

**Evaluation of *The Anthropologist*  
by Ironbound Films, Inc.**

An Ironbound Films, Inc. Informal Science Education (ISE) project  
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## Executive summary

*The Anthropologist* is a film by Ironbound Films, Inc. that focuses on the impact of climate change on indigenous cultures around the world, through the lens of anthropologist Susie Crate and her daughter Katie. The goals of the film are shown below. This report summarizes findings from surveys with general audience, college student and high school student viewers.

- Increase viewers' knowledge of how climate change affects communities and cultures and help viewers understand how scientists are responding to these changes.
- Inform viewers' attitudes towards climate change and how it will affect communities around the world.
- Motivate viewers to become actively involved in assisting people adversely affected by climate change.
- Give a voice to native people who will be forced to adapt or relocate due to climate change.

### During the evaluation period, the film reached:

- **390** survey respondents
- **11** states
- **5** high school classrooms (116 students)
- **3** college classrooms (183 students)

### Overall, the film achieved progress in all goal areas:

- Respondents had **statistically significant increases in their knowledge** of how climate change affects communities and cultures and how scientists are responding to these changes. They had the largest increase in this goal area compared to other goals and respondents in all groups identified gaining new knowledge as the most important takeaway from the film.
- **Respondents' beliefs and interests in climate change significantly improved** as well as their concern about how climate change will affect communities around the world. Additionally, six out of eight educators surveyed indicated that the film was very effective in influencing students' attitudes toward climate change.
- Respondents' **motivation to become actively involved** in assisting people adversely affected by climate change **significantly increased**. A common takeaway from all respondents was the need to act to stop the effects of climate change.
- A majority of student respondents expressed an **interest in pursuing degrees related to anthropology**, climate change and assisting those affected by it after watching the film. Additionally, six out of eight educators agreed that the film **motivated students to pursue degrees in the social sciences, such as anthropology**.
- A majority in each group indicated that **the film gave a voice to native people who were affected by climate change**. When asked what they enjoyed the most, all groups surveyed stated that they enjoyed learning about different cultures.

- Student respondents **gained a new perspective on climate change** by viewing it through an **anthropologic lens**. Student respondents shared that an important takeaway of the film was hearing from those who were affected by how climate change has impacted their lives.
- **Teacher respondents reported that their students were engaged while watching the film** and, aside from the essay, **students shared that they enjoyed both the film and activities in the curriculum**, suggesting that the curriculum guide and use of the film in classrooms are helpful educational tools for students to learn about climate change and its impact on communities around the world.

**To further enhance audience members' knowledge and capitalize on their motivation to help, filmmakers should consider adding the following to the film's social media pages:**

- **Resources to help audience members to become involved** in their communities and combat climate change, such as: discussion questions and talking points, a list of non-profits that need donations and volunteers, individual actions to take, and links to research and policies being implemented to combat climate change and programs working with indigenous cultures affected by climate change.
- **A list of post-screening discussion questions**, such as the ones used in the curriculum guide, to provide audiences a way to expand on topics of the film. By providing a list of discussion questions, audiences may feel more prepared to conduct a post-film debrief, discussion, and/or panel about topics covered in the film.

**Overall, by providing a voice to native people who have been impacted by climate change, *The Anthropologist*, and its corresponding curriculum for high school and college classrooms, have helped to improve viewers' knowledge of climate change and its impact on indigenous cultures. The film has also motivated viewers to help those impacted by climate change. If filmmakers would like to further enhance audience knowledge, attitudes, and motivation to help, they should consider adding resources to the film's social media pages. This may help the audience further engage with the material after watching it.**

## Project overview

In the summer of 2011, Ironbound Films, Inc. received a National Science Foundation (NSF) Informal Science Education (ISE) grant to produce their full-length documentary, *The Anthropologist*. *The Anthropologist* is a film that follows anthropologist Susie Crate and her daughter as they travel around world studying the impact of climate change on indigenous cultures. Their story parallels that of renowned anthropologist Margaret Mead, who also spent decades studying how global change impacts remote cultures. The goals of the Ironbound Films Inc.'s documentary *The Anthropologist* are:

**Goal 1:** Increase viewers' knowledge of how climate change affects communities and cultures and help viewers understand how scientists are responding to climate change.

**Goal 2:** Inform viewers' attitudes about climate change and how it will affect communities around the world.

**Goal 3:** Motivate viewers to become actively involved in assisting people adversely affected by climate change.

**Goal 4:** Give a voice to native people who will be forced to adapt or relocate due to climate change.

## Evaluation overview

### Evaluation approach

SmartStart Evaluation and Research (SmartStart) conducted two types of evaluation for this project: a **formative evaluation** to assess the film's content and participant's initial reactions to the film, and a **summative evaluation** to assess whether the film and its corresponding curriculum achieved its goals. This report is the third evaluation SmartStart has conducted for Ironbound Films, Inc. This summative evaluation of the final cut of the film *The Anthropologist* was conducted by SmartStart from March 2018 to July 2018. Screenings of the film were presented to general audience members, college students, and high school students. A retrospective pre-posttest survey was used to assess whether the film achieved its goals and students' interest and engagement with the film and activities, and to understand implementation of the supplemental curriculum by educators. Findings from this report should be used to demonstrate the impact of the film to NSF.

Below is a summary of previous evaluations:

**Front end Evaluation (completed May 2012):** From January 2012 to May 2012, SmartStart conducted a front-end evaluation of the initial cut of *The Change*, the original working title of *The Anthropologist*, while it was in production by Ironbound Films, Inc. Eleven focus groups were conducted for this report to assess participants' initial views and impressions of the film's characters, narrative, scientific clarity, and relevance to personal interests. In the front-end evaluation, SmartStart reported that most participants showed increased knowledge and awareness about climate change and its impact on cultures and

improved attitudes about climate change and how it affects communities around the world. Some participants had increased motivation to help others affected by climate change. Participants also recognized the authentic voices of those depicted in the film. Participants shared that they appreciated that the film was told through the perspective of indigenous cultures through their own words, which helped participants better understand the impact of climate change on indigenous communities. To improve the film, participants suggested changing the film’s title, incorporating scientific data on climate change, and expanding on the development of the daughter’s character.

**Formative Evaluation (completed July 2016):** SmartStart conducted a formative evaluation of a rough cut of the entire 80-minute film (retitled as *The Anthropologist*) from October 2015 to July 2016. Fifteen focus groups were conducted for this evaluation to assess participants’ level of interest, connection to characters, knowledge about climate change, and attitudes towards climate change. SmartStart found that participants had positive initial reactions to the film and commented that the film made them see the impacts of climate change more directly. Participants also expressed confusion as to whether the film’s focus was climate change, anthropology, or the relationship between the mother and daughter. To improve the film, participants suggested adjusting the final scene of the film to be more in line with the theme of climate change, cutting out some areas of the film, targeting the film for a fifth-grade audience or higher, and including a link to the film’s social media pages at the end of the film.

## Evaluation measures

Evaluators developed and utilized a retrospective pre-posttest survey for general audiences, college students, high school students, and educators to assess their knowledge of and attitudes toward climate change, motivation to help those affected by climate change, and perception of whether a voice was given to native people. Educators and students also received questions regarding students’ engagement with and enjoyment of the film and curriculum and educators received questions about ease of implementing the curriculum. Unless otherwise indicated, all items were rated on a five-point scale. A table of evaluation measures by group is shown in Figure 1.

	Knowledge of climate change	Attitudes toward climate change	Motivation to help and interest in subject	Voice to native people	Student engagement	Curriculum implementation
General Audience	X	X	X	X		X - if an educator
College Students	X	X	X	X	X	
High School Students	X	X	X	X	X	
Teachers	X	X	X	X	X	X

Figure 1. Evaluation measures used in this summative report by group surveyed

## Data collection methods

Evaluators recruited two types of audience participants:

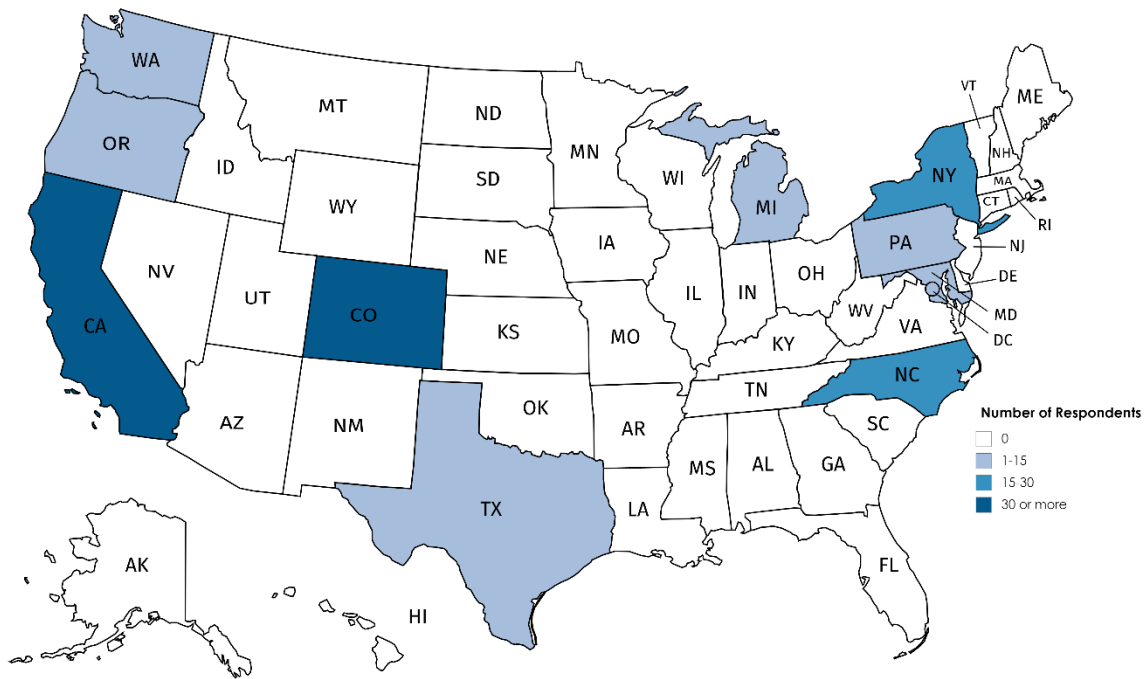
**General Audience:** Evaluators utilized their personal networks and social media campaigns to recruit general audiences to participate in the evaluation. Once audiences agreed to participate in the evaluation, they received a secure online link to the film, provided by Ironbound Films, Inc. through the online video platform Vimeo, and a general link to the survey through the online survey platform, Survey Gizmo. Additionally, SmartStart partnered with a Southern California progressive organization, that partially dedicates efforts to environmental issues, to host a general audience screening of the film. These general audience members received a paper survey and SmartStart entered the data into Excel. General audience respondents who completed the survey were invited to provide their email address to participate in a raffle for a \$50 Amazon gift card as an incentive to participate. A total of 91 general audience respondents watched the film and completed the retrospective pre-posttest survey after watching the film.

**Students / Teachers:** Evaluators utilized their personal networks to reach out to high school and college educators in science, environment, anthropology, and social science classrooms. Five high school classrooms from California and New York and three college classrooms from Colorado and North Carolina participated. Evaluators provided educators with the curriculum guide for the film, which included introduction activities, discussion questions, individual activities, and group activities. Educators could choose which curriculum to use and whether they wanted to show the entire film or select parts. After watching the film and completing the curriculum, students and teachers completed a survey through the online survey platform Survey Gizmo or paper surveys. A total of 183 college students and 116 high school students completed the survey. All eight educators completed the survey.

A total of 390 people responded to the surveys, including general audience members, college and high school students, and teachers. Figure 2 shows the location of survey respondents by state. Most general audience respondents were from California, while most student respondents were from Colorado. Further demographic information of the survey participants is listed in Appendix A.

Respondent demographic information





Created with mapchart.net ©

Figure 2. Map of respondents by state

## Data analysis

Evaluators analyzed results with SPSS and Excel using inferential and descriptive statistical tests. Evaluators averaged items to compute composite scores for knowledge of and attitudes toward climate change and motivation to help those affected by climate change. For a list of items included in each composite and respondents' ratings, see Appendix B. Unless otherwise indicated, evaluators utilized paired sample t-tests to determine statistical significance and in all cases the p-value was less than 0.05. Evaluators disaggregated data into three groups: general audience (which included teachers from the educational surveys), college students, and high school students. Open-ended questions were analyzed for themes. Themes were then grouped by the major goal areas for the project. Only those themes that are most relevant to each goal area are presented

## Knowledge of climate change

All groups surveyed showed a statistically significant (\*) increase in composite scores of knowledge of the effects of climate change after watching the film (Figure 3), suggesting that the film has been successful in this goal area. There were notable increases in all respondents' knowledge of how scientists work with and learn from indigenous cultures to better understand climate change. After watching the film, there were large increases in the percentage of general audience respondents who had moderate understanding or higher of how scientists are working with indigenous cultures to help them better understand and mitigate the effects of climate change (22% to 72% after watching the film) and how scientists can learn from indigenous communities (30% to 83%). There were also large increases in these knowledge areas among college student respondents (21% to 77% after watching the film and 24% to 83%, respectively) and high school student respondents (38% to 76% and 39% to 79%, respectively), though the increases for college students were slightly higher. This could be due to college student respondents being from anthropology classes, and they may have been more familiar with these concepts and therefore, able to recognize them in the film. Educators indicated that the film was effective in showing how scientists are responding to climate change. There were large increases for both high school student respondents and college student respondents in those that had at least a moderate understanding of how humans react to challenges in the environment, (45% to 83%) and (53% to 81%) respectively. Additionally, after watching the film almost all high school student respondents (94%) had at least a moderate understanding of how humans rely on their environments. Respondents' ratings to items are located in Appendix B.

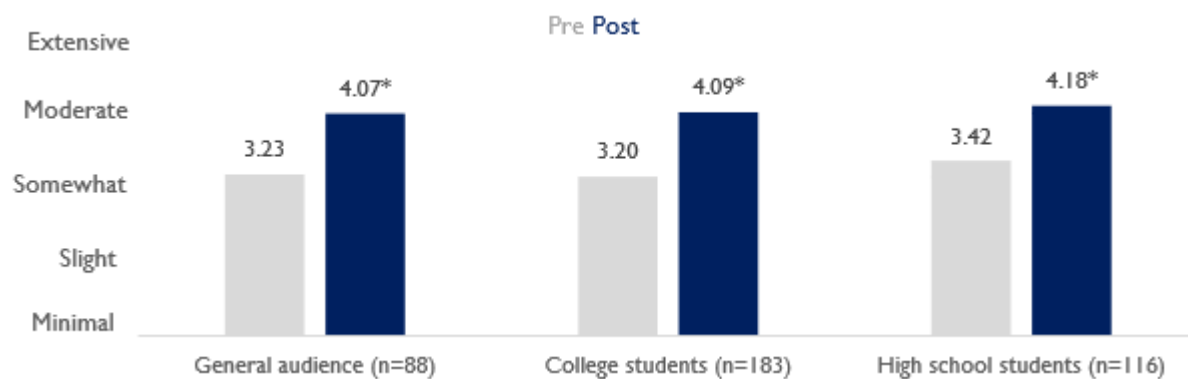


Figure 3. Progress towards increasing knowledge by respondent group

Survey respondents were asked to share their most important takeaway from the film. Evaluators coded these responses for themes, and themes related to the knowledge goal area (n=163) are shown in Figure 4. For all groups, the most important takeaway was gaining knowledge about how climate change impacted communities around the world. General audience and college student respondents also mentioned how climate change affects cultures, which was reflected in the comments made by the educators who shared that the film was very effective in describing how climate change affects communities and culture. Several high school student respondents (16 out of 110) described scenes from the movie that showed the impacts of climate change as important takeaways of the film, suggesting that vivid visual examples were beneficial to helping high school students understand the impact of climate change on indigenous communities. Many college student respondents (41 out of 165) shared what they enjoyed the most about watching the film was gaining new knowledge of other cultures and seeing the impact climate change had on these cultures and their communities. Nine high school student respondents shared that they most enjoyed learning about the impact of climate change around the world from the film.

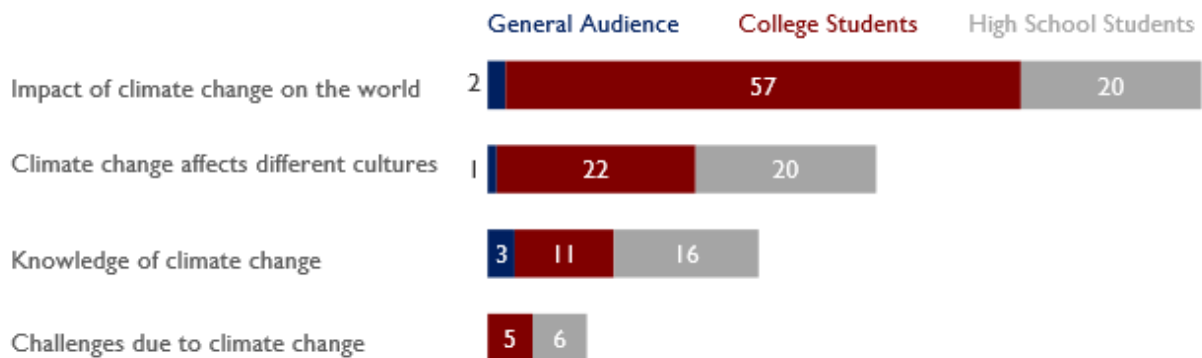


Figure 4. Number of respondents' who identified knowledge concepts as the most important takeaway of the film by group (n=163)

## Informing attitudes toward climate change

All groups surveyed had statistically significant (\*) increases in their beliefs about climate change after watching the film, showing progress was made toward informing attitudes toward climate change, as shown in Figure 5. After watching the film, all general audience respondents believed climate change is a real and concerning issue that is impacting people around the world and will impact future generations. Almost all (93%-96%) college and high school student respondents also indicated that they believed these statements after watching the film, a slight increase from before watching the film. This was reflected in the teachers' responses as well, where six out of eight educators surveyed said that the film was very effective in influencing students' attitudes toward climate change. Respondents' ratings to items are located in Appendix B.

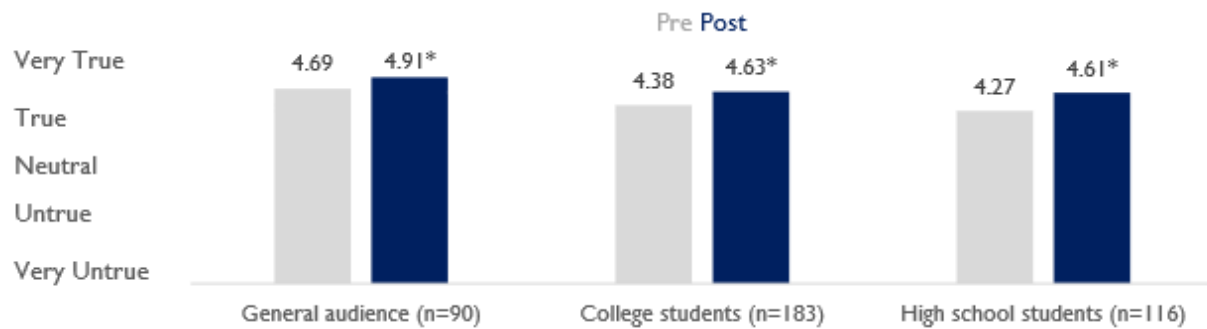


Figure 5. Progress toward informing attitudes by respondent group

Evaluators identified 71 comments where respondents shared a takeaway related to the attitudes goal area. The different theme areas are shown in Figure 6. The most important takeaway related to attitudes for all groups was that climate change is a real. Only the student groups mentioned the effect climate change would have on future generations and the need to care about the environment as an important takeaway of the film. This may be because they were demographically younger than the general audience respondents, and therefore more attuned to the impact that climate change could have on them in the future. Four general audience respondents mentioned that combatting climate change will require a change in people’s attitudes. High school student respondents shared that they enjoyed how the film showed real people and how they were affected by climate change as proof of its existence and urgency. They also suggested that the film should address why some people around the world do not believe that climate change is real or manmade, and one general audience member commented that the movie should address how to talk to those who do not believe climate change is real.

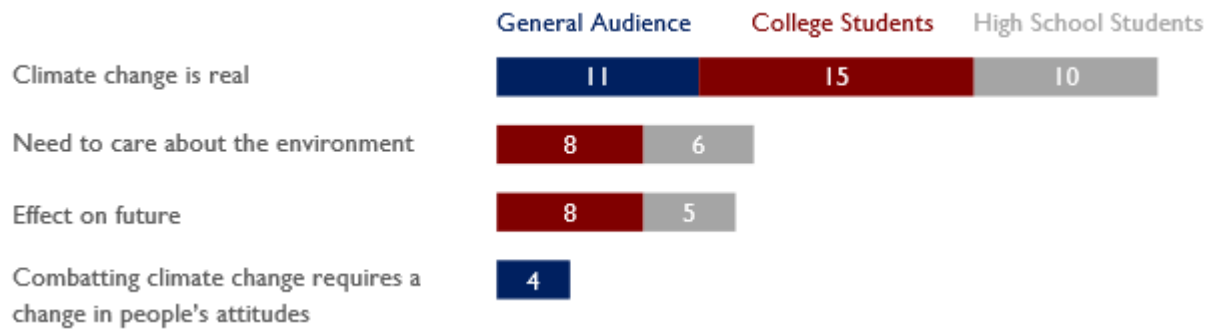


Figure 6. Number of respondents who identify attitude concepts as the most important takeaway of the film by group (n=71)

# Motivation to assist those affected by climate change

## Interest in environmental issues and climate change

All groups surveyed showed a statistically significant (\*) increase in their interest in environmental issues and climate change after watching the film (Figure 7). Most general audience respondents (80%) were very interested in learning about climate change after watching the film, compared to just half prior to watching it. Notably, nearly half of college student respondents (47%) were very interested in environmental issues after watching the movie. Two-thirds were also very interested in learning about climate change, compared to 43% before. Although high school student respondents' composite scores indicated that they were less interested in these topics than general audience and college student respondents, approximately three quarters of high school student respondents were at least somewhat interested in environmental issues after seeing the film. Respondents' ratings of items are located in Appendix B.

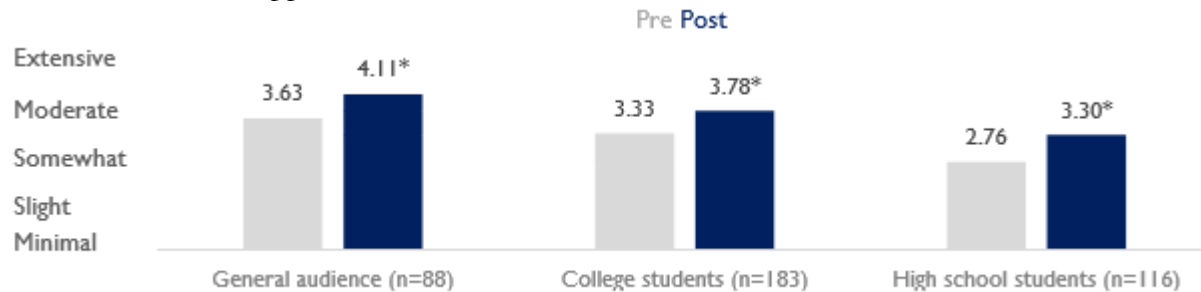


Figure 7. Progress toward increasing interest in environmental issues by group

## Motivation to become involved in assisting those affected by climate change

All groups had significantly (\*) higher motivation to act after watching the movie when compared to before watching (Figure 8). When disaggregated by group, general audience members were most interested in talking to their friends and family about helping those who may be affected by climate change after watching the film. College student respondents were most interested in volunteering for organizations that work with people affected by climate change after watching the film, while high school student respondents were most interested in helping those affected by climate change. This was also reflected in the educator survey, where five out of eight teacher respondents said that the film was very or extremely effective in motivating students to get involved in learning about social sciences and how people are affected by climate change. More college student respondents (53%) were motivated talk to friends and family about people affected by climate change than high school student respondents (41%) after watching the film, possibly suggesting that college students may feel more comfortable or prepared to talk about this concept compared to high school students.

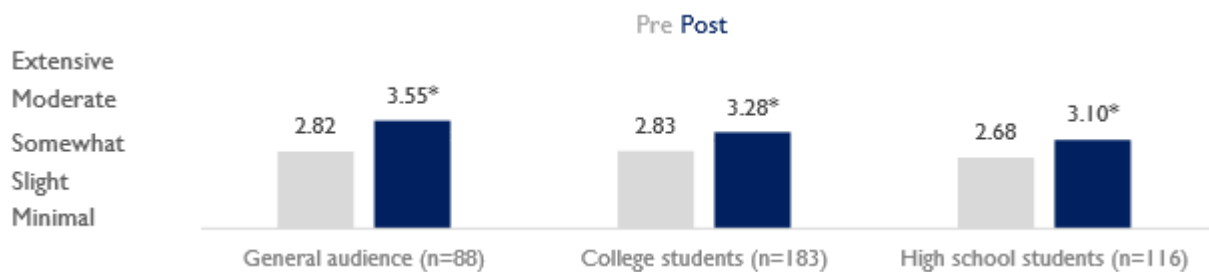


Figure 8. Progress towards increasing motivation to help by group

Evaluators identified 78 comments where respondents shared a takeaway related to the motivation goal area, and the different theme areas are shown in Figure 9. All groups noted that an important takeaway of the film was the awareness of taking actions now to mitigate the effects of climate change. It could be helpful for filmmakers to include ways to act in post-screening activities, such as providing a list of environmental non-profits that need donations and volunteers.

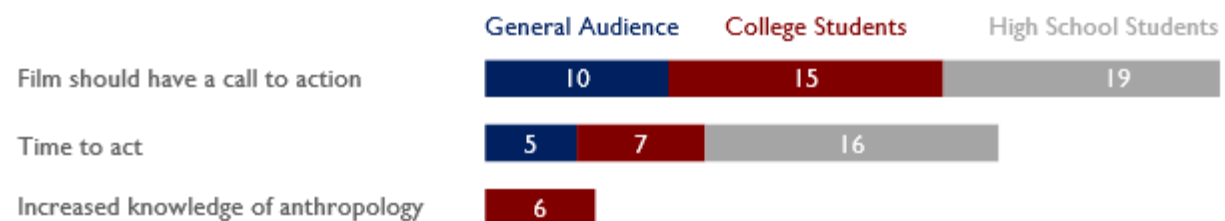


Figure 9. Number of respondents who identified motivation concepts as the most important takeaway of the film by group (n=78)

## Student interest in pursuing degrees related to assisting those affected by climate change

There were statistically significant (\*) increases in high school and college student respondents' interest in climate change and anthropology degrees after watching the film.<sup>1</sup> Results from the teacher survey echoed this finding, as six out of eight teacher respondents said that the film was very or extremely effective in motivating students to learn more about social sciences. More college student respondents were interested in degrees in anthropology or climate change before watching the movie compared to high school student respondents, but after seeing the film, an equal percentage of respondents in each group were at least somewhat interested in degrees in social sciences (Figure 10). College student respondents had smaller increases in degree interest, compared to high school student respondents, possibly because they had already decided their degree or career trajectory. Therefore, this film may be most successful in changing degree-related interest in middle and high school classrooms.

Students rated interest in pursuing a degree related to:

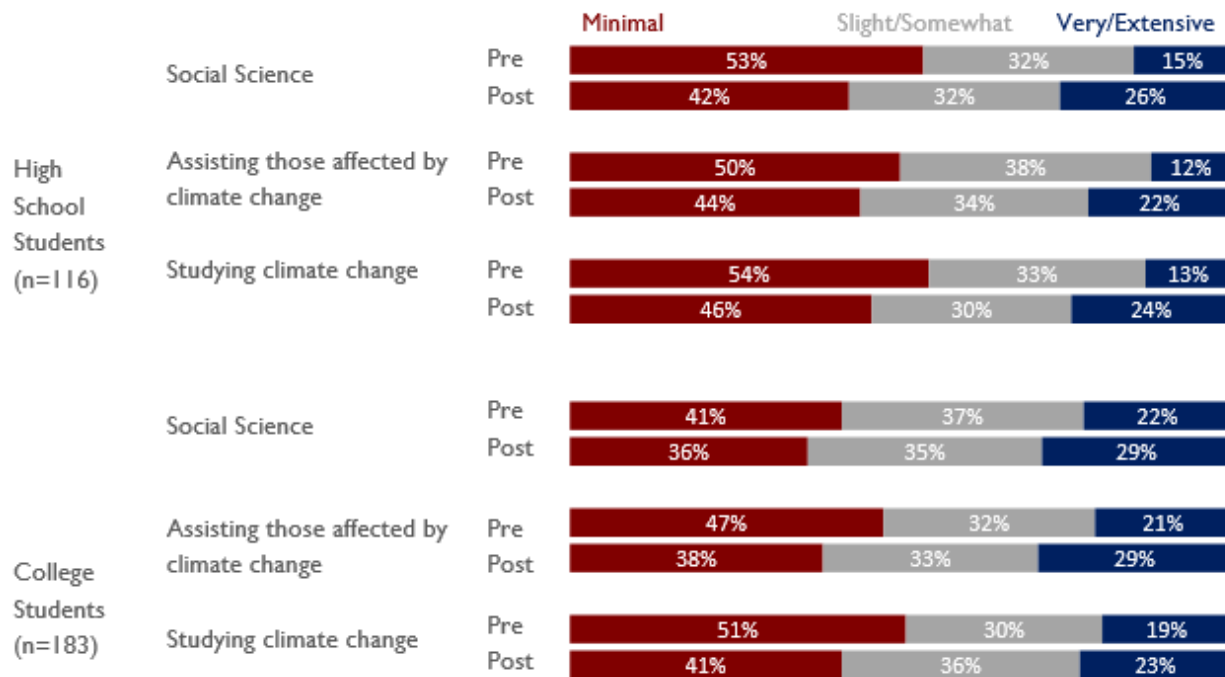


Figure 10. Student interest in pursuing degrees by group

<sup>1</sup> Evaluators utilized Wilcoxon Signed Ranks test.



## Giving a voice to native people

When asked what they enjoyed the most, all groups surveyed stated that they enjoyed learning about different cultures. Twenty-nine respondents overall shared that the most important takeaway of the film was gaining a new perspective on climate change by looking at it through an anthropological lens and seeing the “face” of climate change impact. In this regard, the project was successful in giving a voice to native people affected by climate change. Additionally, one college student respondent shared that his/her most important takeaway was “that climate change is not just a topic to be discussed about within politics. It is an actual problem that is affecting actual people,” demonstrating that this respondent is aware of the immediacy and importance of the issue. Additional respondent quotes are shown in Figure 11.

Most important takeaways:

### General Audience

- I think it was great that the film examined different places to show the variety of effects of climate change.
- The film does a wonderful job of weaving together info on the field of anthropology and climate/environmental change.

### College Students

- How serious this problem is, and although I personally may not feel the effects everyday of my life, it's challenging to see how much people are affected everyday of their lives and that their livelihood has been damaged by people who have no remorse or care. Just the sheer amount of info caused my urgency on this issue to rise.
- That climate change is happening at a rapid rate and we need to stop ignoring it because people in the affected areas are suffering the consequences. We need to face the facts and care for the people most effected.
- A big takeaway from this film, is understanding the deep relationship between humans and the earth
- The film informed the audience of a more real life setting of climate change and helped it seem like more of a reality

### High School Students

- The most important thing that I took away was that climate change is really affecting many people in the world, many don't believe it since they don't see or live in communities where we are affected.
- People really are affected by climate change, and we don't really hear about it.
- The most important takeaway from the film is that people understand the global "environment" through their own, local environment. For the people of Kiribati, climate change is a problem caused by the rest of the world and they have to suffer the very tangible consequences. For the people of the United States, people still have the luxury of debating anthropogenic climate change. Therefore, our homes shape our view of what the rest of the world is like, which can be for better or worse of attaining solutions for climate change.

Figure 11. Select respondent takeaways regarding giving a voice to native people by group

More general audience respondents perceived that the film had given a voice to the native people, followed by high school student respondents, and then college student respondents (Figure 12). Additionally, seven out of eight educators said the film was at least very effective in giving a voice to native populations. 10 high school student and three general audience respondents shared that they would have liked to have seen the film visit more countries and examine the impact of climate change in those locations, including Canada and the United States. Therefore, the curriculum or post-screening discussions could spend more time having people reflect on the influence of climate change on the lives of the people in other places in the United States, or other countries.

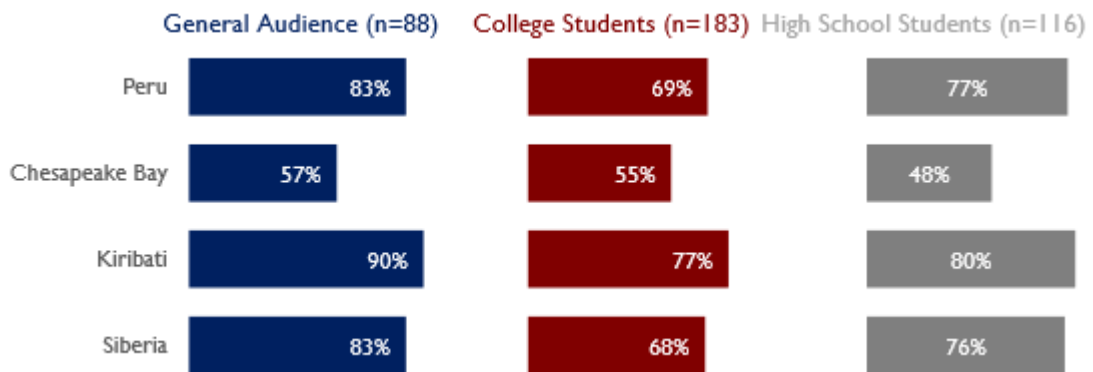


Figure 12. Percentage of respondents who indicated at least very well to the question “Rate how well you believe the film portrays the influence of climate change on local indigenous people’s lives in the following regions” on a scale of not at all, slightly, somewhat, very, and extremely well.

# Feedback on classroom implementation

## Ability to implement and feedback

Eleven general audience respondents were also teachers. These 11 teachers did not implement curriculum in their classroom but responded to questions about their likelihood of implementing the film and curriculum in their classrooms. About two-thirds of these teachers (seven out of 11) felt the film was appropriate for their classroom and five of those seven teachers were at least somewhat likely to implement it in their classroom. Of these five teachers, three were in elementary classrooms, one was in a high school classroom, and one was in a college classroom. The teachers stated that they would use the film to generate student interest in the subject matter and to learn about the environment. Those who would not implement the film, including those who thought it was not appropriate, said it was because the children were too young, they did not have a classroom to show the film, or it was not relevant to the class (medical school).

All teachers who implemented the curriculum (n=8) found it at least slightly easy to implement (Figure 13). Six out of the eight teacher respondents said their students were very engaged while watching the film and participating in activities. The most frequently implemented activity was the discussion questions. A list of the activities implemented by all teachers is shown in Appendix C. No teacher implemented the regional update activity, which asked students to research one of the areas of the film and find news on climate or culture change in the region. However, several students in each group asked for an update on the regions covered in the film or more current information. Encouraging teachers to implement the regional update activity would give students the opportunity to gain more current information. One college educator suggested linking the activities directly to the discussion questions, especially the footprint and mapping activities, as they would have been more effective if there was a group discussion following the individual activities.



Figure 13. Teacher respondents' perception of how easy the film and curriculum were to implement in their class subject, lesson plan, and daily schedule

## Audience enjoyment

### Film

Overall, students found the movie enjoyable (Figure 14). Comments on improving the film included asking for more information on countries highlighted. Respondents also asked to include more places affected by climate change including Canada, Antarctica, and more places in the U.S. These comments suggest that the film inspired interest in the respondents to learn more about climate change. Several respondents in each group suggested improvements to other aspects of the film, such as including different, “less cheesy” music, and adding subtitles for English learners.

Responses in all groups were divided on whether the mother/daughter relationship made the movie more enjoyable, perhaps indicating a personal preference. General audience respondents commented that the relationship enhanced the movie and would have liked filmmakers to follow up on Katie, echoing some student suggestions for a sequel.

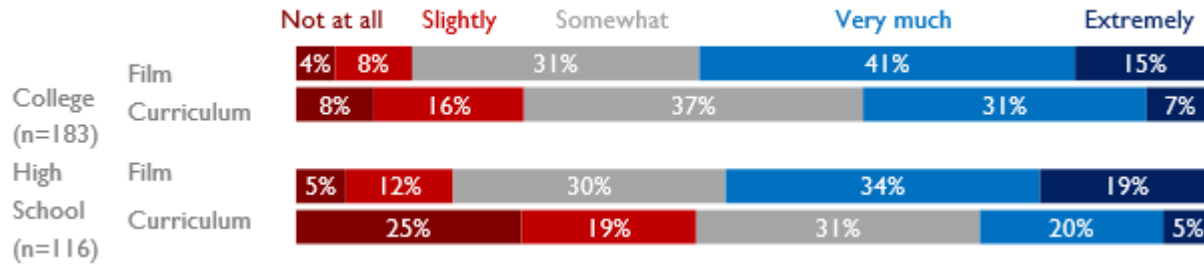


Figure 14. Film and curriculum enjoyment by student group

### Curriculum

More college student respondents than high school student respondents stated that they enjoyed the curriculum. A larger percentage of high school student respondents (25%) said they did not enjoy the activities, while just a few college students (8%) did not enjoy them (Figure 14). When asked if there was anything they did not enjoy, only six high school students mentioned they did not like the curriculum, specifically writing the essay. Four high school students and 13 college students suggested that the number of activities related to the film be increased, including field trips and brainstorming ways to make a positive impact on the environment. Alternatively, 19 college students mentioned that they enjoyed the curriculum, specifically the group activities and discussion, learning about their carbon footprint, and the examples from NASA in the World of Change activity. A few general audience members suggested having a presentation or discussion after the film. Making the discussion questions from the curriculum guide available to the public on the film’s social media pages would be helpful to those looking for more information or ways to get involved.

## Evaluation summary

Overall, the film achieved success in each of the four goal areas. Each group surveyed had significant increases in knowledge, attitude, and motivation to help those affected by climate change. Students benefited from seeing examples of the effects of climate change and shared that the examples helped to increase their knowledge of the topic. Students were also the only group that discussed how climate change would affect future generations. This may be because, as a younger demographic than the general audience, they are more aware of the effects this will have on the future. A common takeaway from the film by all respondents was the need to act to stop the effects of climate change. Additionally, each group indicated that the film gave a voice to native people who were affected by climate change and asked that the film include a call to action and ways to help those affected. Teachers who implemented the curriculum reported that their students were engaged while watching the film. Aside from the essay, student respondents also shared that they enjoyed both the film and activities in the curriculum. Finally, a higher percentage of high school students were more interested in degrees related to anthropology and climate change after watching the film. This may be because college students were already on a set degree path, including social science or climate change degrees, as they had higher interest in these degrees prior to watching the film.

## Evaluator recommendations

The following recommendations are for filmmakers to expand activities and resources for audience members to help increase their knowledge and assist those impacted by climate change.

### From motivation to action

- **Consider making resources available on the film's social media pages to engage audience members in combatting climate change. Resources could include: talking points for audience members to engage in conversations with their friends and family, a list of non-profits that need donations and volunteers, individual actions to take, and links to research and policies implemented to combat climate change and programs working with indigenous cultures affected by climate change.**
  - Many of the respondents' open-ended responses asked what they could do to help either the communities they saw in the film, or things they could do at home to mitigate the effects of climate change. Given the large increase in motivation to help after seeing the film across all groups, it is important to capitalize on this motivation soon after the screening.
  - General audience members and college students showed an interest in having conversations with friends and family about climate change after watching the movie. Making talking points about climate change available on the film's social media pages would be helpful in facilitating these discussions and increasing public knowledge about climate change.
  - General audience members and students commented that they would like to hear more about other locations closer to the United States. Including resources on the film's social

media pages related to these areas could help audience members better understand the voice of those affected by climate change closer to home.

## Expanding activities and implementation

- **Consider adding a list of post-screening discussion questions, such as the ones used in the curriculum guide, to the film’s social media pages and encourage film screenings to include a post-film debrief and/or panel about topics covered in the film to improve viewers’ knowledge about the topic and help motivate them to become involved in assisting those impacted by climate change.**
  - All groups had statistically significant increases in their knowledge about climate change and the impact it is having on indigenous cultures as well as their motivation to become involved. General audience respondents shared that it would be helpful to have a post-film debrief as part of the screening. Notably, seven of the eight teacher respondents utilized discussion questions and one teacher respondent shared that it would be helpful to tie discussion questions to the classroom activities, indicating the usefulness of discussions in the curriculum guide. Discussion questions from the student curriculum could be made available on the film’s social media pages for general audience members to facilitate a group discussion or panel of local advocates and experts. This might be helpful for viewers to relate back to their home environment and ask questions that could improve their knowledge, beliefs, and motivations related to climate change.
  - Group discussions have proven to be effective activities for learners to express emotions that arise when discussing controversial topics.<sup>2</sup> Giving space for audience members to express emotions on climate change, such as discussion questions and writing prompts that use emotion words and language, help make sense of feelings that arise when discussing an emotionally charged topic. Additionally, research has shown that student engagement with climate change is related to knowledge gains and positive opinions about climate change.<sup>3</sup> While most teachers implemented the discussion questions about climate change, it may be beneficial to add questions that ask about viewers’ emotional response to the film’s content.

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<sup>2</sup> Hufnagel, E. (2017). Attending to Emotional Expressions About Climate Change. In Shepardson, D., Roychoudhury, A., & Hirsch, A. *Teaching and learning about climate change* (pp. 43-52). New York, NY: Taylor & Francis.

<sup>3</sup> Holthuis, N., Lotan, R., Saltzman, J., Mastrandrea, M., & Wild, A. (2014). Supporting and Understanding Students' Epistemological Discourse About Climate Change. *Journal of Geoscience Education*, 62(3), 374-387. doi: 10.5408/13-036.1

## Appendix A. Respondent demographic information

Participant Demographics	General Audience (n=91)		College Students (n=183)		High School Students (n=116)		Total (n=390)	
	#	%	#	%	#	%	#	%
<b>Gender</b>								
Male	30		55	30%	54	46%	139	36%
Female	58		108	59%	53	46%	219	56%
I choose to identify differently	-		1	0.5%	2	2%	3	1%
Do not wish to specify/missing	3		19	10%	7	6%	29	7%
<b>Age</b>								
Under 17	-		-	-	72	62%	72	19%
18-29	21		160	87%	34	29%	215	55%
30-39	16		4	2%	-	-	20	5%
40-49	12		1	0.5%	-	-	13	3%
50-59	11		-	-	-	-	11	3%
60 +	27		-	-	2	2%	29	7%
Do not wish to specify/missing	4		18	10%	8	7%	30	8%
<b>Race/Ethnicity</b>								
African-American	1	1%	8	4%	3	2%	12	3%
American Indian or Alaskan Native	-	-	-	-	1	1%	1	0%
Asian	19	21%	9	5%	28	24%	56	14%
Caucasian or White (non- Hispanic)	59	65%	105	57%	31	27%	195	50%
Hispanic or Latino	5	6%	24	13%	25	22%	54	14%
Native Hawaiian or Pacific Islander	-	-	2	1%	3	2%	5	1%
Mixed	2	2%	12	7%	11	10%	25	7%
Other	2	2%	1	0.5%	2	2%	5	1%
Do not wish to specify/missing	3	3%	22	12%	12	10%	37	10%
<b>Area<sup>a</sup></b>								
Urban	37	41%	-	-	-	-	-	-
Suburban	38	42%	-	-	-	-	-	-
Rural	2	2%	-	-	-	-	-	-
Do not wish to specify/missing	14	15%	-	-	-	-	-	-

a. Only general audience members received questions on their area.

Number of Participants by State	General Audience (n=91)		Students (College & High School (n=299))		Total (n=390)	
	#	%	#	%	#	%
California	72	79%	73	24%	145	37%
Colorado	2	2%	186	62%	188	48%
District of Colombia	1	1%	-	-	1	<1%
Maryland	1	1%	-	-	1	<1%
Michigan	2	2%	-	-	2	1%
New York	3	3%	23	8%	26	7%
North Carolina	2	2%	17	6%	19	5%
Oregon	1	1%	-	-	1	<1%
Pennsylvania	1	1%	-	-	1	<1%
Texas	1	1%	-	-	1	<1%
Washington	1	1%	-	-	1	<1%
Do not wish to specify/missing	4	4%	-	-	4	1%



## Appendix B. Survey Results

### Percent of respondents rating at least “4” on a scale of 1 - 5

Question	General Audience (n=91)		College Students (n=183)		High School Students (n=116)	
	Before	After	Before	After	Before	After
<b>Knowledge (% rating at least moderate understanding of concept)</b>						
How climate change affects communities and cultures.	53%	86%	50%	85%	66%	91%
How scientists are responding to climate change.	47%	69%	41%	69%	41%	76%
How research on climate change is ongoing.	52%	74%	47%	79%	46%	80%
How scientists are working with indigenous cultures to help them better understand and mitigate the effects of climate change.	22%	72%	21%	77%	38%	76%
How humans rely on their environments.	66%	85%	73%	86%	78%	94%
How humans react to challenges from their environment.	35%	78%	45%	83%	53%	81%
How indigenous communities can teach scientists about climate change.	30%	83%	24%	83%	39%	79%
<b>Beliefs (% rating at least true on belief concept)</b>						
Climate change is an issue that is concerning.	98%	100%	84%	93%	77%	91%
Climate change is real.	98%	100%	88%	93%	85%	96%
Climate change is impacting people around the world.	97%	100%	85%	94%	95%	95%
Climate change will impact future generations.	98%	100%	88%	95%	85%	96%
<b>Motivation (% rating at least very interested in ways to help)</b>						
Interest in learning about climate change.	54%	80%	43%	61%	28%	41%
Interest in global environmental issues.	57%	79%	47%	62%	37%	50%
Interest in local environmental issues.	59%	81%	47%	65%	31%	47%
Helping those who are affected by climate change.	32%	60%	38%	54%	30%	54%
Volunteering at organizations that work with people	17%	47%	31%	49%	27%	43%

affected by climate change.

Gaining skills to assist those who are affected by climate change.	26%	51%	30%	48%	28%	47%
Talking to friend and family about people affected by climate change.	39%	76%	33%	53%	25%	41%
Participating in politics and government to advocate for those affected by climate change.	31%	57%	-	-	-	-
<b>Degree (% of students at least very interested in pursuing a degree in a related field)</b>						
Pursuing a degree related to studying climate change.	-	-	19%	23%	13%	24%
Pursuing a degree related to assisting those affected by climate change.	-	-	21%	29%	12%	22%
Pursuing a degree related to social science, like anthropology.	-	-	22%	29%	15%	26%

# Appendix C. Activities implemented in classroom

Number of classrooms implementing each curriculum activity (n=8)

