

Summative Evaluation of
Island of the Sharks
An IMAX[®] Dome Film and Associated Educational Resources

Report for
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**Summative Evaluation of
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Executive Summary

November 22, 1999

INTRODUCTION

The summative evaluation reported here focused on a large-format film, titled *Island of the Sharks*, and associated educational resources for use in informal and formal settings. Film production is a joint venture of NOVA/WGBH Boston and Howard Hall Productions. Educational outreach and materials were produced by New England Aquarium, the Association of Science and Technology Center *YouthALIVE!* program, and the WGBH Educational Foundation. The film is distributed by Imax Limited. Major funding for *Island of the Sharks* is provided by the National Science Foundation. Research methods gave consideration to the projected goals of this project, as specified in the body of the report.

METHODS

Research activities for the summative evaluation of *The Greatest Places* were divided into the following two evaluation components:

Adult Audience Study

A summative evaluation in Jersey City, New Jersey at the Liberty Science Center's IMAX® Dome Theater was carried out with adult (18+ years) viewers. The purposes for this evaluation component are to discern affective and cognitive effects for a volunteer audience with diverse demographics and a variety of reasons for attending the film.

A quasi-experimental separate-sample pretest/posttest design was used. Over a period of two weekdays and one weekend, during each showing of the film, researchers approached a randomly chosen sample of adults, stratified by gender. A random number of adults approached before viewing the show completed the previewing questionnaire that included questions on the classification variables described above and questions on the film content. A random number of adults after the viewing responded to the same questions contained in the previewing questionnaire (classification and content) as well as additional questions about the appeal and comprehensibility of the film.

School Audience Study

A summative evaluation involving three classes from each of two middle schools (located in Pittstown, NJ and Holbrook, NY) was carried out with seventh grade students. The purposes for this evaluation component are to discern for a school audience the affective and cognitive effects of the film alone and the film in conjunction with seven reading activities from the project's Activity Guide. Toward this end, the school audience study focused on the following major outcomes:

- To what extent did *Island of the Sharks* appeal to middle school viewers?
- To what extent did the film achieve its intended viewing goals? For example, did students acquire knowledge about science, especially with regards to local underwater ecosystems and the ocean environment?

- Did the implementation of school-based reading activities following film viewing affect learning outcomes?

A quasi-experimental pretest/posttest nonequivalent comparison group design was used with middle school students to evaluate the film and ancillary schoolroom activities. Intact school classes were assigned to one of two treatments: Viewing the film only (FILM) and performing related reading activities after viewing the film (FILM + ACTIVITY). The two groups constituted naturally assembled collectives and were as similar as availability permitted.

All students in the sample completed a pre-viewing questionnaire. Two weeks later, all students visited the Liberty Science Center and viewed *Island of the Sharks* in the IMAX® Dome theater. The day after viewing the film, the teachers of two classes (1 from each school) asked their students to perform seven reading activities contained in *Island of the Sharks Activity Guide* to examine their impact on viewer learning outcomes. The following day, all students completed a posttest and opinion survey (In addition to content questions, the posttest included measures to compare with the pre-viewing questionnaire results and open-ended questions which allowed for exploration of unintended effects.). In this way, a comparison was performed contrasting treatments of viewing the film alone and viewing the film prior to participation in pertinent activities. Administration of the pretest and viewing of the film were separated in time by two weeks so that pre-testing effects would be minimal.

SUMMARY OF RESULTS

The following is a summary of findings obtained from both the adult and school audience studies:

Adult Audience Study

- *To what extent did the film appeal to adult viewers?*

Approximately 81% of the sample rated *Island of the Sharks* as being “Very Interesting” or “Moderately Interesting.” Additionally, about 61% of the sample audience reported that *Island of the Sharks* met or exceeded their expectations. Slightly more than 60% of the respondents focused on the film’s cinematography as the aspect they liked best about *Island of the Sharks*, particularly the scenes that showed sharks hunting and eating their prey. It is noteworthy that the most appealing aspect of the film directly reflects the pre-viewing audience’s most frequent association with sharks – sharks as predators. Another 15% of the sample identified the educational value of the film content as their most liked aspect of *Island of the Sharks*. In fact, over half (56.1%) of the post-viewing sample was positively surprised by the extensive amount of factual information presented in the film.

Only 15% of the 127 member post-viewing sample commented that the film had not met their expectations. When asked to specify why the film fell short of meeting their expectations, about two thirds of these responses related to viewers’ expectation that the film would focus exclusively on sharks. This misconception was also the most frequently reported disliked feature of the film, as well. These results are not surprising, given that four-fifths of the pre-viewing sample reported

expecting a film about sharks. Related to these findings, a significantly higher percentage of the pre-viewing audience felt that *Island of the Sharks* was a good title, compared to the post-viewing sample. Of those in the post-viewing sample who were displeased with the title, half felt that the title incorrectly implies that they would be viewing a film about sharks.

- *What were the learning outcomes associated with film viewing?*

Viewing the film significantly increased viewers' knowledge about the content of *Island of the Sharks*. The pre-viewing mean test score was 8.39 out of 11 points compared with the significantly higher post-viewing mean score of 9.94. These scores did not show interactions with any of the demographic or background variables measured.

With regards to specific content areas in which knowledge increased, statistically significant improvement between the pre- and post-viewing respondents was evidenced for eight (72.7%) of the eleven items. The three items for which this improvement was not demonstrated were: (1) Fish are affected by the Earth's magnetism; (2) An island can form from a volcano; and (3) The ocean floor is as flat as beach sand. When interpreting these results, it is important to note that for each of the two latter items, pre-viewing knowledge was extremely high. Because the pretest scores for these two items were so high, the probability that any post-test improvement for these items would attain statistical significance is unlikely. Hence, there was only marginal room for improvement, and it is not surprising that the score differential from pre- to posttest did not achieve statistical significance.

- *What did viewers perceive that they learned from the film, if anything?*

When asked what they had learned from the film, most viewers' comments and test results focused on an increase in their knowledge about sharks and other aquatic creatures living in the ocean waters surrounding Cocos Island, the effects of El Niño on the ecosystem, and general information about Cocos Island, such as its existence and location. These results are interesting in light of the fact that in spite of reporting that they expected the film to focus more on sharks (and feeling disappointment that it did not), knowledge of sharks was the most frequently reported idea or fact learned from the film

In conclusion, *Island of the Sharks* made a positive impact on sample adult audience member's knowledge of topics presented in the film and was reportedly moderately or very interesting to 81% of the adult sample.

School Audience Study

- *To what extent did *Island of the Sharks* appeal to student viewers?*

Of the 127 student viewers, over two-thirds of the sample rated the film as either "Very Interesting" or "Moderately Interesting" (67.7%). In contrast, only 4.7% thought the film was "Very Boring" or "Moderately Boring." On average, responses to *Island of the Sharks* were very positive, as indicated by students' rating of the film's appeal as 4.0 on a five-point Likert scale ranging from 1 (very boring) to 5 (very interesting).

Students were most impressed with the scenes that included sharks and other sea life, particularly when predators hunted their prey. They also appreciated the cinematography in *Island of the Sharks*. While some students appreciated the educational content of the film and expressed a desire for more information about numerous topics, others felt that the title, “Island of the Sharks” was misleading – they expected more information about sharks and less content related to other types of sea life. Students generally reported interest in film topics, although some voiced a feeling that some scenes were repetitive (e.g., cooperative bait-ball feeding and swimming hammerheads).

The features most liked about the film were the scenes containing sharks and other sea creatures, the cinematography, and the variety of sea life presented in *Island of the Sharks*. For some students, the numerous scenes in which fish were being consumed by their predators was disconcerting. Some students felt that given the film’s title, the attention given to sea life other than sharks was incongruent with their expectation that the film would have a shark-related focus. After the fish left the waters surrounding Cocos Island, some students lost interest in the film. This relates directly to the comments made by some viewers that the film did not contain enough action.

What surprised students most was the educational content of *Island of the Sharks*, particularly relating to information learned about sharks and other fish. Students were also surprised by the reportedly high quality of the film and the IMAX theatre. When asked what most disappointed them, about one-third of students were disappointed with the content of the film. Although they found the content appealing, this feedback related to the ongoing theme of unmet expectations. Students expected and wanted to see more about sharks in this film. Additionally, some students were dismayed by the extent of presented in the film.

- *What were the learning outcomes associated with viewing the film?*

Viewing the film significantly increased science knowledge, as measured by an 11-point content test. Viewers of *Island of the Sharks* came away knowing more about Cocos Island, the effect of the earth’s magnetism on fish, sea animals’ use of electric fields to find food, the impact of ocean currents on sea life, Barber fish, and the formation of islands.

Of the 11 true-false questions, students evidence significant improvement on six items, after viewing *Island of the Sharks*. Two items that did not reach statistical significance contained information about fish working together to capture and eat other fish and about algae as a food source for sea life. When interpreting these results, it is important to note that for each of these items, pre-viewing knowledge of these content areas was extremely high. Hence, there was only marginal room for improvement, and it is not surprising that the score differential from pre- to post-test did not achieve statistical significance.

- *Did the implementation of school-based activities following film viewing affect outcomes?*

Treatment group (i.e., students who viewed the film and performed reading activities vs. students who only viewed the film) was not a significant factor in the appeal ratings nor a significant predictor of posttest scores. Performing reading activities associated with film content also did not differentially affect students' reported interest in film-related topics after viewing the film. Thus, exploration of film-related concepts via seven student-centered activities prior to seeing the film did not impact knowledge or interests significantly beyond what the students learned from the film alone. When asked whether they connected the film to anything they had previously known or experienced none of the students mentioned the class experience with *the Island of the Sharks Activity Guide*.

Summative Evaluation of Island of the Sharks

An IMAX® Dome Film and Associated Educational Resources

November 22, 1999

INTRODUCTION

The summative evaluation reported here focused on a large-format film, titled *Island of the Sharks*, and on an associated activity guide designed for widespread distribution. *Island of the Sharks* is a production of NOVA/WGBH Boston and Howard Hall Productions. Educational outreach and materials were produced by New England Aquarium, the Association of Science and Technology Center *YouthALIVE!* program, and the WGBH Educational Foundation. The film is distributed by Imax Limited. Major funding for *Island of the Sharks* is provided by the National Science Foundation.

The general goals for the research were to determine the appeal of specific film segments and the film as a whole; to measure achievement of the film's viewing goals; to document the impact on post-viewing actions of adult viewers; to assess the value-added effect of school-based activities implemented prior to students viewing the film; and to evaluate the film's motivational impact. Toward this end, research methods focused on the following major outcomes:

- To what extent did the film appeal to adult viewers?
- To what extent did the film achieve its intended viewing goals?
- What did viewers perceive that they learned from the film, if anything?
- Did viewing the film influence the audience beyond the museum visit?
- Did participation in school-based activities add value to the outcomes for students?

The Film

Generally, the 40-minute film and supporting informal and formal educational resources produced by the project are designed to provide avenues for an integrated discovery into the fundamental concepts within the life and earth sciences, and within physics. This is intended to be accomplished through an investigation of the dynamic ecosystem of the Cocos Island waters, the nature and evolution of sharks as a species, and the structure and function of sharks themselves

The following four major themes are developed in the film, as specified in the project description:

- how physical oceanographic processes and geologic features influence the lives of marine organisms;
- mechanisms through which behavioral ecology ties organisms into a community;
- the significance of biodiversity;
- conservation issues regarding local underwater ecosystems, such as the one at Cocos Island, and the global oceanic environment.

Educational Outreach

In addition to the film, summative evaluation efforts focused on an educational resource, titled *Island of the Sharks Activity Guide*. The 36-page guide contains information relating to science themes in the film and a variety of hands-on science activities, with an emphasis on multidisciplinary investigations, available as pre- and post-film resources, but not dependent on viewing the film. The guide was developed by the project for learners in both informal and formal settings.

In accordance with the project goals specified above (which were selected to support multidisciplinary national standards in science), evaluation goals, research sites, and target audiences were selected as specified in the following section of this evaluation report.

GENERAL EVALUATION DESIGN

Research activities for the summative evaluation of *Island of the Sharks* were divided into the following two evaluation components:

Adult Audience Study

A summative evaluation in Jersey City, New Jersey at the Liberty Science Center's IMAX® Dome Theater was carried out with adult (18+ years) viewers. The purposes for this evaluation component are to discern affective and cognitive effects for a volunteer audience with diverse demographics and a variety of reasons for attending the film.

A quasi-experimental separate-sample pretest/posttest design was used. Over a period of two weekdays and one weekend, during each showing of the film, researchers approached a randomly chosen sample of adults, stratified by gender. A random number of adults approached before viewing the show completed the previewing questionnaire that included questions on the classification variables described above and questions on the film content. A random number of adults after the viewing responded to the same questions contained in the previewing questionnaire (classification and content) as well as additional questions about the appeal and comprehensibility of the film.

School Audience Study

A summative evaluation involving three classes from each of two middle schools (located in Pittstown, NJ and Holbrook, NY) was carried out with seventh grade students. The purposes for this evaluation component are to discern for a school audience the affective and cognitive effects of the film alone and the film in conjunction with seven reading activities from the project's Activity Guide. Toward this end, the school audience study focused on the following major outcomes:

- To what extent did *Island of the Sharks* appeal to middle school viewers?
- To what extent did the film achieve its intended viewing goals? For example, did students acquire knowledge about science, especially with regards to local underwater ecosystems and the ocean environment?
- Did the implementation of school-based reading activities following film viewing affect learning outcomes?

A quasi-experimental pretest/posttest nonequivalent comparison group design was used with middle school students to evaluate the film and ancillary schoolroom activities. Intact school classes were assigned to one of two treatments: Viewing the film only (FILM) and doing related reading activities after viewing the film (FILM + ACTIVITY). The two groups constituted naturally assembled collectives and were as similar as availability permitted.

All students in the sample completed a pre-viewing questionnaire. Two weeks later, all students visited the Liberty Science Center and viewed *Island of the Sharks* in the IMAX® Dome theater. The day after viewing the film, the teachers of two classes (1 from each school) asked their students to perform seven reading activities contained in *Island of the Sharks Activity Guide* to examine their impact on viewer learning outcomes. The following day, all students completed a posttest and opinion survey (In addition to content questions, the posttest included measures to compare with the pre-viewing questionnaire results and open-ended questions which allowed for exploration of unintended effects.). In this way, a comparison was performed contrasting treatments of viewing the film alone and viewing the film prior to participation in pertinent activities. Administration of the pretest and viewing of the film were separated in time by two weeks so that pre-testing effects would be minimal.

METHODS & DEMOGRAPHICS

Adult Audience Study

The population from which the sample was randomly chosen was comprised of audience members who stood in the waiting line to view *Island of the Sharks* during a period of four days in October, 1999. All of the questionnaire respondents were 18 years and older. Single adults accompanied by children below the age of five and adults who were part of a group of five or more were excluded.

Of the 256 adults who were randomly selected to participate in the evaluation, 7 people declined responding to the pre-viewing questionnaire because of prior appointments, ongoing conversations, etc. Thus, the total number of usable questionnaires (N=249) included 122 pre-viewing questionnaires and 127 post-viewing questionnaires.

The researcher recruited over a period of two non-holiday weekdays and one weekend, eliciting responses to questionnaires during 16 shows. Information from demographic and background questions was used to determine whether the randomization worked well in equalizing the pre and post-viewing groups and whether the two independent samples should be looked at as having come from the same population. Chi-square analyses revealed that the Viewing Groups (pre and post) did not differ significantly with respect to the classifications of gender, age group, education, and the number of IMAX® films ever seen.

For the sample as a whole, the classification variables of gender (49.8% female, 50.2% male), age group, education, occupation, and number of IMAX® films seen were fairly equally distributed across the categories. The distribution of the sample on these classification variables is presented in Table 1, on the following page.

Table 1. Demographic and Background Variables

Variable	N	Categories	Percent
Gender	249	Female	49.8%
		Male	50.2%
Age Group	246	18-27	32.9%
		28-37	29.3%
		38-47	25.7%
		48+	12.2%
Education	247	Some high school	5.3%
		High school	32.8%
		College graduate	32.4%
		Graduate or professional degree	27.5%
		Other	2.0%
Occupation*	122	Related to science	49.0%
		Not related to science	51.0%
Number of IMAX® films ever seen	247	This is my first film.	28.7%
		One other film.	20.2%
		2-3 other films.	24.7%
		Four or more films.	26.3%

* This item appeared on the pre-viewing survey only.

Prior to viewing *Island of the Sharks*, respondents were asked to rate their interest level in learning about sea life around a Pacific Ocean island. Of the one hundred twenty-two responses, 84.4% were either “very interested” or “moderately interested.” About 13.9% of responding viewers reported being “a little interested,” and only two respondents (1.6%) were “not interested at all.” See Table 2.

Table 2. Interest in Learning about Sea Life by Pre-Viewing Sample

Variable	N	Categories	Percent
Interest	122	Very Interested	47.5%
		Moderately Interested	36.9%
		A little interested	13.9%
		Not interested at all	1.6%

Participants in the pre-viewing sample did not report high levels of knowledge about sea life around a Pacific Ocean island, prior to viewing the film. Of the 122 members of the pre-viewing sample, 7.4% felt they knew “a lot,” and about one-third of these viewers (31.1%) reported knowing “a moderate amount.” Over half of the pre-viewing sample (54.1%) endorsed knowing “a little” on the questionnaire, and about 7.4% reported having no knowledge in this area. Note that the percentages of viewers who reported knowing “a lot” and “nothing” (the two most extreme responses) were identical, and represented only 15% of the total pre-viewing sample. See Table 3.

Table 3. Self-Report of Knowledge About Sea Life by Pre-Viewing Sample

Variable	N	Categories	Percent
Knowledge	122	I know a lot	7.4%
		I know a moderate amount	31.1%
		I know a little	54.1%
		I know nothing	7.4%

School Audience Study

Two middle schools, who were registered to view *Island of the Sharks* in October, 1999 were contacted about participating in the study. As indicated in Table 4, the first middle school provided 65 seventh-grade students. The second middle school provided 62 seventh-grade students.

Table 4. Demographics of Participating Schools/Classes

City	State	Grade	N	Date Viewed
Pittstown	New Jersey	7	65	Oct. 8, 1999
Holbrook	New York	7	62	Oct. 26, 1999

Paired pre- and post-viewing questionnaires were obtained from a total of 127 middle school students. There were 83 students in the FILM treatment (i.e., viewed the film only) and 44 students in the FILM + ACTIVITY treatment (i.e., performed *Island of the Sharks* reading activities in school one day after viewing the film). An approximately equal percentage of females (50.4%) and males (49.6%) participated in the school audience study.

Information from demographic and background questions was used to determine whether the two treatment groups were equivalent samples. Chi-square analyses revealed that the treatment groups (i.e., FILM, FILM + ACTIVITY) did not differ significantly with respect to the classifications of gender, ethnicity, reported interest in learning about the ocean, and reported knowledge about the world under the ocean prior to viewing the film. The distribution of the sample on these classification variables is presented in Table 5.

Table 5. Demographic & Background Variables of Student Sample

Variable	N	Categories	Percent
Gender	127	Female	50.4%
		Male	49.6%
Ethnicity	127	White	60.3%
		Asian American	12.6%
		Black / African American	20.5%
		Latino / Hispanic	6.3%
Interest in Learning about the ocean	127	Very interested	29.9%
		Moderately interested	47.2%
		A little interested	29.9%
		Not at all interested	0.0%
Knowledge about the world under the ocean	127	I know a lot	3.2%
		I know a moderate amount	40.2%
		I know a little	56.7%
		I know nothing	0.0%

In addition to the interest and knowledge variables specified in Table 5, students were asked, both before and after viewing the film, to rate on a 5-point Likert scale ranging from 1 (not interested at all) to 5 (very interested) how interested they were in learning about each of the topics listed in Table 6. On average, prior to viewing the film, students were moderately interested in all three activities. Note that higher means are associated with more interest in learning about the specified topics, and lower means are associated with less interest. Note also that the topics are arranged in descending order with the most valued topic placed at the top of the table (i.e. Learn about how sea animals survive and learn about sharks, with means of 3.6 and 3.5, respectively). Comparison between pre- and post-viewing interests in learning about these film related topics is discussed later in this report.

Table 6. Interest in Topics **Prior** to Viewing *Island of the Sharks**

	N	Mean	1	2	3	4	5
			<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
Learn about how sea animals survive	127	3.6	5 (4%)	21 (17%)	31 (24%)	39 (31%)	31 (24%)
Learn about sharks	127	3.5	9 (7%)	18 (14%)	39 (31%)	23 (32%)	32 (25%)
Learn about mountains under the ocean	127	3.1	13 (10%)	35 (28%)	31 (24%)	27 (21%)	21 (17%)

*Totals may not equal exactly 100.0% due to rounding.

Students were also asked to indicate their parent’s/ guardian’s type of employment. The distribution of this variable is presented in Table 7.

Table 7. Employment of Parents/ Guardians

<i>Occupation</i>	Pittstown, NJ		Holbrook, NY		Total
	<i>Father</i>	<i>Mother</i>	<i>Father</i>	<i>Mother</i>	
Professional (business)	7	4	5	2	18
Professional (science)	6	8	4	8	26
Educator	1	5	0	5	11
Administrator	5	2	7	3	17
Manager	4	6	2	2	14
Technician	9	1	8	0	18
Clerical	0	8	3	12	23
Homemaker	0	7	0	9	16
Worker (skilled)	14	4	16	4	38
Worker (semiskilled)	11	8	7	5	31
Worker (unskilled)	5	5	9	7	26
<i>No response</i>	3	7	1	5	16

Procedure

Six teachers (three from each of the participating schools) were provided with a set of written instructions for administering questionnaires. Two weeks prior to viewing *Island of the Sharks*, each of the teachers administered the pre-viewing questionnaire. All 127 students in the sample completed the questionnaire as part of their regular classroom activity. Teachers did not mention that the questionnaire was associated with *Island of the Sharks* or the planned field trip to the Liberty Science Center/ IMAX® theater. Questions on the pre-viewing questionnaire focused on demographic and background classification variables as well as pre-viewing knowledge about and interest in the film’s topics.

Two weeks after responding to the pre-viewing questionnaire, all students visited the Liberty Science Center and viewed *Island of the Sharks*. The day after viewing the film, two teachers (one from each school) who had each been provided with 25 copies of the *Island of the Sharks Activity Guide*, asked their seventh-grade students to perform seven reading activities contained in the guide. Criterion for activity selection was based upon a correspondence with film content.

In compliance with instructions provided to the teachers, 44 students (i.e., members of the FILM + ACTIVITY treatment group) performed seven other reading activities listed in Table 8 to discern whether or not implementation of school-based activities contained in *The Greatest Places Teacher Activity Guide* following viewing of the film

affects viewer learning outcomes. The day following performance of the reading activities, all 127 of the sample students (i.e., members of both treatment groups) completed a posttest and opinion survey.

Table 8. Reading Activities Performed by FILM + ACTIVITY Treatment Group

Page	Topic/Title
3	What's Under All That Water?
8 & 9	What's Your Ocean Notion IQ?
11	Mountains of the Deep
13	Life Down Under
13	What Is El Niño?
22	Dive Field Guide
23	All About Sharks

Questions on the post-viewing questionnaire included the pre-viewing film content questions and additional questions to assess viewers' reactions to the film, as described below.

Questionnaires

Demographic and Background Variables. The pre-viewing questionnaire established respondents' status with respect to demographic classification variables (gender, ethnicity, and parent's/guardian's type of employment), background classification variables (pre-viewing interest in and previewing knowledge of the film's topics).

Film Appeal. Post-viewing respondents chose one of five scaled statements to indicate how interesting or boring they found *Island of the Sharks*. Viewers also explained what they liked and did not like about the film and why. Finally, an attempt was made to capture unintended effects by utilizing the completion items: "I was surprised . . ." and "I was disappointed . . .".

Science Interests. Students rated their level of interest in three topics, prior to viewing *Island of the Sharks*: (1) Learning about sharks; (2) Learning about mountains under the ocean; and (3) Learning about how sea animals survive.

Science Knowledge. Both the pre-viewing and post-viewing questionnaires included a knowledge test to assess understanding of science content associated with the film's viewing goals. Eleven true-or-false questions, also used for formative evaluation, comprised an 11-point test about the following topics covered in the 40-minute film. The questions and answers drawn from the film's content appear below.

- | | |
|--|-------|
| 1. Cocos Island, in the Pacific, is a desert. | False |
| 2. Fish are affected by the Earth's magnetism. | True |
| 3. Some sea animals find food by detecting electric fields. | True |
| 4. Fish never work together to capture and eat other fish. | False |
| 5. Ocean currents have little impact on ocean life. | False |
| 6. Algae is a source of food for sea life. | True |
| 7. There are fish that eat parasites off of other fish. | True |
| 8. Plankton are endangered animals. | False |
| 9. An island can form from a volcano. | True |
| 10. The ocean floor is as flat as a beach of sand. | False |
| 11. Sharks live their entire lives in a small ocean community. | False |

To gain insight into additional knowledge gained, post-viewing students also responded to the open-ended content inquiry, “Describe two ideas or facts that you learned from the film.” Students were also asked to specify anything they had learned about the ocean, specifically. Finally, students chose one of 5 scaled statements to rate how informative they found *Island of the Sharks*, overall.

RESULTS – Adult Audience Study

Appeal of *Island of the Sharks*

After seeing the film, respondents were asked to rate how interesting or boring *Island of the Sharks* is (See Table 9). Approximately 63% of the sample rated the film as “Very Interesting.” Another 18.1% of the sample rated the film as “Moderately Interesting” and 13.4% rated it as “Okay.” Although 5.5% rated *Island of the Sharks* as “moderately boring”, none of the respondents thought the film was “very boring.”

Table 9. Rating of Overall Appeal of *Island of the Sharks* by Post-Viewing Sample

Variable	N	Categories	Percent
Appeal	127	Very Interesting	63.0%
		Moderately Interesting	18.1%
		Okay	13.4%
		Moderately Boring	5.5%
		Very Boring	0.0%

Appeal ratings were found to be independent of gender, age group, education, and number of IMAX® films ever seen.

Additionally, viewers were asked to rate how visually interesting or visually boring the film was, as well as the film’s level of entertainment. A rating scale ranging from 1 to 5 was used, with 1 representing the most negative response (i.e., visually boring, not entertaining) and 5 representing the most positive response (i.e., visually interesting, very entertaining). Using this scale, respondents rated the film well above average on these two features. The mean visual interest rating was 4.38, and the film’s level of entertainment averaged a rating of 3.95.

Viewers responded positively, when asked to rate the pace of the film. Ratings averaged 3.2 on a scale ranging from 1 (too slow) to 5 (too fast). Similarly, the post-viewing sample felt that the amount of facts presented in *Island of the Sharks* was appropriate. On a scale ranging from 1 (too little information) to 5 (too much information), the mean response for the item, “Please rate the amount of information contained in the film” was 3.31 (See Table 10).

Table 10. Rating of Specific Appeal Factors of Film by Post-Viewing Sample

Variable	n	Mean (sd)
Visual Interest	126	4.38 (.85)
Level of Entertainment	127	3.95 (.98)
Pace	127	3.22 (.83)
Amount of information	127	3.31 (.85)

Associations with Sharks

Prior to viewing the film, the pre-viewing sample was asked to “write down two words that you think of when you read the word “shark.” A breakdown of the 117 responses to this item appears in Table 11 below. As demonstrated in this table, the majority of the associations to the word “shark” relate to the predatory nature of the shark (approximately 63%) – “teeth”, “biting”, and “danger” are the most frequently reported responses in this category. Positive associations with sharks were mentioned by about 14% percent of respondents. Other responses included neutral facts (approximately 17.1%) or miscellaneous words (approximately 9.4%) such as “misunderstood” and “research.”

Table 11. Reported Association With Printed Word “shark” by Pre-Viewing Sample

Associations related to predatory nature of sharks		Positive associations	
	N		N
• Teeth/biting	27	• Interesting	4
• Danger	11	• Sleek	2
• Predator	9	• Exciting	2
• Scary	8	• Awesome	1
• Attack	6	• Intelligent	1
• Killer	3	• Great creatures	1
• Man-eaters	2	• Magnificent	1
• Blood	2	• Peaceful	1
• Non-friendly	1	• Fascinating	1
• Feeding	1	• Perfect	1
• Carnivore	1	• Invincible	1
• Aggressive	1		16
• Gross	1	Neutral facts	
• Angry	1	• Water/ocean	8
	74	• Large	4
Miscellaneous		• Dorsal fin	2
• Misunderstood	2	• Fish	2
• Research	1	• Evolution	1
• Techy	1	• Cartilage	1
• Fishing	1	• Long life	1
• Film	1	• Reptile	1
• Sad	1		20
	7		

How the Film Did or Did Not Meet Expectations

Prior to viewing *Island of the Sharks*, pre-viewing respondents were asked to describe what they expected to see in the film. Responses were received from fifty-seven (46.7%) of these viewers. As illustrated in Table 12, on the following page, expecting a film about sharks was reported by almost four-fifths (78.9%) of the respondents. General information about sharks (24.6%) and sharks’ lifestyles and habitats (21.1%) were the most frequently cited responses in this category. Only three respondents (5.3%) reported having no expectations of what they would see in *Island of the Sharks*.

Table 12. Expectations of *Island of the Sharks* by Pre-Viewing Sample

A film about sharks	<u>N</u>
• General information about sharks	14
• Habitat/lifestyle	12
• Variety of sharks	6
• Sharks surviving with other creatures	5
• Mission to save sharks	3
• Sharks as dangerous and scary creatures	3
• Hammerhead sharks	<u>2</u>
	45
Miscellaneous	
• IMAX effects	7
• No expectations	3
• Excitement and thrills	<u>2</u>
	12

Subsequent to seeing the film, post-viewing respondents were asked to choose from a selection of four statements the one that best describes how *Island of the Sharks* compared to their expectations. Responses were received from 127 (100.0%) of these viewers. As illustrated in Table 13, about 22.0% of the sample reported having no expectations before seeing the film. Twenty members of the post-viewing sample felt that *Island of the Sharks* did not meet their expectations. Sixteen comments were offered as explanations for why the film had not met their expectations. Of these comments, almost two-thirds (62.5%) related to the fact that the film was not exclusively about sharks. Remaining explanations for why the film did not meet viewers' expectations include the following quotations:

- "It didn't show enough information."
- "It was uneventful."
- "It was too boring."
- "I didn't think the screen would be nice and huge."
- "Was not as interesting as I had thought it would be."
- "I expected more action."

In contrast, 33.9% reported that the film did meet their expectations and 28.3% reported it exceeded their expectations. Thus, over half (62.2%) of the post-viewing sample felt that the film had met or exceeded their expectations (See Table 13).

Table 13. How *Island of the Sharks* Compared to Viewer Expectations

N	Categories	Number	Percent
127	The film exceeded my expectations.	36	28.3%
	The film met my expectations.	43	33.9%
	The film did not meet my expectations.	20	15.8%
	I had no expectation before seeing the film.	28	22.0%

What Viewers Liked Most

After viewing the film, the post-viewing respondents were asked what they liked about *Island of the Sharks*, and why. About four-fifths (80.3%) of the 127 viewers who were asked to respond to this question provided an answer. Responses were sorted into the categories presented in Table 14, on the following page. Of these respondents, about 60.8% reported liking the film's cinematography most. Besides the general

appeal of the photography, the most frequent response in this category related to the scene in which the sharks hunted and consumed their prey. About 14.7% of the respondents liked *Island of the Sharks* because of the educational value of its content. About 12.7% of the sample who completed this item reported liking everything about the film. The film's experiential qualities were most appealing to 6.8% of the sample respondents. Approximately 4.9% liked the IMAX sound and visual effects.

Table 14. What Viewers Liked Most About *Island of the Sharks*

Cinematography	<u>N</u>
• Photography (non-specific)	19
• Film of sharks hunting and eating their prey	16
• Film of many species of fish/sea life	13
• Film of underwater scenery	6
• Dramatic presentation of information	4
• Unique view of undersea life	<u>3</u>
	61
Educational Value of Film Content	
• Wealth of information	5
• Information about fish	5
• Information about the cycle of life	3
• Facts about the ocean ecosystem	1
• Facts about El Niño	<u>1</u>
	15
Everything	
• The story of the island and its ecosystem	13
Experiential Qualities	
• Vicarious experience of being underwater	7
IMAX features	
• Sound quality	3
• Visual experience	<u>2</u>
	5

What Viewers Did Not Like

After the film, visitors were asked also what they liked least about *Island of the Sharks* and why. Of the 127 viewers who were asked to respond to this question, approximately one-third (34.6%) provided an answer. About 10% of these responses indicated that there was nothing about the film that the respondent did not like. For example, one respondent wrote, "I loved everything!"

Responses indicating a disliked feature were sorted into categories presented in Table 15, on the following page. As mentioned above, about one-tenth of the respondents liked everything about *Island of the Sharks*. In contrast, about 40.9% did not like the fact that the film was not about sharks, as expected. About one-fifth (20.5%) of the responses expressed the feeling that there wasn't enough action (e.g., more shark hunting scenes should have been shown). Another 9.1% thought that the film was too long. Approximately 6.8% of respondents felt that the film contained insufficient information, and the same percentage felt that the circling fish scene was repetitive. Finally, 4.5% were displeased with the violence presented in the film.

Table 15. What Viewers Liked Least About *Island of the Sharks*

Not About Sharks	<u>N</u>
• The film should have been more focused on sharks, as alluded to by the title	18
Not Enough Action	
• The film should have shown more action	9
Liked Everything	
• Liked everything about the film	5
Length of film	
• The film was too long	4
Not enough information	
• The film should have included more educational content	3
Repetitive	
• The film showed circling fish too often	3
Violent	
• Overemphasis on killing of prey	2

What Surprised Viewers

In order to capture unplanned appeal effects, the post-viewing sample was asked to complete the sentence, “ I was surprised” Responses were sorted with keywords and the number of responses in each mutually exclusive category are presented in Table 16, on the following page. Approximately 55% of the sample wrote no answer to the question. More than one-half (56.1%) of the respondents were surprised by information contained in *Island of the Sharks*. Another 15.8% were surprised by the IMAX experience. Slightly more than 12.3% reported being surprised by the scenic beauty of Cocos Island. About 10.5% were surprised by the film’s content; specifically, that the film was not exclusively about sharks, and the limited amount of information presented. Finally, a small percentage (5.3%) of the respondents to this item were positively surprised by the quality of the film.

Table 16. Respondents’ Completion of “I was surprised”

Factual Information	<u>N</u>
• About sharks	12
• The effect of El Niño	7
• Undersea life	6
• About the variety and behavior of fish	5
• About Cocos Island	<u>2</u>
	32
IMAX Experience	
• Surround sound and visuals	9
Content	
• Film not about sharks	3
• Insufficient information	<u>3</u>
	6
Scenery	
• The scenic beauty of Cocos Island	4
Film Quality	
• How interesting, absorbing, and engaging the film is	3

What Most Disappointed Viewers

Post-viewing survey respondents also completed the sentence stem: “I was most disappointed . . .” Responses were sorted with keywords and percentages of each mutually exclusive category are shown in Table 17. Approximately 80.3% of the sample wrote no answer to the question. About 16% of the respondents indicated that nothing about the film was disappointing. About one-third of the respondents (36.0%) reported that they were disappointed that the film had not contained more information. Other members of the sample (8.0%) felt that the film is too short. About one-quarter (24.0%) reported that they were disappointed that the film had not contained more action. One member of the sample felt that not enough attention was paid to how the photography was done, but did not offer an explanation of this comment. Finally, three miscellaneous comments were offered, relating to the fact that the film’s music was not like the preview, abuse by fishing fleets, and the scene in which a reported female fish was eaten.

Table 17. Respondents’ Completion of “I was most disappointed. . .”

Information	N
• Want more information about sharks	6
• Want more information (Non-specific)	2
• Want more information about the island	$\frac{1}{9}$
	9
Insufficient Action	
• Not enough action in general	5
• Not enough bloodshed	$\frac{1}{6}$
	6
Not Disappointed At All	
• Nothing about the film was disappointing	4
Film Length	
• The film is too short	2
Photography Quality	
• Not enough attention to how photography	1
Miscellaneous	
• Music in film not like preview	1
• Abuse by fishing fleets	1
• Scene in which female fish was eaten	$\frac{1}{3}$
	3

Appeal of the Film’s Title

Pre- and post-viewing sample members were asked to indicate whether they thought the title “*Island of the Sharks*” is a good title or not by completing either of the following two sentences: “It’s a good title because. . .” or “It’s not a good title because. . .” Whether or not respondents perceive the title in a positive light is significantly related to sample membership. In other words, there was a significant difference (Fishers exact test < .0001) between the perceptions of the title by members of the pre-viewing sample, compared to post-viewing participants.

As displayed in Table 18, prior to viewing the film, 47 participants responded to this questionnaire item. Their responses were overwhelmingly positive – 80.9% of these respondents felt that *Island of the Sharks* is a good title. The most frequently cited explanation for this perception (38.3%) is that pre-viewers had expectations that the film

would be about sharks. Additionally, pre-viewers felt that the title “gets to the point” (12.8%) and stimulates interest, excitement and mystery (19.1%).

In contrast, over half (53.8%) of the post-viewing sample who responded to this question felt that *Island of the Sharks* is *not* a good title. Half of these respondents felt that the title is misleading, as it incorrectly implies that *Island of the Sharks* is primarily about sharks. It is noteworthy that subsequent to seeing the film, not all viewers shared this view. In fact, about one-third (32.5%) of the viewers who responded felt that the title appropriately describes the film’s content.

Table 18. Perceptions of the film’s title by Pre- and Post-Viewing Samples

<i>Pre-Viewing Sample</i>		<i>Post-Viewing Sample</i>	
It’s a good title	38 (80.9%)	It’s a good title	37 (46.3%)
The film is about sharks	18 (38.3%)	It describes the film well.	26 (32.5%)
It “gets to the point”	6 (12.8%)	It draws attention to the film	8 (10.0%)
It stimulates interest, excitement, mystery	9 (19.1%)	Miscellaneous	3 (3.8%)
Miscellaneous	5 (10.6%)	It’s a good name	1 (1.3%)
Implies that the film is about habitat	2 (4.3%)	Ocean is appropriate setting for IMAX film	1 (1.3%)
Viewers expect a good film	2(4.3%)	Movie is about hammerhead sharks	1 (1.3%)
It is not intimidating	1 (2.1%)		
It’s not a good title	9 (19.1%)	It’s not a good title	43 (53.8%)
Implies that sharks are on land.	5 (10.6%)	It incorrectly implies that it is a film about sharks	40 (50.0%)
Miscellaneous	4 (8.5%)	Miscellaneous	3 (3.8%)
Could be better	1 (2.1%)	Doesn’t explain origin of island name	1 (1.3%)
Sharks scare people	1 (2.1%)	Implies “eating and hunting”	1 (1.3%)
Unclear title	1 (2.1%)	Film should include other interesting animals	1 (1.3%)
Sharks don’t congregate on one island (1)	1 (2.1%)		

What Confused Viewers

One hundred sixteen members of the post-viewing sample (90.6%) did not report finding anything confusing about *Island of the Sharks*, when queried. Twelve sample members (9.4%) did find something confusing about the film. Of the explanations about the confusing components, four referred to needing more information about El Niño. Three other explanations related to the perception that the film was not about sharks, as expected. One respondent wrote:

“I thought the show was confusing, the title is a little misleading. It suggests that the film will be about sharks, but it’s really about an island. Not that this is bad, but when you go see a film with a preconception, then it isn’t fulfilled, it changes the way you accept the new concept.”

Due to the diversity of the remaining explanations, all are listed on the following page as direct quotations.

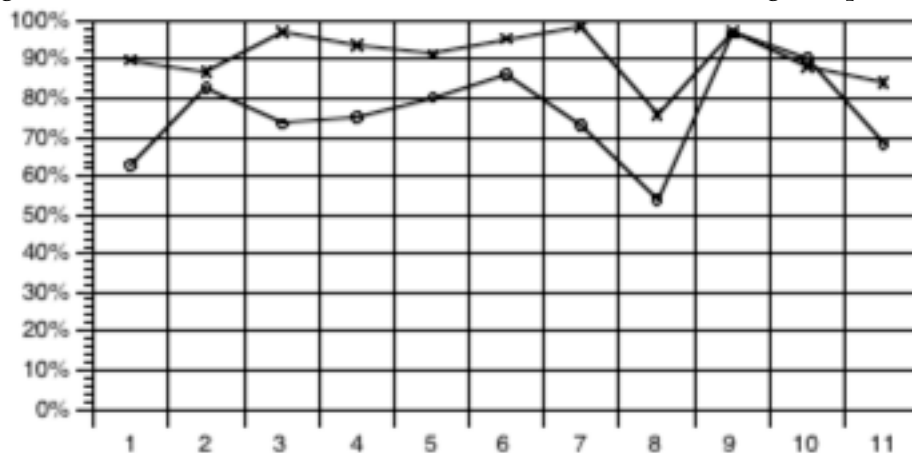
Q: Was there anything about the film that you found confusing? If so, what?

- “Do all the fish in the swirling school get eaten? Narration doesn’t tell.”
- “I would have liked more identification of the different species.”
- “Fish going in a circle.”
- “Not much about the island.”
- “Why was it going very fast, and why did it seem like we were in the movie.”

Learning Outcomes

Learning outcomes were assessed via a test with 11 true-false items. Figure 1 shows the distribution of the test scores for both the pre-viewing and post-viewing samples.

Figure 1. Distribution of Test Scores for Pre- and Post-Viewing Samples



The mean achievement score for the pre-viewing group was 8.39 and for the post-viewing group, 9.94. The analysis of variance indicated that the means were significantly different, $F(1, 247) = 39.87, p \leq .0001$. Thus, the learning outcomes resulting from viewing *Island of the Sharks* are statistically significant.

With an interest in interaction effects, separate two-way ANOVAs on the scores were calculated for Viewing Group (i.e., Pre, Post) and individual demographic and background variables of Gender, Age Group, Education, and Occupation. None of the interactions were statistically significant.

With regards to specific content areas in which knowledge increased, statistically significant improvement between the pre- and post-viewing respondents was evidenced for eight of the eleven (72.7%) items. The three items for which this improvement was not demonstrated were “Fish are affected by the Earth’s magnetism,” “An island can form from a volcano,” and “The ocean floor is as flat as beach sand.” When interpreting these results, it is important to note that for each of these items, pre-viewing knowledge was extremely high (82.6%, 96.7%, and 90.2% respectively). Because these pretest scores were so high, the probability that any post-test improvement for these items would attain statistical significance is unlikely (See Table 19, on the following page).

Table 19. Percentages of Correct Responses by Pre- and Post-Viewing Samples

<i>Content Item</i>	<i>Pre-Viewing (% of Respondents)</i>	<i>Post-Viewing (% of Respondents)</i>	<i>Fisher's Exact Test</i>
Cocos Island in the Pacific Ocean is a desert.	76 (62.8%)	114 (89.8%)	≤ .0001
Fish are affected by the Earth's magnetism.	100 (82.6%)	110 (86.6%)	ns*
Some sea animals find food by detecting electric fields.	89 (73.6%)	123 (96.9%)	≤ .0001
Fish never work together to capture and eat other fish.	91 (75.2%)	119 (93.7%)	≤ .0001
Ocean currents have little impact on ocean life.	98 (80.3%)	116 (91.3%)	≤ .0170
Algae is a source of food for sea life.	105 (86.1%)	121 (95.3%)	≤ .0152
There are fish that eat parasites off of other fish.	89 (73.0%)	125 (89.4%)	≤ .0001
Plankton are endangered animals.	66 (54.1%)	94 (75.8%)	≤ .0004
An island can form from a volcano.	116 (96.7%)	122 (96.8%)	ns
The ocean floor is as flat as a beach of sand.	110 (90.2%)	111 (88.1%)	ns
Sharks live their entire lives in a small ocean community.	83 (68.6%)	107 (84.3%)	≤ .0036

* Not statistically significant

Prior to completing the test section mentioned above, the post-viewing questionnaire asked viewers to describe one idea or fact that they learned from the film. The majority of respondents (72.4%) provided one idea or fact. Nobody in the sample group said they had learned nothing new from *Island of the Sharks*. Two sample members (1.6%) reported impressions of the film, rather than information gained. The remaining sample members (26.0%) did not answer the question at all. The facts reportedly learned were sorted with keywords, and percentages of each mutually exclusive categories are shown in Table 20, on the following page.

Approximately 30.9% of the respondents reported learning information associated with El Niño. Slightly more than 29.8% indicated that they learned information about sea creatures other than sharks, and about 24.5% reported learning about sharks. About 10.6% of the responses reflected learning information about Cocos Island. Another 4.3% learned about Nature.

Table 20. Ideas and Facts Viewers Reported Learning From the Film

Information associated with El Niño	<u>N</u>
• General effects on ecosystem	16
• Depletes of availability of plankton, causing fish to migrate to colder waters	10
• Warm water turns color reefs white	<u>3</u>
	29
Information about other aquatic creatures	
• Barber fish eat parasites off of larger fish	6
• Fish swirl in a group to avoid predators	5
• Schools of fish migrate as seasons change	5
• Fish families have cycles	2
• Shrimp can grow quite large	2
• Shrimp impale their prey	1
• Flounder are predators	1
• Starfish move	1
• Hermit crabs borrow shells	1
• Some fish glow in the dark in deep waters	1
• Fish sleep	1
• Flounder have two eyes on the same side	1
• Crabs eat bird droppings	<u>1</u>
	28
Information associated with sharks	
• Sharks can detect electric impulses from fish's heartbeats	9
• Sharks herd their prey and destroy entire schools of fish	6
• Migration of sharks	2
• Sharks are very intelligent	1
• Hammerhead sharks exist	1
• Whitetip sharks are scavengers	1
• Sharks seek prey in rocks	1
• Sharks don't always eat prey immediately	1
• Reef sharks are persistent	<u>1</u>
	23
Information associated with Cocos Island	
• Cocos Island exists	5
• Location of Cocos Island	2
• Cocos Island is interesting and beautiful	2
• Cocos Island is a protected island	<u>1</u>
	10
Information associated with Nature	
• The relationship between tides, currents, temperatures, and organisms	1
• The need to stop global warming	<u>1</u>
	2

Findings obtained from the school audience study are reported in the following section.

RESULTS – School Audience Study

Appeal of *Island of the Sharks*

After seeing the film, students were asked to rate how interesting or boring *Island of the Sharks* was (See Table 21). Over two-thirds of the sample rated the film as either “very Interesting” or “moderately Interesting” (67.7%). In contrast, only 4.7% thought the film was “very boring” or “moderately boring.” Approximately 27.6% of the students reported the appeal of the film as being “Okay.” On average, responses to *Island of the Sharks* were very positive, as indicated by students rating of the film’s appeal as 4.0 on a five-point Likert scale ranging from 1 (very boring) to 5 (very interesting).

Table 21. Rating of Appeal of *Island of the Sharks* by Students

Variable	N	Categories	Percent*
Appeal	127	Very Interesting	37.8%
		Moderately Interesting	29.9%
		Okay	27.6%
		Moderately Boring	3.9%
		Very boring	0.8%

*Percentages sum to 100.1 %, as a result of rounding.

Expected frequencies for chi-square analyses were increased beyond 1 cell by combining the appeal categories of “moderately boring” and “very boring.” Appeal ratings were found to be independent of treatment, gender, ethnicity, prior estimated knowledge about the film’s topics, and prior interest in learning about the film’s topics. However, there was a significant difference in appeal ratings between schools ($\chi^2(3) = 23.34, p \leq .0001$). Table 22 presents the percentages of appeal ratings endorsed by students in each of the two participating schools.

Table 22. Mean Ratings of Appeal of *Island of the Sharks* by School

Variable	N	Categories	Percent	
			Pittsfield N	Holbrook NY
Appeal	127	Very Interesting	55.4%	19.4%
		Moderately Interesting	26.2%	33.9%
		Okay	12.3%	43.5%
		Moderately / Very Boring	6.2%	3.2%

What Students Liked Most

After viewing the film, students were asked what they liked most about *Island of the Sharks*, and why. All but 10 students responded to this question. Responses were sorted into the categories presented in Table 23. Almost half of the responses (47.0%) expressed liking the film’s scenes that included sharks and other wildlife. In this category, the hunting prey scenes were most popular. Approximately one-fifth of the surveyed students who responded to this item (20.5%) reported liking *Island of the Sharks* because of its cinematography. The IMAX theatre itself was very appealing to 4.3% of the sample students. Approximately 17.9% made general comments about the quality of the film, including its educational value, their perception that it was interesting and exciting, and the variety of sea life shown in the film. Another 6.0% reported liking everything about the film, and 4.3% offered miscellaneous comments.

Table 23. What Students Liked Most About *Island of the Sharks*

Cinematography	N
• Feeling like “you are there”	9
• Photography	5
• Film of flying over ocean	3
• Sound	3
• Underwater footage	2
• Music and photography mix	2
	24
Content Related to Sharks & Other Sea Creatures	
• Hunting prey scenes	30
• Shark scenes (general)	10
• Fish scenes (general)	4
• Barber fish	2
• Tortoise	2
• Schools of fish	1
• Fish swimming in reefs	1
• Crabs	1
• Starfish	1
• Jellyfish	1
• Information about the cycle of life	1
• Mantarays	1
• Hammerhead sharks	1
	55
General Film Qualities	
• Film showed variety of sea life	12
• Film was exciting and interesting	7
• Film was educational	2
	21
Everything	
• The entire film	7
IMAX Theater	
• Theatre and large screen	5
Miscellaneous Comments	
• Island formation	2
• The timeframe of the film	1
• Currents	1
• Nothing	1
	5

The following sample of responses is reflective of what students reportedly liked most about *Island of the Sharks* and are included in this report to guide future planning decisions:

- “I liked the part of the swordfish finding the fish and chasing them in a ball, then eating them all. It was very interesting.”
- “I liked *Island of the Sharks* because of all the beautiful colors of the fish swimming about.”
- “When you were zooming over the ocean it felt like you were flying.”
- “I liked that it filled up the whole dome because it felt like we were really there.”
- “I liked the way the fish got trapped. It looked like a tornado and the music was really scary.”
- “I liked the photography and how much they told about each kind of sea life creature.”

- “The sharks because it was cool how they ate up fish in the coral and how the coral turned white and dies at one point.”
- “I thought the underwater filming was great – it was very well done.”
- “I liked that they showed all the underwater animals and how they lived because it was very interesting.”

What Students Did Not Like

After the film, students were also asked what they did not like about *Island of the Sharks*, and why. Responses indicating a disliked feature were sorted into categories presented in Table 24. Of the 127 students in the sample, 10.2% did not respond to this question. Approximately 27.2% of the students liked everything about *Island of the Sharks*. In contrast, about 7.9% of the responses expressed the feeling that there wasn't enough action (e.g., became bored after El Niño caused fish to leave). Another 15.8% reported wanting to see more coverage of particular topics, especially sharks. About 19.3% of the sample offered general comments about the film such as it was too long, repetitive, or contained too many facts. Approximately 22.8% of sample students were displeased with specific content in the film, such as scenes in which fish were consumed by their predators. About 6.1% of the students experienced motion discomfort, and one student reported disliking the narrator's voice.

Table 24. What Students Did Not Like About *Island of the Sharks*

Liked Everything	<u>N</u>
• “I liked all of <i>Island of the Sharks</i> .”	24
Disliked Specific Content	
• Fish being attacked and eaten	14
• Sharks	5
• Birds	2
• Coral reefs	2
• Island of Cocos	2
• Crabs eating bird droppings	<u>1</u>
	26
General Film Comments	
• Film was too repetitive	9
• Film was too long	7
• Film contained too many facts	<u>6</u>
	22
Not Enough Content	
• Wanted more shark scenes	15
• Wanted to see whales	1
• Wanted to see land animals	1
• Wanted more island scenes	<u>1</u>
	18
Not Enough Action	
• Film should show more underwater action	2
• Film lost appeal after the fish left	6
• Wanted to feel sensation of falling	<u>1</u>
	9
Motion discomfort	
• Felt sick and dizzy	6
• Needed rails to feel safe	<u>1</u>
	7
Narration	
• Didn't like narrator's voice	1

The following sample of responses are reflective of what students indicated they did not like about *Island of the Sharks*:

- *"I liked everything in the Island of the Sharks."*
- *"The fish getting killed."*
- *"I didn't like how they kept getting off the subject by talking about other fish because the movie was about sharks."*
- *"I didn't like the film Island of the Sharks because of the sharks attacking and eating other fish."*
- *"How only a small amount of information on the island. I did not like it because there was so little information that it could have been excluded and not missed."*
- *"You never made it seem like we were going to fall."*
- *"It showed the same stuff twice."*
- *"Too many boring facts."*
- *"You did not really get like face to face with the sharks."*
- *"Having no motion 3-D like parts underwater because it slowed the movie down too much."*
- *"That they called it Island of the Sharks but didn't have a lot of sharks."*
- *"It was about sharks and fish not birds and birds were in it."*
- *"I did not like that basic facts were repeated again and again."*
- *"How it showed the school of fish getting eaten twice."*
- *"The way the camera 'floated' over the ocean made me sick."*
- *"It did not focus on sharks, it focused on sea life. You could not see the sharks killing fish at all!"*
- *"I didn't really like how they kept showing the sharks hunting over and over. After a while, it got a little annoying."*
- *"The Imax made me dizzy and when all the fish spun around and around."*
- *"I thought the part when they were showing the coral was boring because it just like sits there."*
- *"The Island of the Sharks was too long."*
- *"I didn't like when they showed the fish getting eaten by the sharks because it was disgusting."*
- *"The show was good. The thing I disliked was the dome! It made me really dizzy, I got to feel nauseous."*
- *"When El Niño came there was no life and everything was boring."*
- *"How they kept changing the subject about the sharks then to fish."*
- *"When they showed that big fish eat little fish. It was disgusting and mean."*
- *"It was a little on the long side and the movement of the water made me tired."*

What Surprised Students

In order to capture unplanned appeal effects, the post-viewing sample was asked to complete the sentence stem, “I was surprised . . .” Responses were sorted with keywords and the number of responses in each mutually exclusive category are presented in Table 25. Approximately 19.7% of the sample wrote no answer to the question. Almost three-quarters (71.6%) of the sample were surprised by the factual information contained in the film, particularly about fish and sharks. Another 16.7% were surprised by the quality of the film. About 7.8% were positively surprised by the quality of the theatre, and four students offered miscellaneous comments.

Table 25. Students’ Completion of “I was surprised . . .”

Factual Information	<u>N</u>
• About Cocos Island	37
• About sharks	23
• About sea life in general	8
• About El Niño	3
• About Cocos Island	1
• About how islands are created	<u>1</u>
	73
Film Quality	
• How interesting, absorbing, engaging film is	8
• How realistic the film is	5
• Close-up photography	3
• Length of film	<u>1</u>
	17
Theatre Quality (positive feelings)	8
Miscellaneous	
• Film was not exclusively about sharks	2
• Fishing boats	1
• Camera was not closer to sharks	<u>1</u>
	4

The following sample of responses are reflective of written comments completing the sentence stem:

I was surprised . . .

- *“That it wasn’t only about sharks.”*
- *“When the female fish was caught by the lobster.”*
- *“To see that some fish really blended in.”*
- *“That the sharks can smell blood.”*
- *“Sharks only eat when they are hungry.”*
- *“About how much I learned.”*
- *“At underwater survival and daily life.”*
- *“When the thousands of fish were eaten.”*
- *“When the fish went into that tornado shape.”*
- *“There is really a Barber fish.”*
- *“That the movie covered the whole sea life.”*
- *“When it was like a movie that was moving.”*
- *“That is wasn’t boring.”*

- “That I felt like I was in the real ocean.”
- “To see how it looks under the ocean.”
- “When the little fish ate the parasites off the other bugs.”
- “How much life was destroyed from El Niño.”
- “That sharks work together to get food.”
- “To see how the Sea lions gather the school of fish into a ball and then eat them.”
- “That it wasn’t all about sharks.”
- “That the screen was so great.”
- “At the way they captured the shots of sharks hunting.”
- “At the way sharks trap the fish.”
- “To learn the sharks come in so many forms.”
- “When I found out how big schools of fish were.”
- “When they could create islands with volcanoes.”

What Most Disappointed Students

Survey respondents also completed the sentence stem: “I was most disappointed. . .” Responses were sorted with keywords and percentages of each mutually exclusive category are shown in Table 26. Approximately 10.7% of the sample wrote no answer to the question. About 10.8% of the respondents indicated that nothing about the film was disappointing. About one-third of the students (31.2%) were disappointed by the content of the film. Another 22.6% reported being disappointed by the extent of death portrayed in the film. Other members of the sample (4.3%) were disappointed the film did not contain more action. About 6.5% reported that they were disappointed that the film was too short. About 7.5% of the students reported being disappointed that the film was not interesting or exciting. Three sample members found the film repetitious, and two students did not like the narrator’s voice.

Table 26. Students’ Completion of “I was most disappointed. . .”

Not Disappointed At All	<u>N</u>
• Nothing about the film was disappointing	10
Content	
• Content not more focussed on sharks	20
• Film did not include whales or dolphins	6
• Film did not include more on Cocos Island	<u>2</u>
	29
Violence	
• Extent of death of sea life	21
Film Characteristics	
• Film is not interesting, exciting	7
• Film is too short	6
• Film is repetitious	3
• Narrator’s voice unappealing	<u>2</u>
	18
Action	
• Wanted to see more consuming of prey	4
Miscellaneous	11

The following sample of responses are reflective of written comments completing the sentence stem:

I was disappointed . . .

- “When all the animals were leaving the island.”
- “To see the sharks force schools of fish to the top of the water.”
- “There were no dolphins.”
- “It went off the subject.”
- “When all the fish were dying because of El Niño.”
- “About not having the feeling of moving as opposed to 3-D movies.”
- “That facts were repeated.”
- “When it was over.”
- “That it wasn’t focused more on sharks.”
- “Because there wan not enough killing (sharks vs. fish).”
- “When I thought the fish would survive, but many died.”
- “To see all the coral die because of El Niño.”
- “That it didn’t feel like you were under the sea.”
- “When everything died or went away.”
- “That there was so many shots of the same things.”
- “Nothing disappointed me.”
- “Because the narrator’s voice was annoying.”
- “Because it was so short, there was a lot more to learn.”
- “When I saw all the fish that died because of the sharks.”

Interest in Film-Related Topics

Before and after viewing the film, students were asked to rate, on a 5-point Likert scale ranging from 1 (not interested at all) to 5 (very interested), how interested they were in learning about each of three topics related to *Island of the Sharks*. On average, students were moderately interested in all three topics, both before and after viewing the film (See Tables 28, below, and Table 29, on the following page). Note that higher means are associated with more interest in learning about the specified topics, and lower means are associated with less interest. Note also that the topics are arranged in descending order with the most valued topic placed at the top of each table (i.e., learn about how sea animals survive and learn about sharks, with pre-viewing means of 3.6 and 3.5, respectively.)

Table 28. Interest in Topics **Prior** to Viewing *Island of the Sharks**

			1	2	3	4	5
	N	Mean	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Learn about how sea animals survive	127	3.6	5 (4%)	21 (17%)	31 (24%)	39 (31%)	31 (24%)
Learn about sharks	127	3.5	9 (7%)	18 (14%)	39 (31%)	23 (32%)	32 (25%)
Learn about mountains under the ocean	127	3.1	13 (10%)	35 (28%)	31 (24%)	27 (21%)	21 (17%)

*Totals may not equal exactly 100.0% due to rounding.

Table 29. Interest in Topics **After** Viewing *Island of the Sharks**

	N	Mean	1	2	3	4	5
			<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
Learn about sharks	127	3.5	9 (7%)	24 (19%)	29 (23%)	30 (24%)	35 (28%)
Learn about mountains under the ocean	127	3.4	11 (8%)	19 (15%)	28 (22%)	42 (33%)	27 (21%)
Learn about how sea animals survive	127	2.9	21 (17%)	29 (23%)	36 (28%)	26 (19%)	17 (13%)

*Totals may not equal exactly 100.0% due to rounding.

ANOVAs with repeated measures were applied to the pre/post mean interest ratings for each activity with Treatment as a factor. Treatment was not significant in any of the three analyses. Consequently, seeing the film with or without doing the classroom activities had no significant impact on students' interest in the three specified topics.

Personal Associations or Connections With the Film

After viewing the film, students were asked if they associated or connected the film with anything they previously knew or experienced. Of the 127 students in the sample, 26 responded positively. While 19 of these respondents described the association/connection, 7 did not. The 19 responses were sorted by keyword into mutually exclusive categories, which are presented in Table 32.

Although approximately one third of the entire sample (34.7%) performed reading activities contained in the *Island of the Sharks Activity Guide* the day following viewing of the film, none of these students connected the activities with the film. Small groups of the sample associated the film with their prior experience with viewing another film/TV program (7.9%) and outdoor activities (3.9%).

Table 32. Students' Associations or Connections With *Island of the Sharks*

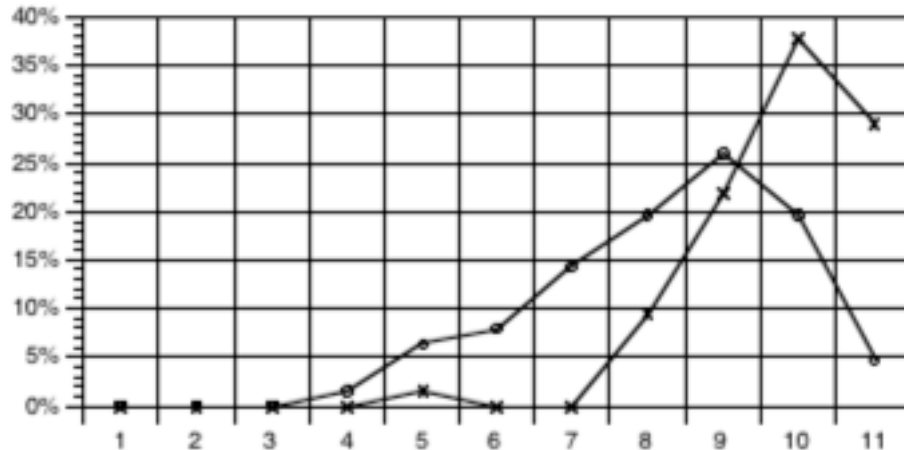
Another Film/TV Program	<u>N</u>
• Related shows on television	5
• The movie "Jaws"	3
• IMAX film about the Grand Canyon	1
• Movie (not specified)	<u>1</u>
	10
Outdoor Activities	
• Scuba diving	2
• Swimming	1
• Snorkeling	1
• Caribbean cruise	<u>1</u>
	5
Miscellaneous	
• Oceanography	1
• Other types of sharks	1
• Sailfish	1
• Hawks hunting their prey	<u>1</u>
	4

Learning Outcomes

Understanding of the film's content was assessed via an 11-point, true/false item test. Figure 2 shows the distribution of the students' test scores for both the pre-viewing and post-viewing samples.

The post-viewing mean achievement score for the whole sample was 9.80, significantly higher than the pre-viewing mean score ($M = 8.24$), as tested by a paired t -test, $t(1,127) = 10.77, p \leq .0001$. A multiple regression analysis with posttest scores as the criterion variable and pretest scores entered as the first predictor resulted in an R^2 of 11.8 and a significant coefficient ($t = 4.22, p \leq .0001$). Treatment (FILM, ACTIVITY + FILM) was not a significant predictor of posttest scores, when added as a second predictor. Thus, approximately 11.8% of the variability in the posttest was accounted for by its linear relationship with the pretest and the treatments did not contribute to the predictive power of the regression. Having experienced the activities in class did not impact students' film knowledge.

Figure 2. Distribution of Test Scores for Pre- and Post-Viewing Samples



With regards to specific content areas in which knowledge increased, statistically significant improvement between the pre- and post-testing was evidenced for six of the eleven (63.6%) items (See Table 27, on the following page). Two of the items for which this improvement was not demonstrated were "Fish never work together to capture and eat other fish," "Algae is a source of food for sea life." When interpreting these results, it is important to note that for each of the two latter items, pre-viewing knowledge was extremely high (89.8% of respondents responded correctly prior to viewing the film). Hence, there was only marginal room for improvement, and it is not surprising that the score differential from pre- to posttest did not achieve statistical significance.

Table 27. Percentages of Correct Responses by Pre- and Post-Viewing Samples

Content Item	Pre-Viewing (% of Respondents)	Post-Viewing (% of Respondents)	Fisher's Exact Test
Cocos Island in the Pacific Ocean is a desert.	82 (64.6%)	118 (92.9%)	≤ .0001
Fish are affected by the Earth's magnetism.	65 (51.2%)	113 (89.0%)	≤ .0001
Some sea animals find food by detecting electric fields.	74 (58.3%)	114 (89.8%)	≤ .0001
Fish never work together to capture and eat other fish.	114 (89.8%)	119 (93.7%)	ns*
Ocean currents have little impact on ocean life.	92 (72.4%)	111 (87.4%)	≤ .01
Algae is a source of food for sea life.	114 (89.8%)	119 (93.7%)	ns
There are fish that eat parasites off of other fish.	106 (83.5%)	123 (96.9%)	≤ .001
Plankton are endangered animals.	88 (69.3%)	93 (73.2%)	ns
An island can form from a volcano.	107 (84.3%)	120 (94.5%)	≤ .01
The ocean floor is as flat as a beach of sand.	97 (76.4%)	109 (85.8)	≤ .07
Sharks live their entire lives in a small ocean community.	108 (85.0%)	106 (83.5%)	ns

* Not statistically significant

Students were also asked on the posttest questionnaire to describe two ideas or facts that they learned from viewing *Island of the Sharks*. Of the 127 students in the sample, 112 (88.2%) provided two ideas or facts, 5 (3.9%) provided one idea or fact, and 10 (7.9%) students did not answer at all. The ideas/facts provided were sorted with keywords, and percentages of each mutually exclusive category and sub-category are shown in Table 30. The percentages were calculated based on the possibility of receiving 254 responses to this question (i.e., two facts per student).

Table 30. General Ideas/Facts Students Reported Learning From Film

Information associated with fish other than sharks	N
• Fish assume a tornado shape when herded by predators	22
• Barber fish eat parasites off of larger fish	18
• Swordfish herd food	16
• Fish detect electric fields to find food	8
• Fish can camouflage themselves	8
• Female Mantarays are larger than male Mantarays	5
• Fish (general information)	4
• Starfish eat algae	1
• Fish are not intelligent	1
	83
Information about sharks	
• General information about sharks	13
• Feeding habits of sharks	10
• Sharks travel in groups	9
• Hammerheads must keep moving to breathe	8
• Sharks migrate	7
• Sharks have keen senses	6
• Largest population of sharks migrate to Cocos Island	2
• Sharks have tough skin	1
	56

Table 30 (Cont.) General Ideas/Facts Students Reported Learning From Film

Information associated with El Niño	<u>N</u>
• The negative effects of El Niño	26
• El Niño kills coral, which then turns white	7
• El Niño affects water currents	3
• El Niño kills food, forcing fish to leave Cocos Island waters	2
• Definition of El Niño	<u>1</u>
	39
General Information	
• Sea creatures work together under the sea	7
• Starfish move very fast/eat coral	5
• There is an underwater food chain	4
• There are mountains under the ocean	3
• There are sandy-looking creatures on ocean bottom	3
• Crabs change their shells	3
• Volcanoes form islands	2
• Nutrients cause plankton to grow	2
• Boats catch many fish	2
• Water currents can move uphill	1
• Colder water has more nutrients	1
• Some shrimp are very large	1
• Crabs eat seagull droppings	<u>1</u>
	35
Information about Cocos Island	
• Cocos Island exists	5
• Climate of Cocos Island	3
• Cocos Island is reserved for animals	2
• Cocos Island location	1
• Variety of life around Cocos Island	1
• Cocos Island was created by a volcano	1
• Cocos Island is Treasure Island	<u>1</u>
	14
Miscellaneous	
• The IMAX theatre has 5 speakers	1
• Film motivated student to scuba dive	<u>1</u>
	2

Approximately one-third (32.7%) of the sample learned information about fish other than sharks. About 22.0% reported learning information about sharks. Another 15.4% of the sample said that they learned information about El Niño. About 13.8% indicated that they learned general information about sea life. Other members of the sample (5.5%) learned information about Cocos Island.

We were interested to learn from our sampled students if they learned anything else specifically about the ocean that they didn't know prior to viewing the film. Of the 127 sample students, 81 (64%) felt they had learned something new. Of these 81 respondents, 63 went on to describe what they had learned. All responses to this item were sorted with keywords, and percentages of each mutually exclusive category are shown in Table 31.

With respect to information learned specifically regarding the ocean, note that approximately 5.5% of the sample learned general information about the ocean. Another 13.4% of the sample said that they learned information about sharks, and the same percentage reported learning about El Niño.

Table 31. Specific Information learned About the Ocean

Information associated with fish other than sharks	N
• Fish assume a tornado shape when herded by predators	7
• Many species of fish	3
• Fish can camouflage themselves	2
• Female Mantarays are larger than male Mantarays	2
• Fish (general information)	1
• Barber fish eat parasites off of larger fish	1
• Starfish move quickly	1
	17
Information associated with El Niño	
• The negative effects of El Niño	15
• Definition of El Niño	1
• El Niño kills coral, which then bleaches	1
	17
Information about sharks	
• General information about sharks	3
• Hammerhead sharks move constantly	2
• Herding techniques of sharks	2
• Sharks have keen senses	1
	8
General Information	
• There is an underwater food chain	7
• There are mountains under the ocean	2
• There are many creatures under the sea	1
• Algae is a source of food	1
	11
Information about the ocean	
• General information about currents	4
• Mountains affect currents	2
• Fish die if there are no currents	1
	7
Information about Cocos Island	
• Cocos Island exists	2
• Cocos Island location	1
	3

The following sample of written responses are reflective of what students indicated they learned about the ocean

- *“The current moved up through the mountains.”*
- *“The currents.”*
- *“I learned new things about the mountains underwater.”*
- *“That ocean currents really affect the life of animals in the sea.”*
- *“Many fish die if there are no ocean currents.”*
- *“That there are mountains under the ocean.”*
- *“I learned that how ocean currents hit a mountain.”*

- “There are mountains under the water that affect the current.”

DISCUSSION

The following is a summary of findings obtained from both the adult and school audience studies:

Adult Audience Study

- *To what extent did the program appeal to adult viewers?*

Approximately 81% of the sample rated *Island of the Sharks* as being “Very Interesting” or “Moderately Interesting.” Additionally, about 61% of the sample audience reported that *Island of the Sharks* met or exceeded their expectations. Slightly more than 60% of the respondents focused on the film’s cinematography as the aspect they liked best about *Island of the Sharks*, particularly the scenes that showed sharks hunting and eating their prey. It is noteworthy that the most appealing aspect of the film directly reflects the pre-viewing audience’s most frequent association with sharks – sharks as predators. Another 15% of the sample identified the educational value of the film content as their most liked aspect of *Island of the Sharks*. In fact, over half (56.1%) of the post-viewing sample was positively surprised by the extensive amount of factual information presented in the film.

Only 15% of the 127 member post-viewing sample commented that the film had not met their expectations. When asked to specify why the film fell short of meeting their expectations, about two thirds of these responses related to viewers’ expectation that the film would focus exclusively on sharks. This misconception was also the most frequently reported disliked feature of the film, as well. These results are not surprising, given that four-fifths of the pre-viewing sample reported expecting a film about sharks. Related to these findings, a significantly higher percentage of the pre-viewing audience felt that *Island of the Sharks* was a good title, compared to the post-viewing sample. Of those in the post-viewing sample who were displeased with the title, half felt that the title incorrectly implies that they would be viewing a film about sharks.

- *What were the learning outcomes associated with film viewing?*

Viewing the film significantly increased viewers’ knowledge about the content of *Island of the Sharks*. The pre-viewing mean test score was 8.39 out of 11 points compared with the significantly higher post-viewing mean score of 9.94. These scores did not show interactions with any of the demographic or background variables measured.

With regards to specific content areas in which knowledge increased, statistically significant improvement between the pre- and post-viewing respondents was evidenced for eight (72.7%) of the eleven items. The three items for which this improvement was not demonstrated were: (1) Fish are affected by the Earth’s magnetism; (2) An island can form from a volcano; and (3) The ocean floor is as flat as beach sand. When interpreting these results, it is important to note that for each of the two latter items, pre-viewing knowledge was extremely high. Because the pretest scores for these two items were so high, the probability that any post-test improvement for

these items would attain statistical significance is unlikely. Hence, there was only marginal room for improvement, and it is not surprising that the score differential from pre- to posttest did not achieve statistical significance.

- *What did viewers perceive that they learned from the film, if anything?*

When asked what they had learned from the film, most viewers' comments and test results focused on an increase in their knowledge about sharks and other aquatic creatures living in the ocean waters surrounding Cocos Island, the effects of El Niño on the ecosystem, and general information about Cocos Island, such as its existence and location. These results are interesting in light of the fact that in spite of reporting that they expected the film to focus more on sharks (and feeling disappointment that it did not), knowledge of sharks was the most frequently reported idea or fact learned from the film

In conclusion, *Island of the Sharks* made a positive impact on sample adult audience member's knowledge of topics presented in the film and was reportedly moderately or very interesting to 81% of the adult sample.

School Audience Study

- *To what extent did *Island of the Sharks* appeal to student viewers?*

Of the 127 student viewers, over two-thirds of the sample rated the film as either "Very Interesting" or "Moderately Interesting" (67.7%). In contrast, only 4.7% thought the film was "Very Boring" or "Moderately Boring." On average, responses to *Island of the Sharks* were very positive, as indicated by students' rating of the film's appeal as 4.0 on a five-point Likert scale ranging from 1 (very boring) to 5 (very interesting).

Students were most impressed with the scenes that included sharks and other sea life, particularly when predators hunted their prey. They also appreciated the cinematography in *Island of the Sharks*. While some students appreciated the educational content of the film and expressed a desire for more information about numerous topics, others felt that the title, "Island of the Sharks" was misleading – they expected more information about sharks and less content related to other types of sea life. Students generally reported interest in film topics, although some voiced a feeling that some scenes were repetitive (e.g., cooperative bait-ball feeding and swimming hammerheads).

The features most liked about the film were the scenes containing sharks and other sea creatures, the cinematography, and the variety of sea life presented in *Island of the Sharks*. For some students, the numerous scenes in which fish were being consumed by their predators was disconcerting. Some students felt that given the film's title, the attention given to sea life other than sharks was incongruent with their expectation that the film would have a shark-related focus. After the fish left the waters surrounding Cocos Island, some students lost interest in the film. This relates directly to the comments made by some viewers that the film did not contain enough action.

What surprised students most was the educational content of *Island of the Sharks*, particularly relating to information learned about sharks and other fish. Students were also surprised by the reportedly high quality of the film and the IMAX theatre. When asked what most disappointed them, about one-third of students were disappointed with the content of the film. Although they found the content appealing, this feedback related to the ongoing theme of unmet expectations. Students expected and wanted to see more about sharks in this film. Additionally, some students were dismayed by the extent of presented in the film.

- *What were the learning outcomes associated with viewing the film?*

Viewing the film significantly increased science knowledge, as measured by an 11-point content test. Viewers of *Island of the Sharks* came away knowing more about Cocos Island, the effect of the earth's magnetism on fish, sea animals' use of electric fields to find food, the impact of ocean currents on sea life, Barber fish, and the formation of islands.

Of the 11 true-false questions, students evidence significant improvement on six items, after viewing *Island of the Sharks*. Two items that did not reach statistical significance contained information about fish working together to capture and eat other fish and about algae as a food source for sea life. When interpreting these results, it is important to note that for each of these items, pre-viewing knowledge of these content areas was extremely high. Hence, there was only marginal room for improvement, and it is not surprising that the score differential from pre- to post-test did not achieve statistical significance.

- *Did the implementation of school-based activities following film viewing affect outcomes?*

Treatment group (i.e., students who viewed the film and performed reading activities vs. students who only viewed the film) was not a significant factor in the appeal ratings nor a significant predictor of posttest scores. Performing reading activities associated with film content also did not differentially affect students' reported interest in film-related topics after viewing the film. Thus, exploration of film-related concepts via seven student-centered activities prior to seeing the film did not impact knowledge or interests significantly beyond what the students learned from the film alone. When asked whether they connected the film to anything they had previously known or experienced none of the students mentioned the class experience with *the Island of the Sharks Activity Guide*.

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