **17d.Sea** [] Never [] Once [] Twice [] Three times or more **18. [IF THEY DON'T SAY NEVER TO ALL 17 a-d] Have you done any of these things when you saw trash in or near water? Choose all the actions you really did.** [ ] Picked it up and threw it in the trash [ ] Told an adult about it so they could help remove it [ ] Leave it because I don't think I should touch it [ ] I haven't seen trash in or near water recently **<u>Secondary school Q9-11; Q13-14</u>** **9. In the past week, how often do you make sure to turn off the faucet tightly after using it to avoid wasting water?** - [ ] Never - [ ] Rarely - [ ] Sometimes - [ ] Most of the time - [ ] Always

10. In the past week, how often do you choose to take shorter showers to save water?

- [ ] Never
- [ ] Rarely
- [ ] Sometimes
- [ ] Most of the time
- [ ] Always

11. In the last month, how often have you had conversations with friends or family about the ocean, seas, rivers, and lakes?

- [ ] Never
- [ ] Rarely
- [ ] Sometimes
- [ ] Most of the time
- [ ] Always

How many times did you visit these places <u>in the last year</u>?

13a. Ocean

[] 0 times/ [] 1-2 times / [] 3-5 times/ [] More than 5 times

13b. River

[] 0 times/ [] 1-2 times/ [] 3-5 times/ [] More than 5 times

13c. Lake

[] 0 times/ [] 1-2 times/ [] 3-5 times/ [] More than 5 times

13d. Sea

[] 0 times/ [] 1-2 times/ [] 3-5 times/ [] More than 5 times

		14. [IF THEY DON'T SAY 0 TIMES TO 13 a-d] When you've seen trash in or near water, like a river, lake, or the ocean, which of the following have you actually done? Select all that apply. - [ ] Picked it up and disposed of it properly - [ ] Informed an adult so they could take care of it - [ ] Didn't touch it, feeling unsure about whether I should - [ ] Haven't noticed any trash in or near water lately
Emotional Connections Emotional connections are about how a person feels and emotionally responds when they think about, are near/ within, or consider issues relating to the ocean, coasts, and seas. Emotions can be positive, negative, or neutral and are all valid responses and will all contribute to behaviour change.	This item asks children to reflect on their emotional state in a specific and relatable context—being near water bodies.	**<u>Primary school Q12</u>** **When you think about oceans, rivers, lakes, or seas, how much do you feel each of the following?** [RANDOMIZE ITEMS] **12a. Inspired, feeling sparkly** [] Not at All [] A Little [] A lot [] I don't know **12b. Excited, feeling happy** [] Not at All [] A Little [] A lot [] I don't know **12c. Enthusiastic, feeling ready** [] Not at All [] A Little [] A lot [] I don't know **12d. Afraid, feeling scared** [] Not at All [] A Little [] A lot [] I don't know **12e. Upset, feeling sad** [] Not at All [] A Little [] A lot [] I don't know **12f. Nervous, feeling worried** [] Not at All [] A Little [] A lot [] I don't know

		Secondary school Q8 **When you think about oceans, rivers, lakes, or seas, how much do you feel each of the following?** [RANDOMIZE ITEMS] **8a. Inspired, feeling sparkly** [] Not at all/[] A little /[] Moderately/[] Quite a bit/ [] Extremely [] I don't know **8b. Excited, feeling happy** [] Not at all/[] A little /[] Moderately/[] Quite a bit/ [] Extremely [] I don't know **8c. Enthusiastic, feeling ready** [] Not at all/[] A little /[] Moderately/[] Quite a bit/ [] Extremely [] I don't know **8d. Afraid, feeling scared** [] Not at all/[] A little /[] Moderately/[] Quite a bit/ [] Extremely [] I don't know **8e. Upset, feeling sad** [] Not at all/[] A little /[] Moderately/[] Quite a bit/ [] Extremely [] I don't know **8f. Nervous, feeling worried** [] Not at all/[] A little /[] Moderately/[] Quite a bit/ [] Extremely [] I don't know
Communication and open schooling	Main question in this dimension is related to the preferable ways of communication for school children. These answers will help later to plan targeted activities to increase ocean literacy using	**Primary School Q16; 19-22** **16. In the last month, where did you learn about the ocean, seas, rivers, and lakes and its animals and plants? Pick all the**

Communication in the context of ocean literacy must be considered from multiple perspectives. - Communication is the extent to which a person communicates with others, such as family and peer groups, on ocean related topics. - Communication should also consider how/ where people get their information about ocean issues from –What methods of communication are most effective? - At an organizational level, communication needs to consider how institutions and organizations are communicating to different audiences about ocean issues.	most effective methods. For both samples question is the same (with small differences in the answer categories, tailored to the age groups) . **Open schooling is understood as** "open learning and open schooling are broad terms which describe learning which is 'open' in terms of timing, location, teaching roles, instructional methods, modes of access, and any other factors related to learning processes. Most schools already do some level of open learning, through off site trips, on site visits and remote learning." (Ecsite.eu, https://www.ecsite.eu/activities-and-services/news-and-publications/what-open-schooling). An open schooling approach includes stakeholders into the process of teaching/learning. It is happening in two ways: (1) by bringing stakeholders into the class, or (2) by bringing students outside the class. This approach promotes the collaboration with non-formal and informal education providers, enterprises and civil society enhanced to ensure relevant and meaningful engagement of all societal actors with science and increase the uptake of science studies and science-based careers, employability and competitiveness (*https://www.openschools.eu/wp-*	**places you've really learned from. [Randomize response categories]** [ ] Watching TV shows or documentaries [ ] Reading books or magazines [ ] Exploring websites or online videos [ ] Checking out posts and videos on social media [ ] In school, from my teachers or school projects [ ] Talking with my family or friends [ ] Other: _____ (please specify) **19. Children learn about oceans, seas, rivers, and lakes in many fun ways, not just in the classrooms! Can you remember all the cool activities you did to learn more about water in the ongoing school year? Tick all the boxes for the things you did! [Randomize response categories]** - [ ] A special lesson taught by scientists or other exciting guests - [ ] A trip to a museum or an exhibition about water - [ ] A visit to a company or a group that helps protect water - [ ] A fun day out at a university or a laboratory where scientists study water - [ ] Working on a project with kids from other classes or schools, or even people from your town - [ ] Classroom assignments where you read extra books, searched the internet, or watched movies about water - [ ] Homework where you explored more about water through books, the internet, or movies - [ ] Something else (What was it?): _____

	content/uploads/2018/01/D2.1-Open-Schooling-Model.pdf). The project will analyse to what extent open schooling is already used and how this approach might be (will be) expanded by implementing school projects. Main questions in this dimension are related to the currently existing and potential situations of open schooling, related to waters and oceans literacy. These answers will help later to co-create individualized pathways for schools to strengthen open schooling perspective in their teaching process (results will feed into WP2).	**20. From all the activities you ticked before, which one was the most interesting way for you to learn about the oceans, seas, rivers, and lakes? Choose the one that you liked the best!** [Please choose one from the options selected in the previous question. This question only appears if at least two options was selected in Q26]. **21. Thinking about oceans, seas, rivers, and lakes, how interested are you to learn more about them?** - [ ] Really interested! - [ ] A little interested. - [ ] Not much interested. **22. [If "Really interested!" or "A little interested" to Q21] How would you like to explore and find out more? Pick up to three ways that sound like the most fun to you! [Randomize response categories]** - [ ] In our school classes with our teachers - [ ] Visiting a university or a laboratory where scientists study water - [ ] Learning from cool posts and videos about water on social media - [ ] By looking through magazines with cool pictures - [ ] Reading big books with lots of pictures - [ ] Watching exciting documentaries on TV - [ ] Playing games on the computer - [ ] Going to science museums or special water exhibitions - [ ] Playing board games that teach me about water - [ ] Going on real adventures to places like the ocean or a river

- [ ] Working on a project with kids from other classes or schools, or even people from your town
- [ ] Something else (What is it?): _____

<u>Secondary school Q12; Q15-18</u>

12. In the last month, from which of the following sources have you gained information about oceans, seas, rivers, lakes, and their inhabitants? Select all the sources you've actually learned from.
- [ ] Watching TV shows or documentaries
- [ ] Reading books or magazines
- [ ] Browsing websites or watching online videos
- [ ] Scrolling through posts and videos on social media
- [ ] At school, through lessons or projects assigned by teachers
- [ ] In conversations with family or friends
- [ ] Other (please specify): _____

15. Beyond the classroom, there are loads of exciting ways to learn about oceans, seas, rivers, and lakes. Think back over this school year and mark all the activities you've participated in to learn more about water. Select all that apply. [Randomize response categories]
- [ ] Participated in a special lesson given by scientists or guest speakers about water
- [ ] Visited a museum or an exhibition focused on water and aquatic life
- [ ] Went to a company or organization dedicated to water conservation

- [ ] Explored a university or lab where scientists do research on water
- [ ] Collaborated on a project with peers from other classes, schools, or community members
- [ ] Completed classroom assignments that involved researching water through books, the internet, or documentaries
- [ ] Did homework that encouraged further exploration about water via reading, online research, or watching films
- [ ] Other (Please describe): _____

16. Of all the activities you've just marked, which one did you find the most interesting for learning about water? Pick your favorite!
[This question should only be shown if the respondent selected at least one option in the previous question.]

17. How interested are you to learn more about oceans, seas, rivers, and lakes?
[] Not at all/ [] A little / [] Moderately/ [] Quite a bit/ [] Extremely

18. [If "A little", "Moderately", "Quite a bit", "Extremely" in Q17] What are the coolest ways you'd like to discover more about water bodies? Choose up to three options that sound most exciting to you! [Randomize response categories]
- [ ] Through classes at school with our teachers
- [ ] By visiting universities or labs where scientists dive deep into water studies
- [ ] Checking out awesome water-related posts and videos on social media
- [ ] Flipping through magazines filled with amazing water photos
- [ ] Diving into big, picture-rich books about water

		- [ ] Watching thrilling documentaries on TV - [ ] Getting into computer games focused on water themes - [ ] Exploring science museums or water-themed exhibitions - [ ] Playing board games that flow with water facts - [ ] Embarking on real-life water adventures to the ocean, rivers, or lakes - [ ] Collaborating on projects with peers from other classes, schools, or community members - [ ] Something else (What is it): _____
Impact of the intervention	These items are included in the post-intervention questionnaire, and seek to collect the feedback about the intervention.	Questions were included in the beginning of the post-intervention survey, after questions about country and school and before knowledge questions. **During last months, there were different activities in your school about waters and oceans. We are curious to know what you liked and what you have learned.** **How did you like the activities in your school in the project?** [] Not at All [] A Little [] A lot [] I don't know **What activity about oceans and waters you liked the most in this project? (open)** **Name few things, that you have learned about the oceans and waters during the project? (open)** **Would you like your school to participate more in such projects in the future?** []Yes [] No [] I don't know

Demographic information	**School Q1** **Country Q2** **Gender Primary: Q23; Seocndary: Q19** **Age Primary: Q24; Secondary: Q20**

Annex 2

KAUNAS UNIVERSITY OF TECHNOLOGY
FACULTY OF SOCIAL SCIENCES, ARTS AND HUMANITIES

International Project:
Promoting Ocean and Water Literacy in School Communities (ProBleu)

Scientific research information form for schools [1]

Kaunas University of Technology Research Ethics Committee Approval, 29 April 2024 protocol No. M6-2024-08

Title of the Scientific Research: Research on Ocean and Water Literacy in School Communities
Lead of Research Team: Prof. Eglė Butkevičienė

Institution, coordinating scientific research activities: Kaunas University of Technology, Faculty of Social Sciences, Arts and Humanities, Research Group "Civil Society and Sustainability "
Address: Mickevičiaus str. 37-101, 44244 Kaunas, Lithuania
Email: egle.butkeviciene@ktu.lt
Link to the project: https://probleu.school/

1. **What is the purpose of this document?**
   This document provides information on scientific research undertaken under the ProBleu project. By signing a ProBleu funding agreement for an educational project, the school agrees to participate in this research. The information on this form is addressed to the school representative signing the contract. Depending on the school's internal procedures and the characteristics of the project being carried out, this information must be made known to the school administration and to the teachers involved in the project activities and, if any, to other school staff directly involved in the project activities.
2. **Why this research is being carried out and what is its purpose?**
   The research is part of a project funded by the EU's research and innovation programme "European Horizon": "Promoting ocean and water literacy in school communities (ProBleu)". Project webpage: https://probleu.school/the-project/ .
   ProBleu follows the traditions of the Network of European Blue Schools (NEBS) and provides funding to small scale educational interventional school projects. These projects aim to apply open schooling methods and to extend and complement traditional curricula with ocean and water literacy activities. The projects are designed, managed and implemented by schools across Europe.
   The aim of the research is to assess the ocean and water literacy of the school communities involved in the projects, and the effectiveness of the educational interventions implemented by the schools.
3. **Who will participate in this research?**
   Research population: Primary and secondary schools from 27 EU Member States and associated countries participating in ProBleu calls and receiving funding. The research involves a representative of the school administration, the teacher in charge of the project and the students directly involved in the project activities. Participation in the research is part of the project activities for the pupils and is the responsibility and management of the teachers (or other designated project leaders).

[1] The template has been prepared in accordance with the Guidelines for the Assessment of Compliance with Research Ethics, approved by the Order of the Ombudsman for Academic Ethics and Procedures of the Republic of Lithuania No V-60 of 10 December 2020.

Around 100 schools are expected to carry out educational intervention projects on ocean and water literacy under ProBleu funding. The study is therefore expected to involve about 100 school administrators, about 100 teachers and about 5000 pupils directly involved in the school projects.

4. **Why is your school invited to participate in the research?**
   Your school is participating, because you received funding from ProBleu for your school project, dedicated for strengthening of ocean and water literacy.

5. **How long the research will last and how long and when you will take part in it?**

   The research is ongoing until all ProBleu participating schools have completed their planned activities. Research activities will include: filling in a pre-activity (pre-intervention) survey for students directly participating in the school project, filling in a post activity (post-intervention) survey for students, answering to structured online interview questions for a school representative and answering structured online interview questions for a designated teacher involved in the school project.

   The first questionnaire, the pre-intervention questionnaire to the students, will normally be administered before the start of the project activities, while the post-intervention questionnaire and the administrative and teacher questionnaires will be administered after the school has completed its project activities. The time interval between these two phases depends on each individual school project and varies between 3 and 12 months.

   A representative of the school administration will spend ~0.5 hours answering online interview questions.
   The teacher will spend a total of 2 hours on the study: 0.5 hours at the beginning of the project by administering the pre-intervention questionnaire to the pupils and waiting for them to complete it; 0.5 hours at the end of the project by administering the post-intervention questionnaire to the pupils and waiting for them to complete it; and 1 hour at the end of the project by administering the questionnaire for the teacher.
   A student will spend 0.5 hours: 15 minutes completing the pre-intervention questionnaire and 15 minutes completing the post-intervention questionnaire.

   Instructions on administering and completing the questionnaires will be sent to schools via email by communication coordinator of the ProBleu project.

6. **Where is this research being carried out?**
   The research is being carried out in all the countries that have participated in ProBleu competitions and have been awarded funding. The competitions are open to schools in the 27 EU Member States and associated countries.
7. **Are you obliged to participate in the research? Can you withdraw from the research?**
   Your school is not obliged to participate in the research. You can ask questions about the study before deciding whether or not to participate. If you agree to participate, you can withdraw from the research at any time, without giving a reason and without any negative consequences, by notifying the ProBleu contact person (probleucall@probleu.school) or the KTU email addresses provided on the forms. If you withdraw from the study, please leave the study questionnaires not completed. You may also request the destruction of any information you have shared within 30 days of your participation in the study, if it is possible to do so. We will leave the name of your school next to the responses for this period. Please also take into account students' wishes to participate, not participate or stop participating in the study. It is sufficient that the student expresses this wish verbally to the teacher administering the surveys. In this case, the pupil simply does not complete the survey.
8. **What will be the course of the research if you agree to take part in it?**
   Your school will receive an information pack about the research and will participate in two phases.
   The first phase takes place before the project activities start. Teachers implementing the project will be asked to organize a survey of the pupils directly involved in the project activities. The questionnaire will be completed online. Teachers will receive an instruction sheet explaining how to organize this.
   Three things will be needed once the project activities are completed (second phase). A nominated person from the school administration will complete the "Information collection form for school administration". The school's nominated teacher from the project will complete the "Questionnaire for a teacher". Teachers

will organize a survey of pupils using a post-intervention questionnaire. Teachers will use the guidelines prepared by the researchers and the survey link sent to them.
The pupils' surveys and the questionnaires for the teacher and school administration will be filled online, via SurveyMonkey.

9. **Are there any risks to participating in the research?**
   There are no tangible risks from participating in research.
   There may be inconveniences if students do not understand the survey questions or are unable to complete the online questionnaire. The Teacher's Guide indicates that in such cases the teacher can support the pupil, provide additional clarification or, in cases where the pupil is unable to complete the online survey due to individual needs, the teacher can complete the survey for the pupil. To mitigate risks, translations of pupils' questionnaires are made into all original languages, e.g. Romanian, Spanish, etc.
10. **Are there any benefits to participating in the study?**
    By taking part in the research, you ensure that the ProBleu project team can evaluate the effectiveness and results of the activities in developing ocean and water literacy. Your responses will allow us to assess the impact and improve the project funding and project delivery conditions.
11. **Reimbursements and payments**
    No compensation will be paid for participation in this research. It is important to stress that ProBleu's funding for educational projects is for open learning and other project activities - the project budgets do not include any salary or time reimbursement for participation in the research.
12. **How the collected scientific data will be managed?**
    The information you provide in scientific research is the research data. Any research data from which you can be identified, such as your name (although we do not ask for this in questionnaires), will be deleted and it will be ensured that there are no personally identifiable elements in the data. However, please note that the surveys are organized through SurveyMonkey, which is owned by Momentive Europe UC. It may collect the personal data described in SurveyMonkey's privacy policy (https://www.surveymonkey.com/mp/legal/privacy/?ut_source=footer#introduction) with your separate consent, which is not under our control, and we do not process your personal data collected on SurveyMonkey's initiative.
    The depersonalised research data will be analysed, processed, prepared and opened in accordance with the FAIR principles in a trusted data repository, LiDA (https://lida.dataverse.lt/), and will be made available in accordance with the requirements for such research datasets and the archival policy.
13. **Whether the results and/or data of the study will be made publicly available?**
    The plan is to publish the results of the research in a report, in scientific papers, in a research repository, to present the results to the ProBleu project partners, and to present the results at scientific conferences, in the media and in other science dissemination activities. Only aggregated data will be used in the publication and dissemination of results, without identifying individuals or specific schools.
14. **Who is funding the research?**
    EU research and innovation programme "European Horizon".
15. **Who to contact if you would like to report this study or have any questions?**
    If you are concerned about aspects of this research, please contact Prof. Egle Butkevičienė, egle.butkeviciene@ktu.lt A decision on your application will be taken and you will be informed within 3 working days. You may contact the Research Ethics Committee of Kaunas University of Technology, Donelaičio str. 73, 44249 Kaunas, e-mail tyrimu.etika@ktu.lt, regarding your rights as a research participant.
16. **Contact details and/or other information**
    If you want to discuss the research in advance (or if you have any questions after the research), please contact:
    Responsible researcher prof. Eglė Butkevičienė
    Institution: Kaunas University of technology
    Address: Mickevičiaus str. 37-101, 44244 Kaunas, Lithuania
    Phone: +370 68615858
    Email: egle.butkeviciene@ktu.lt

Annex 3

ProBleu

Promoting ocean and water literacy

Call HORIZON-MISS-2022-OCEAN-01

Guidelines for teachers

How to administer surveys to the pupils

ProBleu school project / PRIMARY SCHOOLS

ProBleu funding is all about **schools taking the lead** in teaching kids about protecting our oceans and freshwater.

We are fascinated with the project that you are implementing with your school community. Part of the ProBleu, is getting to know about the ocean and water literacy of the pupils and how (if) this changes with the implemented school project. Therefore, **as part of your project, you are asked to administer survey to your pupils that participate in the activities directly**.

These are the short guidelines for the survey:

- **Inform.** Upon the start of your project, make sure that the pupils are informed about the fact that they will survey and assure that there will be no right or wrong answers, that this is not a test, but rather a conversation.
- **Prepare**. Plan time that the pupils could devote for filling in the survey questionnaires. The survey will take approximately 15 min. Survey is web based. Make sure pupils have access to computers, tablets or smartphones with internet connection.
- **Administer**. Share the link to survey with your pupils directly participating in ProBleu funded project activities. Make sure to share the pre-activities questionnaire link before starting the activities. And share the post-activities questionnaire link after the activities are ended.

TIMING: Survey can be completed by all participating pupils simultaneously, e. g. sitting together in the classroom. However, pupils can complete the survey at their own time and pace. The most important thing is that everyone completes the questionnaire in one way or another.

1. BEFORE starting project activities, **PRE-ACTIVITY survey link**: https://www.surveymonkey.com/r/1ProBleuCHILDREN

2. AFTER implementing main project activities: **POST-ACTIVITY survey link** (will be open towards the end of school project): https://www.surveymonkey.com/r/2ProBleuCHILDREN

You can support the children, e. g. clarify the question if the pupils did not understand, or have difficulties to read. If needed, you can type in responses on behalf of a pupil.

If something is unclear or if you have questions, please contact:
Egle Butkeviciene, egle.butkeviciene@ktu.lt

Thank you very much for your initiative, activities with students and for your help with this survey!

Funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

Innovate UK

UK participants in Horizon Europe Project ProBleu [101113001] are supported by UKRI grant numbers: 10082336 Earthwatch Europe, 10081234 Plymouth Marine Laboratory and 10082355 Ocean Conservation Trust.

Annex 4

Promoting ocean and water literacy in school communities

Call HORIZON-MISS-2022-OCEAN-01

Information collection form for school administration

The ProBleu funding initiative supports primary and secondary schools as essential champions in educating children and youth about blue sustainability and safeguarding marine and freshwater ecosystems.

Educational institutions that have implemented ProBleu-funded projects are invited to complete an information form. This form is to be filled in by the school's nominated administrative representative who has information about the school's activities in the ProBleu-funded project.

We do not ask for personal data in this form. The information is needed to enable us to evaluate the results of educational projects funded by ProBleu.

Contact for any questions: probleucall@probleu.school

General information about the project

1. Name of the school implementing the project: _____
2. In which country is your school located? _____
3. Title of the project: _____
4. Project duration in months: 3; 4; 5; 6; 7; 8; 9; 10; 11; 12 months

Information about project activities

5. What activities were carried out? _____
6. How many and which school staff have been involved in the project (do not mention names, but only their general position, e.g. 3 teachers, 2 representatives of school administration): _
7. Which external partners were involved in the project (e.g. families, researchers, arts organisations, public authorities, etc.): _____

8. Did you cooperate with other schools? If yes, how and which schools? (especially mention schools that are members or applicants to the NEBS - The Network of European Blue Schools): _____
9. How many students were **directly** involved in the project activities? If there were several activities, please indicate how many pupils took part in each activity (approximate numbers are sufficient): _____
10. If you have an estimate, how many pupils in your school participated **indirectly**?_____
11. Have you involved students from other schools/educational institutions? If yes, approximately how many? _____
12. Which, if any, open schooling methods were applied in the project? _____
13. Which methods were employed to engage with the wider community? _____

Project results

14. In your own assessment, what are the most important results of the project? _____
15. In your opinion, has the project increased the level of ocean and water literacy in your school community?
    a. Yes, significantly.
    b. Yes, to a great extent.
    c. Yes, to some extent.
    d. Neutral / Unsure.
    e. No, not at all.
16. Will the activities, materials or other practices developed in the project remain integrated into your school's curricula or activities? Please elaborate, how? _____
17. Please describe where and how you made the results available to other schools or other organisations/stakeholders. Did you make the results available to the ProBleu consortium, in order to publish them in a catalogue of ocean and water related educational resources?: ___
18. Please describe any actions (for example, events) that you will further organise to promote the results and invite others to use them _____
19. Were students with fewer opportunities directly or indirectly involved in the project?
    a. No
    b. Yes, students with disabilities
    c. Yes, students from different cultural backgrounds
    d. Yes, students with health problems
    e. Yes, students that are otherwise discriminated
    f. Yes, students that encounter social barriers
    g. Yes, students that encounter geographical barriers
    h. Yes, students that encounter economic barriers
    i. Yes, students with educational difficulties
    j. Other: _____
20. How were the activities of your project made accessible to all types of students, regardless of gender, cultural background, or physical accessibility barriers, among others. Did you undertake any special measures to ensure equal access? _____
21. What, if any, measures did you implement to reduce carbon footprint in any way or to combat other forms of pollution such as the use of plastic with regards to the project activities? _____

General satisfaction

22. Are you satisfied with the ProBleu funded project that you implemented?
    a. Very satisfied
    b. Satisfied
    c. Neutral
    d. Dissatisfied
    e. Very Dissatisfied
23. Please comment further on the main **benefits** of project implementation:
    _____
24. Please comment further on the main **challenges** of project implementation:
    _____
25. The schools are encouraged to become members of NEBS - The Network of European Blue Schools. How do you value NEBS - The Network of European Blue Schools?
    a. Extremely Valuable
    b. Very Valuable
    c. Moderately Valuable
    d. Slightly Valuable
    e. Not Valuable at All
26. How do you assess the contribution of the ProBleu project to the development of ocean and water literacy in your school community?
    a. Very important contribution
    b. Important contribution
    c. Moderately important contribution
    d. Slightly important contribution
    e. Not important
27. Additional remarks:
    _____

Annex 5

Promoting ocean and water literacy in school communities

Call HORIZON-MISS-2022-OCEAN-01

Questionnaire for a teacher

The ProBleu funding initiative supports primary and secondary schools as essential champions in educating children and youth about blue sustainability and safeguarding marine and freshwater ecosystems.

Educational institutions that have implemented ProBleu-funded projects are invited to nominate a teacher, who was directly involved in the project activities, to provide with some feed back.

We do not ask for personal data in this form. The information is needed to enable us to evaluate the results of educational projects funded by ProBleu.

Contact for any questions: probleucall@probleu.school

General information

1. Name of the school implementing the project: _____
2. In which country is your school located? _____
3. Title of the project: _____
4. What disciplines or what type of teacher are you? _____

Feedback on how students participated in surveys

5. Your students took surveys before and after the project activities. Did they need support in providing their answers? _____
6. Please comment on difficulties, if any, that the students encountered while filling in the surveys (was it too difficult, too easy, were there any questions, etc.): _____

Feedback on project activities and results

7. What project activities did You carry out with the students? _____

8. How do You feel about these activities? Did everything go smoothly? Please comment on aspects such as the
    a. organisation of the activities _____
    b. motivation of the students _____
    c. involvement of partners _____
    d. administrative support _____
    e. general feedback _____
9. In your opinion, what was the most impactful aspect of the project for the students? ____
10. Comment on the open schooling methods used in the project. Did they work? How do you assess the success of their use in the ProBleu-funded project? _____
11. In your opinion, has the project increased the level of ocean and water literacy of the students who participated directly or indirectly in the project activities? _____
12. Evaluate the importance of the following in developing your students' ocean and water literacy:

	Very important	Important	Moderately important	Slightly important	Not important
Activities outside usual school environment					
Meeting with external stakeholders, e.g. scientists, artists, fishermen, etc.					
Implementing activities in a team					
Working with school teachers					
Engaging in dissemination and outreach of project results (e. g. exhibition, school event, etc.)					
Activities directly linked to oceans, seas, rivers or lakes					

13. In Your own assessment, what are the most important results of the project? _____
14. Will you uptake and integrate some aspects from the project to your usual school activities or curricula? If yes, please elaborate, how? _____
15. Every project did some efforts to ensure that project activities were made accessible to all types of students, regardless of gender, cultural background, or physical and economic accessibility barriers, among others. Please provide your feedback on this. For example, you can comment on how you managed to do this in practice during the project activities. Were there any challenges and how did you overcome them? _____
16. Have you noticed any undesirable effects or consequences of the project activities? ____

General satisfaction

17. Are you satisfied with the ProBleu funded project that you implemented?
    a. Very satisfied
    b. Satisfied
    c. Neutral

    d. Dissatisfied
    e. Very Dissatisfied
18. How do you assess the contribution of the ProBleu project to the development of ocean and water literacy in your school community?
    f. Very important contribution
    g. Important contribution
    h. Moderately important contribution
    i. Slightly important contribution
    j. Not important
19. Additional remarks:

    _____

Annex 6

ProBleu

ProBleu Questionnaire for PRIMARY School Children

Welcome to Our Water World Adventure! □□

Hey there, young explorer! □ We're super excited to have you join us on this adventure to discover the secrets of the water world around us!

What's this all about? □□ We've prepared some really cool questions for you to think about all the amazing water on our planet!

Why your help is super important: Your answers will help us learn how to better share the wonders of our water world with others.

A few things to remember: Your answers are a secret between us; you don't need to tell us your name or any personal stuff. We're just excited to hear what you think! And don't worry, there are no right or wrong answers here. We love all your thoughts just the way they are.

Ready, set, go! □ This adventure should take about 15 minutes, so when you're all set, let's dive in!

Thank you so much for helping us out. Let the adventure begin! □

ProBleu

ProBleu Questionnaire for PRIMARY School Children

About your school

* 1. What is the name of your school?

* 2. Which country is your school in?

ProBleu Questionnaire for PRIMARY School Children

Let’s dive in! 🌊 First, we’re going to find out some cool things you might already know about the ocean and water. Ready to show what you know?

* 3. Where is most of the water on Earth

- ◯ In the atmosphere
- ◯ In polar ice caps
- ◯ In rivers and lakes
- ◯ In the ocean

ProBleu Questionnaire for PRIMARY School Children

* 4. What is the largest animal ever to live on Earth?

- ◯ Giant squid
- ◯ Woolly mammoth
- ◯ Blue whale
- ◯ Giganotosaurus

ProBleu Questionnaire for PRIMARY School Children

* 5. What is the largest ocean in the world?

- ◯ Atlantic Ocean
- ◯ Pacific Ocean
- ◯ Indian Ocean
- ◯ Arctic Ocean

ProBleu Questionnaire for PRIMARY School Children

Great job! 🎉 Now that we've explored what you know, let's see what you think about the water world around us. Let's find out!

* 6. How much do you know about **animals and plants** in the rivers, lakes, oceans, and seas?

- ◯ Know a lot 😊
- ◯ Know something 😐
- ◯ Nothing ☹
- ◯ Not sure 🤔

* 7. How much do you know about **pollution** of the rivers, lakes, oceans, and seas?

- ◯ Know a lot 😊
- ◯ Know something 😐
- ◯ Nothing ☹
- ◯ Not sure 🤔

* 8. How much do you know about **what can be done by people to protect** rivers, lakes, oceans, and seas?

- ◯ Know a lot 😊
- ◯ Know something 😐
- ◯ Nothing ☹
- ◯ Not sure 🤔

ProBleu Questionnaire for PRIMARY School Children

You’re doing awesome! □ Knowing and noticing are super important. Next, we’re curious about how you feel about the ocean and water.
Thinking about rivers, lakes, oceans, and seas, we want to know what you feel you can do to help keep them clean and safe. For each statement below, choose the answer that best matches how you feel.

* 9. I believe I can help keep rivers, lakes, and oceans clean by doing small things every day.

- ◯ Yes, I believe I can □
- ◯ I'm not sure if I can □
- ◯ No, I don't believe I can ☹

* 10. When I learn about ways to protect our water, I feel like I can make a difference.

- ◯ Yes, I feel like I can make a difference 😀
- ◯ Sometimes I feel like I can make a difference □
- ◯ No, I don't feel like I can make a difference ☹

* 11. I can tell my friends and family why it’s important to save water and protect our oceans and rivers.

- ◯ Yes, I can tell them
- ◯ Maybe, I might be able to tell them
- ◯ No, I can't tell them

ProBleu Questionnaire for PRIMARY School Children

Thanks for sharing your thoughts! ❤ Let’s go a bit deeper. How does the ocean and water make you feel? Your feelings are important, and we’d love to hear about them.

* 12. When you think about oceans, rivers, lakes, or seas, **how much do you feel** each of the following? (provide answer in each row)

	Not at All ☹	A Little □	A lot □□□	*I don't know* □♂
Inspired, feeling sparkly	◯	◯	◯	◯
Excited, feeling happy	◯	◯	◯	◯
Enthusiastic, feeling ready	◯	◯	◯	◯
Afraid, feeling scared	◯	◯	◯	◯
Upset, feeling sad	◯	◯	◯	◯
Nervous, feeling worried	◯	◯	◯	◯

ProBleu Questionnaire for PRIMARY School Children

Feelings are powerful! □ Now that we know how the ocean makes you feel, let's see what actions you take. What do you do to help our oceans and water?

* 13. **In the past week**, how often did you make sure to turn off the tap tightly after using it? □□

- ◯ Almost never
- ◯ Sometimes
- ◯ Almost always

* 14. **In the past week**, how often did you turn off the water while you were brushing your teeth? □□

- ◯ Almost never
- ◯ Sometimes
- ◯ Almost always

* 15. **In the last month**, how often have you talked about oceans, seas, rivers and lakes with your friends or family? □□

- ◯ Almost never
- ◯ Sometimes
- ◯ Almost always

ProBleu Questionnaire for PRIMARY School Children

* 16. **In the last month**, where did you learn about the ocean, seas, rivers, and lakes and its animals and plants? Pick all the places you've really learned from.

- [ ] Watching TV
- [ ] Reading books or magazines
- [ ] Exploring websites or online videos
- [ ] Checking out posts and videos on social media
- [ ] In school, from my teachers or school projects
- [ ] Talking with my family or friends
- [ ] Other (please write what)

ProBleu Questionnaire for PRIMARY School Children

* 17. How many times did you visit these places **in the last year**?

	Never	Once	Twice	Three times or more
Ocean	◯	◯	◯	◯
River	◯	◯	◯	◯
Lake	◯	◯	◯	◯
Sea	◯	◯	◯	◯

ProBleu Questionnaire for PRIMARY School Children

* 18. Have you done any of these things when you saw trash in or near water? Choose all the actions you really did.

- [ ] Picked it up and threw it in the trash
- [ ] Told an adult about it so they could help remove it
- [ ] Leave it because I don't think I should touch it
- [ ] I haven’t seen trash in or near water recently

ProBleu Questionnaire for PRIMARY School Children

* 19. Children learn about oceans, seas, rivers, and lakes in many fun ways, not just in the classrooms! Can you remember all the cool activities you did to learn more about water in the ongoing school year? Tick all the boxes for the things you did!

- [ ] A special lesson taught by scientists or other exciting guests
- [ ] A trip to a museum or an exhibition about water
- [ ] A visit to a company or a group that helps protect water
- [ ] A fun day out at a university or a laboratory where scientists study water
- [ ] Working on a project with kids from other classes or schools, or even people from your town
- [ ] Classroom assignments where you read extra books, searched the internet, or watched movies about water
- [ ] Homework where you explored more about water through books, the internet, or movies
- [ ] None of the above
- [ ] Something else (What was it?):

ProBleu Questionnaire for PRIMARY School Children

* 20. Of all the activities you ticked before, which one was the most interesting way for you to learn about the oceans, seas, rivers, and lakes? Choose the one that you liked the best!

- ◯ A special lesson taught by scientists or other exciting guests
- ◯ A trip to a museum or an exhibition about water
- ◯ A visit to a company or a group that helps protect water
- ◯ A fun day out at a university or a laboratory where scientists study water
- ◯ Working on a project with kids from other classes or schools, or even people from your town
- ◯ Classroom assignments where you read extra books, searched the internet, or watched movies about water
- ◯ Homework where you explored more about water through books, the internet, or movies
- ◯ None of the above
- ◯ [Insert text from Other]

* 21. Thinking about oceans, seas, rivers, and lakes, **how interested are you** to learn more about them?

- ◯ Really interested! 😀
- ◯ A little interested.
- ◯ Not much interested. 😐

ProBleu Questionnaire for PRIMARY School Children

* 22. How would you like to explore and find out more? Pick up to three ways that sound like the most fun to you!

- [ ] In our school classes with our teachers
- [ ] Visiting a university or a laboratory where scientists study water
- [ ] Learning from cool posts and videos about water on social media
- [ ] By looking through magazines with cool pictures
- [ ] Reading big books with lots of pictures
- [ ] Watching exciting documentaries on TV
- [ ] Playing games on the computer
- [ ] Going to science museums or special water exhibitions
- [ ] Playing board games that teach me about water
- [ ] Going on real adventures to places like the ocean or a river
- [ ] Working on a project with kids from other classes or schools, or even people from your town
- [ ] Something else (What is it?):

ProBleu Questionnaire for PRIMARY School Children

Almost there! We have just a few more questions. Can you tell us a little about yourself? Remember, we keep all your answers secret and safe!

* 23. What gender do you identify with?

- ◯ Boy
- ◯ Girl
- ◯ Prefer not to say
- ◯ Other (please write):

* 24. How old are you?

- ◯ 6 years old
- ◯ 7 years old
- ◯ 8 years old
- ◯ 9 years old
- ◯ 10 years old
- ◯ 11 years old
- ◯ 12 years old
- ◯ Other (please write):

ProBleu

ProBleu Questionnaire for PRIMARY School Children

Annex 7

ProBleu Questionnaire for SECONDARY School Students

Welcome to Our Survey!

Hello! 🌊 We're so glad you're here. This survey is all about exploring how young people like you think and feel about water—the oceans, seas, rivers, and lakes—and the incredible life they support. Whether you're someone who loves splashing around in the sea, someone curious about the creatures living beneath the waves, or someone who enjoys learning about our planet, your insights are invaluable to us.
What's it about? 🐠🐋 We've got some cool questions that will make you think about the water on Earth, the amazing animals that call it home, and what we can do to protect this vital resource. Your thoughts will help us understand what young people know and how they feel about these important issues.
Why participate? 🌟 By sharing your views, you'll be contributing to something bigger, helping us to better understand and educate others about our planet's waters. Plus, it's a chance for you to reflect on these topics and perhaps learn something new!
Your privacy matters. 🔒 Please know that your answers are completely confidential. We won't ask for your name or any personal details that can identify you. The results will only be used to learn more about young people's views on water and the environment.
Before you start... There are no right or wrong answers here, just your honest opinions and thoughts. The survey should take about 10 minutes, so when you're ready, dive in!
Thank you for taking the time to share your thoughts with us. Every single response brings us closer to understanding how we can work together to protect our planet's water.
Let's get started! 🚀

ProBleu

ProBleu Questionnaire for SECONDARY School Students

About your school

* 1. What is the name of your school?

* 2. Which country is your school in?

ProBleu

ProBleu Questionnaire for SECONDARY School Students

Let’s dive in! 🌊 First, we’re going to find out some cool things you might already know about the ocean and water.

* 3. Where is most of the water on Earth?

- ◯ In the atmosphere
- ◯ In polar ice caps
- ◯ In rivers and lakes
- ◯ In the oceans

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 4. Both land and ocean provide space for organisms to live. How much of Earth’s living space is found in the ocean?

- ◯ Only a little bit (less than 10%)
- ◯ About half (40–60%)
- ◯ More than half (60–80%)
- ◯ Nearly all (more than 90%)

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 5. How is climate change impacting the Arctic?

- ◯ The impact on the Arctic is the same as on the rest of the planet
- ◯ The Arctic is warming faster than the rest of the planet
- ◯ Glaciers are melting in some parts of the Arctic and growing in other parts
- ◯ Tropical ocean fishes are migrating to the Arctic

ProBleu

ProBleu Questionnaire for SECONDARY School Students

Great job! 🎉 Now that we've explored what you know, let's see what you think about the water world around us.

* 6. Please indicate, how much you feel you know about:

	Nothing at all	A little	Quite a lot	A great deal
Biodiversity in rivers, lakes, oceans, and seas	◯	◯	◯	◯
Impact of human activities on rivers, lakes, oceans, and seas	◯	◯	◯	◯
Actions to protect rivers, lakes, oceans, and seas	◯	◯	◯	◯

ProBleu

ProBleu Questionnaire for SECONDARY School Students

You're doing awesome! 🌟 Knowing and noticing are super important. Considering the importance of rivers, lakes, oceans, and seas, we're curious about your thoughts on contributing to their cleanliness and safety. For the following statements, please select the option that best reflects your opinion.

* 7. For the following statements, please select the option that best reflects your opinion. (provide answer in each row)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I feel confident in my ability to make positive choices that benefit the health of oceans, rivers, lakes, and seas	○	○	○	○	○
I believe my actions, no matter how small, can have a positive impact on protecting water environments	○	○	○	○	○
I think I can effectively communicate the importance of water conservation to others and inspire them to take action	○	○	○	○	○

ProBleu

ProBleu Questionnaire for SECONDARY School Students

Thanks for sharing your thoughts! ❤ Let's go a bit deeper. How does the ocean and water make you feel? Your feelings are important, and we'd love to hear about them.

* 8. When you think about oceans, rivers, lakes, or seas, **how much do you feel** each of the following? (provide answer in each row)

	Not at All	A Little	Moderately	Quite a bit	Extremely	*I don't know*
Inspired, feeling sparkly	○	○	○	○	○	○
Excited, feeling happy	○	○	○	○	○	○
Enthusiastic, feeling ready	○	○	○	○	○	○
Afraid, feeling scared	○	○	○	○	○	○
Upset, feeling sad	○	○	○	○	○	○
Nervous, feeling worried	○	○	○	○	○	○

ProBleu

ProBleu Questionnaire for SECONDARY School Students

Feelings are powerful! Now that we know how the ocean makes you feel, let's see what actions you take. What do you do to help our oceans and water?

* 9. **In the past week**, how often did you make sure to turn off the faucet tightly after using it to avoid wasting water?

- Never
- Rarely
- Sometimes
- Most of the time
- Always

* 10. **In the past week**, how often did you choose to take shorter showers to save water?

- Never
- Rarely
- Sometimes
- Most of the time
- Always

* 11. In the last month, how often have you had conversations with friends or family about the ocean, seas, rivers, and lakes?

- Never
- Rarely
- Sometimes
- Most of the time
- Always

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 12. **In the last month**, from which of the following sources have you gained information about oceans, seas, rivers, lakes, and their inhabitants? Select all the sources you've actually learned from.

- [ ] Watching TV
- [ ] Reading books or magazines
- [ ] Browsing websites or watching online videos
- [ ] Scrolling through posts and videos on social media
- [ ] At school, through lessons or projects assigned by teachers
- [ ] In conversations with family or friends
- [ ] Other (please write what)

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 13. How many times did you visit these places **in the last year**? (provide answer in each row)

	0 times	1-2 times	3-5 times	More than 5 times
Ocean	◯	◯	◯	◯
River	◯	◯	◯	◯
Lake	◯	◯	◯	◯
Sea	◯	◯	◯	◯

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 14. When you've seen trash in or near water, like a river, lake, or ocean, which of the following have you actually done? Select all that apply.

- [ ] Picked it up and disposed of it properly
- [ ] Informed an adult so they could take care of it
- [ ] Didn’t touch it, feeling unsure about whether I should
- [ ] Haven’t noticed any trash in or near water lately

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 15. Beyond the classroom, there are loads of exciting ways to learn about oceans, seas, rivers, and lakes. Think back over this school year and mark all the activities you've participated in to learn more about water. Select all that apply.

- [ ] Participated in a special lesson given by scientists or guest speakers about water
- [ ] Visited a museum or an exhibition focused on water and aquatic life
- [ ] Went to a company or organization dedicated to water conservation
- [ ] Explored a university or lab where scientists do research on water
- [ ] Collaborated on a project with peers from other classes, schools, or community members
- [ ] Completed classroom assignments that involved researching water through books, the internet, or documentaries
- [ ] Did homework that encouraged further exploration about water via reading, online research, or watching films
- [ ] None of the above
- [ ] Something else (What was it?):

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 16. Of all the activities you've just marked, which one did you find the most interesting for learning about water? Pick your favorite!

- ◯ Participated in a special lesson given by scientists or guest speakers about water
- ◯ Visited a museum or an exhibition focused on water and aquatic life
- ◯ Went to a company or organization dedicated to water conservation
- ◯ Explored a university or lab where scientists do research on water
- ◯ Collaborated on a project with peers from other classes, schools, or community members
- ◯ Completed classroom assignments that involved researching water through books, the internet, or documentaries
- ◯ Did homework that encouraged further exploration about water via reading, online research, or watching films
- ◯ None of the above
- ◯ [Insert text from Other]

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 17. How interested are you to learn more about oceans, seas, rivers, and lakes?

- ◯ Not at all
- ◯ A little
- ◯ Moderately
- ◯ Quite a bit
- ◯ Extremely

ProBleu

ProBleu Questionnaire for SECONDARY School Students

* 18. What are the coolest ways you'd like to discover more about water bodies? Choose up to three options that sound most exciting to you!

- [ ] Through classes at school with our teachers
- [ ] By visiting universities or labs where scientists dive deep into water studies
- [ ] Checking out awesome water-related posts and videos on social media
- [ ] Flipping through magazines filled with amazing water photos
- [ ] Diving into big, picture-rich books about water
- [ ] Watching thrilling documentaries on TV
- [ ] Getting into computer games focused on water themes
- [ ] Exploring science museums or water-themed exhibitions
- [ ] Playing board games that flow with water facts
- [ ] Embarking on real-life water adventures to the ocean, rivers, or lakes
- [ ] Collaborating on projects with peers from other classes, schools, or community members
- [ ] Something else (What is it?):

ProBleu

ProBleu Questionnaire for SECONDARY School Students

Almost there! We have just a few more questions. Can you tell us a little about yourself? Remember, we keep all your answers secret and safe!

* 19. What gender do you identify with?

- ◯ Male
- ◯ Female
- ◯ Prefer not to say
- ◯ Other (please write):

* 20. How old are you?

- ◯ 11 years old
- ◯ 12 years old
- ◯ 13 years old
- ◯ 14 years old
- ◯ 15 years old
- ◯ 16 years old
- ◯ 17 years old
- ◯ Other (please write):

ProBleu

ProBleu Questionnaire for SECONDARY School Students

Annex 8

ProBleu Questionnaire for PRIMARY school children
Post-intervention

Welcome to Our Water World Adventure! 🌍💧

Hey there, young explorer! 👋 We're super excited to have you join us on this adventure to discover the secrets of the water world around us!

Why your help is super important: Your school has implementedI cool project on waters and oceans. We are curious to know your thoughts about it.

A few things to remember: Your answers are a secret between us; you don't need to tell us your name or any personal stuff. We're just excited to hear what you think! And don't worry, there are no right or wrong answers here. We love all your thoughts just the way they are.

Ready, set, go! 🏁 This adventure should take about 15 minutes, so when you're all set, let's dive in!

Thank you so much for helping us out. Let the adventure begin! 🚀

[NEXT SCREEN – one item per screen]

1. **What is the name of your school?**

[Open ended]

2. **Which country is your school in?**

[Open -ended]

During last months, there were different activities in your school about waters and oceans. We are curious to know what you liked and what you have learned.

3. How did you like the activities in your school in the project?
   [] Not at All [] A Little [] A lot [] I don't know

4. What activity about oceans and waters you liked the most in this project? (open)

5. Name few things, that you have learned about the oceans and waters during the project? (open)

6. Would you like your school to participate more in such projects in the future?
   []Yes [] No [] I don't know

Let's dive in! First, we're going to find out some cool things you might already know about the ocean and water. Ready to show what you know?

7. **Where is most of the water on Earth**

In the atmosphere
In polar ice caps
In rivers and lakes
** In the ocean

8. **What is the largest animal ever to live on Earth?**

Giant squid
Woolly mammoth
**Blue whale
Giganotosaurus

9. **What is the largest Ocean in the world?**

Atlantic Ocean
**Pacific Ocean
Indian Ocean
Arctic Ocean

Great job! Now that we've explored what you know, let's see what you think about the water world around us. Let's find out!

How much do you know about…?

10. animals and plants in the rivers, lakes, oceans, and seas
    Know a lot
    Know something
    Nothing
    Not sure

11. Pollution of the rivers, lakes, oceans, and seas
    [] Know a lot
    [] Know something
    [] Nothing
    [] Not sure

12. What can be done by people to protect rivers, lakes, oceans, and seas
    [] Know a lot
    [] Know something
    [] Nothing
    [] Not sure

You're doing awesome! Knowing and noticing are super important. Next, we're curious about how you feel about the ocean and water.

Thinking about rivers, lakes, oceans, and seas, we want to know what you feel you can do to help keep them clean and safe. For each statement below, choose the answer that best matches how you feel.

13. **I believe I can help keep rivers, lakes, and oceans clean by doing small things every day**

Yes, I believe I can
I'm not sure if I can
No, I don't believe I can

14. **When I learn about ways to protect our water, I feel like I can make a difference**

- [ ] Yes, I feel like I can make a difference
- [ ] Sometimes I feel like I can make a difference
- [ ] No, I don't feel like I can make a difference

15. **I can tell my friends and family why it's important to save water and protect our oceans and rivers**

- [ ] Yes, I can tell them
- [ ] Maybe, I might be able to tell them
- [ ] No, I can't tell them

Thanks for sharing your thoughts! 💙 Let's go a bit deeper. How does the ocean and water make you feel? Your feelings are important, and we'd love to hear about them.

When you think about oceans, rivers, lakes, or seas, how much do you feel each of the following? [RANDOMIZE ITEMS]

16. **Inspired, feeling sparkly**
[] Not at All [] A Little [] A lot [] I don't know

17. **Excited, feeling happy**
[] Not at All [] A Little [] A lot [] I don't know

18. **Enthusiastic, feeling ready**
[] Not at All [] A Little [] A lot []I don't know

19. **Afraid, feeling scared**
[] Not at All [] A Little [] A lot [] I don't know

20. **Upset, feeling sad**
[] Not at All [] A Little [] A lot [] I don't know

21. **Nervous, feeling worried**
[] Not at All [] A Little [] A lot [] I don't know

Feelings are powerful! Now that we know how the ocean makes you feel, let's see what actions you take. What do you do to help our oceans and water?

22. **<u>In the past week</u>, how often do you make sure to turn off the tap tightly after using it?**
    [] Almost never [] Sometimes [] Almost always

23. **<u>In the past week</u>, how often did you turn off the water while you were brushing your teeth?**
    [] Almost never [] Sometimes [] Almost always

24. **<u>In the last month</u>, how often have you talked about oceans, seas, rivers and lakes with your friends or family?**
    [] Not at all [] A little [] A lot

25. **<u>In the last month</u>, where did you learn about the ocean, seas, rivers, and lakes and its animals and plants? Pick all the places you've really learned from. [Randomize response categories]**

Watching TV
Reading books or magazines
Exploring websites or online videos
Checking out posts and videos on social media
In school, from my teachers or school projects
Talking with my family or friends
[ ] Other: _____ (please specify)

How many times did you visit these places <u>in the last year</u>?

26. **Ocean**
    [] Never [] Once[] Twice [] Three times or more

27. **River**
    [] Never [] Once[] Twice [] Three times or more

28. **Lake**
    [] Never [] Once[] Twice [] Three times or more

29. **Sea**
    [] Never [] Once[] Twice [] Three times or more

30. **[IF THEY DON'T SAY NEVER TO ALL Q21, Q22, Q23, Q24] Have you done any of these things when you saw trash in or near water? Choose all the actions you really did.**

Picked it up and threw it in the trash
Told an adult about it so they could help remove it
Leave it because I don't think I should touch it

I haven't seen trash in or near water recently

31. **Children learn about oceans, seas, rivers, and lakes in many fun ways, not just in the classrooms! Can you remember all the cool activities you did to learn more about water <u>in the last three months?</u> Tick all the boxes for the things you did! [Randomize response categories]**

A special lesson taught by scientists or other exciting guests
A trip to a museum or an exhibition about water
A visit to a company or a group that helps protect water
A fun day out at a university or a laboratory where scientists study water
Working on a project with kids from other classes or schools, or even people from your town
Classroom assignments where you read extra books, searched the internet, or watched movies about water
Homework where you explored more about water through books, the internet, or movies
Something else (What was it?): _____

32. **From all the activities you ticked before, which one was the most interesting way for you to learn about the oceans, seas, rivers, and lakes? Choose the one that you liked the best!**

[Please choose one from the options selected in the previous question. This question only appears if at least two options was selected in Q26].

33. **Thinking about oceans, seas, rivers, and lakes, how interested are you to learn more about them?**

Really interested!
A little interested.
Not much interested.

34. **[If "Really interested!" or "A little interested" to Q28] How would you like to explore and find out more? Pick up to three ways that sound like the most fun to you! [Randomize response categories]**

In our school classes with our teachers
Visiting a university or a laboratory where scientists study water
Learning from cool posts and videos about water on social media
By looking through magazines with cool pictures
Reading big books with lots of pictures
Watching exciting documentaries on TV
Playing games on the computer
Going to science museums or special water exhibitions
Playing board games that teach me about water
Going on real adventures to places like the ocean or a river
Working on a project with kids from other classes or schools, or even people from your town
Something else (What is it?): _____

Almost there! We have just a few more questions. Can you tell us a little about yourself? Remember, we keep all your answers secret and safe!

35. What gender do you identify with?

Boy
Girl
Prefer not to say
Other: _____ (please write)

36. How old are you?

6 years old
7 years old
8 years old
9 years old
10 years old
11 years old
12 years old
Other: _____ (please write)

Note: Correct answers are provided for children at the end of questionnaire.

Where is most of the water on Earth? [ ] **In the ocean.
What is the largest animal ever to live on Earth? [ ]**Blue whale.
What is the largest Ocean in the world? [] **Pacific Ocean

Annex 9

ProBleu Questionnaire for SECONDARY school children
Post- intervention

Welcome to Our Survey!

Hello! 👋 We're so glad you're here.

This survey is all about exploring how young people like you think and feel about water—the oceans, rivers, and lakes—and the incredible life they support. Whether you're someone who loves splashing around in the sea, someone curious about the creatures living beneath the waves, or someone who enjoys learning about our planet, your insights are invaluable to us.

Why participate? 🌟 Your school has implemented cool project on waters and oceans. We are curious to know your thoughts about it.
By sharing your views, you'll be contributing to something bigger, helping us to better understand and educate others about our planet's waters.

Your privacy matters. 🔒 Please know that your answers are completely confidential. We won't ask for your name or any personal details that can identify you. The results will only be used to learn more about young people's views on water and the environment.

Before you start... There are no right or wrong answers here, just your honest opinions and thoughts. The survey should take about 10 minutes, so when you're ready, dive in!

Thank you for taking the time to share your thoughts with us. Every single response brings us closer to understanding how we can work together to protect our planet's water.
Let's get started! 🚀

[NEXT SCREEN – one item per screen]

1. **What is the name of your school?**

[DROPDOWN MENU OF SCHOOL NAMES]

2. **Which country is your school in?**

[Open-Ended Response]

During last months, there were different activities in your school about waters and oceans. We are curious to know what you liked and what you have learned.

3. How did you like the activities in your school in the project?
   [] Not at All [] A Little [] A lot [] I don't know

4. What activity about oceans and waters you liked the most in this project? (open)

5. Name few things, that you have learned about the oceans and waters during the project? (open)

6. Would you like your school to participate more in such projects in the future?

   []Yes [] No [] I don't know

7. **Where is most of the water on Earth?**

[ ] In the atmosphere.
[ ] In polar ice caps.
[ ] In rivers and lakes.
[ ] **In the ocean.

8. **Both land and ocean provide space for organisms to live. How much of Earth's living space is found in the ocean?**

[ ] Only a little bit (less than 10%).
[ ] About half (40–60%).
[ ] More than half (60–80%).
[ ] **Nearly all (more than 90%).

9. **How is climate change impacting the Arctic?**

[ ] The impact on the Arctic is the same as on the rest of the planet.
[ ]**The Arctic is warming faster than the rest of the planet.
[ ] Glaciers are melting in some parts of the Arctic and growing in other parts.
[ ] Tropical ocean fishes are migrating to the Arctic.

Please indicate, how much do you feel you know about:

10. **Biodiversity in rivers, lakes, oceans, and seas**
    [] Nothing at all
    [] A little
    [] Quite a lot
    [] A great deal

11. **Impact of human activities on rivers, lakes, oceans, and seas**
    [] Nothing at all
    [] A little
    [] Quite a lot
    [] A great deal

12. **Actions to protect rivers, lakes, oceans, and seas**
    [] Nothing at all
    [] A little

[] Quite a lot
[] A great deal

Considering the importance of rivers, lakes, oceans, and seas, we're curious about your thoughts on contributing to their cleanliness and safety. For the following statements, please select the option that best reflects your opinion.

13. **I feel confident in my ability to make positive choices that benefit the health of oceans, rivers, lakes, and seas**

Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree

14. **I believe my actions, no matter how small, can have a positive impact on protecting water environments**

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neither agree nor disagree
- [ ] Agree
- [ ] Strongly agree

15. **I think I can effectively communicate the importance of water conservation to others and inspire them to take action**

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neither agree nor disagree
- [ ] Agree
- [ ] Strongly agree

When you think about oceans, rivers, lakes, or seas, how much do you feel each of the following? [RANDOMIZE ITEMS]

16. **Inspired, feeling sparkly**
    [] Not at all
    [] A little
    [] Moderately
    [] Quite a bit
    [] Extremely
    [] I don't know

17. **Excited, feeling happy**
    [] Not at all
    [] A little
    [] Moderately
    [] Quite a bit

[] Extremely
[] I don’t know

18. Enthusiastic, feeling ready

[] Not at all
[] A little
[] Moderately
[] Quite a bit
[] Extremely
[] I don’t know

19. Afraid, feeling scared

[] Not at all
[] A little
[] Moderately
[] Quite a bit
[] Extremely
[] I don’t know

20. Upset, feeling sad

[] Not at all
[] A little
[] Moderately
[] Quite a bit
[] Extremely
[] I don’t know

21. Nervous, feeling worried

[] Not at all
[] A little
[] Moderately
[] Quite a bit
[] Extremely
[] I don’t know

22. In the past week, how often do you make sure to turn off the faucet tightly after using it to avoid wasting water?

Never
Rarely
Sometimes
Most of the time
Always

23. In the past week, how often do you choose to take shorter showers to save water?

- [ ] Never
- [ ] Rarely

- [ ] Sometimes
- [ ] Most of the time
- [ ] Always

24. In the last month, how often have you had conversations with friends or family about the ocean, seas, rivers, and lakes?

- [ ] Never
- [ ] Rarely
- [ ] Sometimes
- [ ] Most of the time
- [ ] Always

25. In the last month, from which of the following sources have you gained information about oceans, seas, rivers, lakes, and their inhabitants? Select all the sources you've actually learned from.

Watching TV
Reading books or magazines
Browsing websites or watching online videos
Scrolling through posts and videos on social media
At school, through lessons or projects assigned by teachers
In conversations with family or friends
- [ ] Other (please specify): _____

How many times did you visit these places <u>in the last year</u>?

26. Ocean

0 times
1-2 times
3-5 times
More than 5 times

27. River

[] 0 times
[] 1-2 times
[] 3-5 times
[] More than 5 times

28. Lake

[] 0 times
[] 1-2 times
[] 3-5 times
[] More than 5 times

29. Sea

[] 0 times
[] 1-2 times
[] 3-5 times

[] More than 5 times

30. **[IF THEY DON'T SAY 0 TIMES TO ALL Q21, Q22, Q23, Q24] When you've seen trash in or near water, like a river, lake, or the ocean, which of the following have you actually done? Select all that apply.**

- [ ] Picked it up and disposed of it properly
- [ ] Informed an adult so they could take care of it
- [ ] Didn't touch it, feeling unsure about whether I should
- [ ] Haven't noticed any trash in or near water lately

31. **Beyond the classroom, there are loads of exciting ways to learn about oceans, seas, rivers, and lakes. Think back over last three months and mark all the activities you've participated in to learn more about water. Select all that apply. [Randomize response categories]**

Participated in a special lesson given by scientists or guest speakers about water
Visited a museum or an exhibition focused on water and aquatic life
Went to a company or organization dedicated to water conservation
Explored a university or lab where scientists do research on water
Collaborated on a project with peers from other classes, schools, or community members
Completed classroom assignments that involved researching water through books, the internet, or documentaries
Did homework that encouraged further exploration about water via reading, online research, or watching films
Other (Please describe): _____

32. **Of all the activities you've just marked, which one did you find the most interesting for learning about water? Pick your favorite!**

[This question should only be shown if the respondent selected at least one option in the previous question.]

33. **How interested are you to learn more about oceans, seas, rivers, and lakes?**
    Not at all
    A little
    Moderately
    Quite a bit
    Extremely

34. **[If "A little", "Moderately", "Quite a bit", "Extremely" in Q28] What are the coolest ways you'd like to discover more about water bodies? Choose up to three options that sound most exciting to you! [Randomize response categories]**

Through classes at school with our teachers
By visiting universities or labs where scientists dive deep into water studies
Checking out awesome water-related posts and videos on social media
Flipping through magazines filled with amazing water photos
Diving into big, picture-rich books about water

Watching thrilling documentaries on TV
Getting into computer games focused on water themes
Exploring science museums or water-themed exhibitions
Playing board games that flow with water facts
Embarking on real-life water adventures to the ocean, rivers, or lakes
Collaborating on projects with peers from other classes, schools, or community members
- [ ] Other (please specify): _____

35. What gender do you identify with?

[ ] Male
[ ] Female
[ ] Prefer not to say
[ ] Other (please specify): _____

36. How old are you?

11 years old
12 years old
13 years old
14 years old
15 years old
16 years old
17 years old
Other (please specify): _____

Note: Correct answers are provided for children at the end of questionnaire.

Where is most of the water on Earth?

[ ] **In the ocean.

Both land and ocean provide space for organisms to live. How much of Earth's living space is found in the ocean?

[ ] **Nearly all (more than 90%).

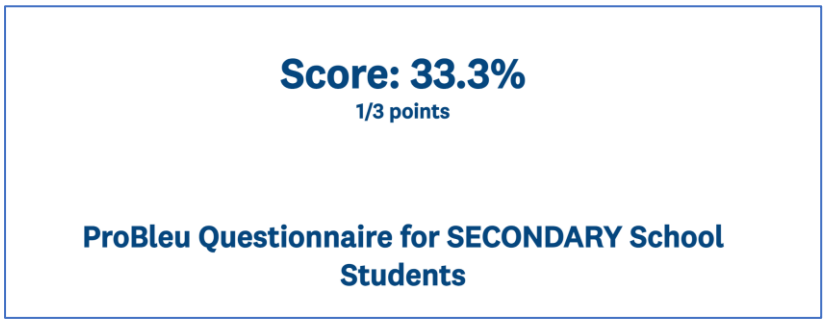
How is climate change impacting the Arctic?

[ ]**The Arctic is warming faster than the rest of the planet.

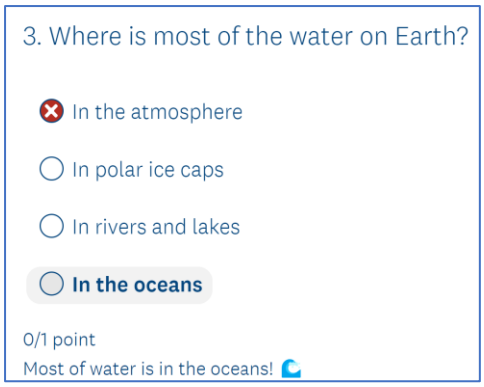
Annex 10

Example: Feedback on knowledge questions in a questionnaire for secondary school children

Example of feedback on total score for correct answers:



Example of the feedback when the answer is wrong:



Example of the feedback when the answer is correct: