



Integrating Activities for Advanced Communities

D2.3- 2nd CAWI survey report

Project No.730938-INTERACT

H2020-INFRAIA-2016-2017/H2020-INFRAIA-2016-1

Start date of project: 2016/10/01 Due date of deliverable: 2018/09/30 (M24)

Duration: 48 months Actual Submission date: 2019/05/31

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Dissemination Level			
PU	Public	х	
РР	Restricted to other programme participants (including the Commission Services)		
RE	Restricted to a group specified by the Consortium (including the Commission Services)		
СО	Confidential, only for members of the Consortium (including the Commission Services)		



Table of contents

1.	Publishable Executive Summary	3
2.	Introduction	4
3.	Methodological note	4
4.	Respondents	4
5.	Dissemination of the survey	4
	5.1. Workshops	5
	5.2. Websites	5
	5.3. E-mail / newsletter	5
	5.4. Facebook fan pages	6
	5.5. Facebook groups	6
6.	Number of replies	7
7.	Answers	7
	7.1. Question No. 1: "How clear and comprehensible do you find content of PERMAFROST tool-kit as a	
	whole"	7
	7.2. Question No. 2: "Which elements of the PERMAFROST educational tool-kit you found the most	
	useful?"	7
	7.3. Question No. 3: "Which elements of the PERMAFROST educational tool-kit you found the least	
	useful?"	8
	7.4. Question No. 4: "How satisfied are you with the content of the PERMAFROST educational tool-kit?" .	9
	7.5. Question No. 5,6,7: "How do you assess the impact of materials on your students level of interest in	
	polar research/ understanding scientific language/ capability of working with scientific data/texts?" 1	LO
	7.6. Question No. 8: "Would you suggest any improvements for our materials?" 1	LO
	7.7. Question No. 10: "What kind of polar-related topics are you interested in (for educational materials)"	"
		L1
	7.8. Question No. 9: What is more important from your perspective in terms of science-based educationa	al
	materials: unique scientific content vs. hands-on activities1	L2
8.	Conclusions and recommendations 1	٤2
9.	Appendix 1 – The questionnaire	13



1. Publishable Executive Summary

This report is a summary of the 2nd CAWI (Computer-Assisted Web Interviewing) survey carried out within the INTERACT Project ("International Network for Terrestrial Research and Monitoring in the Arctic"). It is a part of Work Package No. 2 ("Scientific coordination, mentoring and education"), task 2.2. ("Promote Arctic and climate change issues in education"), sub-task 2.2d. ("Feedback on INTERACT educational resources"). This survey is a second survey of a series of three evaluation questionnaires for teachers which are intended to evaluate the usefulness of resources for education on Arctic and northern issues.

The aim of this study was to evaluate the usefulness of educational materials about the Arctic recently created by the INTERACT consortium (based on first launched full EDUCATIONAL TOOL-KIT, dedicated to PERMAFROST. The survey was anonymous, and was disseminated using various communication channels. The total number of replies was **22**. The results of this report will allow the INTERACT consortium to improve already existing materials and use this feedback to create new resources.

The most important conclusions are:

- The most high valued materials were-materials for teachers (topic in a nutshell with basic/advance information, research methods and 5 fun facts), and worksheet (hands-on activities for students); no significant critical remarks were given
- Overall answers regarding how clear and comprehensive the evaluated materials is are positive, however, lower answers combines with positive assessment of proposed tools show that the matter is complicated, not well known, and the use of scientific data/results/language poses some difficulties to teachers/educators/students
- Not all teachers had opportunity to test materials in time given, yet the general positive impact of those is assessed as high; also, it may indicate they have a very limited time to introduce polar issues to their students;
- Teachers are interested in further diverse topics, with a clearly dominant aspect of climate issues, which confirms results of first CAWI in 2017 - which they can conduct lessons about the Arctic; among then suggested topics, the most interesting one for teachers was "Climate change – causes and consequences"; also, social sciences-oriented topics were suggested.



2. Introduction

This report is a summary of a computer-assisted web interviewing (CAWI) survey conducted among science teachers and polar educators. The survey was conducted as part of the INTERACT Project in April and May 2019. It is the second of three surveys designed to collect feedback from teachers and educators and support the development of new educational resources. The aim of the 2nd CAWI survey was to evaluate the usefulness of materials already created within the Project.

The 1st CAWI survey was conducted in 2017 and its aim was recognize the teachers and educators' needs and expectations in relation to new educational materials about the Arctic, while the 3rd CAWI survey will focus on recommendations for future development of educational resources.

3. Methodological note

The survey was conducted using the computer-assisted web interviewing (CAWI) technique, provided by *eSurvey Creator*. It was published on-line (under this link: https://www.esurveycreator.com/s/39e0ba5). The survey was opened and announced on 25th of March 2019, and was closed 2 months later, 25th of May 2019. All the responses were anonymous.

The 2nd CAWI survey report was originally scheduled for Month 24 (September 2018), but due to a delay in creation of educational materials, and an idea to include new educational tool-kits (not originally planned in the Project Proposal) in the survey, the date was postponed until those new educational materials were ready to be tested by the teachers.

The survey consisted of **9** questions (open and closed, single and multiple answer), and 2 additional questions regarding interest in receiving information about educational projects, materials and activities organised by members of INTERACT consortium

Participants were asked whether they want to leave their e-mail address in order to stay in contact and receive occasional e-mail notifications or newsletters about the Project (it wasn't obligatory, and acceptance required acknowledging actively Institute of Geophysics, Polish Academy of Sciences as data administrator, acting in compliance with General Data Protection Regulation). **11** participants gave their e-mail address.

4. Respondents

The target group for this survey was science teachers and polar educators, of all levels of education. There were **22** participants-in total.

5. Dissemination of the survey

Respondents were sought and encouraged to participate in the survey using various communication channels: website announcements, e-mail and newsletter notifications, Facebook fan pages and Facebook groups for science and polar teachers and educators, as well as during the Polar Educators International (PEI) Workshop 2019 in Cambridge, UK (8-11 April 2019). A detailed list can be found below. This list is not definitive, as all recipients of the survey were asked to disseminate it further, to whom it may be appropriate. Below are main dissemination activities performed by the authors of this report.



5.1. Workshops

Date	Name and place of workshop	
13 March 2019	Scientix Online Webinar – Frozen ground in changing climate;	
	Link to recording: <u>https://youtu.be/oHBoju96KvA</u>	
	51 views on 29 th May 2019	
	This online webinar was conducted before the survey was launched, but	
	feedback expectation was mentioned	
8-11 April 2019	PEI 2019: "Education and polar science in action", Cambridge, UK	
12 April 2019	Finals of Polish National Geography Olympiad – workshop for geography teachers	
24 April 2019	SCIENTIX Workshops for STEM teachers; Warsaw, Poland.	
26 April 2019	SCIENTIX Workshops for STEM teachers; Poznan, Poland.	

5.2. Websites

Date	Institution/organisation	URL Address	Comments
27 mar 2019	Institute of Geophysics, Polish Academy of Sciences	https://interact.igf.edu.pl/	This website is dedicated to educational materials provided within INTERACT project; materials are available for downloading, project idea and mission is explained. Direct link to the survey was displayed

5.3. E-mail / newsletter

Date	Details	Comments	
1 st April 2019	Newsletter sent to 103 science teachers	The newsletter contained:	
	and educators who expressed their	1. Introduction;	
	willingness to receive news about the	2. List of topics, information on	
	Project. E-mails we collected during the 1st	background, target group, and	
	CAWI Survey (May/June 2017) and during	key features;	
	STEM workshops for teachers organised by	3. Information about copyright;	
	IGF PAS.	Elements and content;	
		 Information on promotional materials about educational resources (brochure and video clip); 	
		6. Polar Educators' Forum in Cambridge (8-11 April);	
		7. SCIENTIX – webinar for teachers;	
		8. Request for feedback (link to a survey).	
		The Newsletter contains also a link	
		to INTERACT's Facebook page, a	
		short general note about the Project,	
		and contact details.(See D2.7 report	
		- 2 nd Newsletter)	

Public



31 May 2017	E-mail sent to 72 recipients – science	E-mail in Polish sent to Polish
	teachers who expressed interest in	teachers
	receiving information on educational	
	projects, materials and initiatives, gathered	
	during events, e.g. Educational Fair, 14-15	
	March 2019	

5.4. Facebook fan pages

Date and time	Name of Facebook fan	Sreen	Followers of
(CEST)	page		the fan page
15/04/2019 13:11	EDU-ARCTIC	the strength of the stren	~1600

5.5. Facebook groups

Date and time (CEST)	Name of Facebook group	URL Address	Number of members
11 April, 17:11	Teaching STEM	https://www.facebook.com/Teachin gSTEM/	7448
11 April, 17:11	Geography Teachers	https://www.facebook.com/Geogra phy-Teachers-219950674780829/	2613
11 April, 17:11	Geography Teachers	https://www.facebook.com/Geogra phy-Teachers-501302453367698/	514
11 April, 17:11	Geography Teachers	https://www.facebook.com/Geogra phy-teachers-647402012087605/	1669
11 April, 17:11	STEM educators	https://www.facebook.com/STEM.T eachers/	231
6 May 2019, 15:03	Cool Geography Teachers group	https://www.facebook.com/groups/ 1074022345961593/	3302
6 May 2019, 15:08	Science Teachers in Europe	https://www.facebook.com/groups/ ScienceTeachersEurope/	14857
6 May 2019, 17:48	STEM Activities & Projects for Kids	https://www.facebook.com/groups/ stemforkids/	3315



6. Number of replies

The total number of received replies was 22.

7. Answers

The first part of the survey (questions 1-4) referred to tested educational tool-kit (PERMAFROST) directly, i.e. its assessment as a whole and its particular elements. The second part of the survey (questions 5-7) was focused on assessment of impact of materials on students. Questions 8 and 10 were open and were aimed at gathering suggestions for improvements and new topics. Question No. 9 was the most general and the responses reflect expectations towards science-based educational materials. Questions 1, 2, 4 and 8 contained additional instructions/clarifications.

Below are detailed descriptions of answers collected for each question.

7.1. Question No. 1: "How clear and comprehensible do you find content of PERMAFROST tool-kit as a whole"



Fig. 1. Answers to Question No. 1

The first question tackled overall impression/user's experience regarding the usefulness of the tool-kit. The vast majority of respondents (90,9%) found the material clear and comprehensible (12 – very clear and comprehensible, 8 – rather clear and comprehensible). There were no responses stating that the materials was completely unclear and incomprehensible. 2 respondents found it rather unclear and incomprehensible.

7.2. Question No. 2: "Which elements of the PERMAFROST educational tool-kit you found the most useful?"





Fig. 2. Answers to Question No. 2

Question number 2 referred to teachers' preferences regarding particular elements of the tested tool-kit. In this case, more than 1 answer was possible. In total, 61 indications were made (up to 7 out of 8 elements indicated). 2 elements were valued the highest: 13 users indicated MATERIAL FOR TEACHERS as the most useful now. The same number of respondents indicated WORKSHEET. Only 2 responses indicated LESSON PLAN as the most useful part.





Fig. 3 – Answers to question No. 3

Page 8 of 15



In case of indicating the least useful elements of tested tool-kit, responses were significantly less numerous (21 responses in comparison with 61 evaluated as most useful). Again, multiple answers were accepted. This time, syllabus and lesson plan were indicated as the least useful (both -4 responses), while material for teachers and webinar received only 1 response each.

For questions 2 and 3 responders had option to provide additional comments and explanations. The given comments (7 in total) were rather general and did not indicate particular flaws or advantages of tested elements. The one exception is quality of sound in ANIMATIONS' narration.

All was good, but some of them were simply better.
Nothing. I like them all, but some of them were better.
Nothing. All was very useful.
Nothing really
All was very well prepared and very useful, Worksheet was the least useful only.
Webinar is the best. Also presentations. I found lesson plan the least useful.
worst: quality of the voice recording (on animations)

7.4. Question No. 4: "How satisfied are you with the content of the PERMAFROST educational tool-kit?"



Fig. 4 – Answers to question No. 4

In case of this question respondents were supposed to asses level of their satisfaction with particular elements of tested tool-kit (8 elements) on 5 –step rating scale from "not at all (1)" to "very satisfied (5)".



The vast majority of responses indicated high level of satisfaction with all tools (satisfied, rather satisfied). There were no responses lower than 3 (rather satisfied).

Worksheet received the highest results (4,65 on average), while lesson plan and syllabus received the lowest results (4,12 on average), with total average 4,41 for all the evaluated tools.

7.5. Question No. 5,6,7: "How do you assess the impact of materials on your students level of interest in polar research/ understanding scientific language/ capability of working with scientific data/texts?"



Fig. 5 – Answers to questions No. 5 6, 7.

Answers to these 3 questions give an insight into the impact on students observed by teachers. This question was not obligatory, since not all teachers had possibility to test the tool-kit with students in given time. The responses indicate actual positive impact on students (no responses lower than "rather high impact"). The highest impact in given sample is observed in terms of interest in polar research, which is usually easily and rapidly observed outcome. The capability of working with scientific data and texts is a longer perspective (4 responses indicating very high impact, 3 responses indicating rather high impact, which means the lowest rate of "very high impact" and the highest rate or "rather high impact" responses.

7.6. Question No. 8: "Would you suggest any improvements for our materials?"

Question no. 8 was intended to give freedom of expression and identify possible areas for improvement/modifications in terms of visual content, length, topics, activities proposed in educational tool-kits. The answers did not deliver any suggestions, but they confirmed positive view of responders:

I am really satisfied. Thank you.

No, everything was really good.



Mara and mara matarials. All is really useful
More, and more materials. All is really useful.
No improvements suggested
I like all. nothing to improve
Everything was really interesting. Thank you for that
Liverything was really interesting. Thank you for that.
I like it all. Everything was really interesting.

7.7. Question No. 10: "What kind of polar-related topics are you interested in (for educational materials)"

In this question the respondents were asked to indicate all subjects in scope of which they will be able to use new educational materials. No responses were suggested. The answers show a significant variety of topics. Climate change was mentioned by 6 respondents. Topics related to biology (flora, fauna – 8 respondents) and anthropology (2 respondents) were also mentioned. Some of topics are already covered (surge, calving in GLACIERS educational tool-kit), scientific research in the Arctic (special section in each material for teachers). In one case, the teacher expressed the need for other versions of the materials in national languages.

Climate change, animals
Animal and plants. Life in general.
Change of a climate and its impact on Arctic. Also life behavour.
Arctic indigenous people, Arctic fauna, Arctic medicine
Climate change
Polar life & animals. Climate change.
Calving, more about permafrost, surge, arctic life
Climate change: Rise of sea levels: Extreme weather
Arctic flora & fauna; Scientific research in the Arctic
Indigenous people of the Arctic; Snow; Extreme weather
Shrinking sea ice; Climate change
All

Document ID: INTERACT_Deliverable_2.3_20190617



Arctic animals & plants; Sea ice; glaciers; ice age

working with real scientific data; materials in other languages (e.g. Spanish)

Webinars with polar scientists

7.8. Question No. 9: What is more important from your perspective in terms of science-based educational materials: unique scientific content vs. hands-on activities

What is more important from your perspective in terms of science-based educational materials

unique scientific content hands-on activities

This question was designed to find expected balance between proposed hands on activities (online, experiments, tasks) and working with unique scientific content. The average response is ~49%, which indicates balance with not very significant predominance of unique scientific content. This indicated that the ideal solution is giving hands-on activities based on scientific data/publications/results. The availability of scientific content provided by educational materials should not be underestimated.

8. Conclusions and recommendations

The results of the report allow INTERACT to asses various aspects of proposed educational materials. Also, relatively low number of responses, despite intense dissemination campaign dedicated to desired target groups requires further analysis. During dissemination events (workshops for teachers) teachers found the fact that materials were provided in English, not in national languages, rather discouraging. On the other hand, webinar recording, given in English gathered high notes.

The proposed solution to address this: CLIL (Content and Language Integrated Learning) specialists and possibly use networking with SCIENTIX project to engage ambassadors and, in longer perspective try to provide translations of materials.

The respondents' show relatively balanced interest in both hands-on activities and science-based content. Also, direct contact with teachers allows to break the resistance and use materials actively and in a creative way. Relatively low interest in lesson plans and presentation may indicate that teachers lack time to use materials during classes and they treat them as source of knowledge for self-development or extra homework/challenges for students.

Undoubtedly, climate change aspects and social science should be included in future topics.



9. Appendix 1 – The questionnaire

Dear Teachers and Educators,

are you keen to raise aspirations and engagement in science, technology, engineering and mathematics (STEM) in your school?

We have a set of ready-to-use materials with rich, research-based content. Check out interact.igf.edu.pl for materials proposed in framework of INTERACT project. Please check out our materials either on your own or, preferably, with your students. First we'd like to learn your opinion about PERMAFROST educational tool-kit.

We really appreciate your feedback. Thank you in advance for your comments!

- 1. How clear and comprehensible do you find content of PERMAFROST tool-kit as a whole?
- $\hfill\square$ very clear and comprehensible
- □ clear and comprehensible
- □ rather clear and comprehensible
- □ rather unclear and incomprehensible
- □ completely unclear and incomprehensible
- 2. Which elements of the PERMAFROST educational tool-kit you found the most useful? (more than one answer possible)
- □ syllabus
- □ material for teachers
- □ lesson plan
- □ worksheet
- □ experiment scenario
- □ animations
- □ presentation
- \Box webinar
- □
- 3. Which elements of the PERMAFROST educational tool-kit you found the least useful? (more than one answer possible)
- □ syllabus
- material for teachers
- □ lesson plan
- □ worksheet
- □ experiment scenario
- □ animations
- □ presentation
- □ webinar
- □



4. Please, justify shortly your choice of best/worst elements of the PERMAFROST educational toolkit:

.....

5. How satisfied are you with the content of the PERMAFROST educational tool-kit?

	not at all	rather not	rather satisfied	satisfied	very satisfied
syllabus					
material for teachers					
lesson plan					
worksheet					
experiment scenario					
animations					
presentation					
webinar					

- 6. How do you assess the impact of materials on your students level of interest in polar research?
 - □ very high impact
 - □ high impact
 - □ rather high impact
 - $\hfill\square$ rather low impact
 - □ low/no impact
- 7. How do you assess the impact of materials on your students' level of understanding scientific language?

(Skip this question if you never used these materials with your students)

- □ very high impact
- \Box high impact
- □ rather high impact
- □ rather low impact
- □ low/no impact
- 8. How do you assess the impact of materials on your students' capability of working with scientific data/texts?

(Skip this question if you never used these materials with your students)



- □ very high impact
- □ high impact
- □ rather high impact
- □ rather low impact
- □ low/no impact

9. Would you suggest any improvements for our materials?

(In terms of visual content, length, topics, activities)

.....

10. What is more important from your perspective in terms of science-based educational materials?

unique scientific content ----- hands-on activities

11. What kind of polar-related topics are you interested in (for educational materials)?

.....

- 12. Do you want to receive information about educational projects, materials and activities organised by members of INTERACT consortium?
 - □ yes
 - 🗆 no
- 13. If you marked YES, please give your email address.

.....

If you want to withdraw your consent and no longer receive information about educational projects, materials and activities, please write to edukacja@igf.edu.pl and your email will be removed from our database immediately.