

Summative Evaluation of  
*The Greatest Places*  
*An IMAX<sup>®</sup> Dome Film and Associated Educational Resources*

Report for  
**Science Museum of Minnesota**  
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**Summative Evaluation of  
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**Executive Summary**

June 15, 1999

**INTRODUCTION**

The summative evaluation reported here focused on a large-format film, titled *The Greatest Places*, and associated educational resources for use in informal and formal settings. Project development is a joint venture of the Science Museum of Minnesota (SMM) and the Fort Worth Museum of Science and History, with additional support from the St. Louis Science Center. 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 Milwaukee, Wisconsin at the Humphrey 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 four weekdays and one weekend, during each showing of the film, the researcher 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 four classes from each of two middle schools was carried out with eighth 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 two reading activities from the Teacher Activity Guide. Toward this end, the school audience study focused on the following major outcomes:

- To what extent did *The Greatest Places* 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 diversity?
- Did the implementation of school-based 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 viewing the film after doing related activities (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 Milwaukee Public Museum and viewed *The Greatest Places* in the IMAX® Dome theater. The day after viewing the film, the teachers of four classes (2 from each school) asked their students to perform eight reading activities contained in *The Greatest Places Teacher 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 pretesting 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?*

*The Greatest Places* was reportedly “moderately” or “very interesting” to 92% of the adult sample, with approximately 63% of the sample rating the film as “very interesting.” Viewers identified Madagascar, the Waterfalls of the Iguazu River, and the Amazon River as the most appealing segments of the film. Slightly more than one-quarter of the sample focused on the film’s cinematography as the aspect they liked best about *The Greatest Places*. The film’s experiential qualities were most appealing to about 11%. A similar percentage of viewers identified the educational value of the film content as their most liked aspect of *The Greatest Places*. In accordance with the results of evaluations of previous Omni films, these statistics offer support for the notion that viewers appreciate both the entertainment and educational aspects of these films.

Additionally, it is noteworthy that although one may be tempted to interpret the low percentages that appear in the preceding paragraph as indicators of the film’s lack of appeal, this is countered by the above average ratings of the film’s segments and photography, music and narration. Instead, these numbers are most likely a reflection of the low response rate to the open-ended questions on the post-viewing survey that probed for feedback about what viewers liked, disliked, and learned.

The appeal of *The Greatest Places* is also evidenced by the fact that when asked what they liked least about the film, the most frequently cited response was disappointment that there was not more coverage of topics. These results indicate that viewers wanted more of what was presented, as opposed to different content or presentation of material.

- *To what extent did the film achieve its intended viewing goals?*

Viewing the film significantly increased viewers knowledge about the age of the solar system, the largest island on Earth, the location of the Namib Desert, lemurs, the location of the Okavango River delta, the waterfalls of the Iguazu River, the Amazon River, the Himalayas, Pangea, and the creation of the Tibetan plateau. The pre-viewing mean test score was 3.68 out of 10 points compared with the significantly higher post-viewing mean score of 7.65. These scores did not show interactions with any of the demographic or background variables measured, thus showing that the successful learning outcomes are applicable to a general audience.

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

The majority (84.2%) of respondents feel that *The Greatest Places* is moderately or very informative. When asked what they had learned from the film, most viewers' comments and test results focused on an increase in their knowledge about Madagascar, the Iguazu Falls, and Tibet. Some of the other reported learning outcomes are rooted in more specific information, such as learning about upside-down trees and the reason that birds ingest clay.

### School Audience Study

- *To what extent did *The Greatest Places* appeal to student viewers?*

Of the 170 student viewers, slightly more than one quarter (25.8%) thought *The Greatest Places* was either "very" or "moderately" interesting. The features most liked about the film are its photography, animals, close-ups of places never visited, the educational value of the film, and Madagascar. The features least liked is a general feeling that the film is not interesting, a perceived shortage of action, the narration, the motion discomfort some students experienced, and the desert scenes. What surprised students most was the overall superb quality of the film and the IMAX® film experience. For some students, the fact that it was not as interesting as expected surprised them.

- *To what extent did *The Greatest Places* achieve its intended viewing goals?*

Viewing the film significantly increased sample students' knowledge, on average, as measured by a 10-point content test. Viewers of *The Greatest Places* came away knowing more about the history of the solar system's formation, Greenland, the location of the Namib Desert, lemurs, the location of the Okavango Delta, the Iguazu Falls, the Amazon Basin, and the creation of the Tibetan Plateau.

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

Treatment group (FILM, FILM + ACTIVITY) was not a significant factor in the appeal ratings nor a significant predictor of posttest scores. Thus, exploration of film-related concepts via reading activities after seeing the film did not differentially affect students' knowledge or interests significantly beyond what students learned from the film alone.

# Summative Evaluation of The Greatest Places

## An IMAX® Dome Film and Associated Educational Resources

June 15, 1999

### INTRODUCTION

The summative evaluation reported here focused on a large-format film, titled *The Greatest Places*, and associated educational resources for use in informal and formal settings. Project development is a joint venture of the Science Museum of Minnesota (SMM) and the Fort Worth Museum of Science and History, with additional support from the St. Louis Science Center. Research methods gave consideration to the projected goals of this project, which are to integrate most of the 18 National Geography Standards, including:

- Standard 1* How to use geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
- Standard 2* How to use mental maps to organize information about people, places, and environments in a spatial context
- Standard 4* The physical and human characteristics of places.
- Standard 5* That people create regions to interpret Earth's complexity.
- Standard 7* The physical processes that shape the patterns of the Earth's surface.
- Standard 8* The characteristics and spatial distribution of ecosystems on the Earth's surface.
- Standard 12* The processes, patterns, and functions of human settlement.
- Standard 14* How human actions modify the physical environment.
- Standard 15* How physical systems affect human systems.
- Standard 17* How to apply geography to interpret the past.

Additionally, the project is designed to integrate with the Curriculum Standards for Social Studies, including Thematic Strand 1 (Culture); Strand 2 (Time, Continuity, and Change); and Strand 3 (People, Places, and Environment).

#### The Film

Generally, the 40-minute film and supporting informal and formal educational resources produced by the project are designed to increase interest and excitement of the audience about seven of the most geographically dynamic locations on Earth. The film emphasizes science content areas, including biology, earth science, environmental science, social science, and physical and human geography. The following five major themes are developed in the film, as specified in the project description:

- Integrated Processes and Elements* – The way physical processes interact at the Earth's surface. The elements and processes of the lithosphere, atmosphere, hydrosphere, and biosphere converge as one interprets, for example, vegetation, hydrography, and landforms.
- Spatial Perspective* – The spatial dimension of both landscape and human experience. It leads to a global perspective and an understanding of patterns, flows, differences, and similarities across the Earth and the organization and identification of regions. Spatial perspective brings into play key geographic skills and tools relating to maps, charts, and imagery.

*Systems* – An organized means to understand in part or in whole processes and phenomena. Systems have interrelated flows, feedback, and interactions.

*Environmental Unity* – The concept that all elements and processes of environment are interrelated and interdependent and that a change in one will lead to change in the others, a primary tenet of environmental and ecological teaching.

*Diversity* – Referring to the variety of natural environments and peoples on Earth. Just as the world's ecosystems are diverse, so too the geographic origins and characteristics of cultures on Earth are different.

### Educational Outreach

In addition the film, summative evaluation efforts focused on an educational resource, titled *The Greatest Places Teacher Activity Guide*. The guide contains a variety of hands-on science activities available as a pre- and post-film resource, 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 and social sciences), 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 *The Greatest Places* were divided into the following two evaluation components:

### Adult Audience Study

A summative evaluation in Milwaukee, Wisconsin at the Humphrey 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 four weekdays and one weekend, during each showing of the film, the researcher 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.

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A summative evaluation involving four classes from each of two middle schools was carried out with eighth 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 two reading activities from the Teacher Activity Guide. Toward this end, the school audience study focused on the following major outcomes:

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- To what extent did the film achieve its intended viewing goals? For example, did students acquire knowledge about science, especially with regards to diversity?
- Did the implementation of school-based 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 viewing the film after doing related activities (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 Milwaukee Public Museum and viewed *The Greatest Places* in the IMAX® Dome theater. The day after viewing the film, the teachers of four classes (2 from each school) asked their students to perform eight reading activities contained in *The Greatest Places Teacher 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 pretesting 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 *The Greatest Places* during a period of six days in February, 1999. Ninety-six percent of these participants 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 405 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=398) included 202 pre-viewing questionnaires and 196 post-viewing questionnaires.

The researcher recruited over a period of four non-holiday weekdays and one weekend, eliciting responses to questionnaires during 18 shows. Information from demographic and background questions was collected. The distribution of the sample on these classification variables is presented in Table 1, on the following page.



Table 1. Demographic and Background Variables

<i>Variable</i>	<i>Categories</i>	<i>Pre-Viewing</i>	<i>Post-Viewing</i>
Gender	Female	46.5%	46.4%
	Male	53.0%	53.6%
	<i>No response</i>	0.5%	0%
Age Group	13-17	1.0%	2.6%
	18-27	22.8%	26.0%
	28-37	31.7%	26.0%
	38-47	19.8%	19.4%
	48+	16.8%	18.9%
	<i>No response</i>	7.9%	7.1%
Education	Some high school	1.5%	3.0%
	High school	38.1%	29.1%
	College graduate	48.0%	38.3%
	Post graduate	6.9%	22.4%
	Technical/Trade	5.5%	3.1%
	<i>No response</i>	0%	4.1%
Countries visited in lifetime	10 or more	5.0%	14.8%
	7-9	3.5%	3.6%
	4-6	10.9%	12.2%
	1-3	48.0%	36.2%
	None	32.7%	29.6%
	<i>No response</i>	0%	3.6%
Number of IMAX® films seen	This is my first film	40.1%	30.1%
	One other film	24.8%	19.9%
	2-3 other films	18.8%	20.9%
	Four or more films	16.3%	24.5%
	<i>No response</i>	0%	4.6%

Participants were provided with a list of museum activities, and asked to endorse any in which they had participated. Table 2 provides a breakdown of the sample’s responses to this item. As displayed in the table, the overwhelming majority of respondents had not participated in other museum activities, at the time they completed the survey. Of the activities listed on the questionnaire, pre- and post-survey respondents participated most frequently in a guided tour of the Milwaukee Public Museum (17.3% and 18.4%, respectively).

Table 2. Participation in Other Museum Activities

<i>Activity</i>	<i>Pre-Viewing Participation</i>	<i>Post-Viewing Participation</i>
The <i>Greatest Places</i> day trip to Prairie du Sac	9 (4.5%)	25 (12.8%)
A guided tour of the Milwaukee Public Museum	35 (17.3%)	36 (18.4%)
Activities contained in the Explorer Backpack	2 (0.0%)	2 (0.0%)

### School Audience Study

Two middle schools, who were registered to view *The Greatest Places* in March, 1999 were contacted about participating in the study (See Table 3). As indicated in Table 3, the first middle school provided 92 eighth-grade students. The second middle school provided 78 eighth-grade students.

Table 3. Demographics of Participating Schools / Classes

<i>City</i>	<i>State</i>	<i>Grade</i>	<i>N</i>
Waukesha	Wisconsin	8	92
Madison	Wisconsin	8	78

Paired pre- and post-viewing questionnaires were obtained from a total of 170 middle school students. There were 48 students in the FILM treatment (i.e., viewed the film only) and 122 students in the FILM + ACTIVITY treatment (i.e., performed *The Greatest Places* activities in school after viewing the film).

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 (FILM, FILM + ACTIVITY) did not differ significantly with respect to the classifications of gender, ethnicity, reported interest in learning about some of the greatest places on earth, previous visits to the Milwaukee Public Museum, and number of large-format IMAX® films seen. The distribution of the sample on these classification variables is presented in Table 4.

Table 4. Demographic & Background Variables of Student Sample

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Gender	170	Female	51.8%
		Male	48.2%
Ethnicity	170	White	77.1%
		Minority	22.9%
Interest in Learning about some of the greatest places on Earth	169	Very interested	13.5%
		Moderately interested	49.4%
		A little interested	30.6%
		Not at all interested	5.9%
Number of countries visited in lifetime (other than U.S.A.)	170	10 or more	0.6%
		7-9	1.2%
		4-6	5.9%
		1-3	41.8%
		None	50.6%
Number of IMAX films ever seen	170	Only the Greatest Places	31.2%
		One other IMAX film	31.2%
		Two to three other IMAX films	22.4%
		More than three IMAX films	15.3%
Previous visit(s) to Milwaukee Public Museum	170	Yes	81.2%
		No	18.8%

Students differed by treatment group in terms of interest in learning about social science; the test group's [FILM + ACTIVITY] reported mean interest rating (M=2.7) was significantly lower than the mean (M=3.4) of the control group [FILM] ( $t=3.4$ ,  $p = .001$ ). There were no significant treatment group differences in reported interest in learning about biology, earth science, environmental science, physical geography, or human geography. Students were also asked to indicate their parent's/guardian's type of employment. The distribution of this variable is presented in Table 5.

Table 5. Employment of Parents/Guardians

<i>Occupation</i>	Waukesha, WI		Madison, WI		<b>Total</b>
	<i>Father</i>	<i>Mother</i>	<i>Father</i>	<i>Mother</i>	
Professional (business)	8	3	6	4	22
Professional (science)	10	5	8	6	28
Educator	1	5	2	7	15
Administrator	5	2	6	3	16
Manager	2	2	3	1	8
Technician (computer)	3	1	5	1	10
Clerical	1	5	2	6	14
Homemaker	–	2	–	2	4
Worker (skilled)	7	6	7	5	25
Worker (semiskilled)	6	7	5	6	24
Worker (unskilled)	2	–	3	–	5

## Procedure

Teachers were provided with a set of written instructions for administering questionnaires. Two weeks prior to viewing *The Greatest Places*, each of the four participating teachers administered the pre-viewing questionnaire. All 170 students in the sample completed the questionnaire as part of their regular classroom activity. Teachers did not mention that the questionnaire was associated with *The Greatest Places* or the planned field trip to the museum/ 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 Milwaukee Public Museum and viewed *The Greatest Places* in the Humphrey IMAX® Dome theater. The day after viewing the film, two teachers were each provided with 25 copies of *The Greatest Places Teacher Activity Guide*. The teachers (1 from each school) asked their eighth-grade students to perform eight reading activities contained in *The Greatest Places Teacher Activity Guide* to examine their impact on viewer learning outcomes. Criterion for activity selection was based upon a correspondence with film content.

In compliance with instructions provided to the teachers, 122 students (i.e., members of the FILM + ACTIVITY treatment group) read the introduction in the Teacher Activity Guide. They also performed seven other reading activities (See Table 6) 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 students completed a posttest and opinion survey.

Table 6. Reading Activities Performed

<i>Page</i>	<i>Topic</i>
1	Introduction
8	Greenland
10	The Amazon
12	The Okavango Delta of Botswana
14	Madagascar
16	Namibia
18	Tibet
20	The Iguazu Falls

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 and ethnicity) and background classification variables (pre-viewing interest in and pre-viewing knowledge of the film's topics, number of foreign countries visited, and previous visit(s) to the Milwaukee Public Museum). Post-viewing respondents also identified the number of IMAX® large-format films seen.

***Program Appeal.*** Post-viewing respondents chose one of five scaled statements to indicate how interesting or boring they found *The Greatest Places*. After viewing the

film, they also rated how the level of interest that each of the following film segments had for them, using a scale that ranged from 1 (Not interesting at all) to 5 (Very interesting): ( 1) Learning about Madagascar; (2) Learning about the Tibetan Plateau; (3) Learning about the Amazon River; (4) Learning about the Namib Desert; (5) Learning about Greenland; (6) Learning about the Okavango River Delta ; and (7) Learning about the Waterfalls of the Iguazu River. Using a 5-point scale ranging from 1 (didn't like at all) to 5 (liked very much), students were also asked to rate the appeal of the film's photography, music and narration. 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 item: "I was surprised..."

**Science Interests.** Students rated their level of interest in six topics, prior to viewing *The Greatest Places*: (1) Biology; (2) Earth Science; (3) Environmental Science; (4) Physical Geography; (5) Human Geography; and (6) Social Science.

**Science Knowledge.** Both the pre-viewing and post-viewing questionnaires included a knowledge test to assess understanding of the viewing goals. Nine multiple choice items and one short answer question comprised a 10-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. Our solar system took form about how long ago?  
Respondents were offered the following four options and asked to check the correct answer: (1) 10 billion years ago, (2) 5 billion years ago, (3) 2 billion years ago, and (4) 1 billion years ago. The correct answer is 5 billion years ago.
2. Which of the following is the largest island on Earth?  
Respondents were offered the following four options and asked to check the correct answer: (1) Madagascar, (2) Australia, (3) Greenland, and (4) Japan. The correct answer is Greenland.
3. Check the statement below that best describes where the Namib Desert is located.  
Respondents were offered the following four options: (1) Along the southwest coast of Africa, (2) in Botswana, southern Africa, (3) South of the Amazon basin, and (4) On the Tibetan plateau. The correct answer is "Along the southwest coast of Africa".
4. Which of the following mammals is found only on the island of Madagascar?  
Respondents were offered the four following options and asked to check the correct answer: (1) Fur seals, (2) Lemurs, (3) Musk Ox, and (4) Yak. The correct answer is "lemurs."
5. Check the statement below that best describes where the Okavango River delta is located.  
Respondents were offered the four following options: (1) Along the southwest coast of Africa, (2) In Botswana, southern Africa, (3) South of the Amazon basin, and (4) On the Tibetan plateau. The correct answer is "In Botswana, southern Africa".
6. Where are the tallest mountains on Earth located?  
Respondents were offered the four following options and asked to check the correct answer: (1) The Rocky Mountains, (2) The Sierra Madre, (3) The Himalayas, and (4) The Alps. The correct answer is "The Alps."
7. What is the name of Earth's supercontinent that began to separate more than 200 million years ago?  
Respondents were offered the four following options and asked to check the correct answer: (1) Atlantis, (2) Eurasia, (3) Mu, and (4) Pangea. The correct answer is "Pangea."
8. Check the statement below that best describes where the waterfalls of the Iguaza River are located.  
Respondents were offered the four following options: (1) Along the southwest coast of Africa, (2) In Botswana, southern Africa, (3) South of the Amazon basin, and (4) On the Tibetan plateau. The correct answer is "South of the Amazon Basin".

9. On which of the following continents is the Amazon river located?  
 Respondents were offered the four following options and asked to check the correct answer: (1) Africa, (2) Asia, (3) Europe, and (4) South America. The correct answer is "South America".
10. Describe how the Tibetan plateau was created.  
 India collided with Asia.

To gain insight into additional knowledge gained, post-viewing students also responded to the open-ended content inquiry, "Describe one idea or fact that you learned from the film." Finally, students chose one of 5 scaled statements to rate how informative they found *The Greatest Places*, overall.

**RESULTS – Adult Audience Study**

Appeal of *The Greatest Places*

After seeing the film, respondents were asked to rate how interesting or boring *The Greatest Places* is (See Table 7). Approximately 62.8% of the sample rated the film as "Very Interesting." Another 29.1% of the sample rated the film as "Moderately Interesting" and 5.6% rated it as "Okay." None of the respondents thought the film was very boring.

Table 7. Rating of Appeal of *The Greatest Places* by Post-Viewing Sample

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Appeal	196	Very Interesting	62.8%
		Moderately Interesting	29.1%
		Okay	5.6%
		Moderately Boring	2.0%
		Very Boring	0.0%
		No response	0.5%

Appeal of Specific Film Segments

To gain insight into the appeal of specific film segments, respondents were asked to rate seven segments of *The Greatest Places* on a five-point Likert scale ranging from 1 (not interesting at all) to 5 (very interesting). The two highest rated segments of *The Greatest Places* are Madagascar (Mean = 4.4) and Waterfalls of the Iguazu River (Mean = 4.4). As indicated in Table 8, on average, appeal ratings were very positive (higher mean scores are associated with more positive ratings, and lower mean scores are associated with less positive ratings). Note that the film segments are arranged in descending order with the most appealing elements placed at the top of the table.

Table 8. Appeal of Film Segments

<i>Film Segment</i>	<i>Mean (standard deviation)</i>
Madagascar	4.4 (.80)
Waterfalls of the Iguazu	4.4 (.85)
The Amazon River	4.3 (.81)
The Tibetan Plateau	4.2 (.91)
The Okavango River Delta	4.1 (.94)
Greenland	4.0 (.92)
The Namib Desert	3.9 (.95)

## Appeal of Film Elements

Audience members were asked to rate the appeal of the photography, music and narration of *The Greatest Places*, using a five-point scale ranging from 1 (didn't like at all) to 5 (liked very much). As displayed in Table 9, appeal ratings for each element listed in the questionnaire were very positive.

Table 9. Appeal of Film Elements

<i>Film Element</i>	<i>Mean (standard deviation)</i>
Photography	4.6 (.66)
Music	4.4 (.82)
Narration	4.3 (.91)

## Impact on Knowledge

When asked how informative *The Greatest Places* was, overall, approximately 95.9% of respondents felt that the film was moderately or very informative. Only one viewer felt that the film was not informative at all. Table 10 provides a breakdown of responses to this question.

Table 10. Rating of Appeal of *The Greatest Places* by Post-Viewing Sample

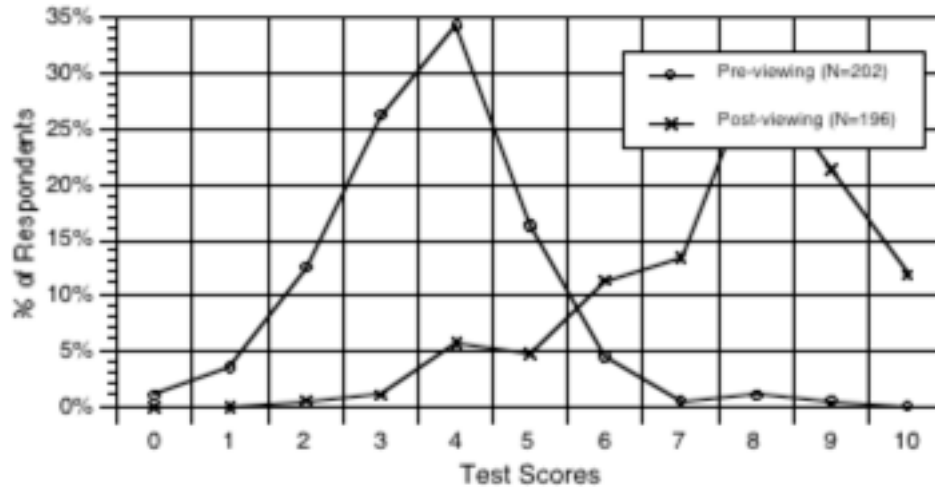
<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Informative	196	Very informative	44.9%
		Moderately informative	51.0%
		Not very informative	3.6%
		Not informative at all	0.5%

***Achievement of intended learning outcomes.*** Learning outcomes were assessed via a test with 9 multiple choice items and 1 short answer item. Table 11 and Figure 1 (on the following page) show the distribution of the test scores for both the pre-viewing and post-viewing samples. Note the decrease in low scores and corresponding increase in high scores from pre-viewing to post-viewing test scores.

Table 11. Distribution of Test Scores for Pre- and Post-Viewing Samples

<i>Test Score</i>	<i>Pre-Viewing (% of Respondents)</i>	<i>Post-Viewing (% of Respondents)</i>	<i>Difference</i>
0	1.0%	0.0%	- 1.0%
1	3.5%	0.0%	- 3.5%
2	12.4%	0.5%	- 11.9%
3	26.2%	1.0%	- 25.2%
4	34.2%	5.6%	- 28.6%
5	16.3%	4.6%	- 11.7%
6	4.5%	11.2%	+ 6.7%
7	0.5%	13.3%	+ 12.8%
8	1.0%	30.6%	+ 29.6%
9	0.5%	21.4%	+ 20.9%
10	0.0%	11.7%	+ 11.7%

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



The mean achievement score for the pre-viewing group is 3.68 and for the post-viewing group, 7.65. The analysis of variance indicated that the means were significantly different,  $F(1, 396) = 48.29, p \leq .0001$ . Thus, the learning outcomes resulting from viewing *The Greatest Places* are statistically significant.

With an interest in interaction effects, separate two-way ANOVAs on the scores were calculated for Viewing Group (Pre, Post) and individual demographic and background variables of Gender, Age Group, Education, Countries visited in a lifetime, and number of IMAX® and/or OMNIMAX large-format films seen. None of the interactions were statistically significant.

In order to compare the pre-viewing and post-viewing percentages of correct responses for individual items, a Chi-square test of individual variances was performed for each content question. The results of this test indicate that the percentage of correct post-viewing responses was significantly greater than the percentage of pre-viewing correct responses for *every* scored item on the questionnaire. Table 12 displays a comparison between the percentages of pre-viewing and post-viewing correct responses for each item.

Table 12. Comparison of Pre- and Post-Viewing Percentages of Correct Responses

Scored Item	% Correct (Pre)	% Correct (Post)	$\Delta$ Post% - Pre%*
Age of solar system	29.2%	53.1%	23.9%
Greenland	24.3%	91.8%	67.5%
Namib Desert	38.6%	80.6%	42.0%
Lemurs	31.2%	93.9%	62.7%
Okavango River delta	20.8%	53.1%	32.3%
Himalayas	78.7%	95.4%	16.7%
Pangea	41.1%	77.0%	35.9%
Iguazu River	26.7%	78.6%	51.9%
Amazon River	68.3%	84.7%	16.4%
Creation of Tibetan plateau	8.9%	56.6%	47.7%

\* All Chi-square tests of individual variances are significant at the .001 level or higher.

**Ideas or Facts Learned.** Viewers were asked to describe one idea or fact that they learned from the film. Almost half of respondents (45.9%) provided one idea or fact.

Nobody in the sample said they had learned nothing new from *The Greatest Places*. The remaining sample members (54.1%) did not answer the question at all. The facts were sorted with keywords, and percentages of each mutually exclusive categories are shown in Table 13, below.

Approximately 11.2% of the sample reported learning information associated with Madagascar. About 8.2% indicated that they learned information about the Iguazu Falls. Another 5.1% of the sample said that they learned information about Tibet. Two percent of respondents reported learning about each of the following categories: The Amazon River, the Namib Desert, and self-knowledge. Other members of the sample (11.7%) learned facts or ideas reported by three or fewer viewers; these responses are included in the Miscellaneous category.

Table 13. Ideas and Facts Viewers Reported Learning From the Film

<b>Information about Tibet</b>	<u>N</u>
• Tibetan culture	2
• Tibetan people	3
• Tibet contains the highest plateau in the world	3
• Tibet is very interesting	<u>2</u>
	<b>10</b>
<b>Information about Greenland</b>	
• Greenland is an island	4
• Greenland is so large	1
• Greenland is below sea level	1
• There is so much life in Greenland	<u>1</u>
	<b>7</b>
<b>Information about Madagascar</b>	
• Lemurs live only in Madagascar	18
• Madagascar is not a desert	2
• Madagascar is unique	1
• The evolution of Madagascar	<u>1</u>
	<b>22</b>
<b>Information about Iguazu Falls</b>	
• The Iguazu Falls exist	8
• They are so large	<u>8</u>
	<b>16</b>
<b>Information about the Amazon River</b>	
• The Amazon is so large	1
• The Amazon is located in South America	1
• The Amazon contains 1000 rivers	1
• The Amazon has a waterfall	<u>1</u>
	<b>4</b>
<b>Information about the Namib Desert</b>	
• The Namib Desert is bordered by water	2
• The Namib Desert moves	1
• General information about the Namib Desert	<u>1</u>
	<b>4</b>
<b>Self-Knowledge</b>	
• I want to travel to these places	2
• I want to study these places more	<u>1</u>
	<b>3</b>



Table 13 (continued). Ideas and Facts Viewers Reported Learning From the Film

Miscellaneous	<u>N</u>
• There is so much diversity of land, plants, & animals	5
• The Okavango River doesn't flow to the sea	3
• Birds eat clay to offset toxins	2
• There are upside down trees with roots on top	2
• The world is so big	2
• Iceland is the largest island	1
• Knowledge about icebergs	1
• The importance of the food chain	1
• The history of the earth	1
• Our need for water	1
• Location of areas covered in film	1
• Dunes were created by themselves	1
• Animals live in the desert	1
• The large number of animals and how they survive	1
• Waterfalls are interesting	<u>1</u>
	<b>24</b>

**What Viewers Liked.** After viewing the film, the post-viewing respondents were asked what they liked about *The Greatest Places* and why. Of the 196 viewers who were asked to respond to this question, over half (56.6%) provided an answer. Responses were sorted into the categories presented in Table 14, on the following page. A little over one-quarter of the sample (27.6%) reported liking the film's cinematography most. About nine percent liked *The Greatest Places* because of the educational value of its content. Vicariously traveling to exotic places was most appealing to 11.2% of the sample viewers. About 4.6% of the sample reported liking everything about the film.

Table 14. What Viewers Liked Most About *The Greatest Places*

<b>Cinematography</b>	<u>N</u>
• Photography (unspecific)	12
• Photography of scenery	10
• Photography of nature	9
• Photography of animals	4
• Scenes with people	4
• Realism of photography	5
• Waterfall scenes	3
• Falling ice scene	1
• Action scenes	3
• IMAX® format	<u>3</u>
	<b>54</b>
<b>Educational Value of Film Content</b>	
• Information about other cultures	2
• Information about Madagascar	3
• Information about Tibet	2
• Educational content (non-specific)	<u>10</u>
	<b>17</b>
<b>Experiential Qualities</b>	<b>22</b>
<b>Variety of Film Content</b>	<b>7</b>
<b>Music/Narration</b>	<b>2</b>
<b>Everything</b>	<b>9</b>

The following is a representative sample of respondents' comments about what they liked most about the film and are included in this report to guide future planning decisions:

- *"The photography. Great views of different landscapes."*
- *"Photography. Reason being is that most people will never have a chance to make it to those places."*
- *"Scenery, wildlife, real life depictions of places I will never go to."*
- *"Beautiful photography and good narration."*
- *"Seeing new places and animals."*
- *"It introduced us to places we'll never see. Explained how it all comes about."*
- *"Learned things I hadn't even heard about in an interesting and entertaining way."*
- *"I felt like I was there – could have spent more time in each place."*
- *"Educational."*
- *"Great, great music."*
- *"Segments with people were most interesting."*
- *"Took you to places you may never see."*
- *"Because got new information about nice places."*
- *"Very educational, diverse, beautiful."*
- *"They were places that most people don't visit and the things you saw were very unusual and unique."*
- *"I liked that it showed a variety of things."*
- *"Good introduction to a variety of places, educational."*
- *"Very informative."*
- *"It provided information I didn't know in an entertaining format."*
- *"I found them very interesting how they describe the places."*
- *"Took one to places one would normally be able to visit. Saw it from different heights."*
- *"All of the nature. It is neat to see so many places."*
- *"It was neat seeing all of the different places and cultures."*
- *"Very interesting places."*
- *"Information and ability to take me to places I will never be but feel as though I have been there."*
- *"Wonderful close-ups – the lizard, under the waterfalls. Incredible shots of places I will never visit. Great shots of places I've been – Amazon."*
- *"Educational. Showed our children other peoples and ways of the earth."*
- *"Being able to see places you may never get to see."*
- *"I thought the film was energizing, but not too technical. It was the perfect length."*
- *"I saw places I didn't know existed and won't be able to see in person."*
- *"Photography – saw some very beautiful and interesting places."*
- *"I like Madagascar with the upside down tree. I also like how they describe a little of each place. If someone was interested in it, they could go to the library."*
- *"Showing the cultures."*
- *"Avery Brooks is an excellent narrator. He seems to know what he is talking about and perfectly paces the photography."*
- *"Diversity of wet, dry, cold, and hot climates."*
- *"I loved the narration and the music was very well done!"*

- *“Information about people living in places you never hear about makes you think about your own life.”*
- *“Information about animals, things I’d never see before, identified upside down trees.”*
- *“The information about the river valleys and life.”*
- *“All places featured were places I had never known existed or knew very little about.”*
- *“Beautiful photography and color of incredible scenery.”*
- *“Gorgeous film, I was very impressed with the entire production – the scenery, the places, the music. I learned so much. I appreciated the places chosen – they were different from what I expected.”*
- *“The places chosen were very exotic.”*
- *“Took you remote away from tourists.”*
- *“The scenery was beautiful and I liked the narration (information).”*
- *“Tibet. I’m interest in the culture and people after seeing IMAX.”*
- *“Seeing how the people live in Tibet was great.”*
- *“It was great to see the contrast of the different places.”*
- *“Excellent coverage of many different areas and the people and animals in each.”*
- *“Lush and diverse scenery to look at.”*
- *“Seeing all the different landscapes because people get too use to their own surroundings.”*
- *“Very educational, Many facts relating to seasons and animal populations of the greatest places. Also different human cultures.”*
- *“Very well produced and informative.”*
- *“The Whole show was great. Visual Textures.”*
- *“The diversified climate, animals, etc.”*
- *“I saw places I never saw before.”*
- *“I liked the photography, it was interesting because it was diverse and well done – I loved the begging (sic) with the creation of the earth!”*
- *“I enjoyed seeing Madagascar best – seeing the landforms made me aware of Madagascar as a place in a way that reading and still photos could not.”*
- *“These settings were captured in a magnificent way on film.”*
- *“Informative, described interesting information on each location.”*
- *“I like close ups of animals, seeing people of other cultures and costumes, seeing unusual animals and birds, and hearing details.”*
- *“Cinematography; segments on people.”*
- *“The roaming vast landscapes and the hidden peaks at the animals in their own world.”*
- *“The landscapes of Greenland. It was beautiful and was the type of thing I expected The Greatest Places to be.”*

**What Viewers Did Not Like.** After the film, viewers were also asked what they liked least about *The Greatest Places* and why. Of the 196 viewers who were asked to respond to this question, less than one-half (44.4%) provided an answer. About five percent of these responses indicated that there was nothing about the film that the respondent did not like.

Responses indicating a disliked feature were sorted into categories presented in Table 15, below. Of the eighty-seven responses to this question, 2.0% of the respondents liked everything about *The Greatest Places*. In contrast, 19.4% felt that the film contained insufficient detail. In particular, respondents wanted to see more detail on each location covered. About 6.6% of the responses expressed concerns

about the quality of the film itself, such as out of focus images. About 4.1% of the responses involved the film not holding their interest. Another 3.6% were displeased with the OMNI theater’s accommodations (e.g., uncomfortable seats). Similarly, 3.1% expressed concerns about the narration quality (e.g., “too preachy”), and 2.0% did not like the quality of the music (e.g. too repetitive).

Table 15. What Viewers Liked Least About *The Greatest Places*

<b>Liked Everything (4)</b>	<u>N</u>
• Liked everything about <i>The Greatest Places</i> (4)	4
<b>Insufficient Detail</b>	
• Not enough detail on each location	21
• Not enough coverage of people / cultures	4
• Not enough coverage of scenery	3
• No underwater scenes	1
• Film was too short	7
• Not enough detail on Greenland	1
• Not enough detail on the waterfalls	<u>1</u>
	<b>38</b>
<b>Not Enough Information</b>	
• The film should contain more information	2
• The film should contain a mention of God	<u>1</u>
	<b>3</b>
<b>Quality of Narration</b>	
• The narration was too “preachy”	3
• The narration was uninformative	<u>3</u>
	<b>6</b>
<b>Quality of Music</b>	
• The music was repetitive	1
• The music was too loud	1
• The music was not majestic	<u>2</u>
	<b>4</b>
<b>Film did not hold viewer’s interest</b>	<b>8</b>
<b>OMNI Theater Accommodations</b>	
• Experienced discomfort resulting from motion on screen	5
• Not enough leg room	1
• Seats uncomfortable	<u>1</u>
	<b>7</b>
<b>Projection Quality (2)</b>	
• Defects in projection were discernable (e.g., lint on lens)	2
<b>Film Quality</b>	
• Out of focus images	9
• Camera moved too quickly	<u>4</u>
	<b>13</b>
<b>Miscellaneous</b>	
• Film should contain a parental advisory	1
• Didn’t like the cold in Greenland and hot in the desert	<u>1</u>
	<b>2</b>

The following is a representative sample of respondents' comments about what they liked least about the film:

- *"The script was too vague. It did not explain convincingly why these places were so great – the truth of the matter is one could find something intriguing in just about any place in the world, this film would have been better if it included more facts and had better transitions between subjects of discussions and better transitions between places. Instead of Madagascar "one of the greatest places..." Perhaps one thing that could have made the show better is less places. It's hard to go into detail of 7 places in only an hour. Focusing on strange or unusual facts (more of them) might also add to the film."*
- *"needs more description of each location, more information would be nice, though more did give good information."*
- *"Narration script overly simple and repetitive."*
- *"Wasn't comprehensive enough. It could have shown a lot more of each place."*
- *"It was a bit short and I thought more variety of things could be shown in each place, i.e. people, landscape, plants and animals."*
- *"Way too short!! Very little information on the different animals like in the Amazon, where I am from."*
- *"Photography – too much zoom, moved around too quickly, focus."*
- *"Would have liked to seen more on the waterfalls of the Iguazu River."*
- *"Much was filmed too close, must be more interesting places."*
- *"Filming was too close in many shots and was hard to get focused."*
- *"Better to focus on less places so the film does not hop from place to place."*
- *"Perhaps too broad, would have liked to have more depth."*
- *"Some shots did not have a central focal point which made it difficult to watch during these segments."*
- *"I wanted to see more from each place."*
- *"Could have gone more in depth shown more of Amazon for instance."*
- *"A little loud, some transitions a little abrupt. Wanted to see more of almost everything about each place."*
- *"Too short time on each place."*
- *"Too short. Not enough narrative detail."*
- *"The script was heavy-handed and not very informative. The hyperbolic nature of the description of these places was unnecessary the truth is stunning and beautiful enough without."*
- *"Verbal explanation insufficient."*
- *"Would like more information about each place."*
- *"The music tried too hard to be like the "Fanfare of the Common Man" but was not nearly as majestic."*
- *"The same music was repeated over and over."*

**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. Approximately 63.8% of the sample wrote no answer to the question. The largest category of responses (13.2%) of the sample were surprised by information contained in *The Greatest Places*. Another 7.1% were surprised by the quality of the film. About 6.6% were surprised by their general reactions to the film's content (e.g., the beauty of Nature). About 4.1% were

surprised by their disappointment related to specific film features. Four viewers were surprised by the IMAX® format, and two expressed disappointment that specific places were not included in the film (Australia and the Grand Canyon).

Table 16. Respondents' Completion of "I was surprised . . ."

<b>Factual Information about Specific Content</b>	<b>N</b>
• About the size of Iguazu Waterfalls	5
• About the existence of Iguazu Waterfalls	3
• About Madagascar	3
• About life in the Namib Desert	2
• About life on the Amazon River	2
• The size of Tibet	1
• Tibet contains the highest plateau	2
• The delta in Africa doesn't flow anywhere	1
• Macaws eat clay	3
• Seals survive the surf	1
• Greenland is a great island	2
• Non-specific information	<u>1</u>
	<b>26</b>
<b>Viewers' General Reactions</b>	
• The earth is so diverse	5
• Nature is so beautiful	5
• There are so many unpopulated, vast areas	2
• People live "purely" without technology	<u>1</u>
	<b>13</b>
<b>Choice of Greatest Places</b>	
• Grand Canyon omitted	1
• Australia omitted	<u>1</u>
	<b>2</b>
<b>Film Quality</b>	
• How realistic the film was	6
• The excellent quality of the cinematography	4
• High sound quality	1
• The ability to film in dangerous places	1
• The close shots of the animals	1
• The "awesome" photography	<u>1</u>
	<b>14</b>
<b>Disappointments</b>	
• The brevity of the film	3
• The brevity of each section	2
• Film didn't capture interest	1
• Film wasn't more lush	1
• Film didn't include more landscape	<u>1</u>
	<b>8</b>
<b>IMAX®</b>	
• The size of the screen	3
• The opening segment	<u>1</u>
	<b>4</b>

The following is a representative sample of respondents' comments about what they found surprising in the film:

- *“That Greenland is an island.”*
- *“At the high quality pictures and sound.”*
- *“The existence of the Iganzu River.”*
- *“To see how real and in person it seemed.”*
- *“By diversity.”*
- *“About human life on the Amazon.”*
- *“At the realism.”*
- *“At the animals. I almost felt like them.”*
- *“By many places that I did not know.”*
- *“The size of the waterfalls.”*
- *“That the waterfalls of the Iguaza River consisted over 200 waterfalls – very impressive.”*
- *“To see Greenland as one of the Greatest Places.”*
- *“At how the medium seemed to take you there. You forget you are in a theater in Milwaukee.”*
- *“At nothing. I expected the variety of climates, etc.”*
- *“The beauty of nature.”*
- *“The beauty of places I never heard of.”*
- *“To learn there were waterfalls that are so big yet still unknown to many people.”*
- *“By the land formations in Madagascar.”*
- *“Of the choices of the 7 greatest places since it omitted the Grand Canyon.”*
- *“By the life in the Namib.”*
- *“The waterfalls of Iguazu.”*
- *“At the details and camera shots in dangerous places.”*
- *“With the vast, unpopulated areas that we still have on earth.”*
- *“At how well it was done.”*
- *“That the Delta in Africa does not flow anywhere.”*
- *“By Madagascar scenery – beautiful.”*
- *“By the beautiful greatest places.”*
- *“By Madagascar.”*
- *“How diverse our earth is.”*
- *“By the closeness to animals, etc.”*
- *“By the vast difference.”*
- *“That the quality was so good.”*
- *“To learn about the huge waterfall.”*
- *“I felt part of it.”*
- *“That Macaws eat clay.”*
- *“I was surprised by the producers ability to capture some of these shots. They are awesome.”*
- *“That the seals survive the pounding surf off Namibia.”*
- *“At the range of different land forms on earth.”*
- *“At how many people still live a purest life without technology.”*
- *“By the size of Tibet.”*
- *“At how high the elevation of the Tibetan plateau is.”*
- *“About the beetles in the desert and where they store water.”*
- *“At the excellent transitions and diversity shown.”*

- “That the Amazon River has lots of human life!”
- “At the enormity of it.”
- “That Tibet is such a large plateau, that parrots eat clay, and why.”
- “That Mackaws eat clay.”
- “Because there were so many waterfalls.”
- “That the falls was so large.”
- “Of the interest that the drama produces.”
- “At how enthralled I was with the film. It went by so fast. I wanted it to last forever.”
- “How beautiful – beautiful the earth is.”
- “By the new information I learned.”

## RESULTS – School Audience Study

### Appeal of *The Greatest Places*

After seeing the film, students were asked to rate how interesting or boring *The Greatest Places* was (See Table 17). Approximately one-fourth of the sample rated the film as either “Very Interesting” or “Moderately Interesting” (25.8%). Slightly more than one-fourth of students (28.8%) thought the film was “Very Boring” or “Moderately Boring.” Almost half (45.3%) of the students reported the appeal of the film as being “Okay.” Responses to *The Greatest Places* were slightly below average, as indicated by students rating of the film’s appeal as 2.9 on a five-point Likert scale ranging from 1 (very boring) to 5 (very interesting).

Table 17. Rating of Appeal of *The Greatest Places* by Students

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent*</i>
Appeal	170	Very Interesting	5.8%
		Moderately Interesting	20.0%
		Okay	45.3%
		Moderately Boring	18.2%
		Very boring	10.6%

\*Percentages sum to 99.9 %, as a result of rounding.

Overall, students found the photography of the film most appealing (M=4.02), compared to the music (M=3.26) and the narration (M=2.99). Appeal ratings were found to be independent of school, treatment, gender, ethnicity, prior estimated knowledge about the film’s topics, and prior interest in learning about the film’s topics, as tested by Chi-square analyses.

***What Students Liked*** . After viewing the film, students were asked what they liked most about *The Greatest Places*, and why. All but 10 students responded to this question. Responses were sorted into the categories presented in Table 19. A little over quarter of the responses (25.6%) expressed liking the film’s photography. Of the students who answered this question, about 15.0% reported liking everything about *The Greatest Places*, and a similar percentage found the animals and educational value of the film most appealing. The close-ups of places never visited were very appealing to 11.0% of these students. About 7.5% reported liking Madagascar most. The waterfalls were very appealing to 4.4% of students, 3.8% of the responses cited The Amazon as appealing.



Table 19. What Students Liked Most About *The Greatest Places*

Category	N
Photography	41
Everything	24
The animals	23
Educational	22
Previews	10
New places	17
Madagascar	11
Waterfalls	7
The Amazon	6
Miscellaneous	9

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

- *"Cool Pictures"*
- *"Pictures jumped off the screen"*
- *"Kept me at the edge of my chair."*
- *"Felt very real."*
- *"Because it captured me and made me think about life now (in USA) and the rest of the world."*
- *"Enjoyed the whole thing."*
- *"I liked everything about the movie."*
- *"Very interesting."*
- *"It was cool."*
- *"Everything."*
- *"Close-ups of animals."*
- *"Different kinds of animals."*
- *"The Elephants."*
- *"Elephant running toward us."*
- *"Lemurs."*
- *"Spider monkeys."*
- *"The film was educational, not just 3-D ride."*
- *"More interesting than reading a book."*
- *"You learn from seeing things in detail."*
- *"The sound made it feel like you were really there."*
- *"Music because it was interesting."*
- *"Close-up of different places. Places I have never been."*
- *"Madagascar."*
- *"Waterfalls because they are beautiful."*
- *"The Amazon."*
- *"Desert because it looked cool."*
- *"Greenland."*
- *"Tibet was a plateau."*
- *"Jungles."*

- “How beautiful the places shown were.”
- “How places broke up.”
- “Showed how other people lived.”

**What Students Did Not Like.** After the film, students were also asked what they did not like about *The Greatest Places*, and why. Responses indicating a disliked feature were sorted into categories presented in Table 20. Of the 170 students in the sample, slightly more than one-quarter (27.6%) did not respond to this question. Approximately 34.7% of the students felt that some segments were not interesting. About 15.1% of the sample indicated not liking the narration, either because it was confusing, lacked expression, or did not introduce topics well enough. About 6.1% of the responses expressed the feeling that there wasn't enough action (e.g., wanted more of a feeling of “being there”). Motion discomfort was reported by about 4.7% of students. Approximately 3.5% of sample students were displeased with the desert footage in *The Greatest Places*.

Table 20. What Students Did Not Like  
About *The Greatest Places*

Category	N
Not interesting	59
Not enough action	11
Narration	10
Motion discomfort	8
Desert scenes	6
Miscellaneous	29

The following sample of responses are reflective of what students indicated they did not like about *The Greatest Places* (Included are representative positive comments offered in response to this item.):

**Some segments not interesting**

- “Some places seemed slow and boring.”
- “When geological stuff came on it was boring.”
- “Middle part of the film was dull.”
- “It wasn't like a story. It was basically all facts.”
- “Seemed just like watching normal TV.”
- “Long and drawn out.”
- “It was my least favorite of five experiences at the IMAX. I even fell asleep.”
- “It really didn't get you involved in the sense of fun.”
- “Part with people did not catch my interest.”
- “No scary part.”
- “Same scenes over and over.”

**Not enough action**

- “There wasn't a lot of action – the show was mostly informational.”
- “Wasn't a lot of movement.”
- “Need more action. Wasn't even exciting.”
- “Was not much IMAX effect.”
- “Regular movie. Should feel like you are there. This one didn't.”

### Narration

- “Narrator had no expression.”
- “Introduce different places better.”
- “That they didn’t say what place they were talking about before they talked about it.”
- “Didn’t give reasons why they were the greatest places.”
- “Confusing to understand what they are talking about.”
- “Talking about the fatalities produced discomfort.”

### Motion discomfort

- “Movement. I get sick when watching this kind of thing.” (5)
- “The spinning around the camera did.”
- “How fast things moved.”
- “Motion gave me a headache.”

### Miscellaneous

- “Coverage of the fatalities was unnecessary/not consistent.”
- “All of it – it wasn’t very good.”
- “Some parts too long.”
- “If you are going to watch a movie like that, watch it on the Discovery Channel.”
- “Was not enough information about animals.”
- “Too much information at once. Too much to take in.”
- “Didn’t seem believable. Doesn’t tie into the main theme.”
- “Icebergs/avalanches. Couldn’t tell which way was up.”
- “Did not go under water to see icebergs.”
- “Cut off in the helicopter and motorcycle scene.”
- “Did not like movie. Afraid of heights.”
- “Desert films.”
- “Wasn’t enough information about animals.”
- “Didn’t like it when they talked about people.”
- “Quiet music – don’t like quiet music.”
- “Spent too much time on one thing.”
- “How you separated the parts, because they flowed together too much.”
- “Didn’t give good enough perspective.”
- “Didn’t like all the places.”
- “Made it sound as if other countries were poor and worthless.”
- “Greenland – no cool things.”
- “Many places the movie said were so great I considered not to be.”

**What Surprised Students.** 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 21. Almost one-quarter (24.2%) of the sample wrote no answer to the question. Approximately 17% of the sample were surprised by the quality of the film. Another 15.3% were surprised by the IMAX® experience. About 13.5% were surprised that the film was not more interesting. Slightly more than 6% were surprised by the animals contained in *The Greatest Places*, and the same percentage were surprised by the photography. About 5.3% reported

being surprised by the sound in the film. Another 4.1% of the sample indicated that they were positively surprised by the Iguazu Falls segment of *The Greatest Places*.

Table 21. Students' Completion of  
"I was surprised . . ."

Category	N
Film Quality	29
IMAX experience	26
Not interesting	23
Photography	11
Animals	11
Sound	9
Iguazu Falls	7
Greenland	4
Amazon	3
Tibetan plateau	3
Lemurs	3
Miscellaneous	29

The following sample of feedback is reflective of responses completing the sentence fragment "I was surprised . . .":

#### Positive Feedback

I was surprised . . .

- "By incredible camera views."
- "Cool sound."
- "How camera angles changed."
- "How much photography was put on the screen."
- "Some of the views."
- "The Iguazu Falls."
- "So much water in Iguazu Falls."
- "200 waterfalls."
- "How big glaciers in Greenland."
- "Traveled up close to Glaciers in Greenland."
- "Greenland is not green."
- "Greenland largest island."
- "How many people live in the Amazon."
- "In Tibet there are still many people who worship."
- "How Tibet was formed the way it was."
- "People in Tibet farmed yak."
- "Lemurs only in Madagascar."
- "So many kinds of lemurs."
- "Lemurs are pretty."
- "How beautiful scenery was."
- "All the animals."
- "Monkeys. Monkeys dancing."
- "Close up of an elephant."
- "Excellent photography."
- "How big the fish they caught were."

- "How cool the film was."
- "A lot of action."
- "Way some people lived."
- "All Greatest Places were in Africa."
- "Lots of Greatest Places."
- "When a snake came on screen."
- "What people consider great."
- "Upside down tree."
- "Spider walking on water."
- "I learned so much."
- "Monkeys don't fall."

### Negative Feedback

I was surprised . . .

- "By the excellent quality of the movie."
- "The film was very good."
- "How real it felt. How big the screen was."
- "When I felt in the movie."
- "When elephants woke me up."
- "It made me scream."
- "Wasn't as interesting as other films."
- "Kind of slow."
- "Took so long."
- "Surprised at beginning, asleep at the end."
- "Like normal TV."
- "Never felt like I was in the movie."
- "Did not have that much realistic stuff like I was there."
- "Wasn't a lot of action."
- "IMAX didn't have effect. Could have been on a flat screen."
- "Wasn't many scenes only IMAX could show."
- "Wasn't as good as some of the other films."
- "It was just about places."

### Impact on Knowledge

**Achievement of Intended Viewing Goals.** Understanding of the film's content was assessed via a 10-point test with multiple-choice and short answer items. Table 22 and Figure 2 show 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 6.36, significantly higher than the pre-viewing mean score ( $M = 4.11$ ), as tested by a paired t-test,  $t(1,169) = 13.76, p \leq .0001$ . Thus, the learning outcomes resulting from viewing *The Greatest Places* are statistically significant for the sampled middle school students.

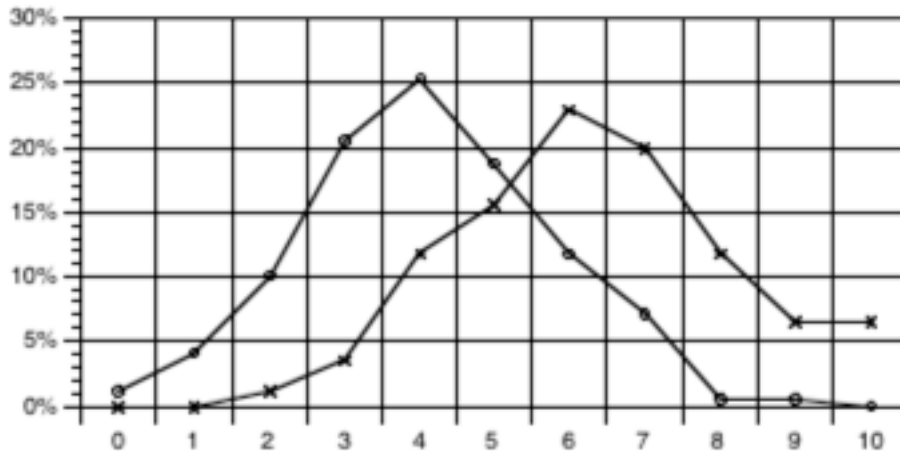
A multiple regression analysis with posttest scores as the criterion variable and pretest scores entered as the first predictor resulted in an  $R^2$  of 98.4 and a significant coefficient ( $t = 102, p \leq .0001$ ). Treatment (FILM, FILM + ACTIVITY) was not a

significant predictor of students' post-survey scores. Thus, approximately 98% of the variability in 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.

Table 22. Distribution of Pre- and Post-Viewing Test Scores

Test Score	Pre-Viewing (% of Respondents)	Post-Viewing (% of Respondents)	Difference
0	1.2%	0.0%	- 1.2%
1	4.1%	0.0%	- 4.1%
2	10.0%	1.2%	- 8.8%
3	20.6%	3.5%	- 17.1%
4	25.3%	11.8%	- 13.5%
5	18.8%	15.6%	- 11.7%
6	11.8%	22.9%	+ 11.1%
7	7.1%	20.0%	+ 12.9%
8	0.6%	11.8%	+ 11.2%
9	0.6%	6.5%	+ 5.9%
10	0.0%	6.5%	+ 6.5%

Figure 2. Display of Pre- and Post-viewing Test Scores



**Interest in The Greatest Places-Related Topics.** 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 the topics related to *The Greatest Places*. On average, students were moderately interested in all seven topics after viewing the film (See Tables 23, 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 topics placed at the top of each table (i.e., Waterfalls of the Iguazu River and the Amazon River, each with a mean of 3.6).

Table 23. Interest in Topics After Viewing *The Greatest Places*

Topic	N	Mean
Waterfalls of the Iguazu River	170	3.6
The Amazon River	170	3.6
Madagascar	170	3.3
The Namib Desert	170	2.9
Greenland	170	2.9
The Okavango River Delta	170	2.8
The Tibetan Plateau	170	2.8

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

**General Ideas or Facts Learned..** Students were asked on the posttest questionnaire to describe one idea or fact that they learned from viewing *The Greatest Places*. A total of 110 responses were generated in response to this item. These responses are categorized and displayed in Table 24.

Approximately 22.9% of the sample learned information about lemurs. About 12.9% reported learning information about Greenland, such as the fact that it is an island. Another 10.6% of the sample said that they learned about beautiful places they had never seen. Facts about the Iguazu Falls, animals generally, and monkeys were learned by about 6.5%, 5.9%, and 5.3%, respectively.

Table 24. General Ideas & Facts Students Reported Learning From *The Greatest Places*

<b>Lemurs</b>	<u>N</u>
• Lemurs are found only in Madagascar	34
• There are many kinds of Lemurs	<u>5</u>
	<b>39</b>
<b>Greenland</b>	
• Greenland is the largest island	15
• Miscellaneous	<u>7</u>
	<b>22</b>
<b>Greatest Places</b>	
• There are many beautiful places I've never seen	12
• Miscellaneous	<u>6</u>
	<b>18</b>
<b>Iquazu Falls</b>	
• They are larger than Niagra Falls	4
• Miscellaneous	<u>7</u>
	<b>11</b>
<b>Animals</b>	
• Information about monkeys	9
• Animals are interesting	8
• Miscellaneous	<u>2</u>
	<b>19</b>
<b>Tibet</b>	
• Tibetan plateau culture	3
• Miscellaneous	<u>3</u>
	<b>6</b>

Table 24 (continued). General Ideas & Facts Students Reported Learning From *The Greatest Places*

<b>Amazon River</b>	<u>N</u>
• People live on the Amazon River	3
• Miscellaneous	<u>2</u>
	5
<b>Madagascar</b>	
• Madagascar broke from Africa	2
• Miscellaneous	<u>2</u>
	4
<b>Miscellaneous</b>	16

The following are responses reflective of the ideas and/or facts respondents reported having learned from *The Greatest Places*:

- "Lemurs are only in Madagascar."
- "There are so many kinds of Lemurs!"
- "Greenland is the largest island."
- "End of Greenland pushed down."
- "What fur seals look like."
- "Seals live in Greenland."
- "Icebergs are big underwater."
- "Greenland is not all ice."
- "Greenland is a big iceberg."
- "Greenland is not green."
- "Animals are interesting."
- "Different animals than just the ones in America."
- "Cool wild life out there."
- "Animals in the desert."
- "Monkeys."
- "One monkey of the batch just didn't look right."
- "Madagascar is an island."
- "Cactus of Madagascar."
- "Madagascar broke from Africa."
- "Many beautiful places I have never seen."
- "Many great places in the world."
- "Places never heard of."
- "They looked pretty and beautiful."
- "Lots of great places."
- "Didn't know the places."
- "We see some other countries."
- "Some places not very nice to live in."
- "Iguazu Falls."
- "The Falls are bigger than Niagra falls."
- "There are over 200 waterfalls."
- "Amazon river."
- "People live on the Amazon river."



- “Pangeia”
- “Planet before and after the land moved.”
- “Information about the desert.”
- “That a desert can touch water.”
- “People who live on Tibetan plateau are very few and lead their religion.”
- “Tibet is a plateau.”
- “Tibetan plateau culture.”
- “How Tibetan plateau formed.”
- “Okavango does not empty to the ocean.”
- “Everything.”
- “How Iguana’s use their tongue.”
- “Upside down trees.”
- “Rainfall patterns can be different.”

## 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 film appeal to adult viewers?*

*The Greatest Places* was reportedly “moderately” or “very interesting” to 92% of the adult sample, with approximately 63% of the sample rating the film as “very interesting.” Viewers identified Madagascar, the Waterfalls of the Iguazu River, and the Amazon River as the most appealing segments of the film. Slightly more than one-quarter of the sample focused on the film’s cinematography as the aspect they liked best about *The Greatest Places*. The film’s experiential qualities were most appealing to about 11%. A similar percentage of viewers identified the educational value of the film content as their most liked aspect of *The Greatest Places*. In accordance with the results of evaluations of previous Omni films, these statistics offer support for the notion that viewers appreciate both the entertainment and educational aspects of these films.

Additionally, it is noteworthy that although one may be tempted to interpret the low percentages that appear in the preceding paragraph as indicators of the film’s lack of appeal, this is countered by the above average ratings of the film’s segments and photography, music and narration. Instead, these numbers are most likely a reflection of the low response rate to the open-ended questions on the post-viewing survey that probed for feedback about what viewers liked, disliked, and learned.

The appeal of *The Greatest Places* is also evidenced by the fact that when asked what they liked least about the film, the most frequently cited response was disappointment that there was not more coverage of topics. These results indicate that viewers wanted more of what was presented, as opposed to different content or presentation of material.

- *To what extent did the film achieve its intended viewing goals?*

Viewing the film significantly increased viewers knowledge about the age of the solar system, the largest island on Earth, the location of the Namib Desert, lemurs, the location of the Okavango River delta, the waterfalls of the Iguazu River, the Amazon River, the Himalayas, Pangea, and the creation of the Tibetan plateau. The pre-viewing mean test score was 3.68 out of 10 points compared with the significantly higher post-viewing mean score of 7.65. These scores did not show interactions with any of the demographic or background variables measured, thus showing that the successful learning outcomes are applicable to a general audience.

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

The majority (84.2%) of respondents feel that *The Greatest Places* is moderately or very informative. When asked what they had learned from the film, most viewers' comments and test results focused on an increase in their knowledge about Madagascar, the Iguazu Falls, and Tibet. Some of the other reported learning outcomes are rooted in more specific information, such as learning about upside-down trees and the reason that birds ingest clay.

### School Audience Study

- *To what extent did *The Greatest Places* appeal to student viewers?*

Of the 170 student viewers, slightly more than one quarter (25.8%) thought *The Greatest Places* was either "very" or "moderately" interesting. The features most liked about the film are its photography, animals, close-ups of places never visited, the educational value of the film, and Madagascar. The features least liked is a general feeling that the film is not interesting, a perceived shortage of action, the narration, the motion discomfort some students experienced, and the desert scenes. What surprised students most was the overall superb quality of the film and the IMAX® film experience. For some students, the fact that it was not as interesting as expected surprised them.

- *To what extent did *The Greatest Places* achieve its intended viewing goals?*

Viewing the film significantly increased sample students' knowledge, on average, as measured by a 10-point content test. Viewers of *The Greatest Places* came away knowing more about the history of the solar system's formation, Greenland, the location of the Namib Desert, lemurs, the location of the Okavango Delta, the Iguazu Falls, the Amazon Basin, and the creation of the Tibetan Plateau.

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

Treatment group (FILM, FILM + ACTIVITY) was not a significant factor in the appeal ratings nor a significant predictor of posttest scores. Thus, exploration of film-related concepts via reading activities after seeing the film did not differentially affect students' knowledge or interests significantly beyond what students learned from the film alone.

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