Spring | 10

San Diego Zoo – Volunteer Training

Ladan Moshiri and Rudy Arias

San Diego Zoo – Volunteer Training is an online training course designed for the San Diego Zoo and the San Diego Zoo's Wild Animal Park volunteers who interact with visitors. This course will help the volunteers understand the concept of taxonomy also relate that understanding to the park visitors. This design document describes out the content that will be included in the course.

Table of Contents

Executive Briefing i

Introduction 1

Analysis 1

- Audience Analysis 2
- Environment Analysis 4
- Content Analysis 4

Content Map 6

Objectives & Test Items 8

- Objectives & Test Items Matrix 8

Implementation Guidance 12

Evaluation Framework 13

- Key Evaluation Questions 13
- Evaluation Instrumentation & Data Collection 14
  - Evaluation Question & Procedure Matrix 14

Executive Briefing

The San Diego Zoo and San Diego Wild Animal Park are among the largest zoos in the entire world; and every year millions of guests visit both parks. In order to accommodate for such large number of visitors, the zoo administration uses volunteers to help educate guests about the animals and the conservation. These volunteers go through several trainings to gain the knowledge necessary to understand the animals and also relate that understanding to the park visitors. One of these topics is Taxonomy which is the practice and science of classification of animals. Currently, the volunteers attend a 45 minute classroom training to learn the subject of Taxonomy. However, Taxonomy is a vast and complicated topic which is not easy to learn and even more difficult to memorize. This results in the volunteers not feeling confident about their knowledge on this topic. This situation presents an opportunity for online learning. If successful, volunteers will learn at their own pace and have the chance to re-visit the course materials when they need additional information or forget important details.

For this purpose, a web-based learning module will be created to teach the volunteers the topic of taxonomy. This module will be an online course which will be divided into several units. Every unit will contain interactive lessons and examples to engage the learners and help them understand important topics about taxonomy. This course will explain the definition of taxonomy, and its benefits to the volunteers. Also, the zoo volunteers will learn the definition of species and subspecies and will be taught different methods of recognizing them. Finally, the zoo volunteers will gain adequate knowledge about the different schools of taxonomy. Also, the volunteers are provided with an interactive quiz at the end of each unit to present them with the necessary practice and to reinforce understanding. In summary, this course will allow the zoo volunteers to have a great understanding of taxonomy; thus enabling them with adequate knowledge to perform better in their jobs and answer the guests' questions.

Introduction

As stated in the Executive Briefing, currently, the volunteers at the San Diego Zoo and San Diego Wild Animal Park are required to attend a 45 minute classroom training to learn the subject of Taxonomy and to relate that understanding to the park visitors. However, Taxonomy is a vast and complex topic which is challenging to learn and hard to memorize. Thus, attending only one instructor-led classroom session, and listening to the lecturer trying to cover all areas of taxonomy in only 45 minutes may not provide the ideal situation for the volunteers to walk away with sufficient knowledge and practice to be able to address the visitors' questions. Also, the absence of adequate practice and lack of ample understanding of the topic, results in the volunteers' lack of confidence about their knowledge on taxonomy. This situation presents an excellent opportunity for an online course.

The web-based learning environment provides the volunteers with the chance to learn the course content at their own pace. Thus, if they have difficulty understanding specific areas of taxonomy, they may go back and repeat the corresponding lessons until they feel confident in that area. Moreover, interactive examples and quizzes which will be implemented in the online version will offer the volunteers the opportunity to have a more engaging learning experience, plus, have the ability to examine their knowledge in different areas. Finally, the volunteers have the chance to re-visit the course materials any time they need additional information or if they forget important details. This capability will help boost the volunteers' confidence.

This web-based training will be divided into several interactive units to cover important areas of taxonomy. The key topics will be covered in this online course are: the definition of taxonomy and its benefits, the definition of species and subspecies, plus their methods of recognition; and finally different schools of taxonomy.

The following document presents an outline for creating this web-based training. First is the analysis section which includes detailed analyses of the audience, the environment, and the course content. The analysis section will serve as a guide in instructional design. Next, is the content map which features all the key topics that the course will cover. Subsequently, the instructional objectives are listed, followed by a framework for evaluation. Finally, a detailed story board of the course prototype is included.

Analysis

This analysis is being conducted to elaborate the specific skills/knowledge that is necessary for successful performance on the job.

The sources for this analysis are the zoo volunteers and Karen Weise, a training manager at the San Diego Zoo, who will serve as the subject matter expert for this study. This analysis starts by examining the volunteers at the zoo who are the main audience for this study. Next, the zoo environment, in which the volunteers will work and actually utilize the acquired training, will be analyzed. Finally, the analysis will focus on the specific content that this online training will offer.

Audience Analysis

The main audience for this study is the volunteers who work at the San Diego Zoo and San Diego Wild Animal Park. These volunteers are scattered throughout different exhibits in both parks. According to Karen Weise, the subject matter expert, most of them are retired individuals from diverse backgrounds, who have very limited prior knowledge about the animals. Volunteers invest their time at the zoo for self-fulfillment and their love for animals. The main responsibility of the volunteers is to take part in educating people concerning diverse species and conveying the zoo's message about conserving the animals and rescuing endangered species. These volunteers are enrolled in an interpretation program which has been available for two years now. The volunteers go through a twenty hour of general training and an additional thirty-two hours, if they would like to qualify to work at the Elephant Odyssey exhibit. The goal of the interpretation program is for the volunteers to gain knowledge about different topics regarding the animals and then relate that understanding to the park visitors. One of the more complicated training topics for the volunteers is Taxonomy.

According to an official survey done by the San Diego Zoo training department, which included sixteen participating volunteers, the majority of the survey participants have been volunteering at the zoo ranging from six months to two years. The survey results revealed that the volunteers were highly **motivated** to learn about the animals and interpret the information for the park guests. Furthermore, all sixteen volunteers highly **valued** the significance of the message they were spreading among the park visitors. Figure 1 shows the sample volunteers' responses to a question from this official survey. These responses demonstrate the high value and motivation levels among these individuals.

Figure 1

What kinds of themes/messages do you deliver to guests during your programs, tours, guest conversations and/or other interpretive experiences?
Relay information and display attitude to connect the guests to wildlife, share how wildlife is in danger and let them know what they can do to protect and conserve. At all times, be excited and interested about what I am doing because it's so much fun.
Our care for our animals and our world-wide efforts on their behalf. What we can do to help.
I deliver themes and messages that fall within the scope of the Zoo's general themes which include: 1) wildlife and threatened wildlife habitats; 2) there are certain dangers faced by animals and their habitat; 3) we can all help.
Loss of habitat, how endangered the animals are in their natural habitat, what the Zoo is doing to help them in the wild, what we can all do to help in the conservation of wildlife.

However, when asked about their comfort level and **confidence** regarding their knowledge and interpretation skills, only five out of sixteen volunteers felt very confident. In fact, six out of sixteen volunteers surveyed, believed that their knowledge and interpretation skills would fall below the necessary average. Furthermore, a personal interview with three zoo volunteers revealed that although they found the classroom trainings very useful, they had a difficult time remembering the information they had obtained in the classroom. When asked specifically about the topic of Taxonomy, although they all remembered having had training on the subject, they did not have much recollection of the covered content; thus would not be able to answer specific questions about Taxonomy.

As a result, it can be seen that there clearly is a skills/knowledge deficiency among the zoo volunteers, particularly on the subject of Taxonomy. Therefore, additional instruction in the proper method is needed to close the existing gaps. Furthermore, since the classroom trainings are not being offered on a regular basis to help the volunteers, there is visibly a need for online courses. Essential evidence supporting this fact was found in the zoo's official survey of the sixteen volunteers. The table in Figure 1 demonstrates the need for online courses by analyzing some of the volunteers' responses to this question: "**What do you feel are your greatest challenges?**"

Figure 2

What do you feel are your greatest challenges?	
Volunteers' Replies	**Benefits of Online Trainings to close the Skills/Knowledge Gaps**
The information we are passing along to guests per interpretation is time sensitive and changes while we are left with less timely passé data.	The online information can be continuously updated to provide the volunteers with the up-to-date information.
Remembering all the important data.	The volunteers can refer to the online courses any time they need to remember important data.
Need to re-educate myself about information prior	The volunteers can access the

to shift.	information in the online courses any time they need additional information or to re-educate themselves.
Classroom sessions are too long.	The volunteers can take the courses at their own paces.

In summary, the result of the audience analysis revealed that although the zoo volunteers were greatly motivated and had a high value toward the subject matter, their confidence level was very low in general. Further study of the volunteers determined that the low confidence was the direct result of insufficient skills and knowledge. As a result, additional instruction in form of online training, especially on Taxonomy, would greatly benefit the volunteers, to help them share their knowledge with the zoo visitors.

Environment Analysis

After volunteers finish their classroom trainings, they are stationed at different exhibits within the San Diego Zoo and San Diego Wild Animal Park. However most of the volunteers are stationed at the following five exhibits at the San Diego Zoo: Polar Bears, Koalas, Elephant Odyssey, Gorillas, and Galapagos Tortoises. The volunteers interact with many individuals throughout the day; but the frequency of their interactions with the park guests depends on the number of visitors on any given day. For this reason, their work environment is constantly changing from slow-paced on some days to fast-paced on others. Consequently, this change in the environment directly affects the volunteers' performances since on the busy days they have to answer a lot more questions and interact with more guests. In addition, the training staffs are not always available to respond to the volunteers' questions. Although the volunteers do not have access to computers or the internet while working at their designated stations, they can still benefit from online classes. For example, on busy days, they may choose to prepare themselves ahead of time at home, or by using the computers at the training department at the zoo, to re-visit the online courses and quickly look up important details. However, if the volunteers only rely on the classroom lectures, they will clearly miss the opportunity for continuous self-training. This example undoubtedly demonstrates the need for online training at the San Diego Zoo. Furthermore, since Taxonomy is one of the more difficult subjects to memorize, an online course about Taxonomy will provide the opportunity for the volunteers to quickly update themselves on the several computers available at the zoo, thus increasing their performance in answering the guests' questions.

Content Analysis

A consultation with Karen Weise, the Subject Matter Expert (SME), revealed that there are five specific topics in the area of Taxonomy that would greatly benefit the volunteers and help them improve their performances: *Taxonomy Definition, Reasons for Taxonomy, History of Taxonomy, Schools*

of Taxonomy, Hierarchy of Taxonomy, and finally *Species*. The following is the potential hierarchy of these topics.

1. Taxonomy Definition

The zoo volunteers need to know the definition of Taxonomy before they can begin learning about its proper use. For this reason, first, the definition and a broad overview of taxonomy will be presented. Next, this section will be divided into five subsections to highlight and cover the key components about Taxonomy.

2. Reasons for Taxonomy

It is essential for the volunteers to learn the reasons behind the scientists' decisions to classify the animals into different groups. Therefore, this section will briefly explain the reasons for Taxonomy.

3. History of Taxonomy

Throughout history, there have been many individuals who have attempted to furnish different theories for Taxonomy. This section will be dedicated to listing, and briefly explaining the important work of several scientists. The following is the potential outline for this section:

1. *Aristotle :* Explaining the difference between Air, Water and Land dwellers
2. *Theophrastus :* Categorize based on form, life span, and habitat
3. *St. Augustine :* Classify based on usefulness, Harmfulness, and Superfluous
4. *John Ray :* Formulated "species" as a group of organisms with the same morphology an can reproduce their own kind.
5. *Linnaeus :* Gave the animals binomial names, and created a hierarchical system.

4. Hierarchy of Taxonomy

Next, the volunteers are introduced to the hierarchy of Taxonomy. This section will be divided into seven sub-sections, each one going deeper into the hierarchy. In this section the order is very important.

1. Kingdom
2. Phylum
3. Class
4. Order
5. Family
6. Genus
7. Specific Epithet

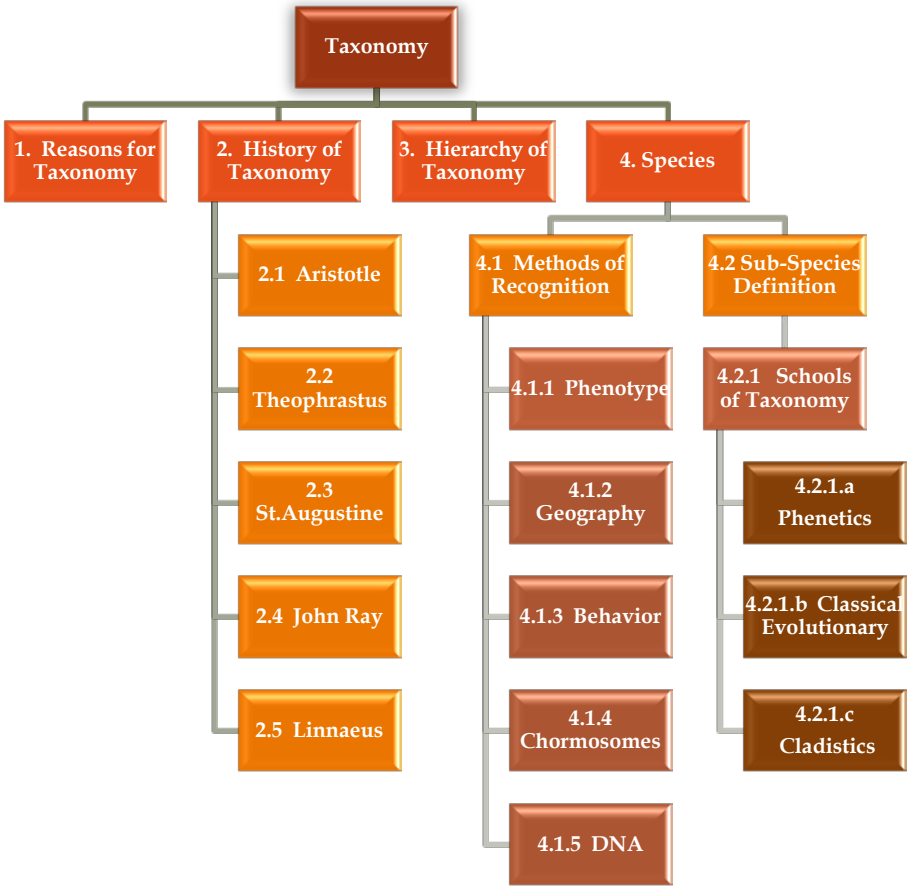
5. Species

Finally, it is essential for the volunteers to learn about different species and subspecies and be able to distinguish one type from another. For this purpose, this section begins by first explaining the meaning of species and subspecies. Next, the volunteers are introduced to different methods of distinguishing different types of species. The potential outline of this section is as follow:

1. Definition of Species
    a. Methods of Species recognition
        i. *Phenotype :* color, pattern, size, anatomy
        ii. *Geography :* where they are, physical Barriers
        iii. *Behavior :* courtship display, song
        iv. *Chromosomes :* number, size, banding
        v. *DNA :* banding patterns, molecular sequence
    b. Definition of Sub-species
        i. Schools of Taxonomy
            1. Phenetics
            2. Cladistics
            3. Classical Evolutionary

Content Map

The content map for this course follows the flow of the content analysis section. In order to follow the directions specified by the SME, as well as taking into consideration the resources provided by her, this course was divided into five units: *Reasons for Taxonomy, History of Taxonomy, Hierarchy of Taxonomy,* and finally *Species*. The first unit *Reasons for Taxonomy* contains only one lesson. The second unit, *History of Taxonomy* is divided into five lessons, with each lesson explaining the work of a single scientist. Once the volunteers have completed all five lessons, an assessment will be offered which will cover the content of all five lessons combined. The third unit, *Hierarchy of Taxonomy,* describes the seven different levels of the hierarchy of Taxonomy. A single assessment will be offered upon completion of this lesson. The fourth unit, titled *Species,* is divided into two sub-units. The first sub-unit will introduce Species. Then, this sub-unit is divided into five lessons to explain different *Methods of Species Recognition*. Upon completion of all five lessons, an assessment will be offered to cover the content of these sub-lessons. The second sub-unit, called Sub*species* will first introduce the Subspecies. Then, this sub-unit is divided into three lessons to explain different *Schools of Taxonomy*. Upon completion of all three lessons, an assessment will be offered to cover the content of these lessons. Finally, individual colors in the content map represent different levels of hierarchy.


Taxonomy
1. Reasons for Taxonomy
2. History of Taxonomy
3. Hierarchy of Taxonomy
4. Species
2.1 Aristotle
2.2 Theophrastus
2.3 St.Augustine
2.4 John Ray
2.5 Linnaeus
4.1 Methods of Recognition
4.2 Sub-Species Definition
4.1.1 Phenotype
4.1.2 Geography
4.1.3 Behavior
4.1.4 Chormosomes
4.1.5 DNA
4.2.1 Schools of Taxonomy
4.2.1.a Phenetics
4.2.1.b Classical Evolutionary
4.2.1.c Cladistics

Objectives & Test Items

The overarching goal of instruction is to provide the San Diego Zoo volunteers with an understanding of animal Taxonomy which is the classification of organisms in an ordered system. Consecutively, to help the volunteers better understand the concept of animal taxonomy; they first need to learn about *Reasons for Taxonomy, History of Taxonomy, Hierarchy of Taxonomy, Species,* and *Schools of Taxonomy*. As a result, each of these headings in the content map has an overarching terminal objective (see CM1, CM2, CM3, CM4 and CM5). In addition, subsection 4.3 (Methods of Recognition) has a terminal objective. The remaining objectives related to the content map are all enabling objective.

Objectives & Test Items Matrix

CM	Objective	Category	Instructional Methods	Practice Methods	Assessment Type	Assessment Item (TO only)
1.0	**When asked by a visitor, the zoo volunteer will be able to describe at least three reasons why animal taxonomy exists.**	**Recall Concept**	**Web-Based Learning - Provide text definition**	**Drill and Practice**	**Matching, Multiple Choice, or True/False Review Quiz**	**Describe the main five reasons for existence of animal taxonomy**
2.0	**When asked by a visitor, the zoo volunteer will be able to name at least three scientists who contributed to animal taxonomy and describe the correct classification technique for each scientist.**	**Recall Fact/ Recall Concept**	**Web-Based Learning - Provide text definition**	**Drill and Practice**	**Matching, Multiple Choice, or True/False Review Quiz**	**Name the main five scientists who contributed to animal taxonomy and describe each scientist's method.**
2.1 2.2 2.3 2.4	Each time the volunteer explains the history of taxonomy to the zoo visitors, he/she will be able to select one scientist from the following list and describe the technique which the selected scientist used to classify the	Recall Concept	Web-Based Learning - Provide text definition	Drill and Practice	Matching, Multiple choice or true/false review quiz	

CM	Objective	Category	Instructional Methods	Practice Methods	Assessment Type	Assessment Item (TO only)
2.5	animals: • Aristotle • Theophrastus • St. Augustine • John Ray • Linnaeus					
3.0	**When asked about different animals, the zoo volunteer will be able to correctly categorize at least one animal according to the taxonomy hierarchy.**	**Recall Fact/ Recall Concept/ Apply Concept**	**Web-based learning: step-by-step written instructions with accompanying visual examples.**	**Drill and Practice**	**Multiple Choice or True/False Review Quiz**	**Categorize the given animals in the correct taxonomy hierarchy.**
4.0	**When asked by a zoo visitor, the volunteer will be able to accurately define species, subspecies, and apply different methods to recognize them.**	**Recall Fact/ Recall Concept/ Apply Concept**	**Web-Based Learning - Provide written instructions with accompanying conceptual and visual examples**	**Drill and Practice**	**Multiple Choice or True/False Review Quiz**	**Define species and sub-species, and list the six methods of species recognition, and finally describe the characteristics for each method.**
4.1	**When presented with two or more pictures of the same species, the volunteer will be able to**	**Recall Fact/ Recall**	**Web-Based Learning -**	**Drill and Practice**	**Multiple Choice or**	**Distinguish different types**

CM	Objective	Category	Instructional Methods	Practice Methods	Assessment Type	Assessment Item (TO only)
	use at least three methods of species recognition, to distinguish different types of the sub-species of the same species.	**Concept/ Apply Concept**	**Provide written instructions with accompanying visual and conceptual examples**		**True/False Review Quiz**	**of the sub-species of any given species**
4.1.1 4.1.2 4.1.3 4.1.4 4.1.5	When explaining the methods of species recognition to the visitors, the volunteer will be able to name at least three characteristics of the following recognition methods: • Phenotype • Geography • Behavior • Chromosomes • DNA	Recall Fact/ Recall Concept/Apply Concept	Web-Based Learning - Provide visual and conceptual example, and text definition	Drill and Practice	Matching, Multiple Choice or True/False	
4.2	**When asked by a zoo visitor, the volunteer will be able to describe an accurate definition of sub-species.**	**Recall Concept**	**Web-Based Learning - Provide text definition and conceptual examples**	**Drill and Practice**	**Multiple Choice or True/False**	**The volunteer will be able to state an accurate description of subspecies, and also correctly state which school of taxonomy was used to determine if**

CM	Objective	Category	Instructional Methods	Practice Methods	Assessment Type	Assessment Item (TO only)
						the two subspecies were from the same species or not.
4.2.1	**When asked about different animals, the zoo volunteer is able to use at least one school of taxonomy to describe if the given animals are related or not.**	**Recall Fact/ Recall Concept/ Apply Concept**	**Web-Based Learning - Provide written instructions with accompanying conceptual, and visual examples**	**Drill and Practice**	**Multiple Choice or True/False Review Quiz**	**The volunteers will be able to use the three schools of taxonomy to describe if different animals are related or not.**
4.2.1.a 4.2.1.b 4.2.1.c	Every time the zoo volunteer is asked about two different animals, he/she is able to use one of the following schools of taxonomy to explain if the given animals are related or not: • Phenetics • Cladistics • Classical Evolutionary	Recall Fact/ Recall Concept/ Apply Concept	Web-Based Learning - Provide visual and conceptual examples and text definition	Drill and Practice	Matching, Multiple Choice or True/False	

Implementation Guidance

The findings in the analysis section revealed that the causes for the existing performance gaps are mainly due to a skills/knowledge deficiency which results in lack of motivation, both in terms of confidence and value. As stated in the analysis section, the current classroom training on taxonomy does not provide the volunteers with sufficient skills/knowledge on this topic. As a result, the volunteers lack the necessary confidence to perform their job and answer the volunteers' questions about taxonomy. Also, while the volunteers greatly value learning about animals, they may not value the topic of taxonomy as much as other topics. This lack of value is a direct result of insufficient skills/knowledge which produces a lack of motivation to learn about taxonomy. This web-based training addresses all of these three gaps.

Learning the complicated topic of taxonomy may seem like a difficult task to the volunteers. However, this online course simplifies this complex topic by taking advantage of the web-based environment to provide easy to understand and interactive lessons which enforce learners' engagement. Learning a complex topic such as taxonomy in smaller modules containing many visuals and interactive examples helps the volunteers to understand the topic better. Also, the interactive quizzes provide the much needed practice which in turn helps the volunteers to commit the lessons to memory for much longer periods. Therefore, the web-based training will help reduce the gap caused by the skills/knowledge deficiency.

Consequently, as the volunteers' understanding of taxonomy increases, they will have a much greater motivation and confidence to answer the visitors' questions about this topic.

Furthermore, this online course uses many visuals and interactive examples to ensure that the volunteers realize the importance of taxonomy and its benefits to science. This will result in the volunteers appreciating the value of taxonomy much more, resulting in added motivation to discuss taxonomy with the zoo visitors.

For the volunteers, completing the course in full once should be adequate to generate satisfactory results when helping the zoo guests. However, the volunteers are encouraged to perform continual practice to ensure maintaining and remembering different areas of taxonomy.

Evaluation Framework

Since the volunteers' performance occurs in an informal setting instead of the traditional work setting, the evaluation for this web-based training is unique and rather challenging. Since this training is web-based, surveys can be built into the training module to measure Kirkpatrick's first level of evaluation which is *reaction*. This evaluation must measure how the volunteers have reacted to the online training. This survey may be performed immediately following the completion of the online training.

Furthermore, this web-based module will contain several tests and quizzes. Additional online pre-tests and post-tests can be easily added to this online course. As a result, the data collected from these tests and quizzes may be used for Kirkpatrick's second evaluation level which is *learning*. This evaluation must measure what the volunteers have learned from this online training. This evaluation may also be performed immediately following the completion of the online training.

Kirkpatrick's third level of evaluation or *transfer* answers the question of whether the training has been transferred back to the job. This evaluation must measure how much of the training the zoo volunteers received is actually being applied on the job. One way of measuring transfer may be to observe the volunteers performance following completion of the course. Also, individual pre- and post-training tests or surveys may be done to measure the third level of evaluation. It is recommended that this evaluation be done one to three months after the volunteers have completed the online training. Moreover, it is important to remember that this evaluation is resource intensive and costly.

Kirkpatrick's fourth level of evaluation or *results* answers the question of whether the training has been transferred back to the job. However, return on investment is difficult to measure because of the nature and intent of this course.

Key Evaluation Questions

Considering Kirkpatrick's four levels of evaluation, the following questions are essential and relevant in evaluating this product.

Level 1:
Based on the volunteers' initial reaction, was this web-based training easy to navigate? How easily were the volunteers able to follow the course directions?

Level 2:
Were the volunteers successful in completing the online practice and review quizzes? Are the volunteers able to demonstrate the information they learned in this training?

Level 3:

- Are the volunteers able to accurately answer the visitors' questions about taxonomy as a result of the information they learned in the online training?

- Are they able to answer more questions about taxonomy in compare to the number of questions they could answer prior to completing this online course?

Evaluation Instrumentation & Data Collection

Since this training is web-based, surveys can be built into the training module to measure the volunteers' *reaction*. The surveys may be performed immediately following the completion of the online training. If additional data is necessary, face to face interviews with the volunteers may also be conducted.

Furthermore, this online course will contain several tests and quizzes. Additional online pre-tests and post-tests can also be added As a result, the data collected from these tests and quizzes may be used to measure what the volunteers have learned from this online training. This evaluation can be performed immediately following the completion of the online training. If additional data is necessary, role plays with the volunteers may also be conducted.

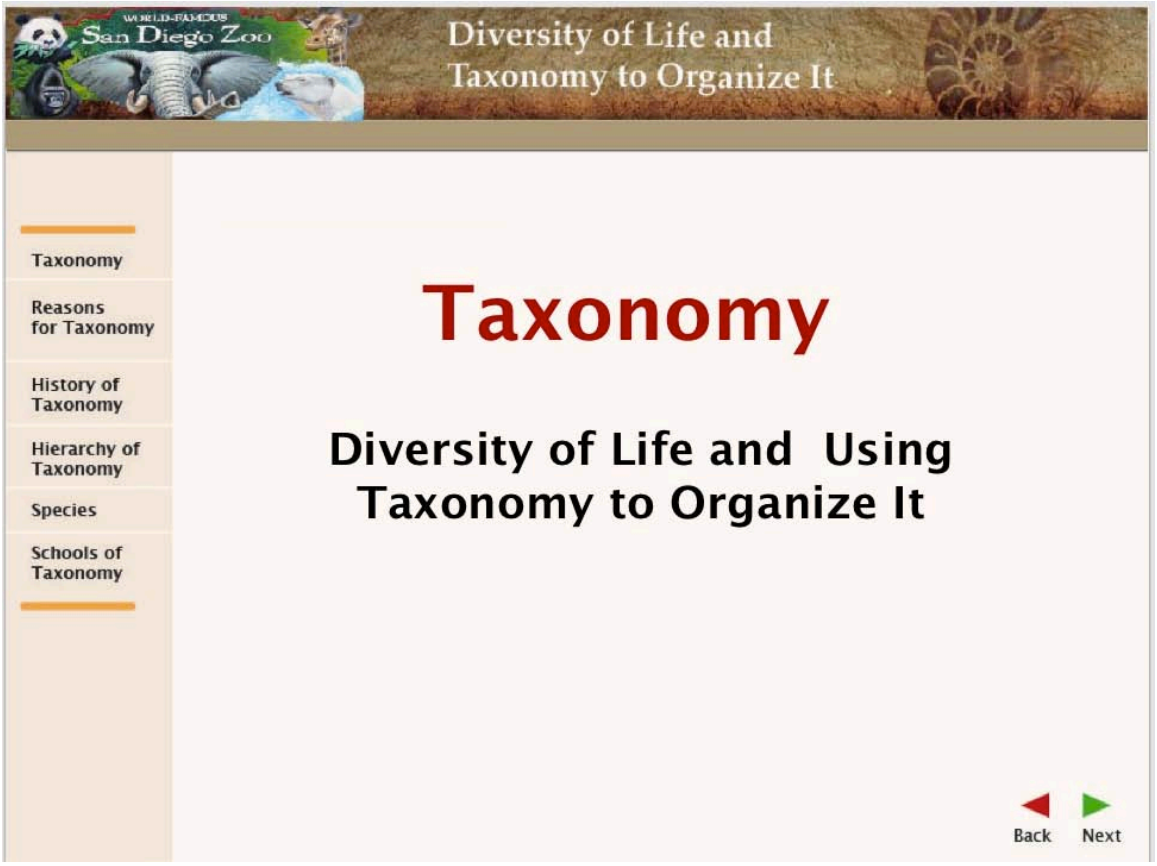
In order to collect data for the third evaluation level, individual pre- and post-training tests or surveys are recommended. Other methods of data collection for level three evaluations include face to face interviews with the volunteers, on the job performance observation, and finally feedback from the park visitors. It is recommended that this type of evaluation (including the post-training tests and surveys) be performed one to three months after the volunteers have completed the online training.

Evaluation Question & Procedure Matrix

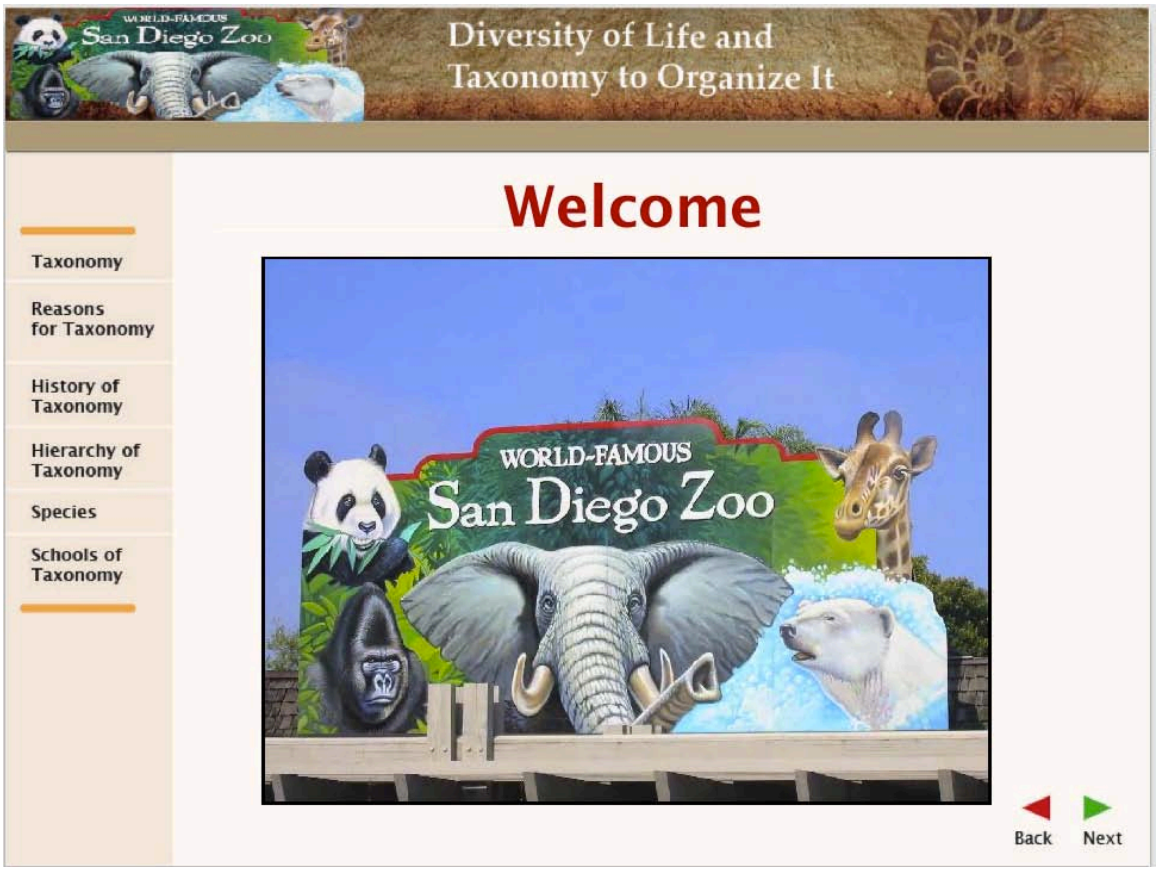
Evaluation Question	Information Required to Answer Question	Source of Information	Data Collection Strategy
1. Based on the volunteers' initial reaction, was this web-based training easy to navigate? How easily were the volunteers able to follow the course directions?	1. Survey results	1. Post-instruction surveys	1. Distribution of post instruction surveys
2. Were the volunteers	Practice and review quiz	Archive of the volunteers'	Automatic ally

Evaluation Question	Information Required to Answer Question	Source of Information	Data Collection Strategy
successful in completing the online practice and review quizzes?	results	quiz scores	archiving the volunteers' quiz scores
3. Are they able to answer more questions about taxonomy in compare to the number of questions they could answer prior to completing this online course?	1. Pre and post test results	1. Archive of the volunteers' pre and post test scores	1. Automatically archiving the volunteers' pre and post test scores
4. Are they able to answer more questions about taxonomy in compare to the number of questions they could answer prior to completing this online course?	1. Results of individual pre- and post-training test or surveys	1. Archive of individual pre- and post-training test or survey results	1. Archiving the results of individual pre- and post-training tests or surveys

Prototype Design Specification

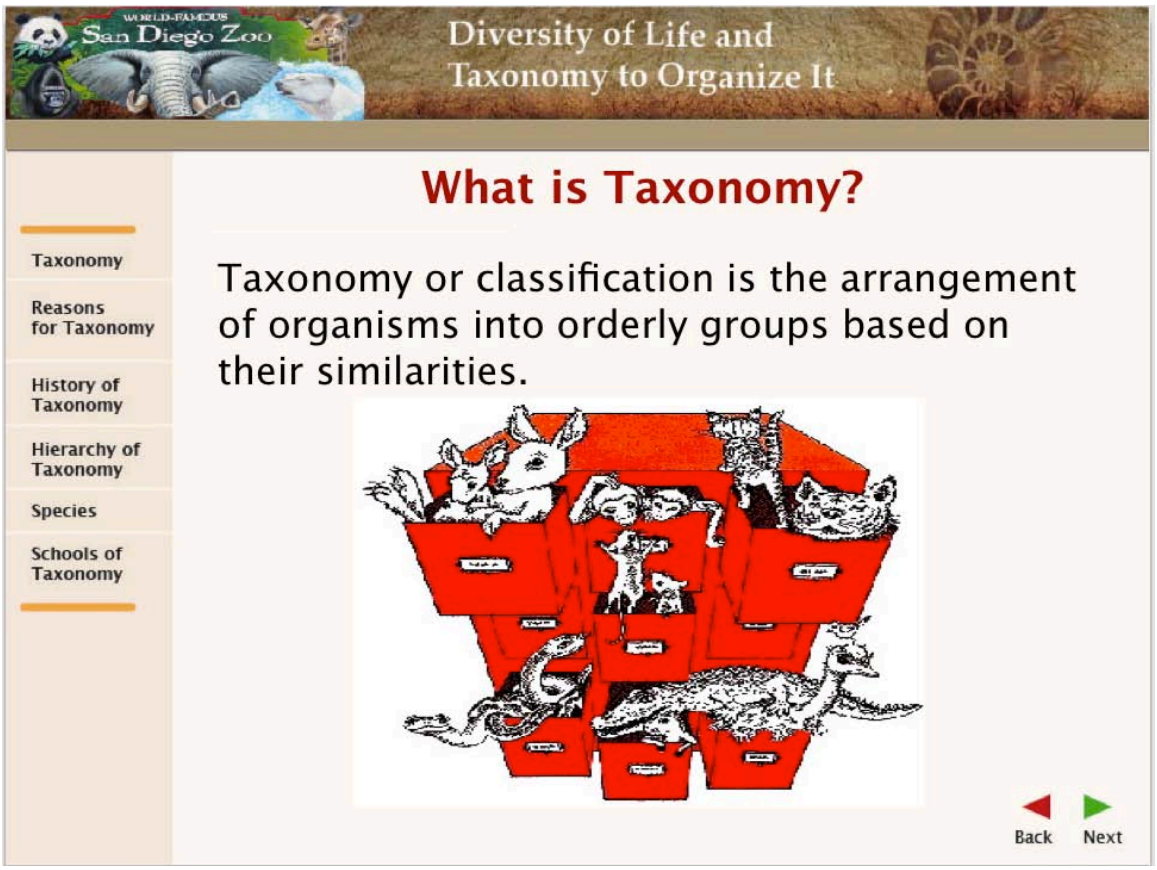


Slide #	1
Description	Introduction to Taxonomy course.
Links	Click on Next button to begin (slide 2) Sidebar/Navigation bar: **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media



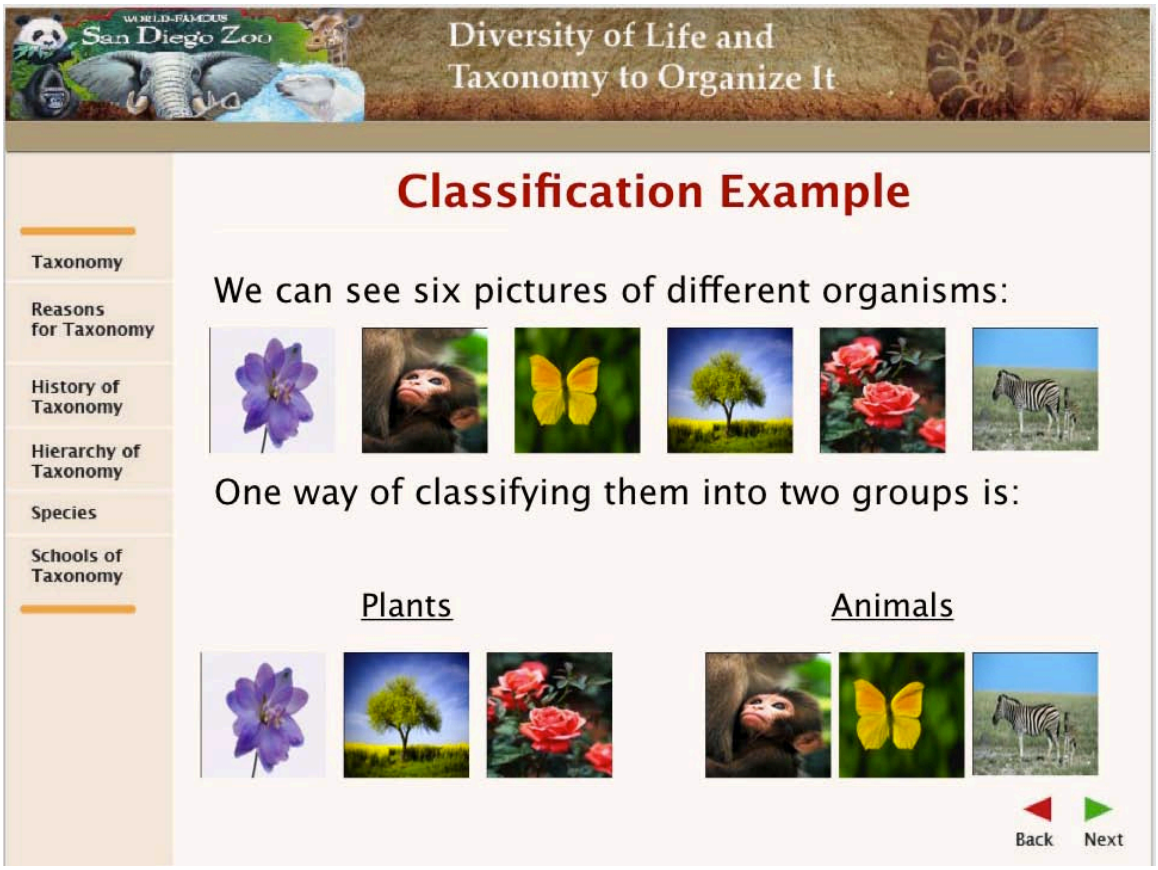
Slide #	2
Description	Introduction video automatically plays to inspire inquiry arousal. Presents two questions: 1) How many different Species are there? 2) How are they related?
Links	Next button (slide 3) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Introduction video

Slide #	3
Description	Inquiry arousal: How many animals do you think there are?
Links	Next button (slide 4) Back button (slide 2) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic images show variety of animals.

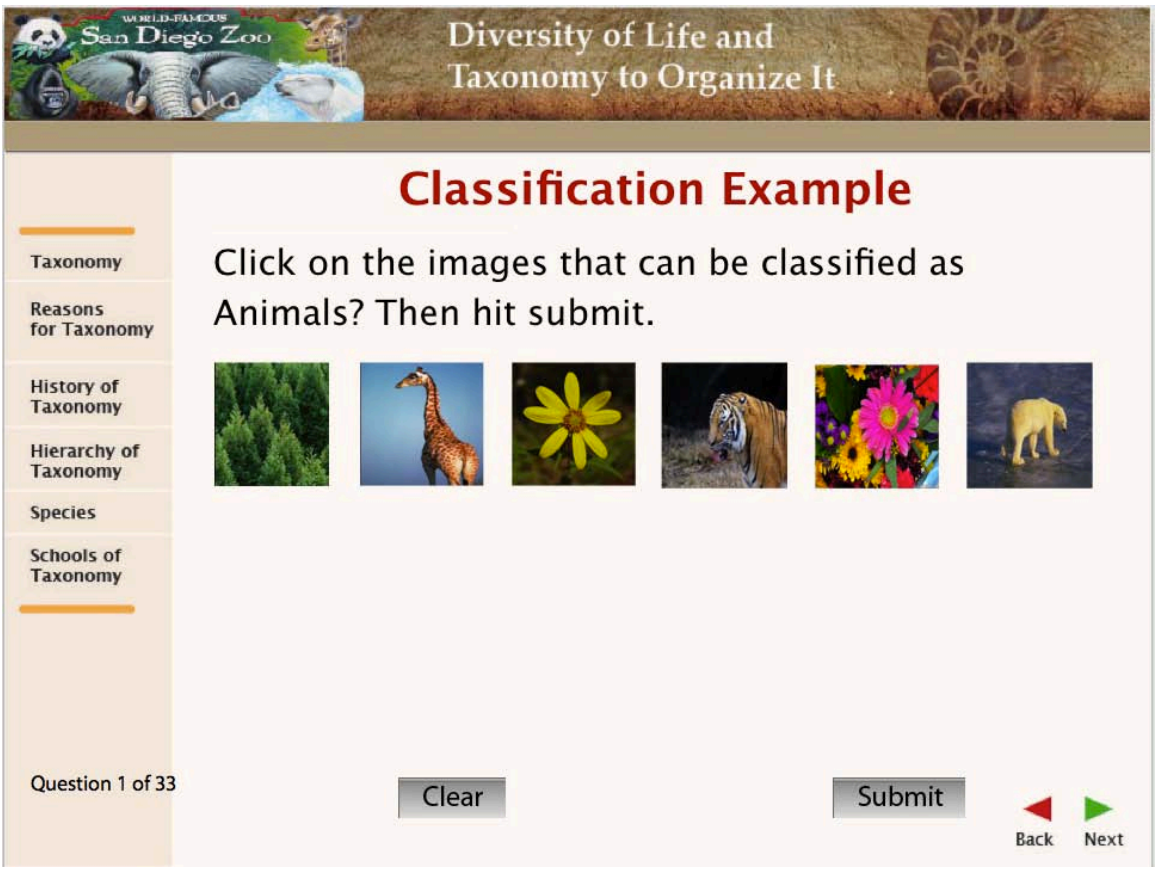


Slide #	4
Description	Inquiry arousal: Introduction to What is Taxonomy?
Links	Next button (slide 5) Back button (slide 3) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of drawer demonstrating classification of organisms.

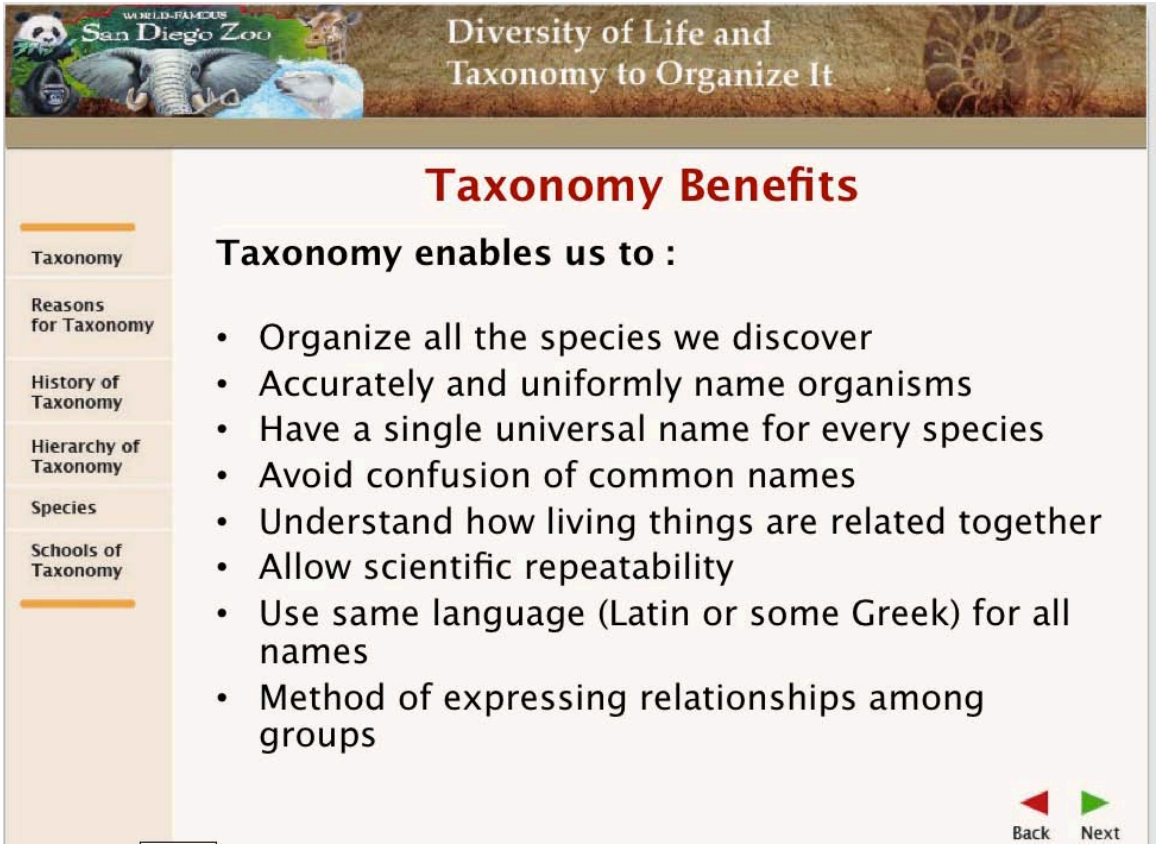
Slide #	5
Description	Inquiry arousal: Why Classify?
Links	Next button (slide 6) Back button (slide 4) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic images shows kitchen drawer as example of classification.



Slide #	6
Description	Classification example focuses on dividing two organisms, plants and animals.
Links	Next button (slide 7) Back button (slide 5) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic images include plants and animals.

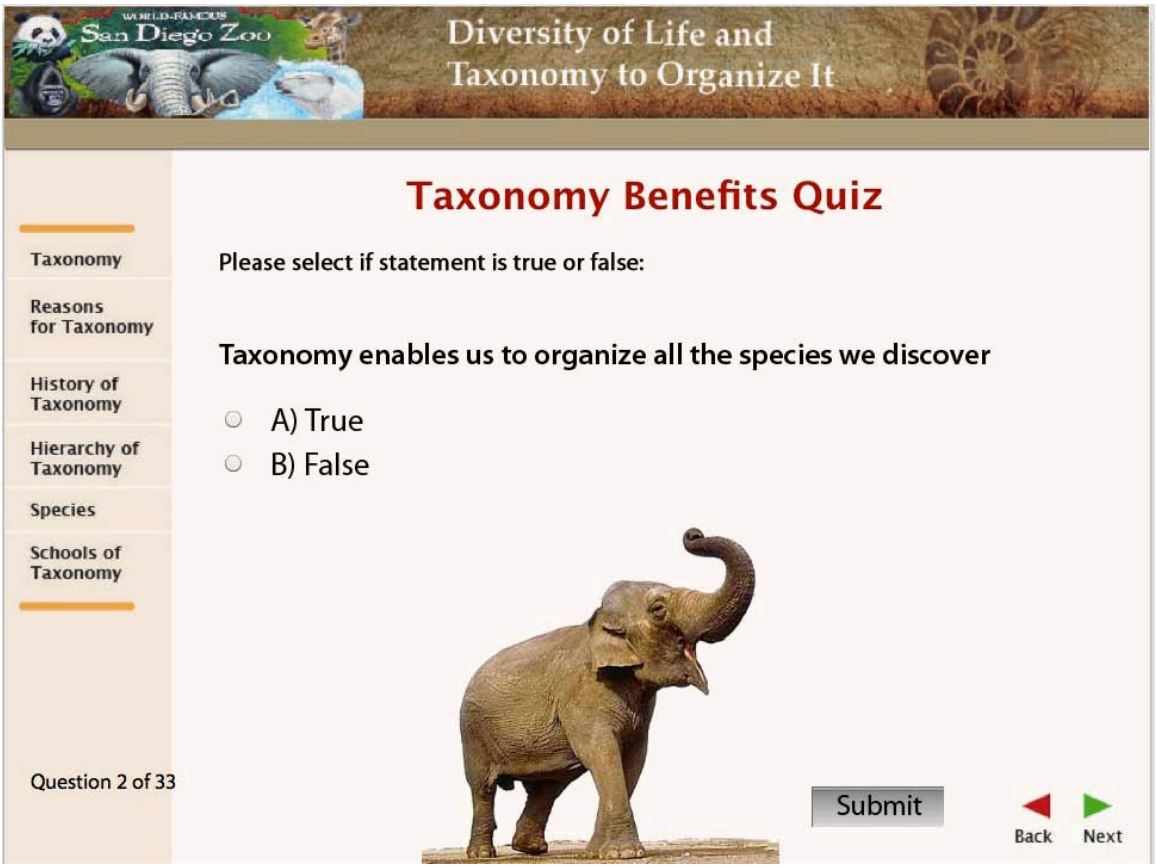


Slide #	7
Description	Interaction: Learner is asked to interact by clicking on images that can be classified as animals.
Links	Next button (slide 8) Back button (slide 6) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic images include plants and animals.

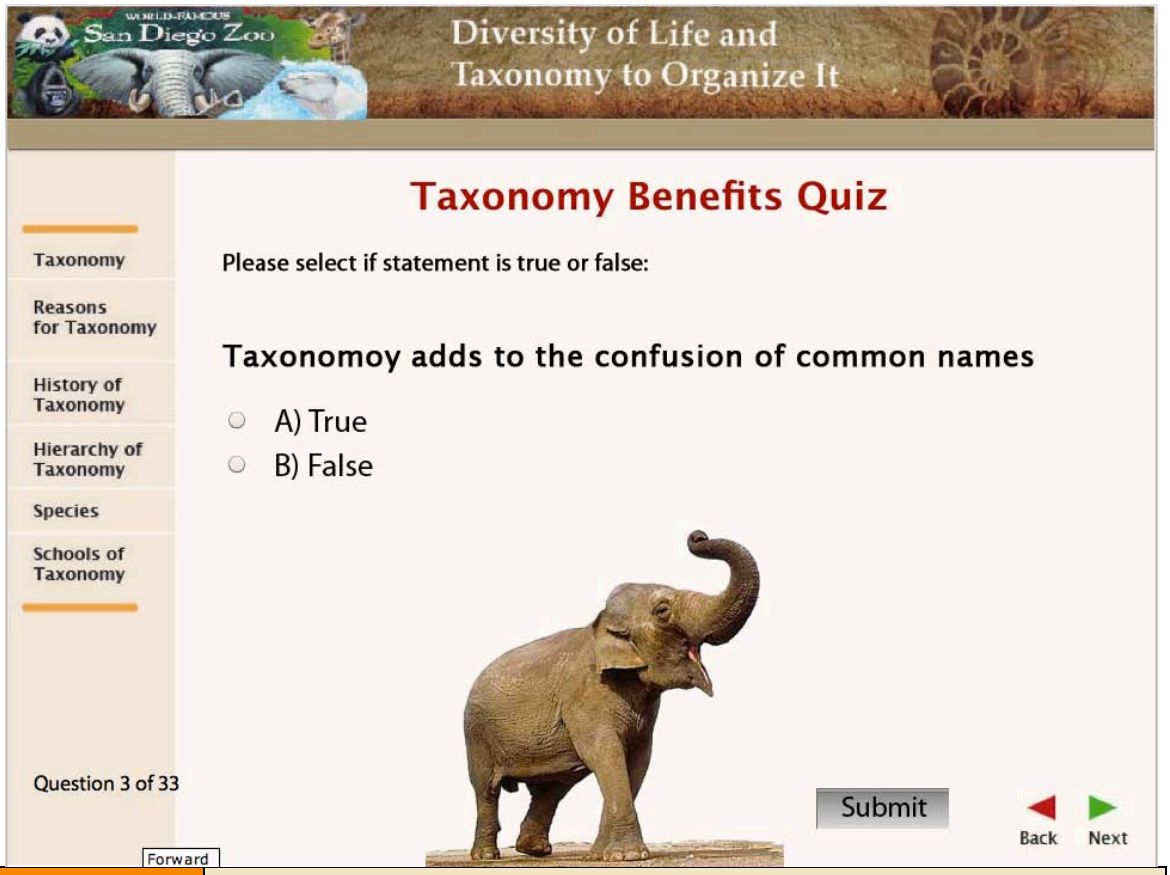


Slide #	8
Description	Taxonomy Benefits is defined.
Links	Next button (slide 9) Back button (slide 7) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media.

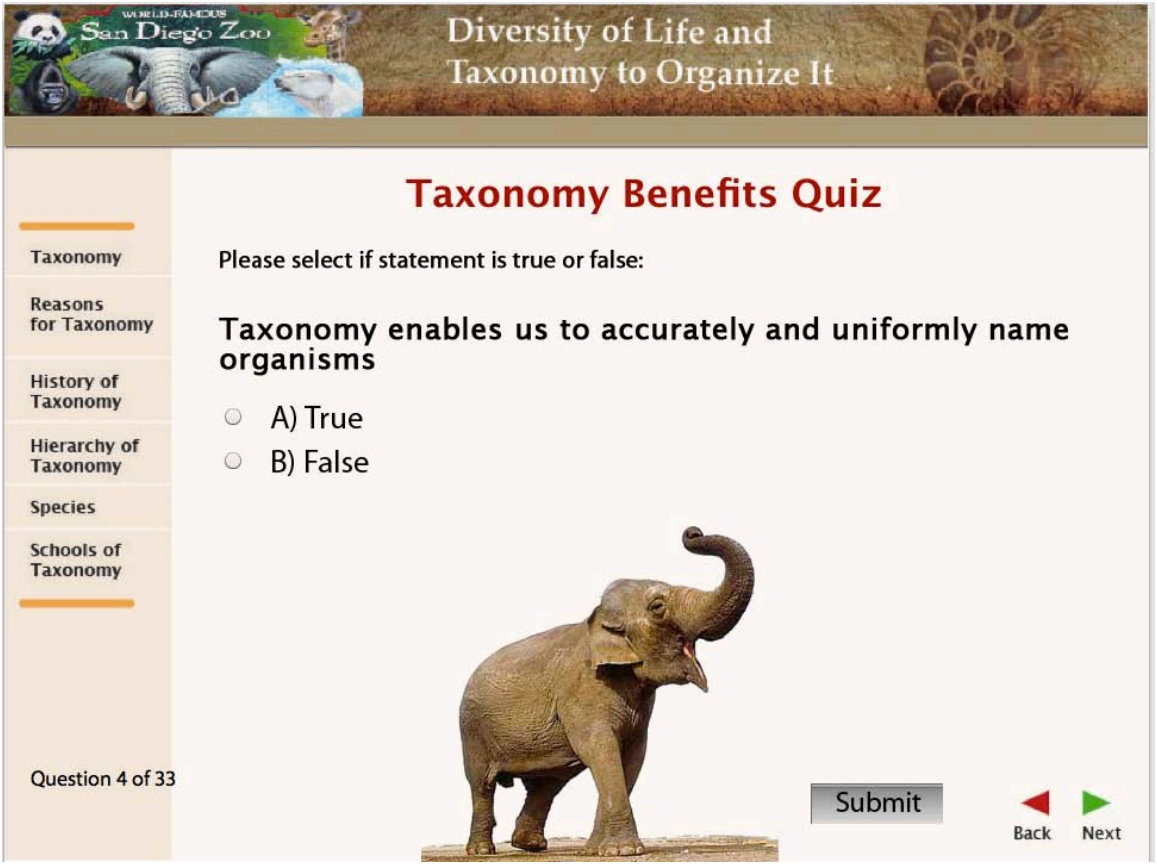
Slide #	9
Description	Example of Taxonomy Benefits. Example shows 6 images of the same animal with different names. Interaction: Learner is asked to click on images to show species name. Bottom left text: shows current number of question.
Links	Next button (slide 10) Back button (slide 8) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	6 different images of the same species. Hot spots on image allow species name to fade in.



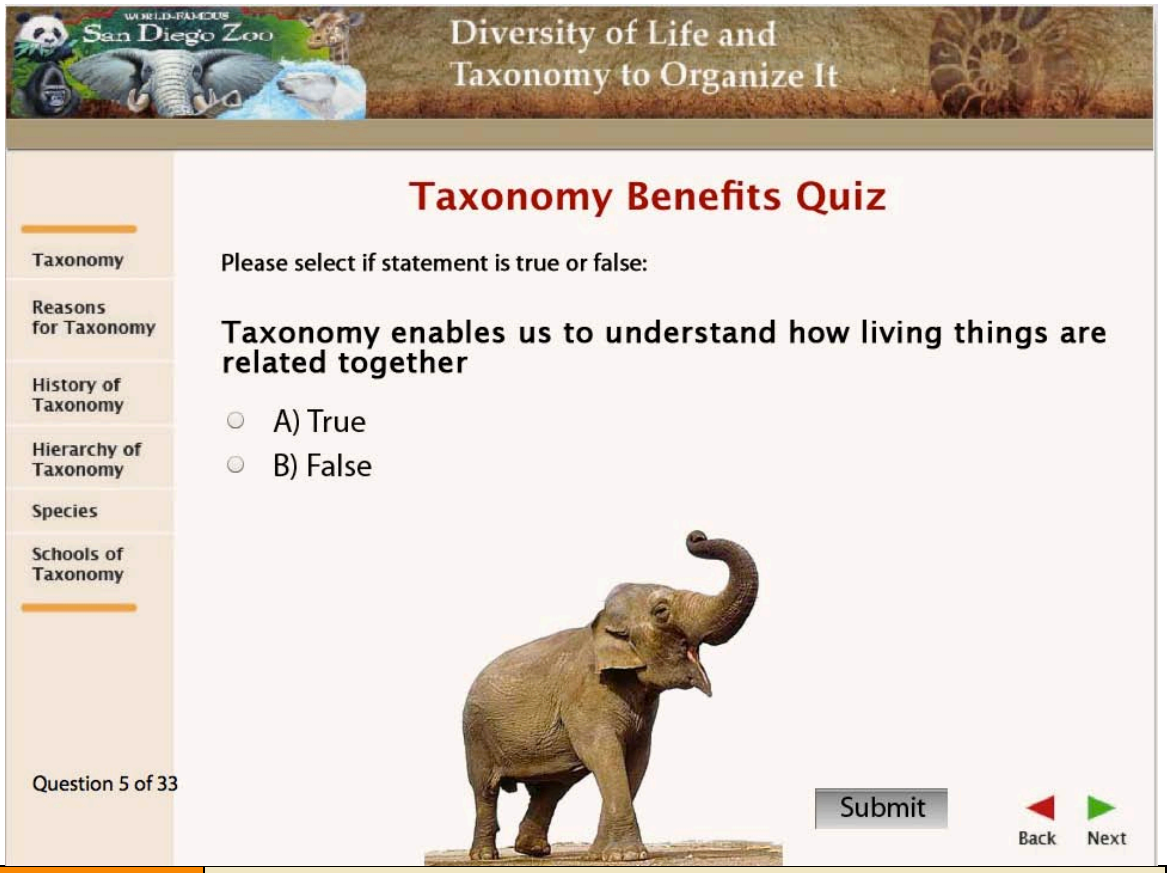
Slide #	10
Description	Taxonomy Benefits Quiz. True of False question: Taxonomy enables us to organize all the species we discover. Answer: A Bottom left text: shows current number of question.
Links	Submit button (slide 11) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



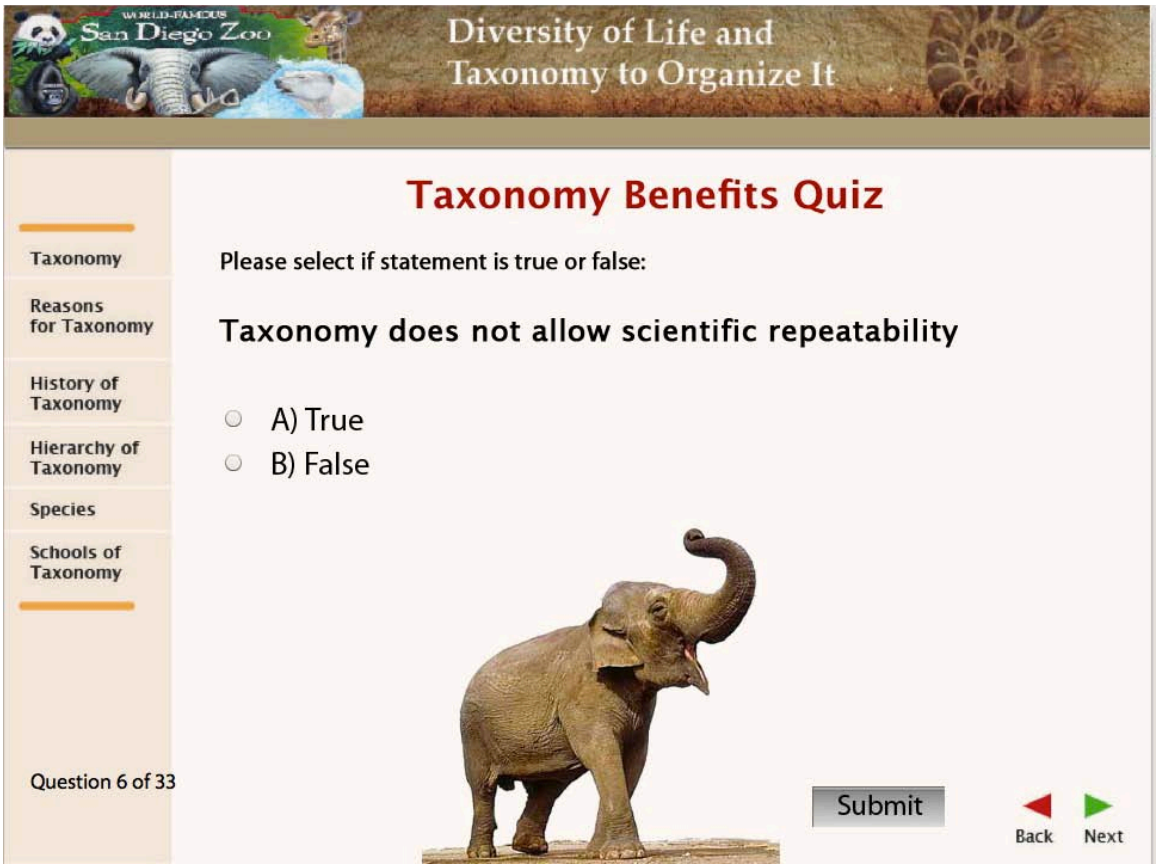
Slide #	11
Description	Taxonomy Benefits Quiz. True of False question: Taxonomy adds to the confusion of common names. Answer: A Bottom left text: shows current number of question.
Links	Submit button (slide 12) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



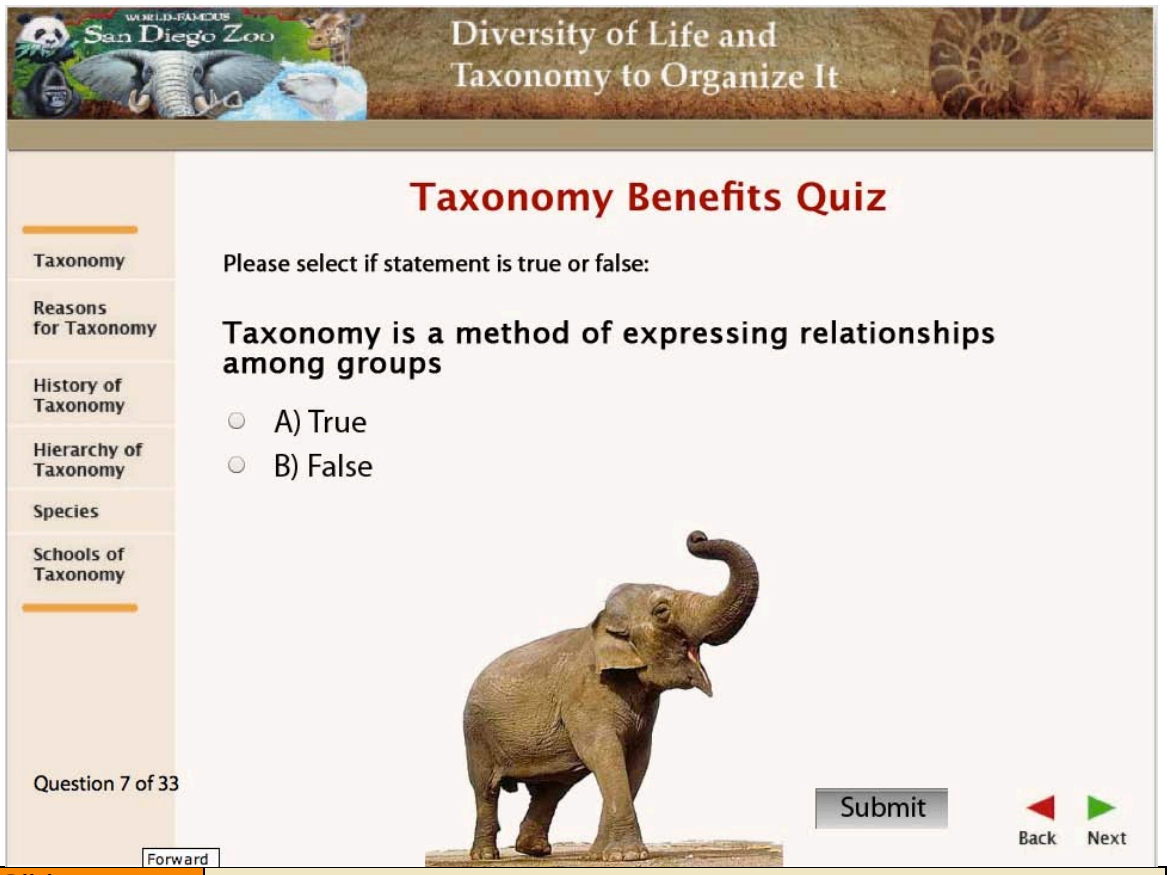
Slide #	12
Description	Taxonomy Benefits Quiz. True of False question: Taxonomy enables us to accurately and uniformly name organisms. Answer: A Bottom left text: shows current number of question.
Links	Submit button (slide 13) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



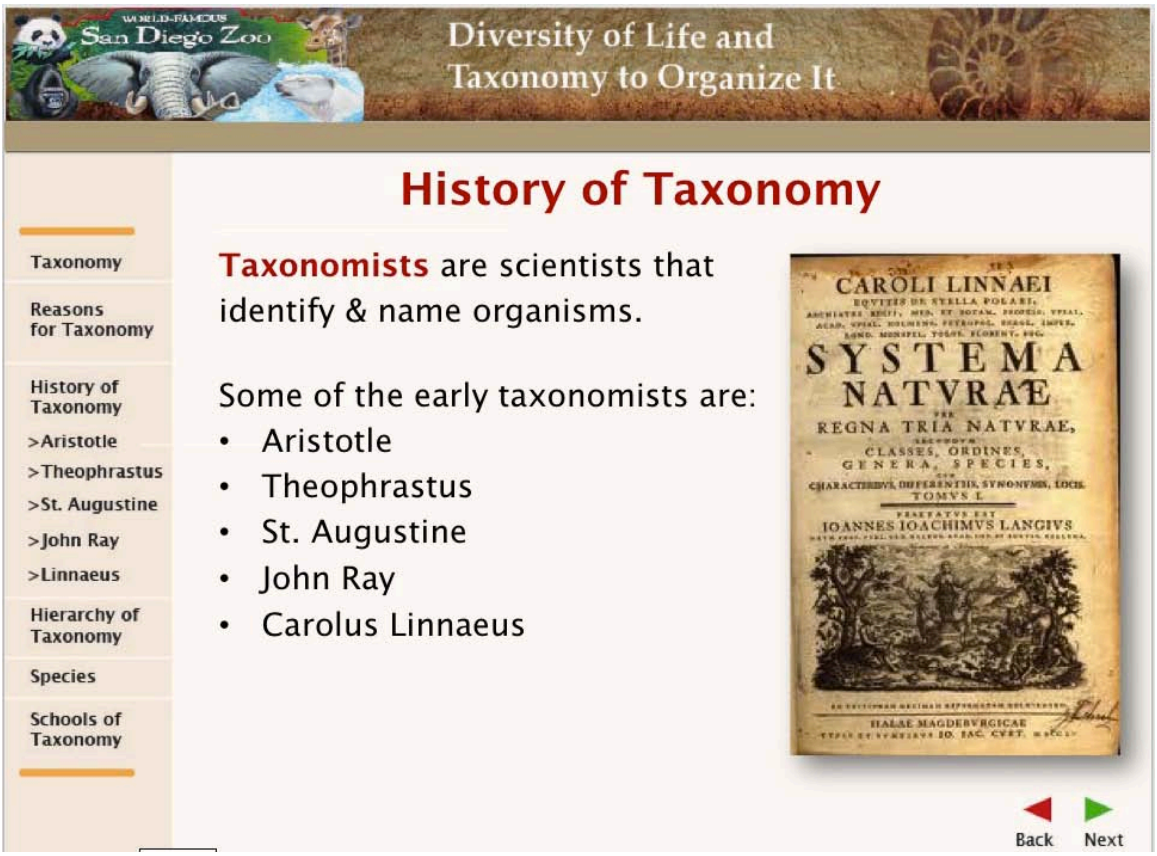
Slide #	13
Description	Taxonomy Benefits Quiz. True of False question: Taxonomy enables us to understand how living things are related together. Answer: A Bottom left text: shows current number of question.
Links	Submit button (slide 14) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



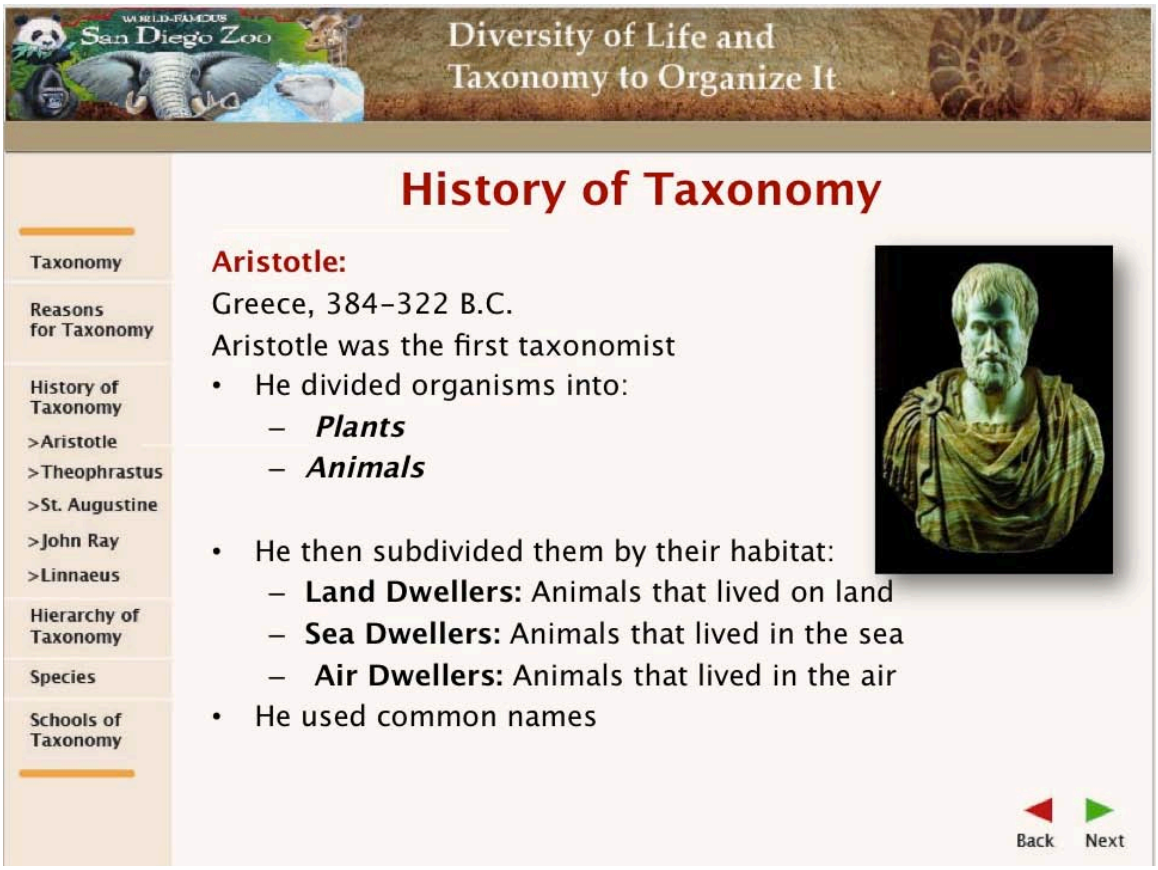
Slide #	14
Description	Taxonomy Benefits Quiz. True of False question: Taxonomy does not allow scientific repeatability. Answer: B Bottom left text: shows current number of question.
Links	Submit button (slide 15) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



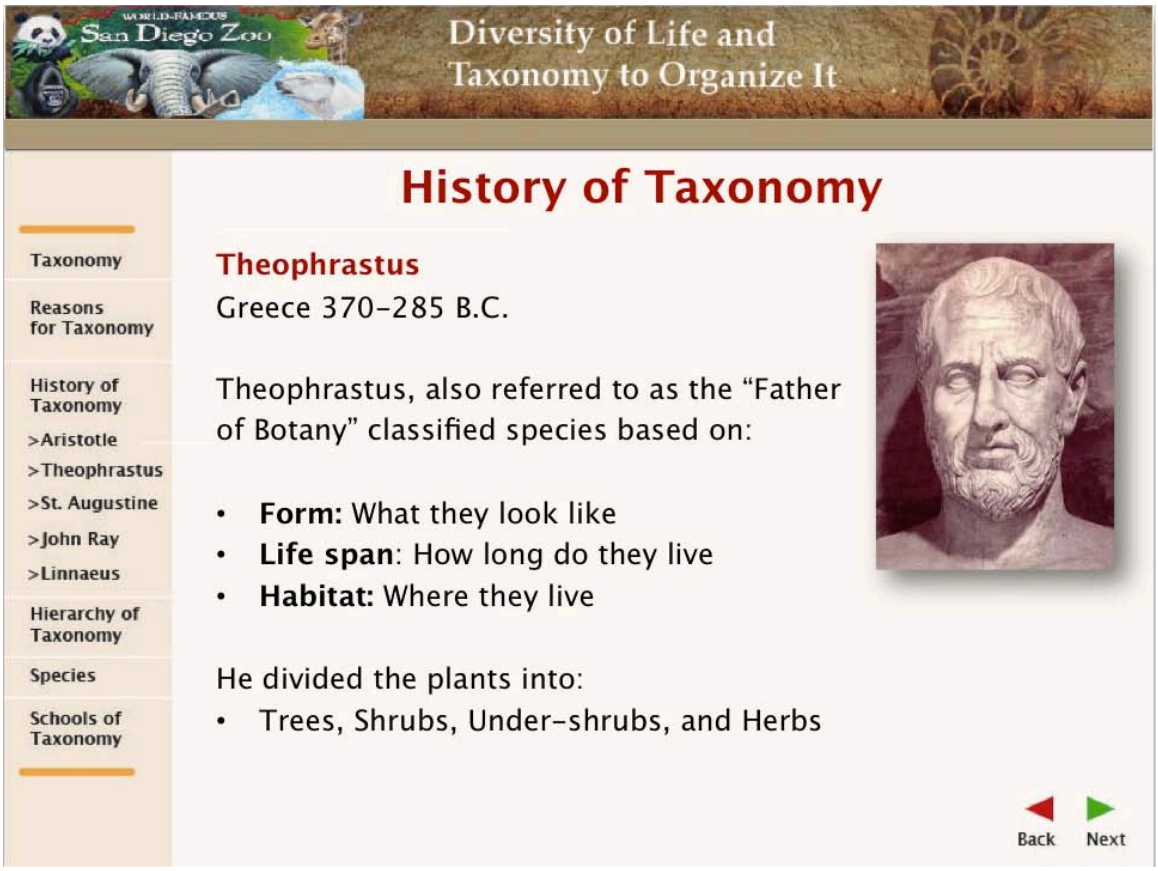
Slide #	15
Description	Taxonomy Benefits Quiz. True of False question: Taxonomy is a method of expressing relationships among groups. Answer: A Bottom left text: shows current number of question.
Links	Submit button (slide 16) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



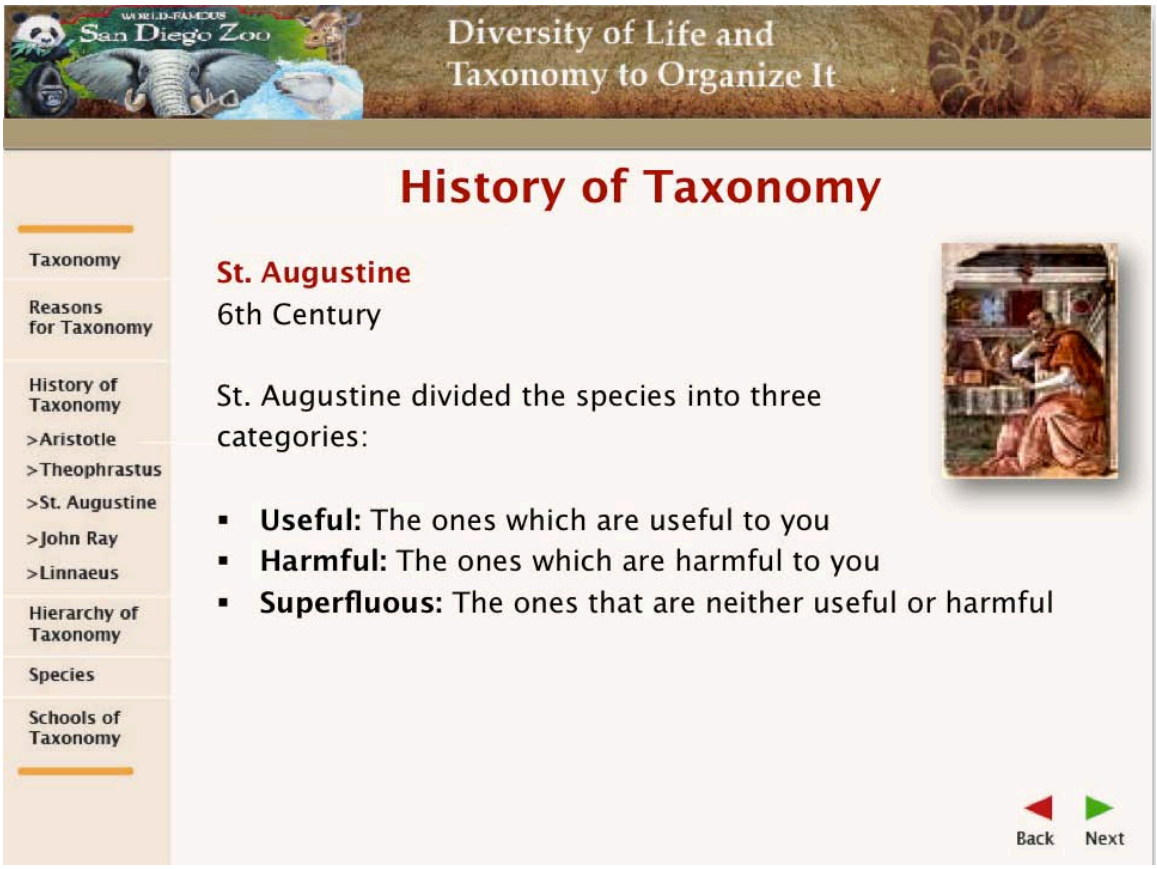
Slide #	16
Description	Introduction to History of Taxonomy. Explains early taxonomists.
Links	Next button (17) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Aristotle** (slide 17) **Theophrastus** (slide 18) **St. Augustine** (slide 19) **John Ray** (slide 20) **Linnaeus** (slide 21) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Carolus Linnaeus.



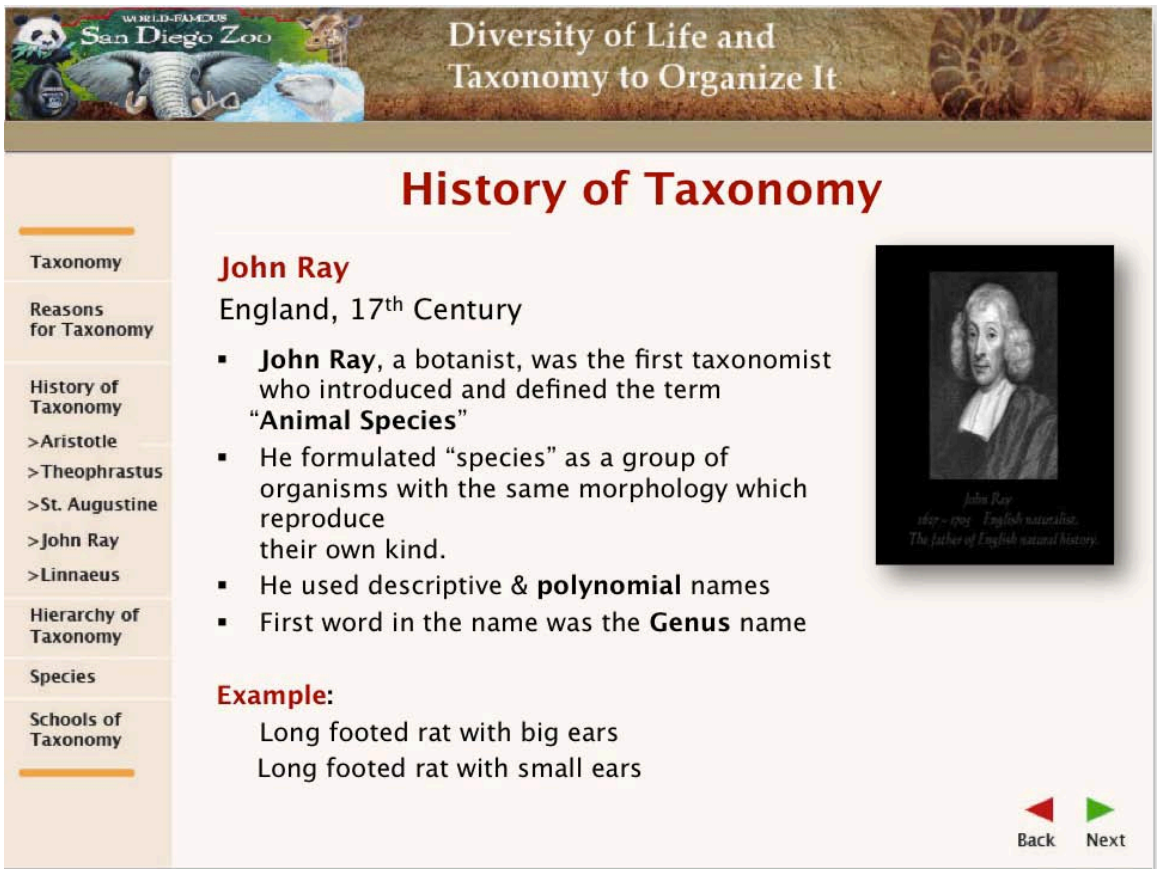
Slide #	17
Description	History of Taxonomy highlights Aristotle's taxonomy approach.
Links	Next button (slide 18) Back button (slide 17) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Aristotle** (slide 17) **Theophrastus** (slide 18) **St. Augustine** (slide 19) **John Ray** (slide 20) **Linnaeus** (slide 21) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Aristotle.



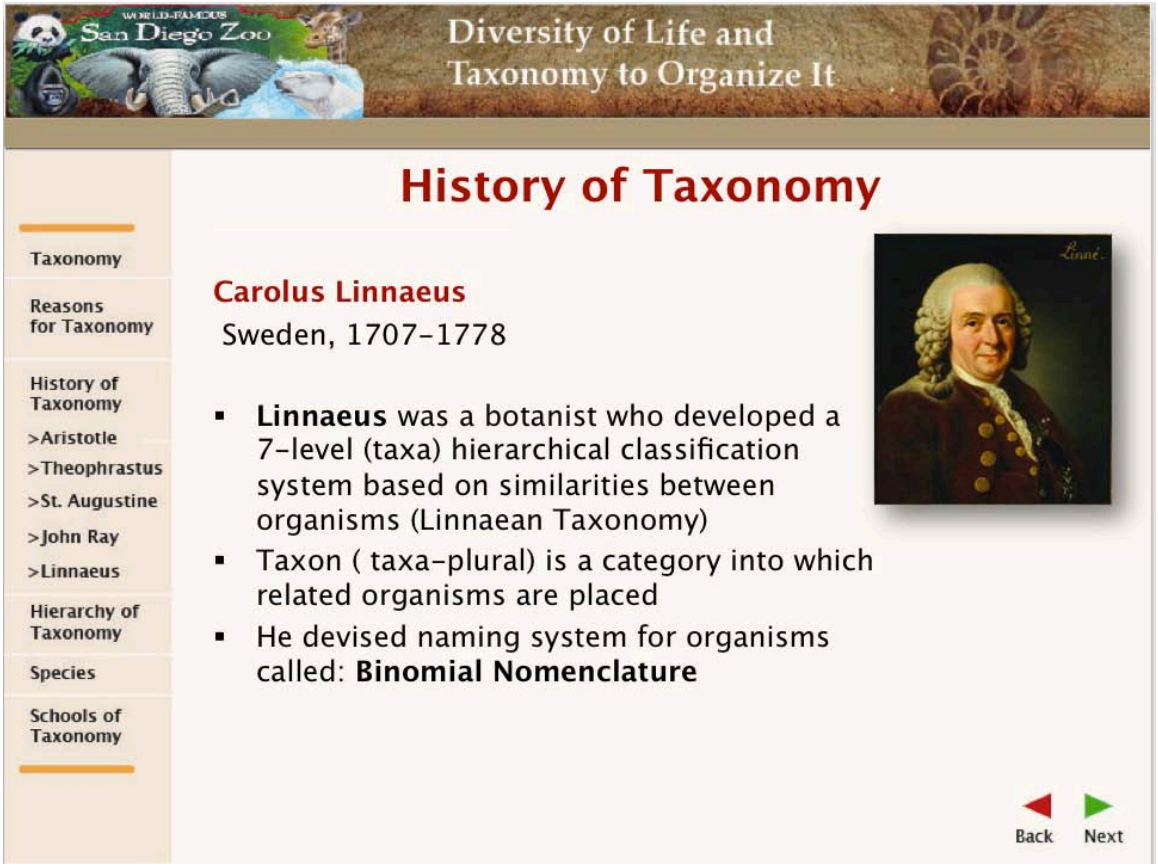
Slide #	18
Description	History of Taxonomy highlights Theophrastus taxonomy approach.
Links	Next button (19) Back button (slide 17) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Aristotle** (slide 17) **Theophrastus** (slide 18) **St. Augustine** (slide 19) **John Ray** (slide 20) **Linnaeus** (slide 21) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Theophrastus.



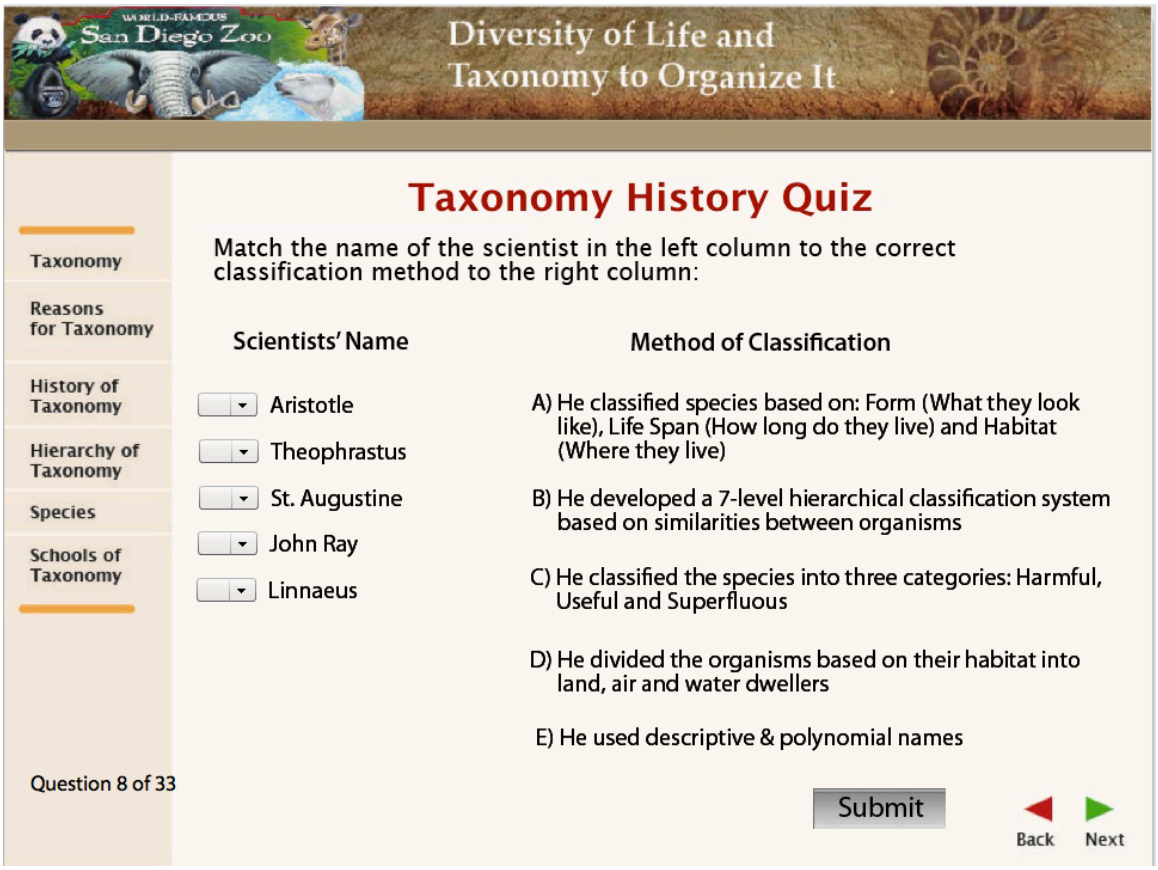
Slide #	19
Description	History of Taxonomy highlights St. Augustine taxonomy approach.
Links	Next button (20) Back button (slide 18) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Aristotle** (slide 17) **Theophrastus** (slide 18) **St. Augustine** (slide 19) **John Ray** (slide 20) **Linnaeus** (slide 21) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of St. Augustine.



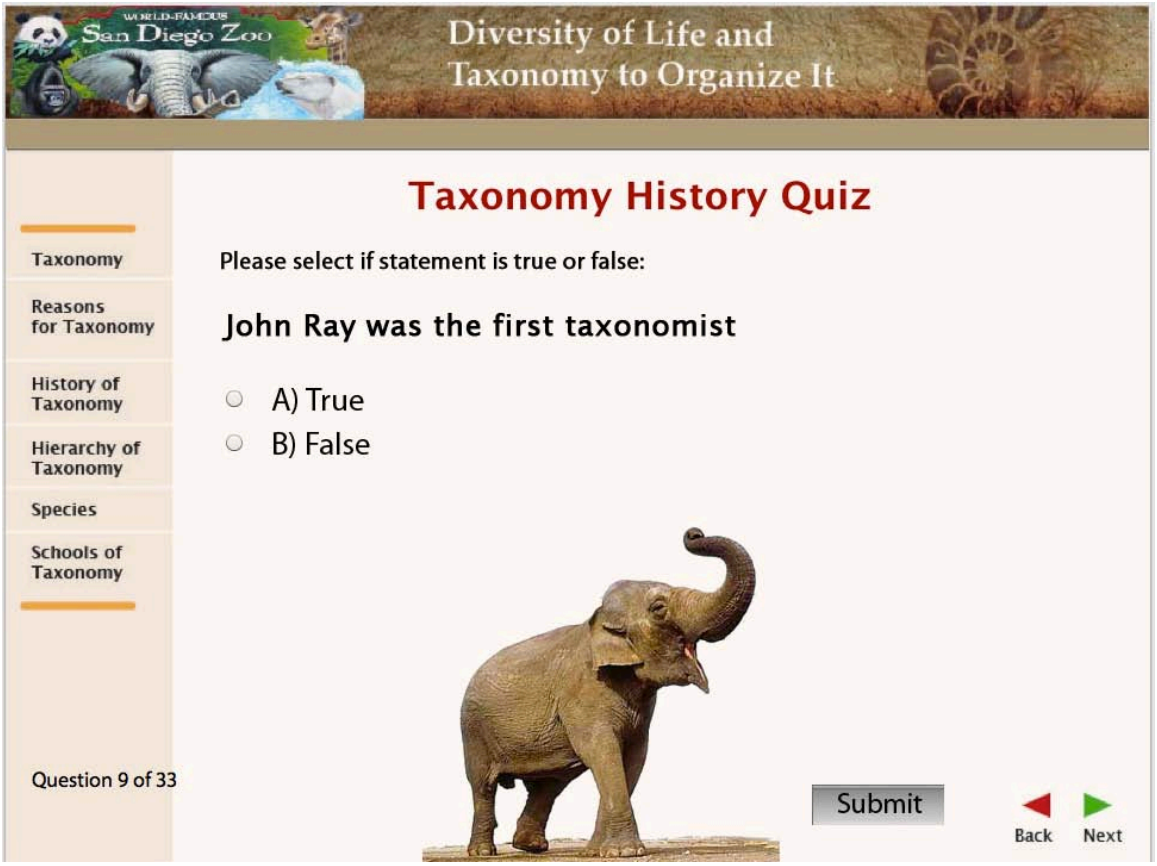
Slide #	20
Description	History of Taxonomy highlights John Ray taxonomy approach.
Links	Next button (21) Back button (slide 19) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Aristotle** (slide 17) **Theophrastus** (slide 18) **St. Augustine** (slide 19) **John Ray** (slide 20) **Linnaeus** (slide 21) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of John Ray.



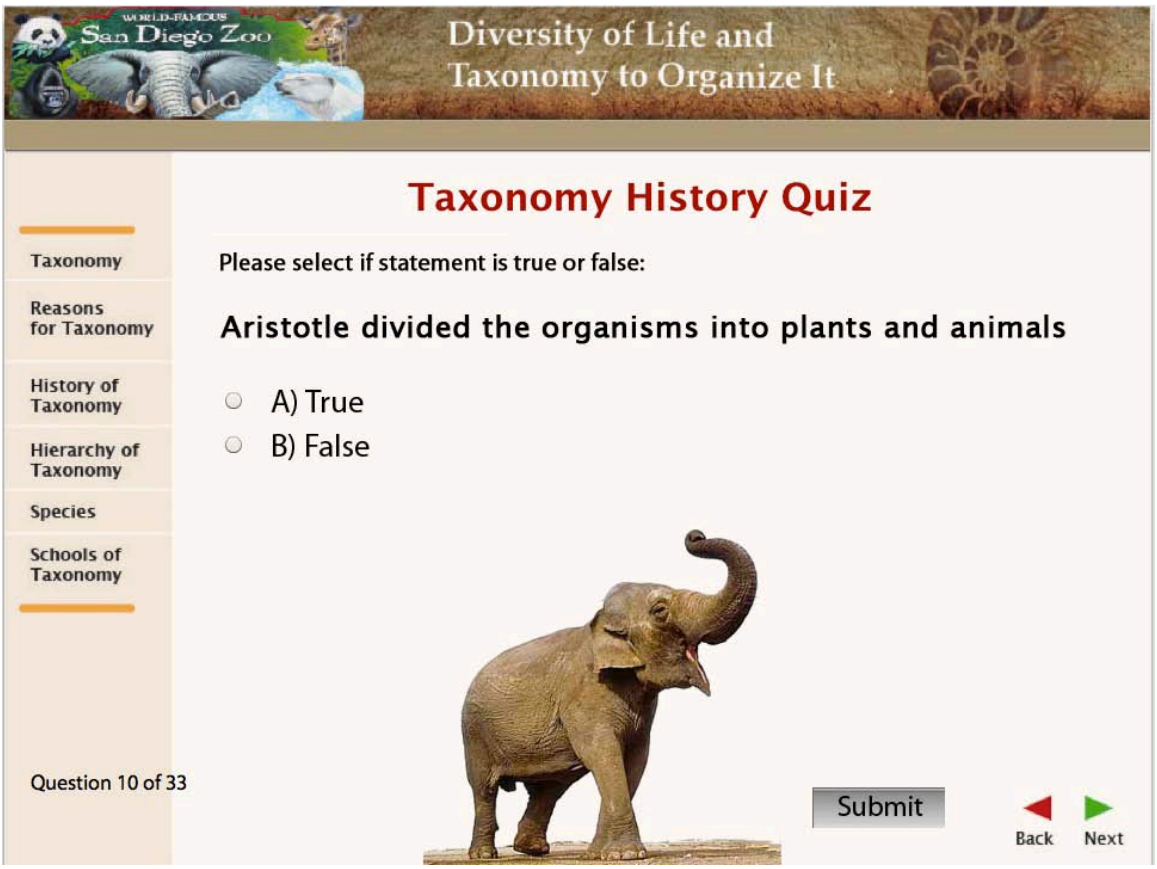
Slide #	21
Description	History of Taxonomy highlights Carlos Linnaeus taxonomy approach.
Links	Next button (22) Back button (slide 19) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Aristotle** (slide 17) **Theophrastus** (slide 18) **St. Augustine** (slide 19) **John Ray** (slide 20) **Linnaeus** (slide 21) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Carlos Linnaeus.



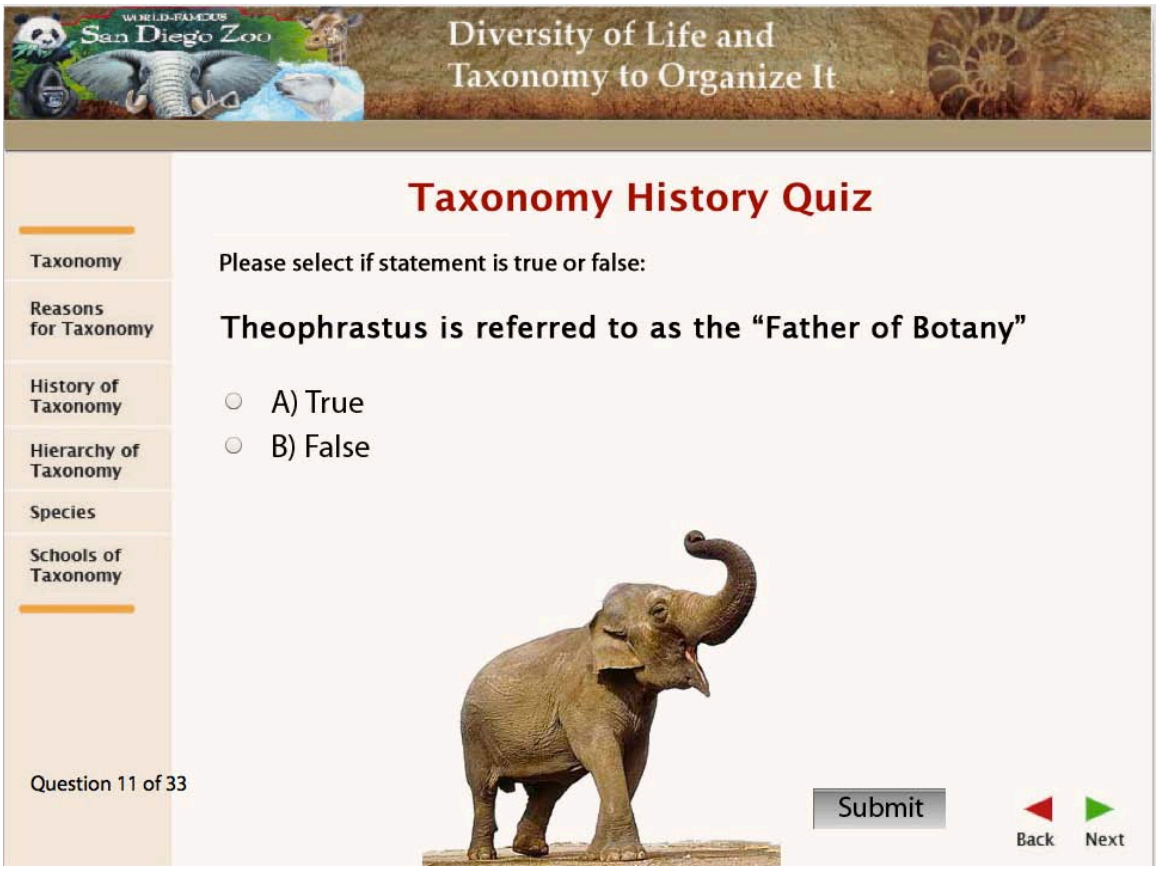
Slide #	22
Description	History of Taxonomy multiple-choice quiz. Question: Match the name of the scientist in the left column to the correct classification method to the right column. Answers: D,A,C,E,B Bottom left text: shows current number of question.
Links	Submit button (slide 23) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media.



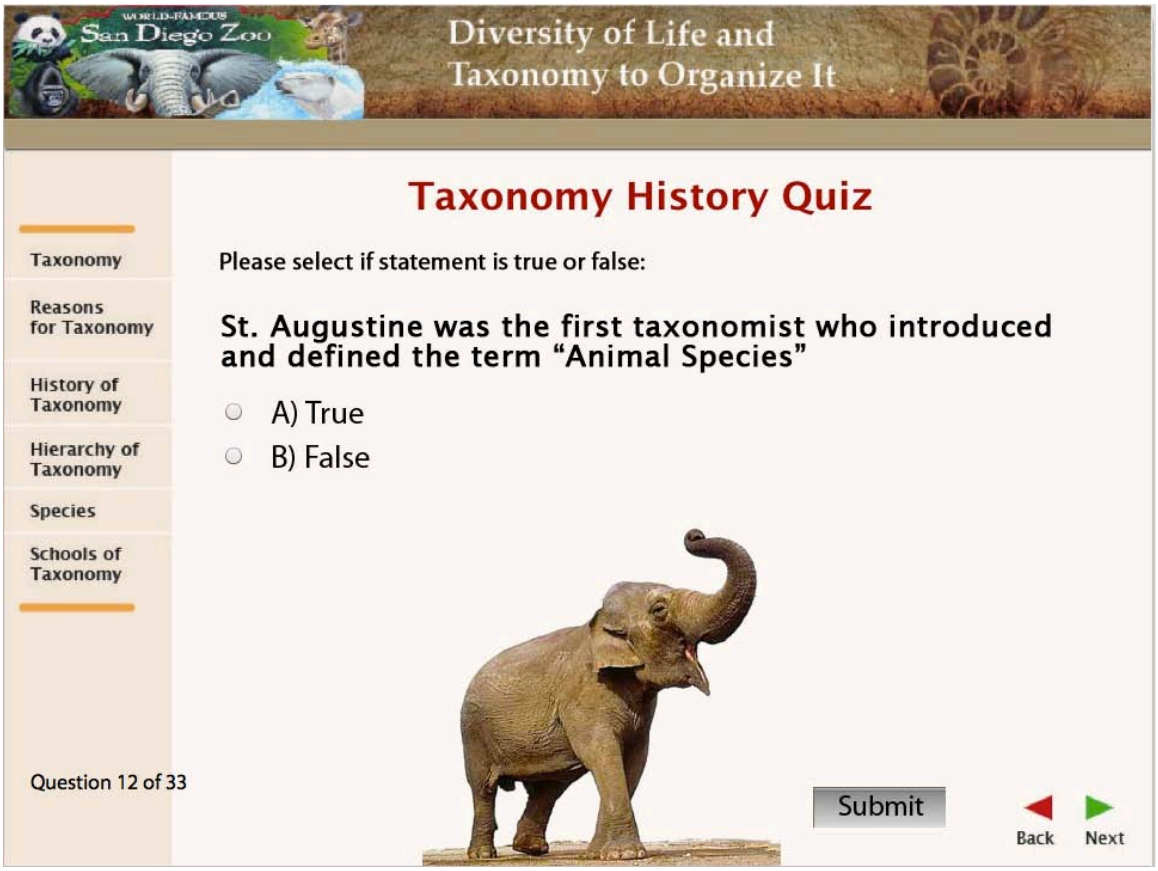
Slide #	23
Description	History of Taxonomy True or False quiz. Question: John Ray was the first taxonomist. Answers: B Bottom left text: shows current number of question.
Links	Submit button (slide 24) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



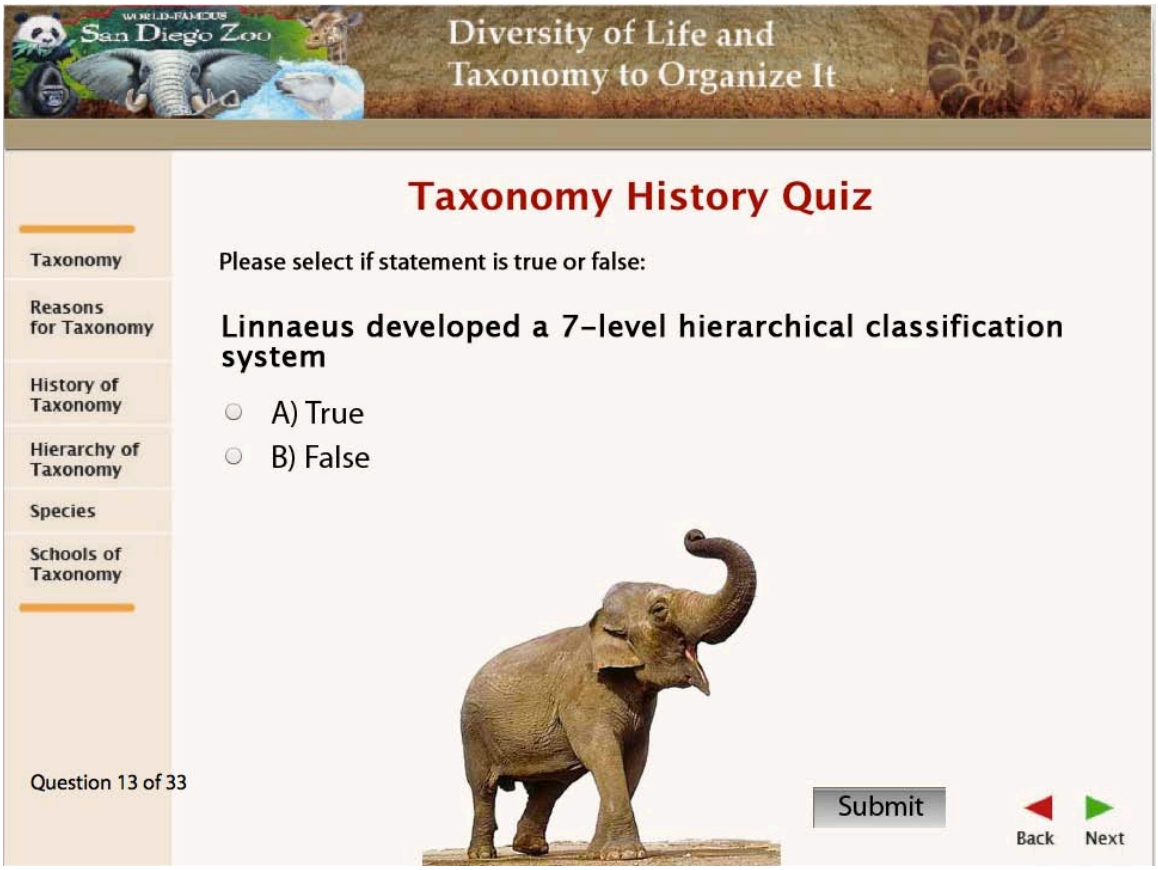
Slide #	24
Description	History of Taxonomy True or False quiz. Question: Aristotle divided the organisms into plants and animals. Answers: A Bottom left text: shows current number of question.
Links	Submit button (slide 25) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



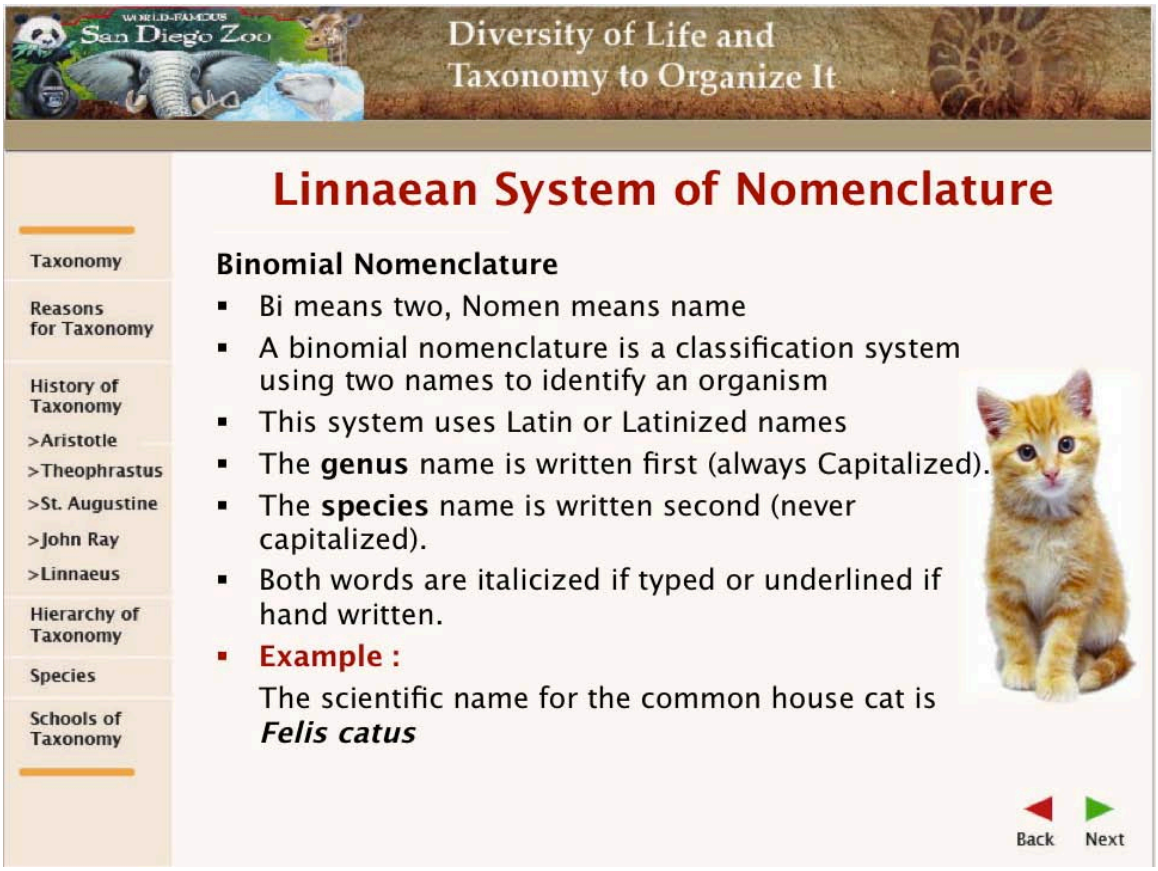
Slide #	25
Description	History of Taxonomy True or False quiz. Question: Theophrastus is referred to as the "Father of Botany" Answers: A Bottom left text: shows current number of question.
Links	Submit button (slide 26) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



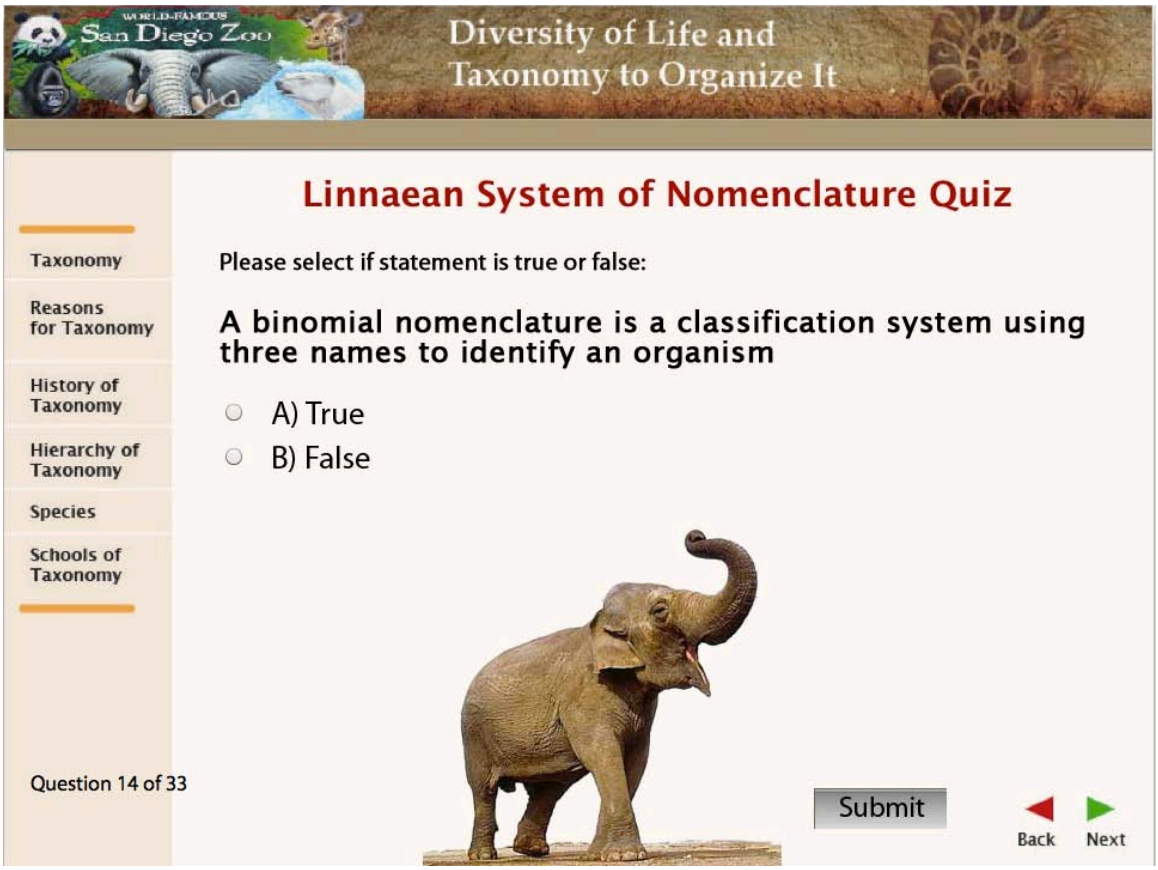
Slide #	26
Description	History of Taxonomy True or False quiz. Question: St. Augustine was the first taxonomist who introduced and defined the term "Animal Species" Answers: B Bottom left text: shows current number of question.
Links	Submit button (slide 27) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



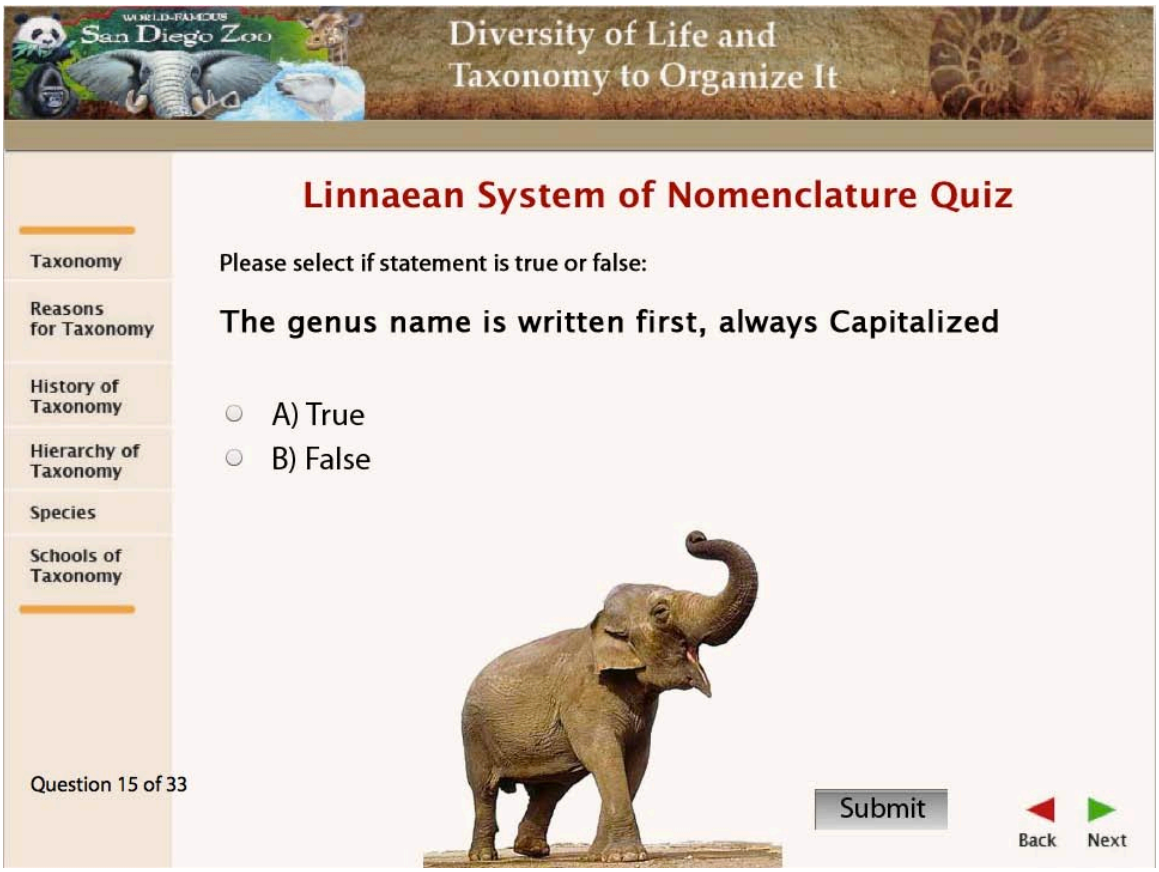
Slide #	27
Description	History of Taxonomy True or False quiz. Question: Linnaeus developed a 7-level hierarchical classification system. Answers: A Bottom left text: shows current number of question.
Links	Submit button (slide 28) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



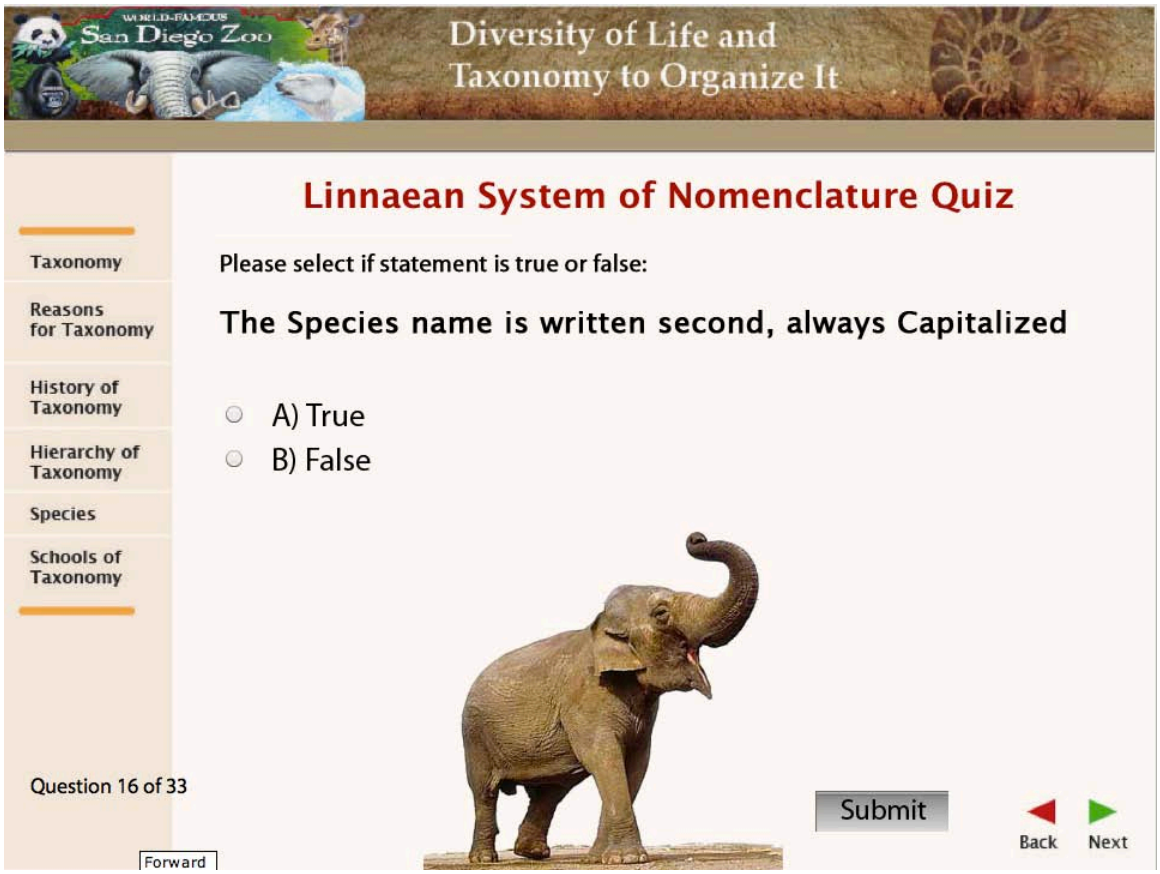
Slide #	28
Description	Linnaean System of Nomenclature is defined with example.
Links	Next button (29) Back button (27) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of cat is used for example.



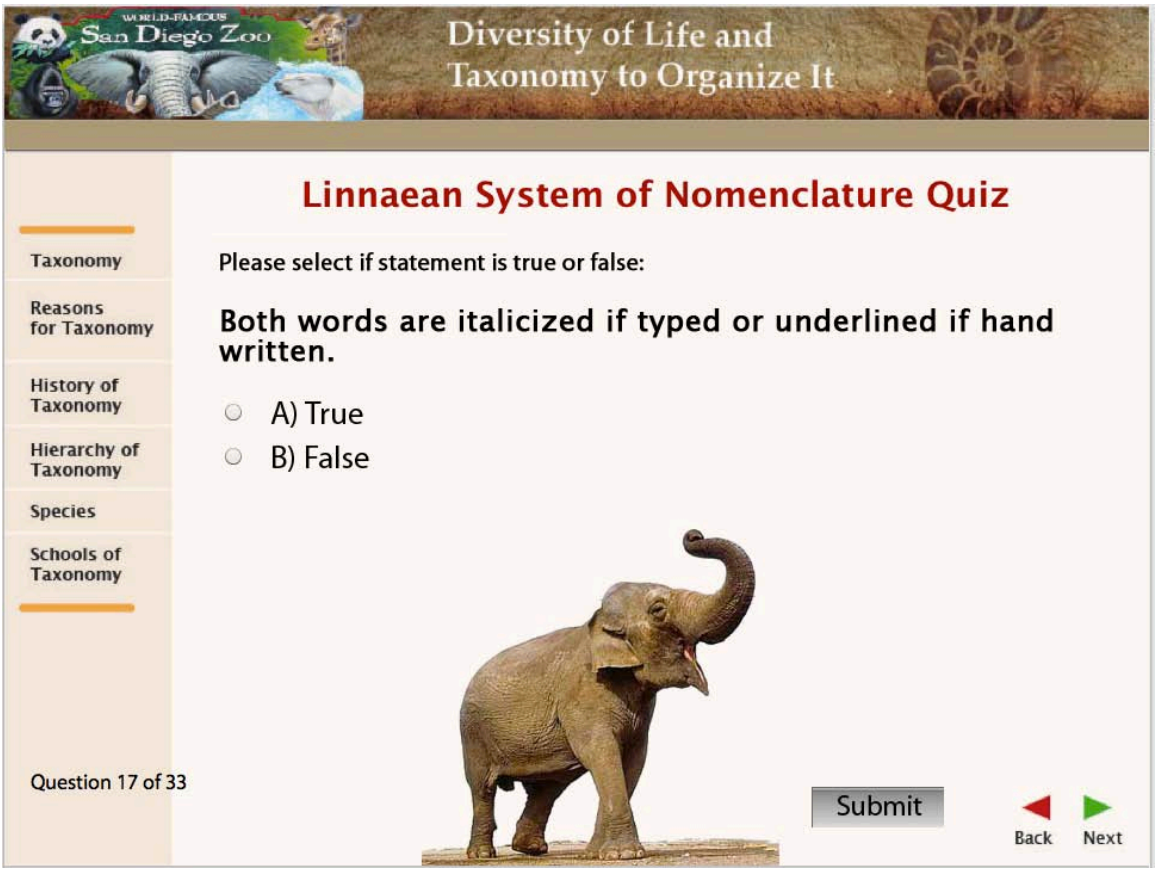
Slide #	29
Description	Linnaean System of Nomenclature True or False quiz. Question: A binomial nomenclature is a classification system using three names to identify an organism. Answers: B Bottom left text: shows current number of question.
Links	Submit button (slide 30) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



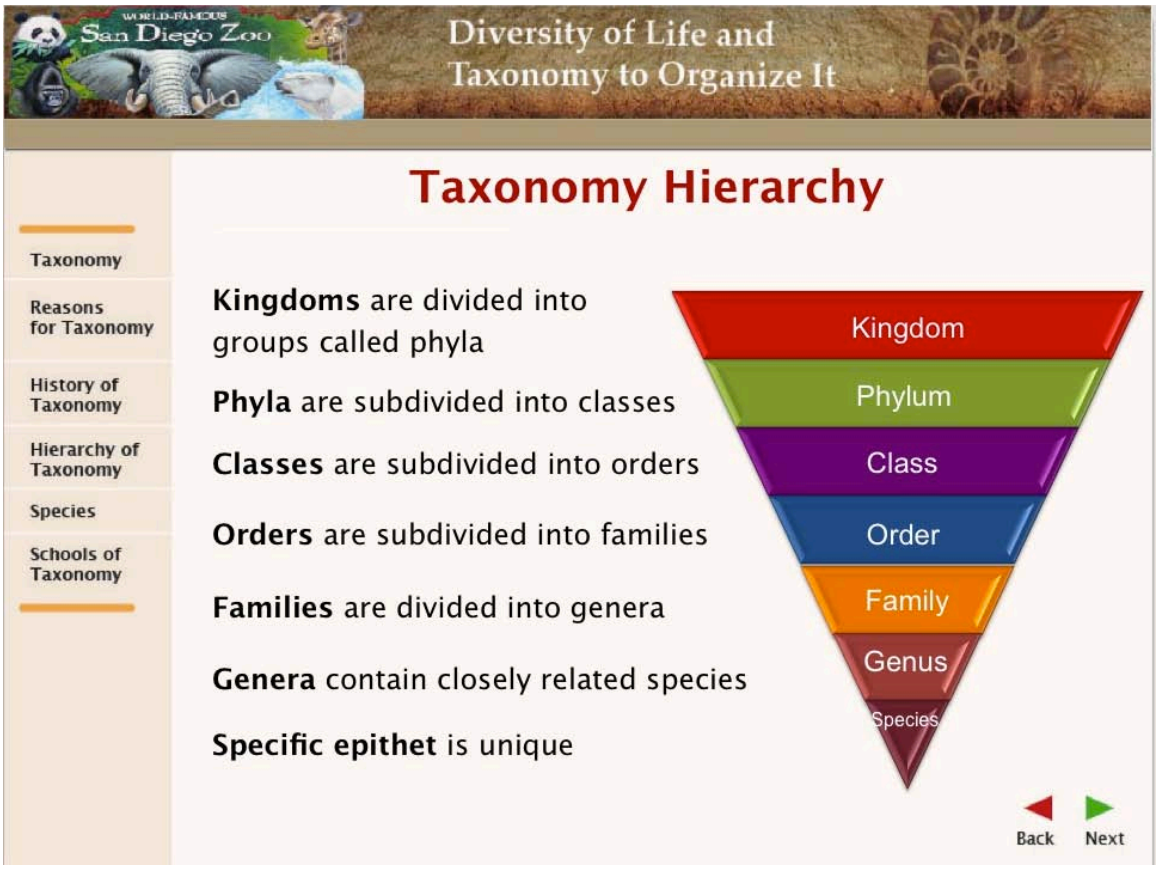
Slide #	30
Description	Linnaean System of Nomenclature True or False quiz. Question: The genus name is written first, always Capitalized. Answers: A Bottom left text: shows current number of question.
Links	Submit button (slide 31) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



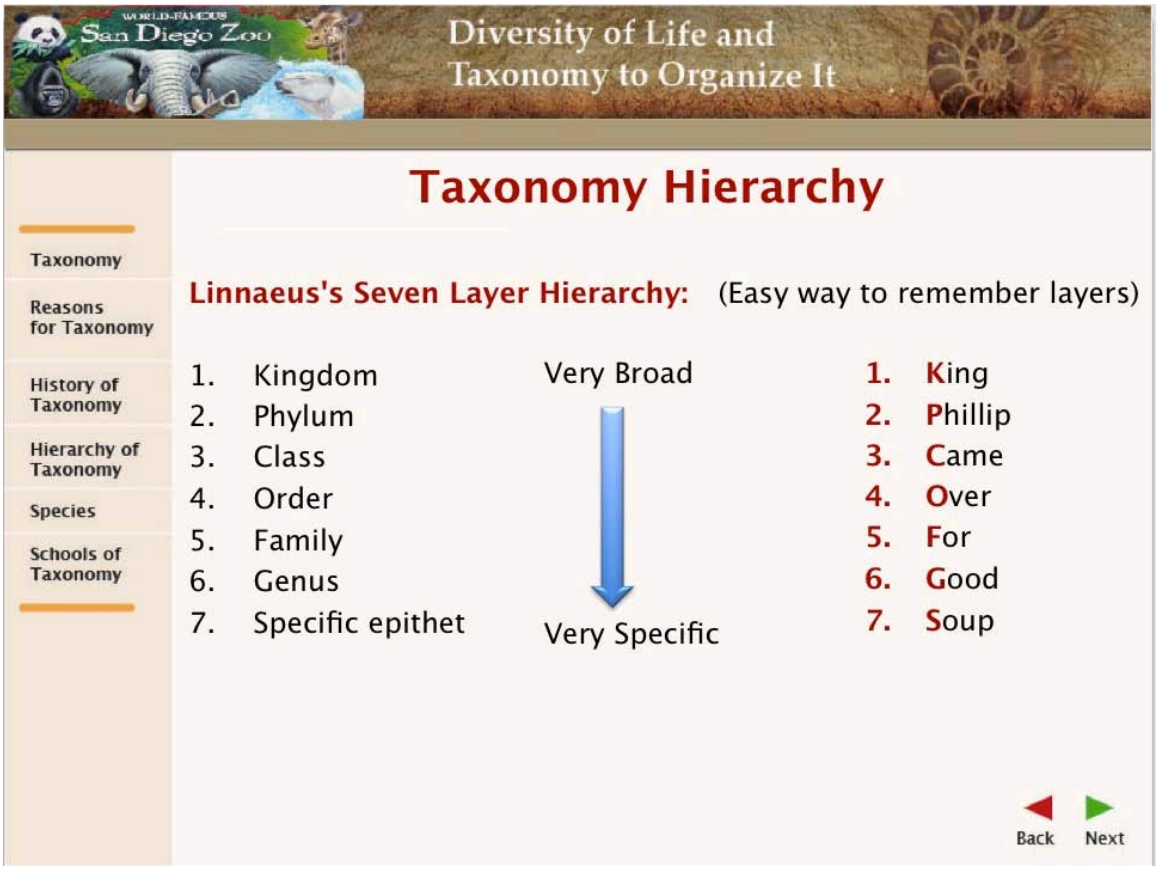
Slide #	31
Description	Linnaean System of Nomenclature True or False quiz. Question: The Species name is written second, always Capitalized. Answers: B Bottom left text: shows current number of question.
Links	Submit button (slide 32) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



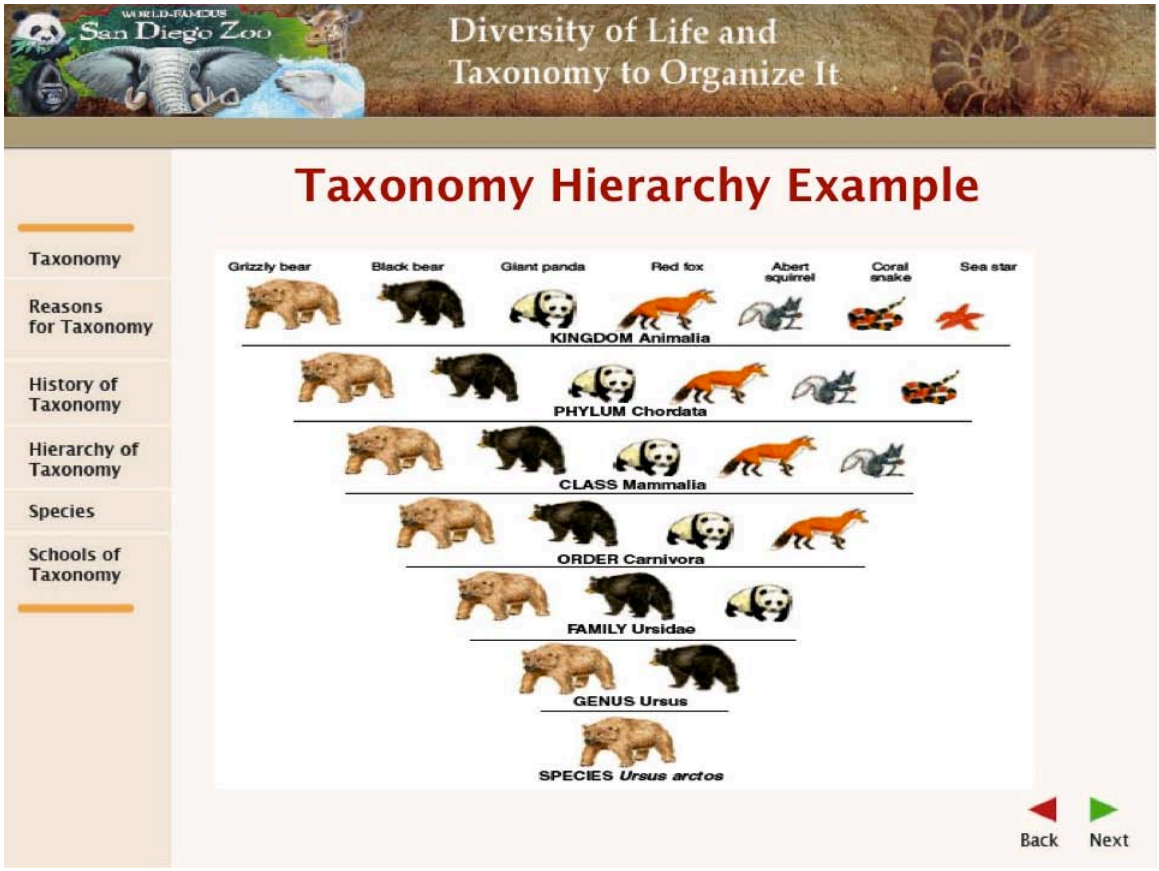
Slide #	32
Description	Linnaean System of Nomenclature True or False quiz. Question: Both words are italicized if typed or underlined if hand written. Answers: A Bottom left text: shows current number of question.
Links	Submit button (slide 33) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



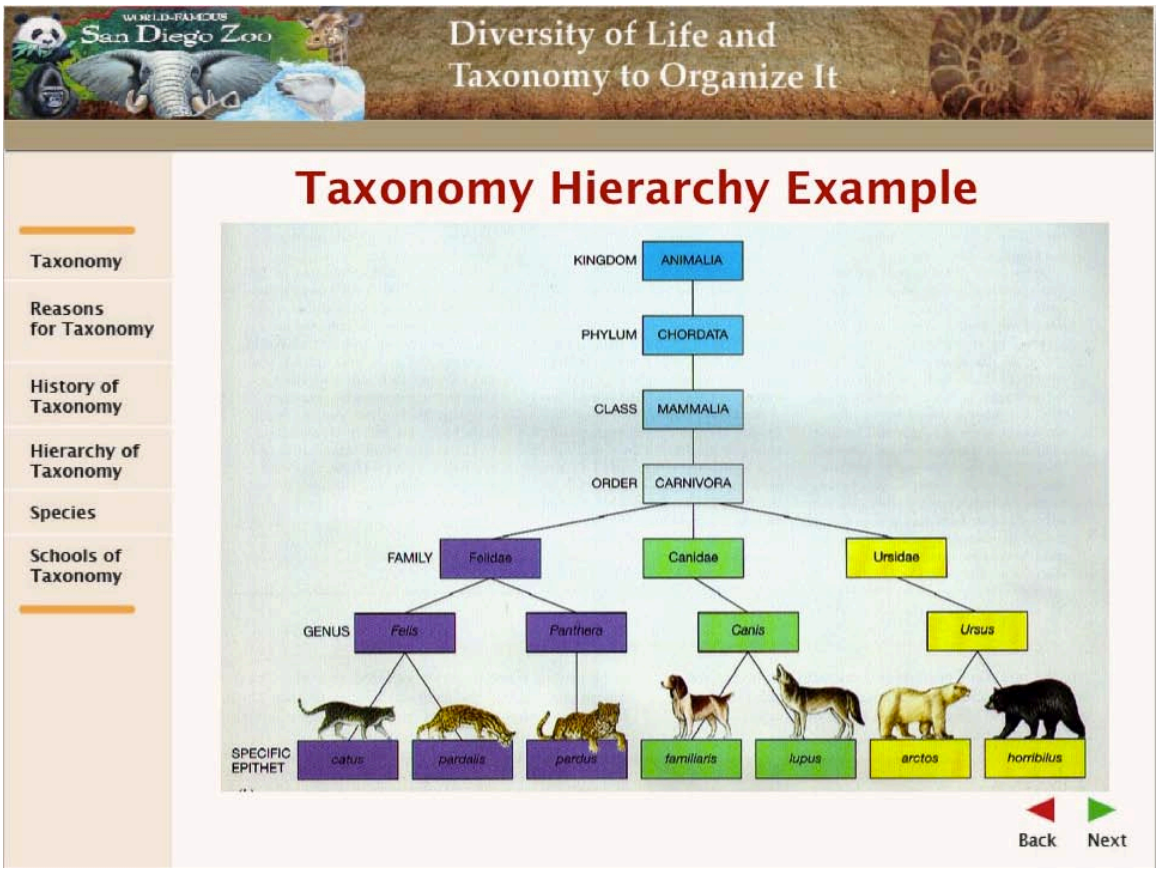
Slide #	33
Description	Introduction to levels of Taxonomy Hierarchy
Links	Next button (34) Back button (32) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Graphic image used to show Hierarchy level.



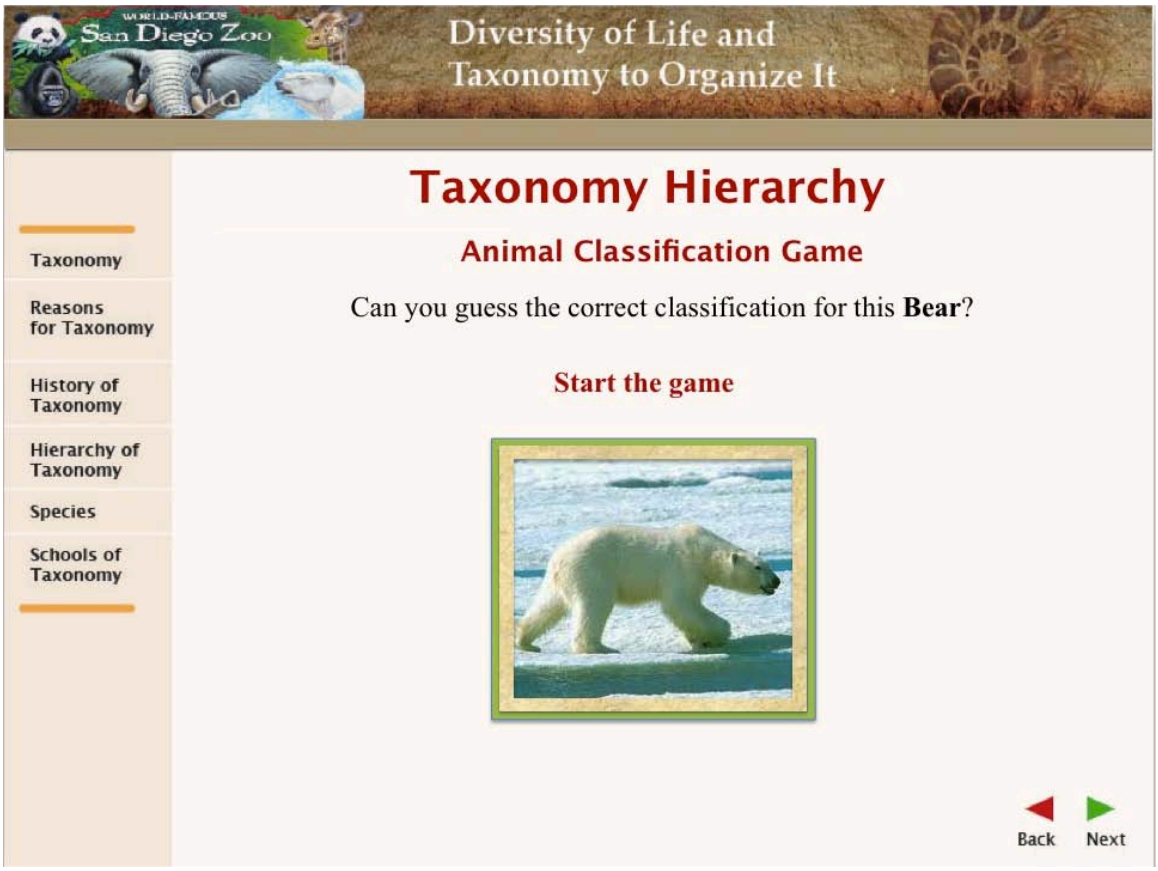
Slide #	34
Description	Memorization example of Taxonomy Hierarchy
Links	Next button (35) Back button (33) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Graphic image used to show Hierarchy level.



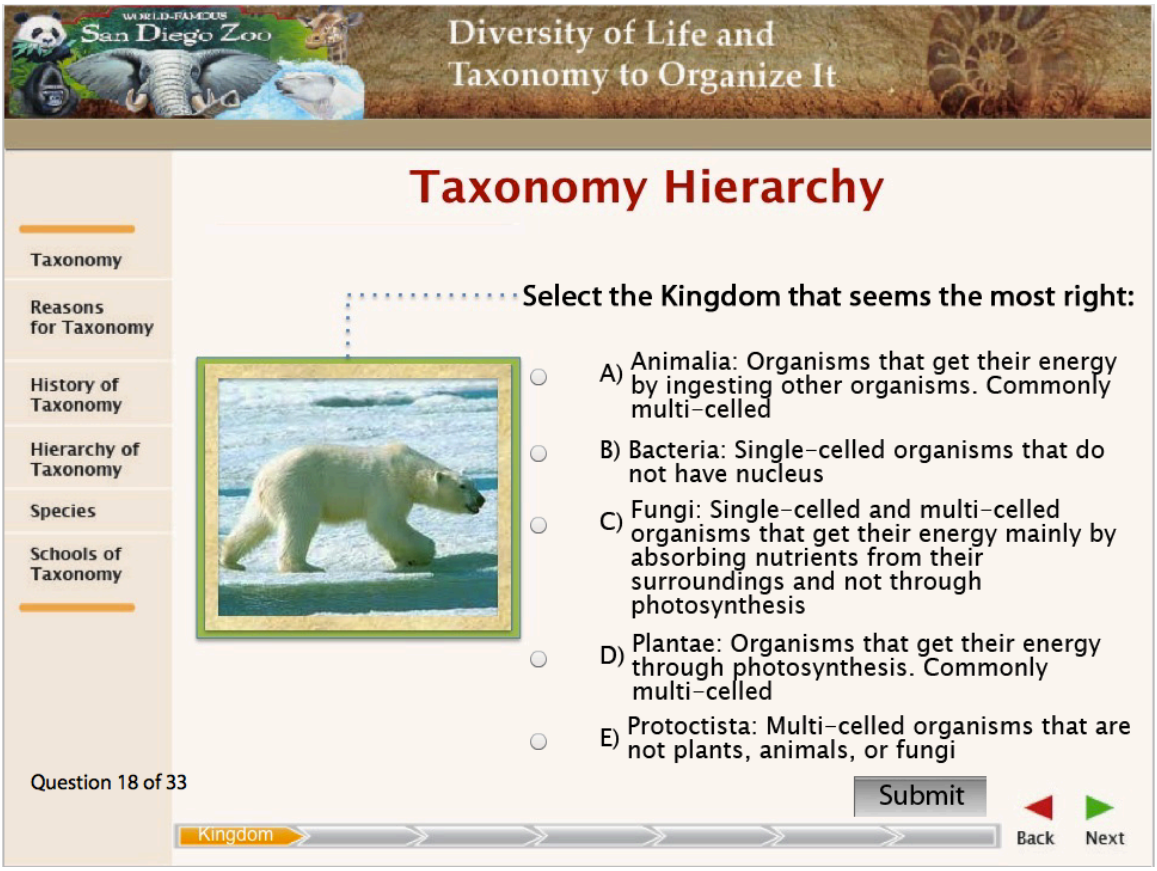
Slide #	35
Description	Taxonomy Hierarchy Example of animals
Links	Next button (36) Back button (34) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Graphic image used to show Hierarchy level.



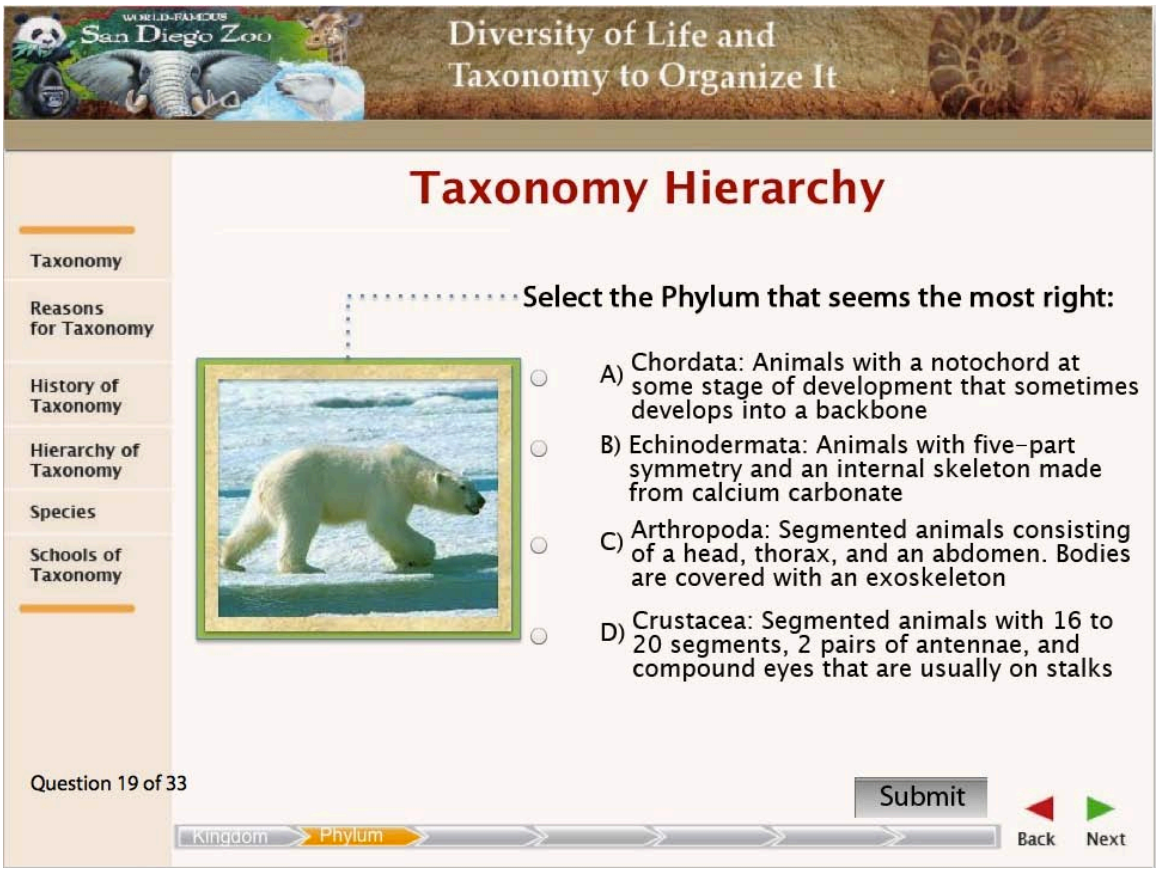
Slide #	36
Description	Taxonomy Hierarchy secondary Example of animals
Links	Next button (37) Back button (35) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Graphic image used to show Hierarchy level.



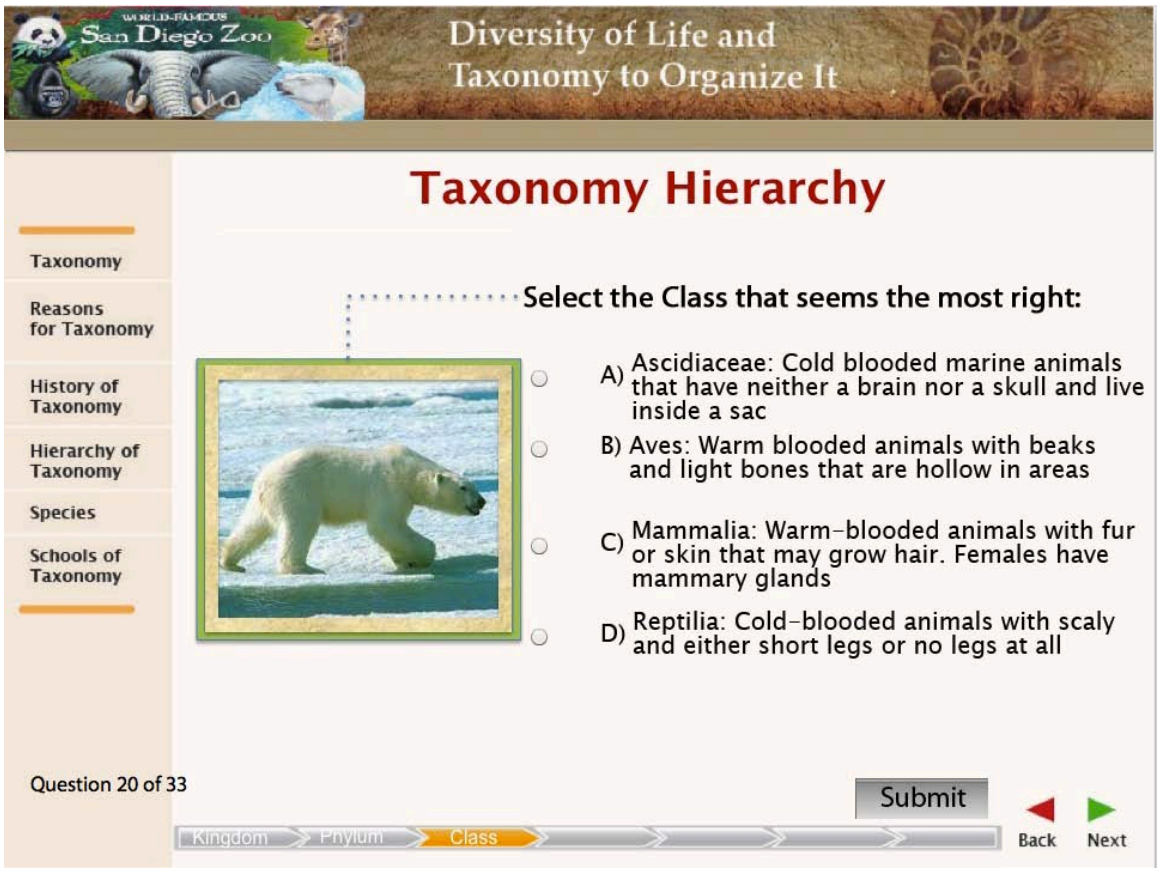
Slide #	37
Description	Game: Animal Classification introduction. Learner is asked to play a game to guess the correct classification.
Links	Next button (38) Back button (36) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear.



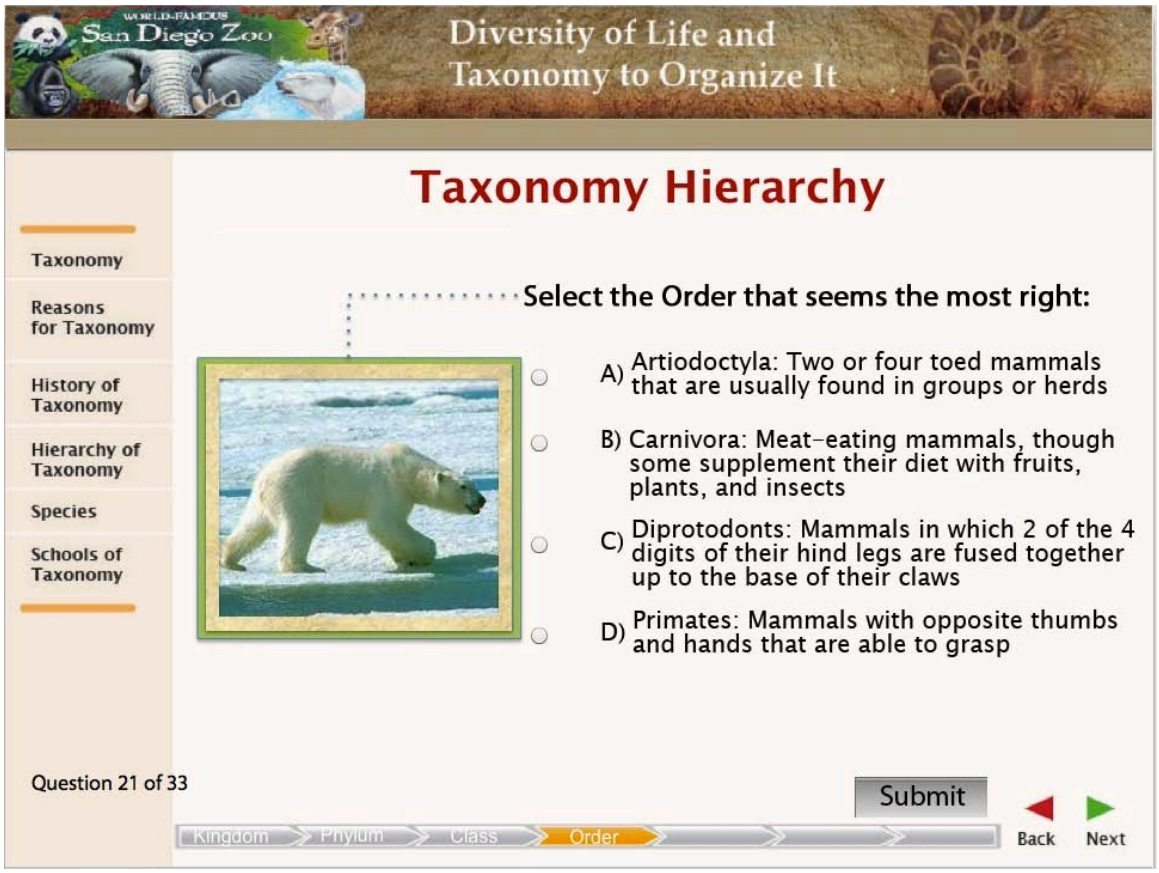
Slide #	38
Description	Game: Animal Classification first level. Learner is asked to select the best Kingdom the bear belongs to. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Next button (39) Back button (37) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear. Progress bar shows current level of hierarchy.



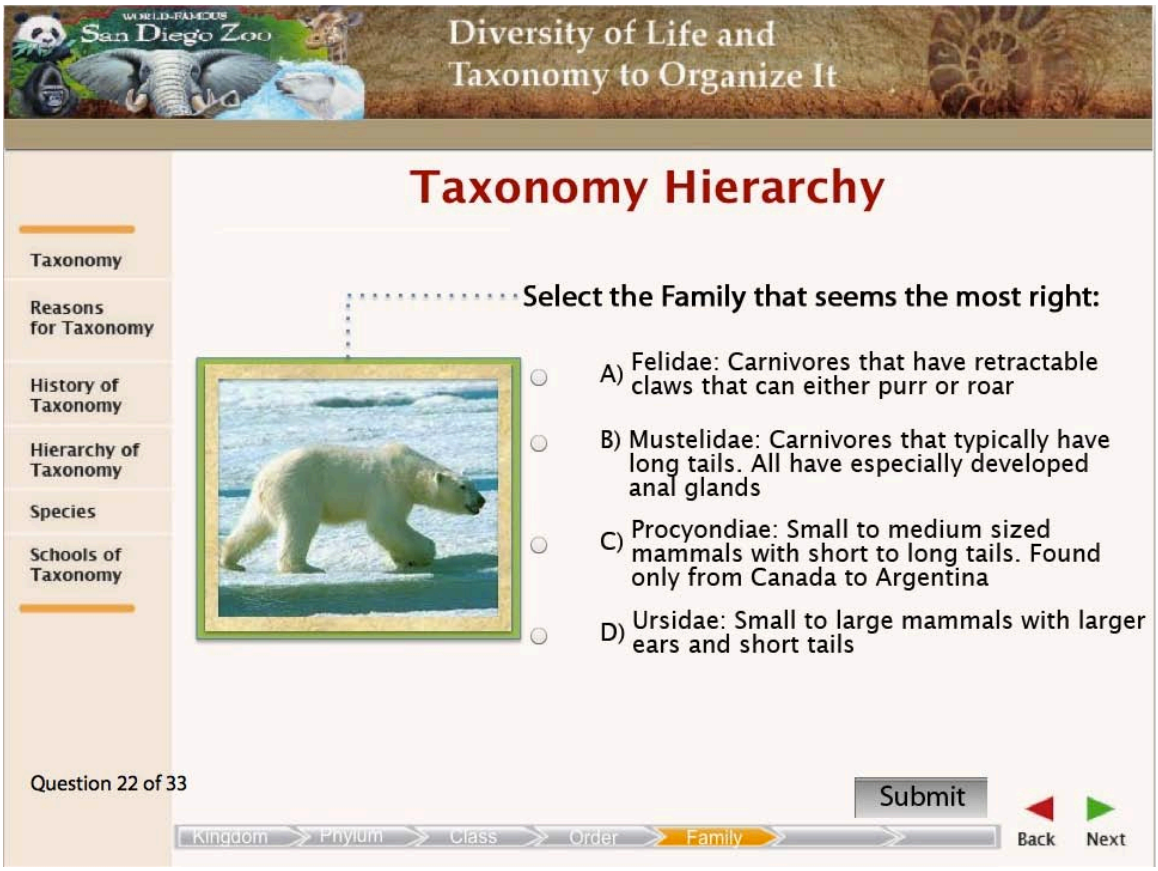
Slide #	39
Description	Game: Animal Classification first level. Learner is asked to select the best Phylum the bear belongs to. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Next button (40) Back button (38) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear. Progress bar shows current level of hierarchy.



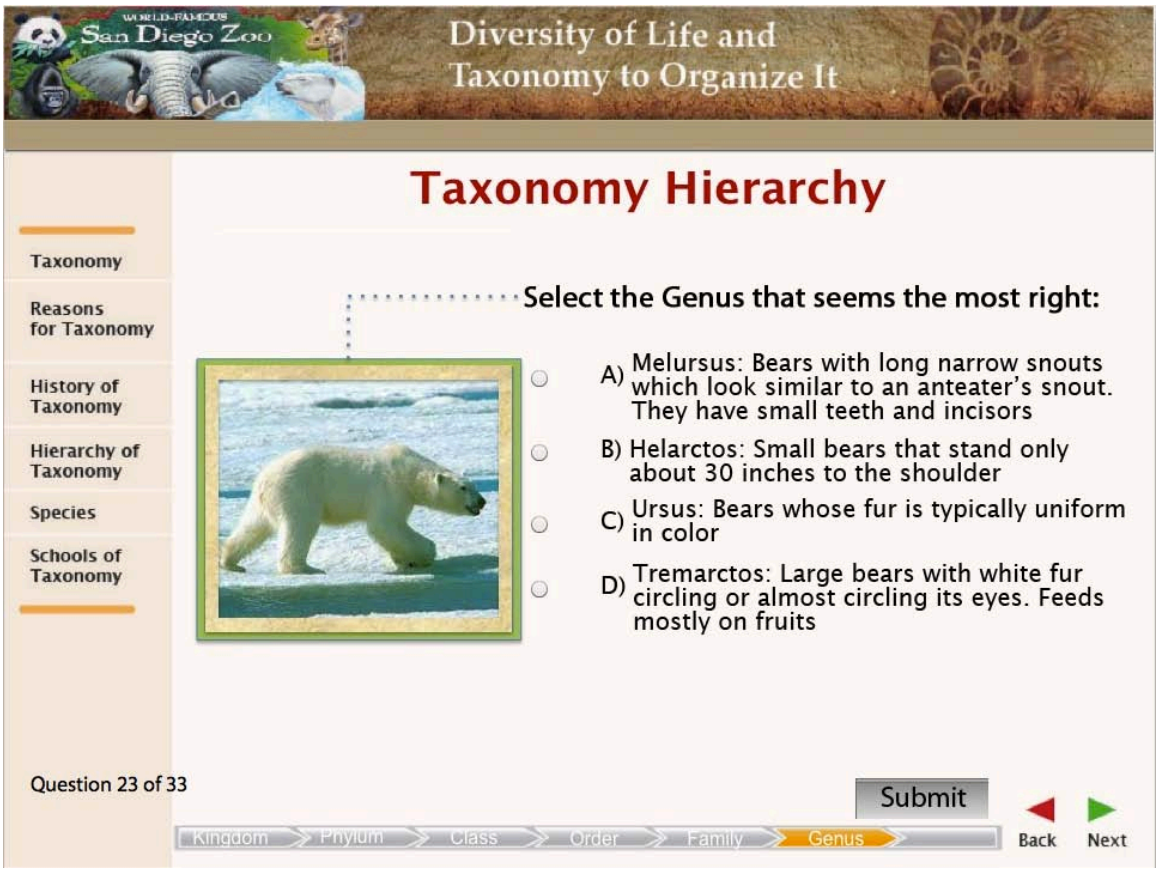
Slide #	40
Description	Game: Animal Classification first level. Learner is asked to select the best Class the bear belongs to. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Next button (41) Back button (39) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear. Progress bar shows current level of hierarchy.



Slide #	41
Description	Game: Animal Classification first level. Learner is asked to select the best Order the bear belongs to. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Next button (42) Back button (40) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear. Progress bar shows current level of hierarchy.

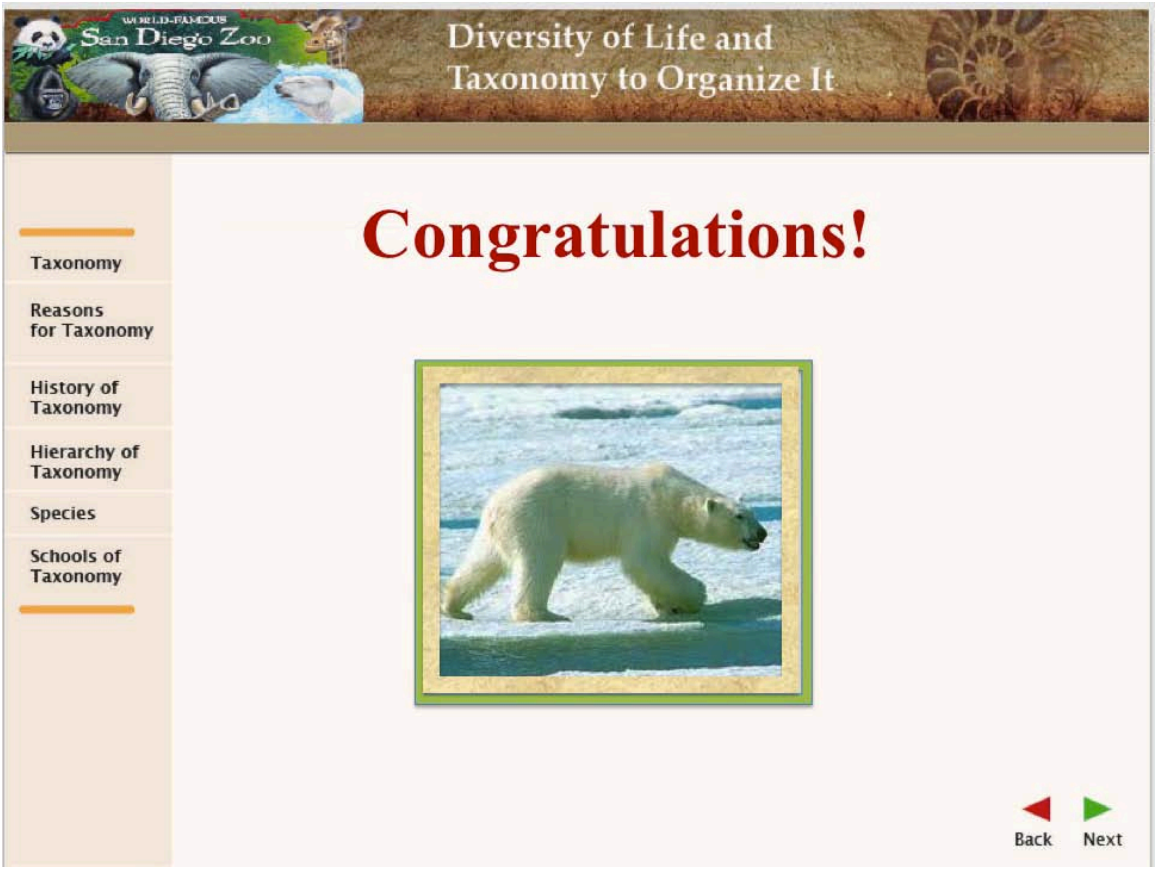


Slide #	42
Description	Game: Animal Classification first level. Learner is asked to select the best Family the bear belongs to. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Next button (43) Back button (41) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear. Progress bar shows current level of hierarchy.

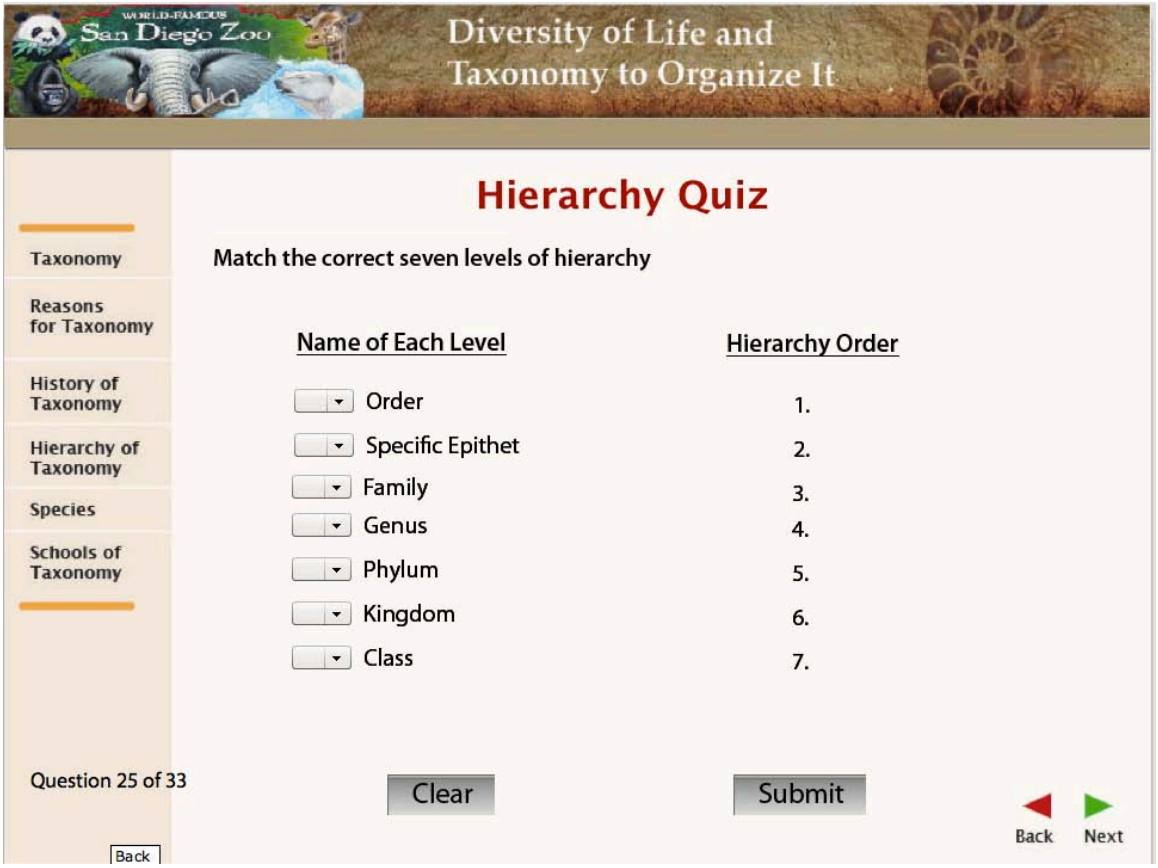


Slide #	43
Description	Game: Animal Classification first level. Learner is asked to select the best Genus the bear belongs to. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Next button (44) Back button (42) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear. Progress bar shows current level of hierarchy.

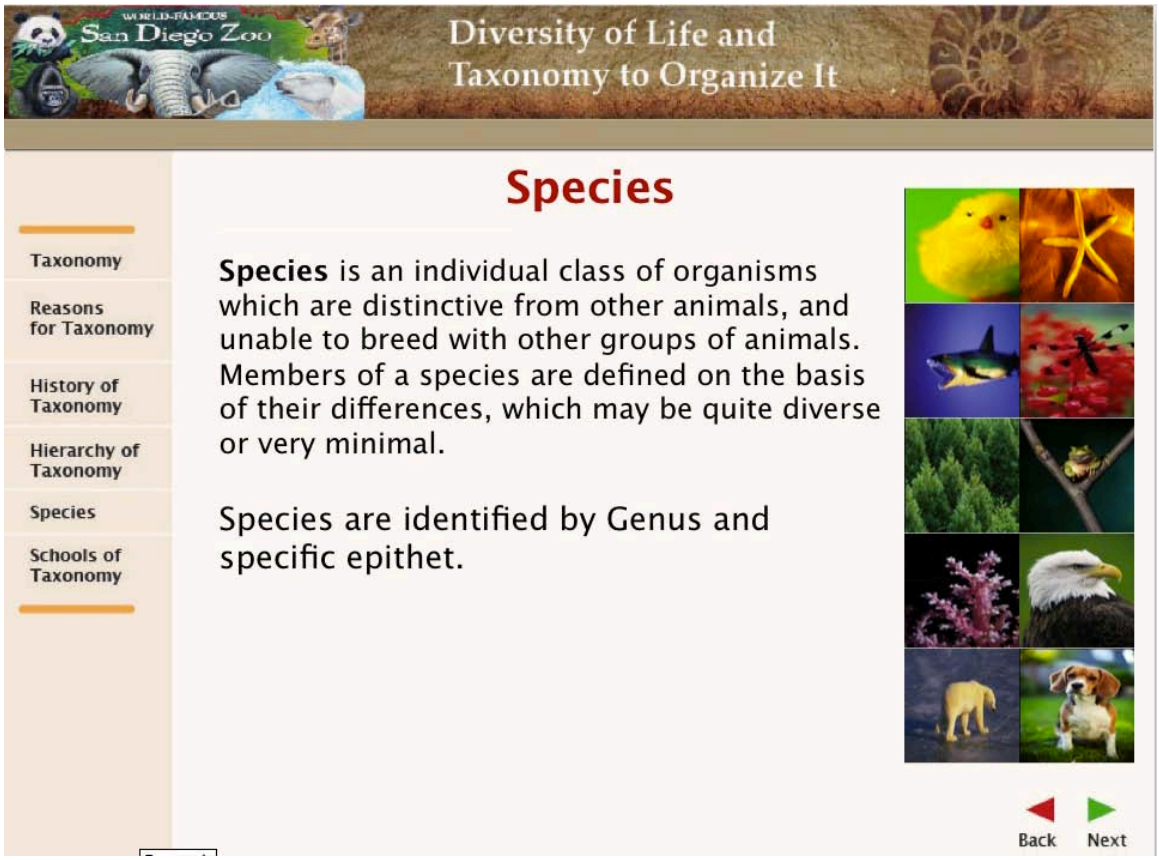
Slide #	44
Description	Game: Animal Classification first level. Learner is asked to select the best Species the bear belongs to. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Next button (45) Back button (43) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear. Progress bar shows current level of hierarchy.



Slide #	45
Description	Game: presents positive feedback when all 7 levels are completed.
Links	Slide proceeds to next slide 46 in 4 seconds. Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Bear.

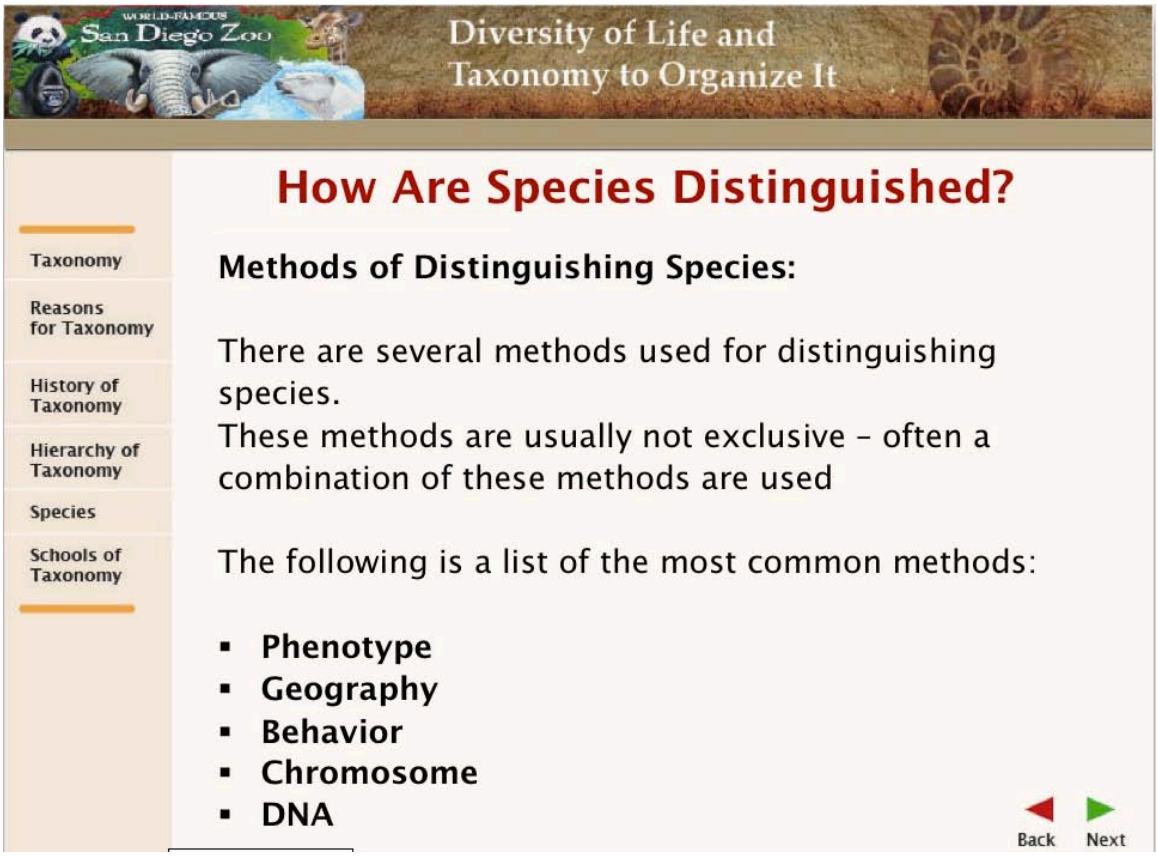


Slide #	46
Description	Hierarchy Quiz. Question: Match the correct seven levels of hierarchy. Answer: 4,7,5,6,2,1,3 Bottom left text: shows current number of question.
Links	Submit button (slide 47) Clear button clears answers from drop-down list. Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No Media

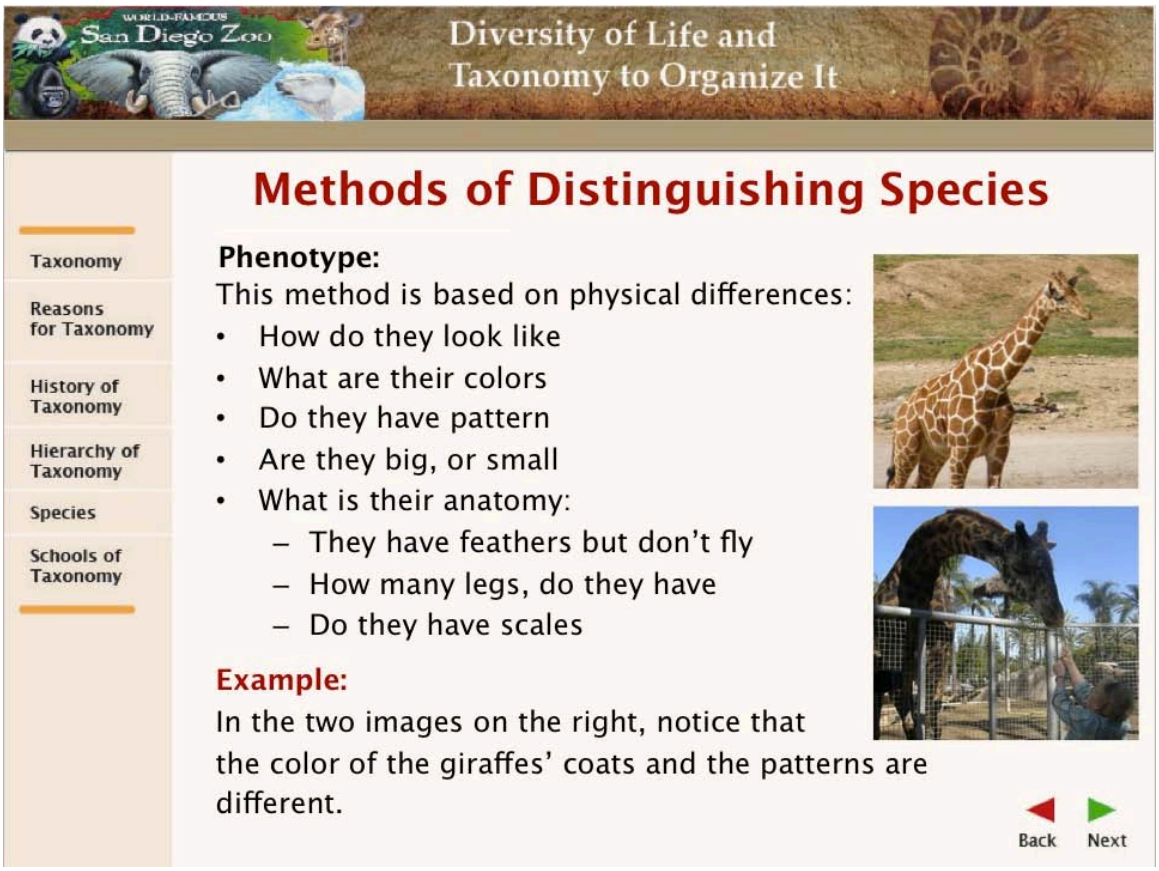


Slide #	47
Description	Introduction to Species. Species is defined.
Links	Next button (48) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic images of species.

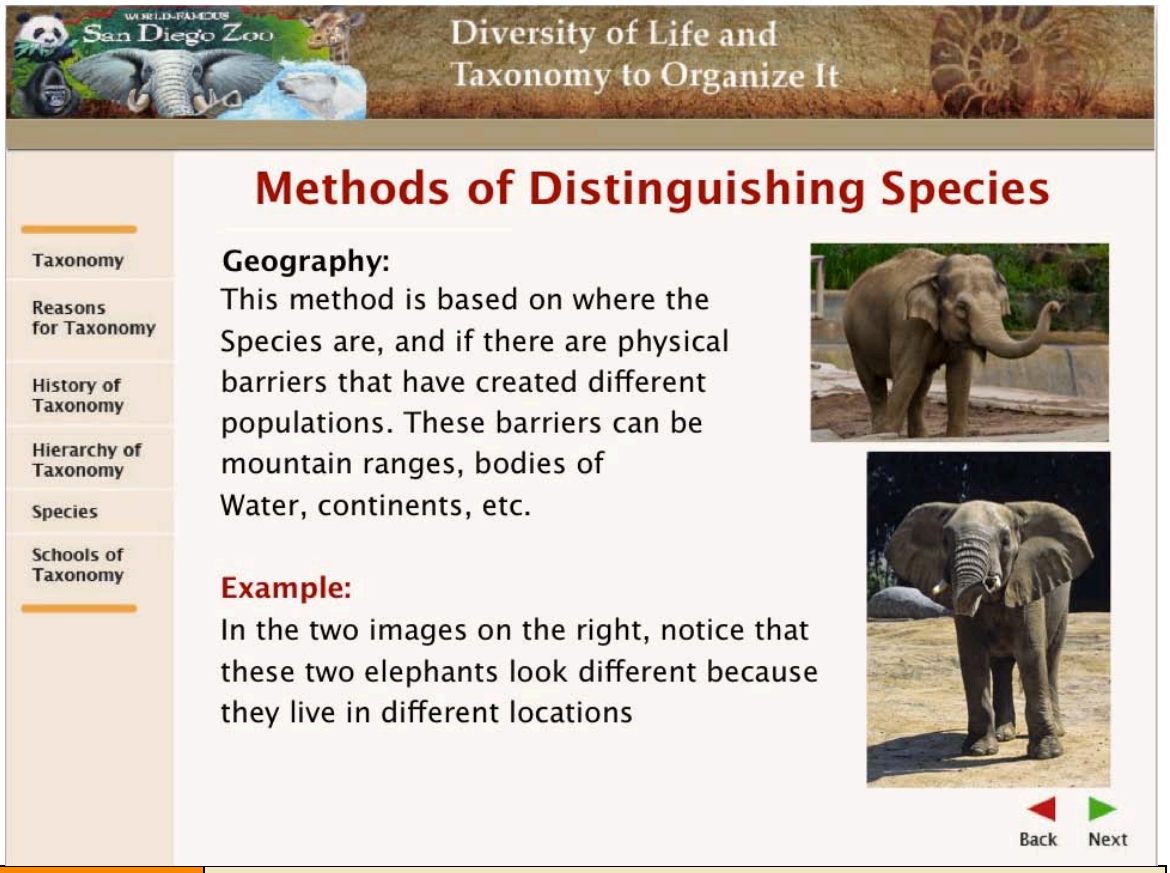
Slide #	48
Description	Game: Species Guessing Game. Learner is asked to guess if the following two animals are the same species? Answer: No. Learner must choose correct answer to proceed. Bottom left text: shows current number of question.
Links	Submit (slide 49) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Indian Elephant and African Elephant.



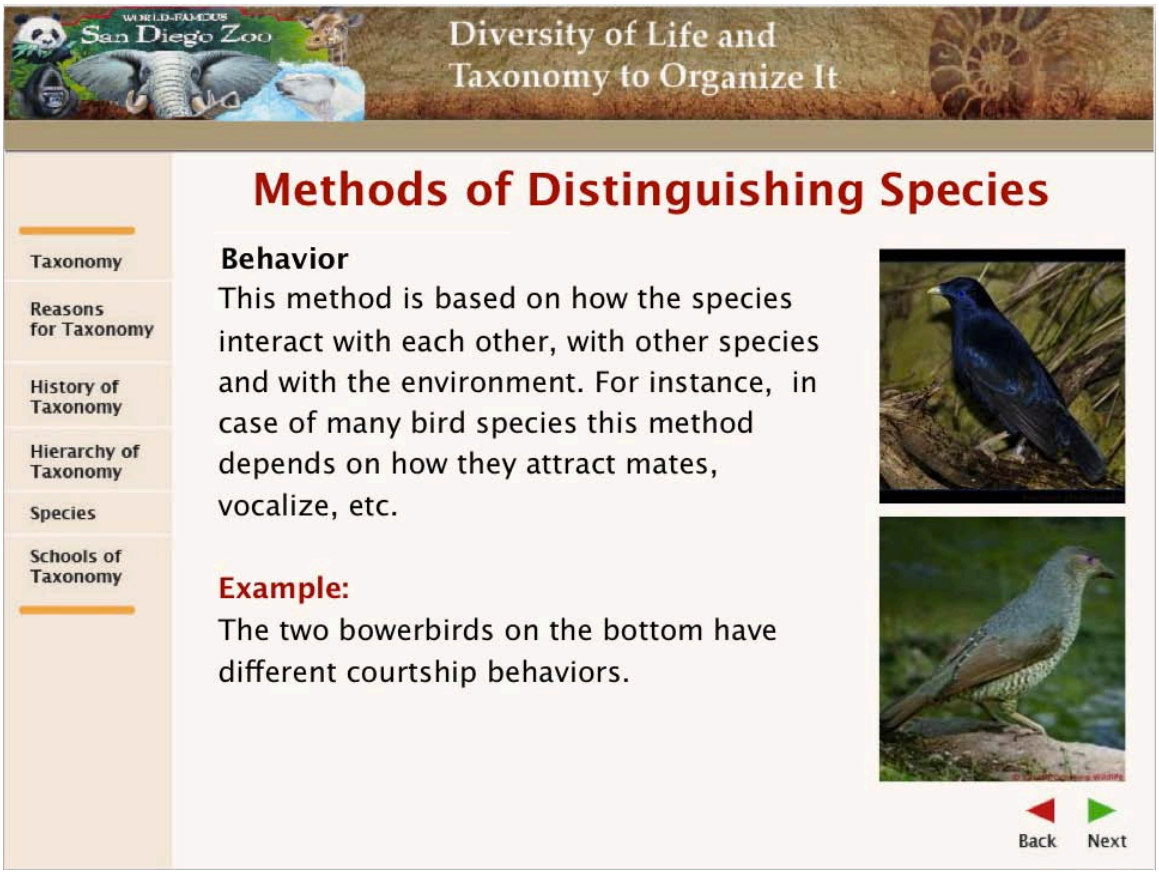
Slide #	49
Description	How are Species Distinguished Methods of distinguishing species is defined.
Links	Next button (50) Back button (48) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media



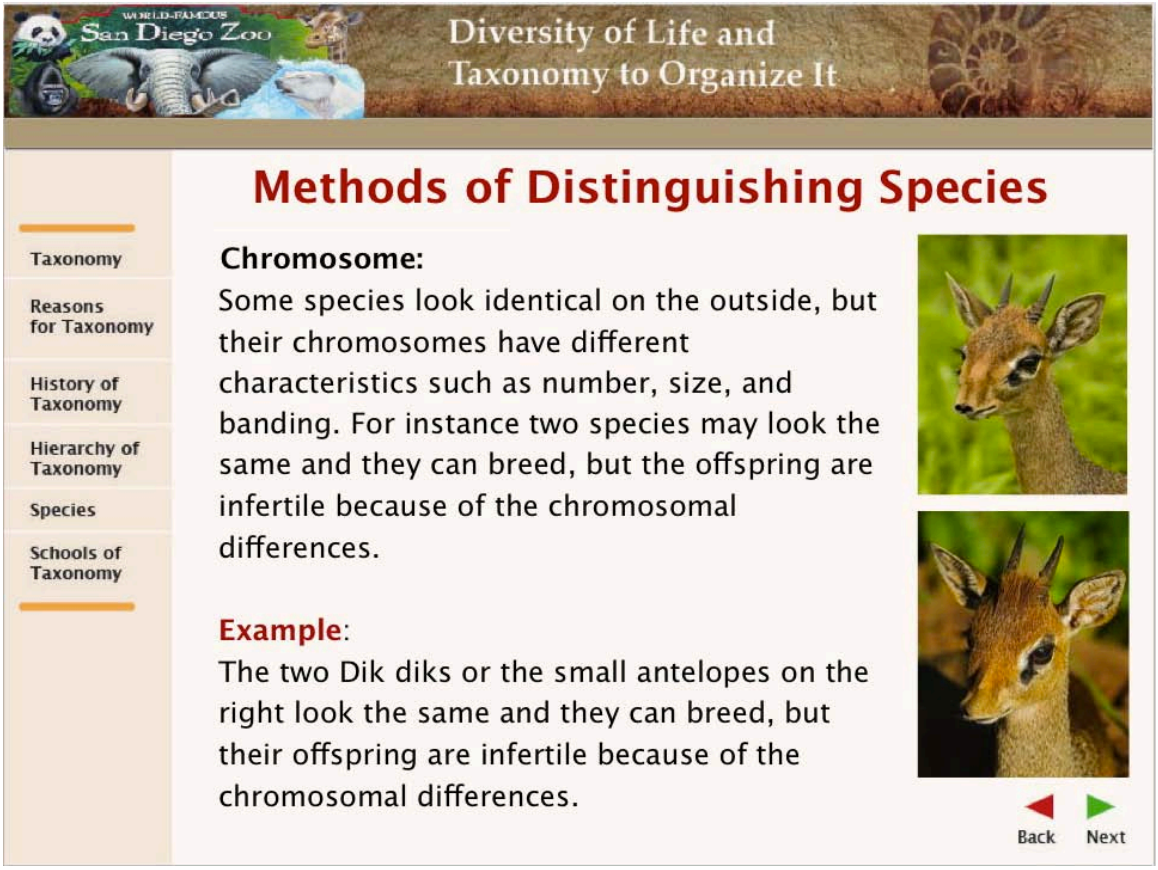
Slide #	50
Description	Methods of Distinguishing Species Method: Phenotype is defined and example is given.
Links	Next button (51) Back button (49) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of giraffe is used to demonstrate differences.



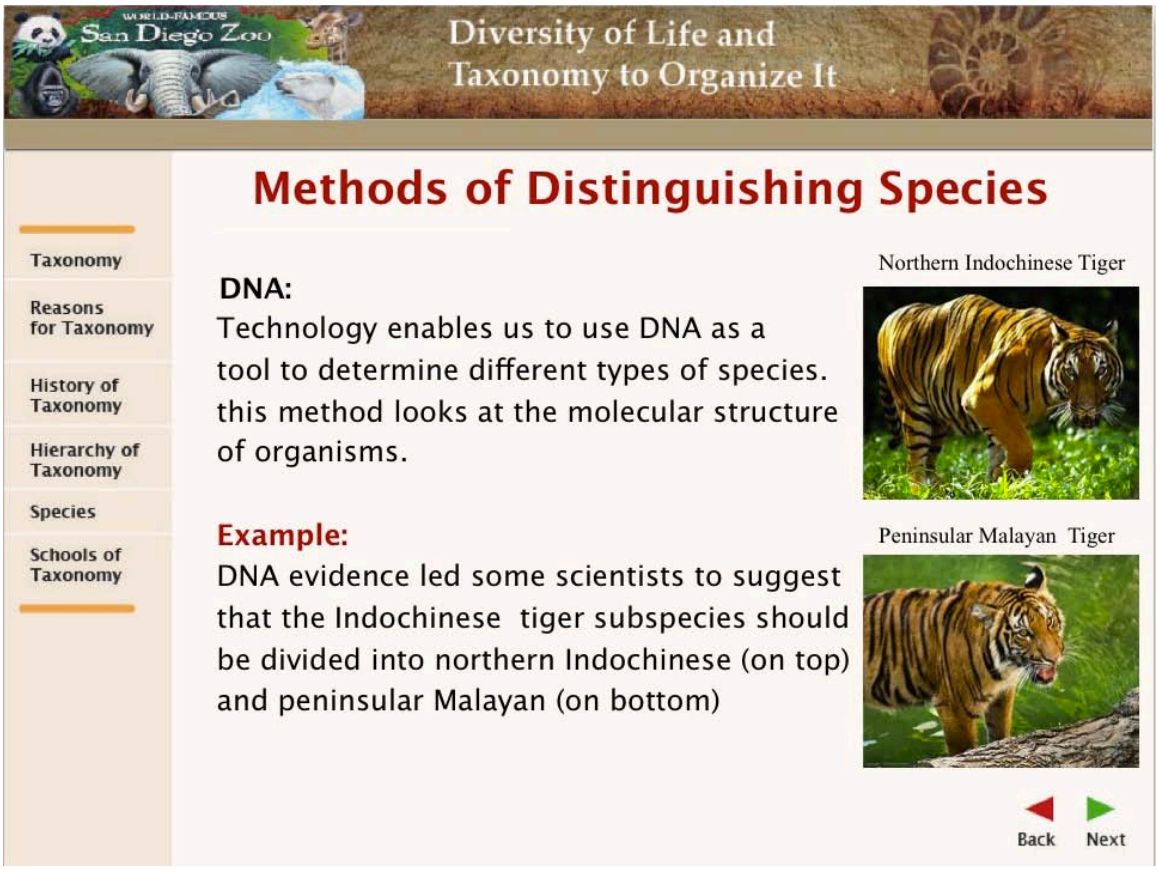
Slide #	51
Description	Methods of Distinguishing Species Method: Geography is defined and example is given.
Links	Next button (52) Back button (50) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to demonstrate differences.



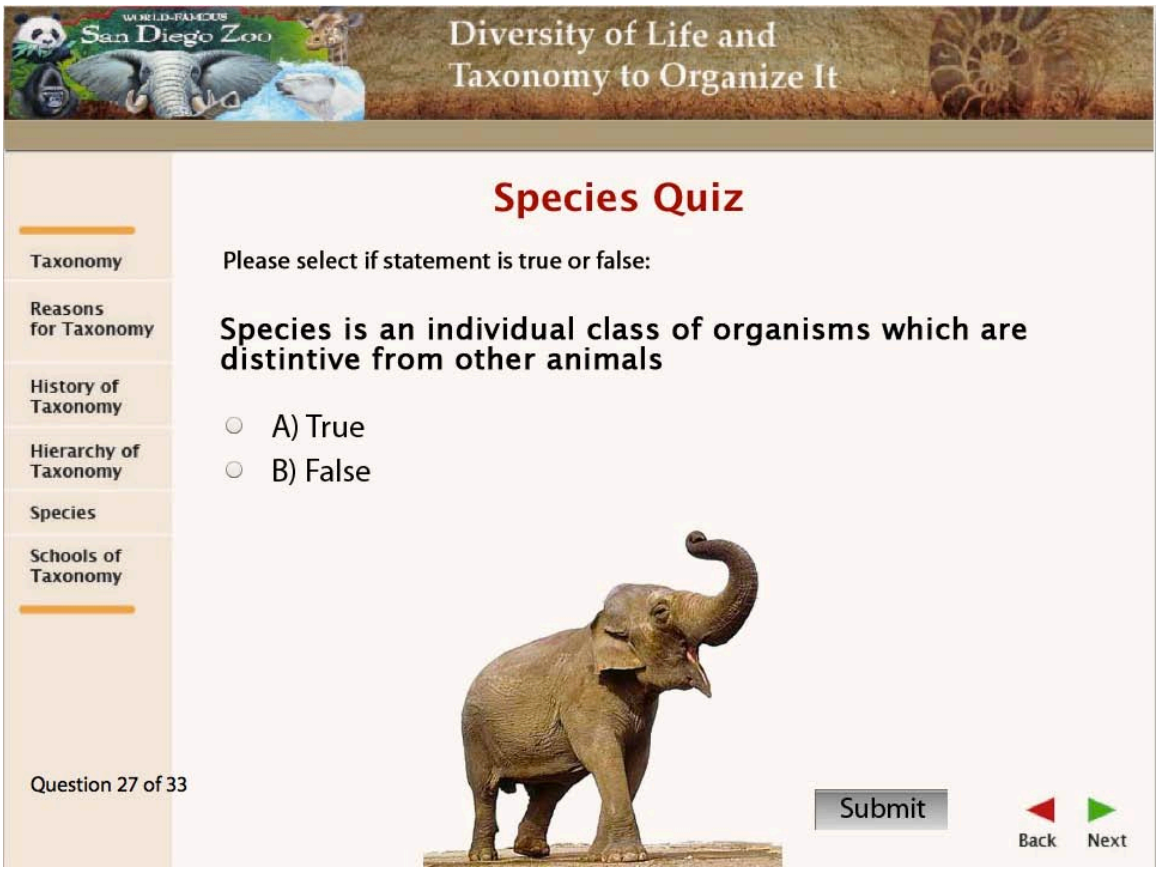
Slide #	52
Description	Methods of Distinguishing Species Method: Behavior is defined and example is given.
Links	Next button (53) Back button (51) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of bowerbirds is used to demonstrate differences.



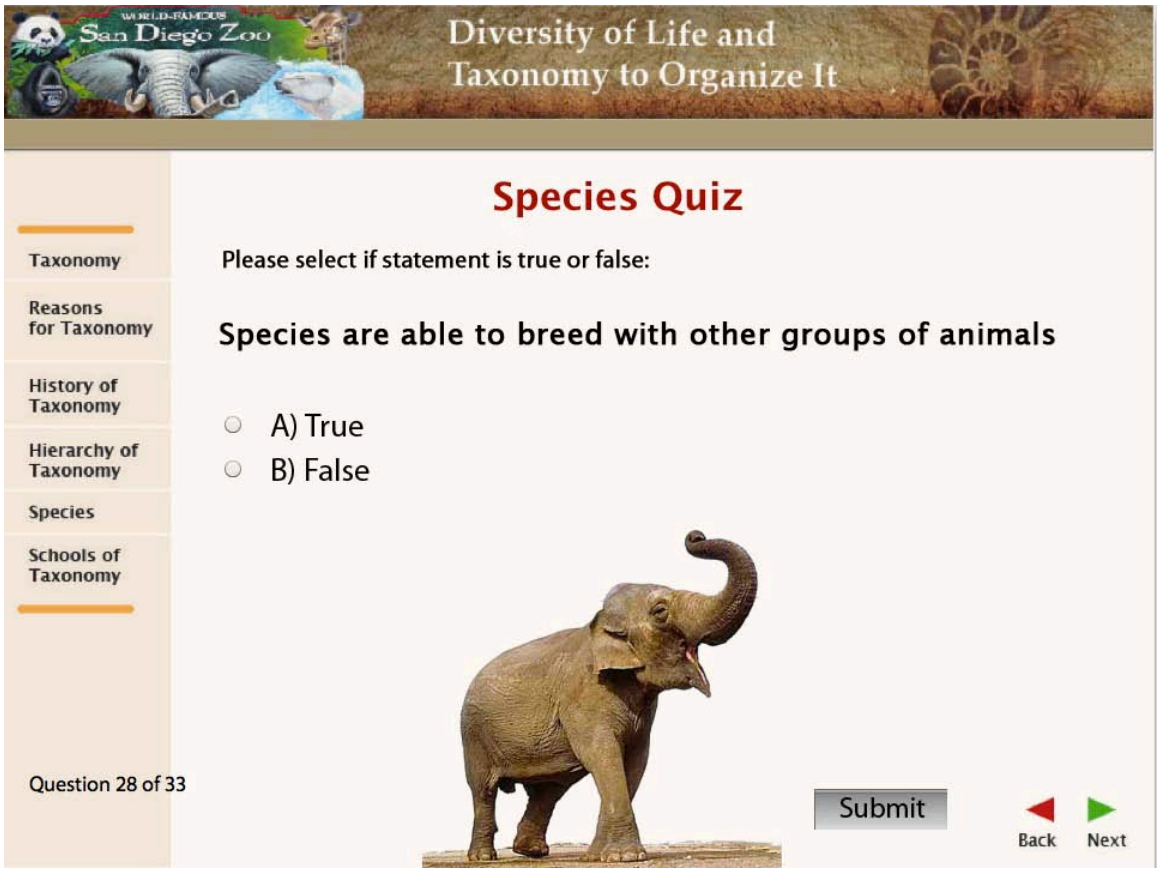
Slide #	53
Description	Methods of Distinguishing Species Method: Chromosome is defined and example is given.
Links	Next button (54) Back button (42) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Dik diks is used to demonstrate differences.



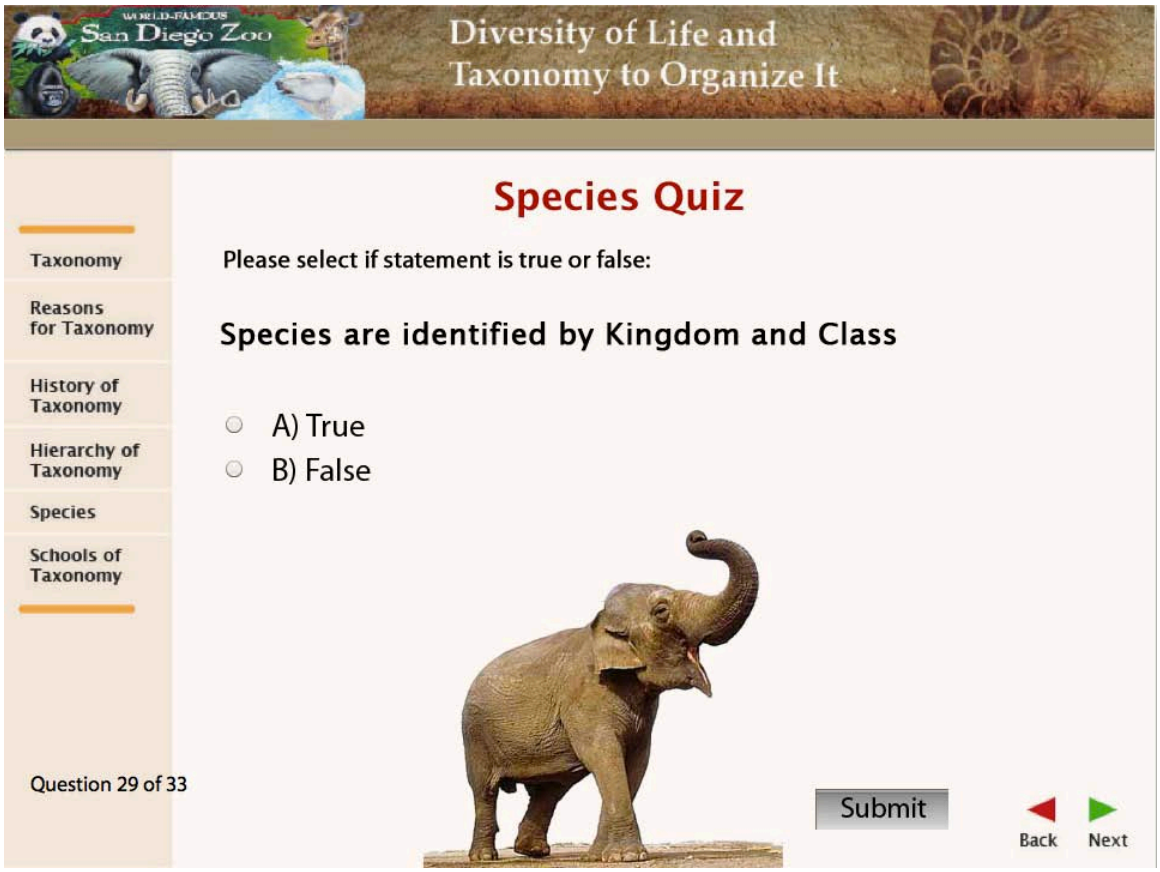
Slide #	54
Description	Methods of Distinguishing Species Method: DNA is defined and example is given.
Links	Next button (55) Back button (53) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of Northern Indochinese and Peninsular Malayan Tigers are used to demonstrate differences.



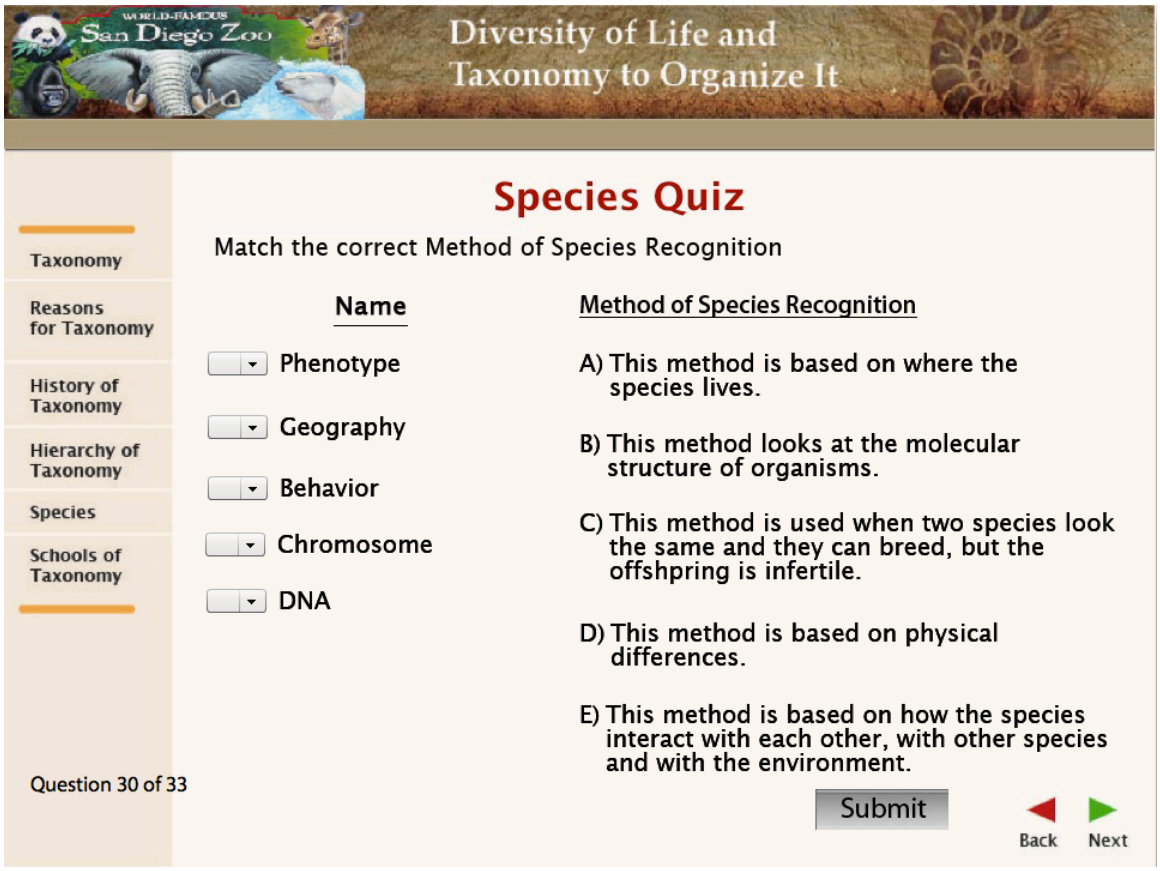
Slide #	55
Description	Species True or False quiz. Question: Species is an individual class of organisms which are distinctive from other animals. Answers: A Bottom left text: shows current number of question.
Links	Submit button (slide 56) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



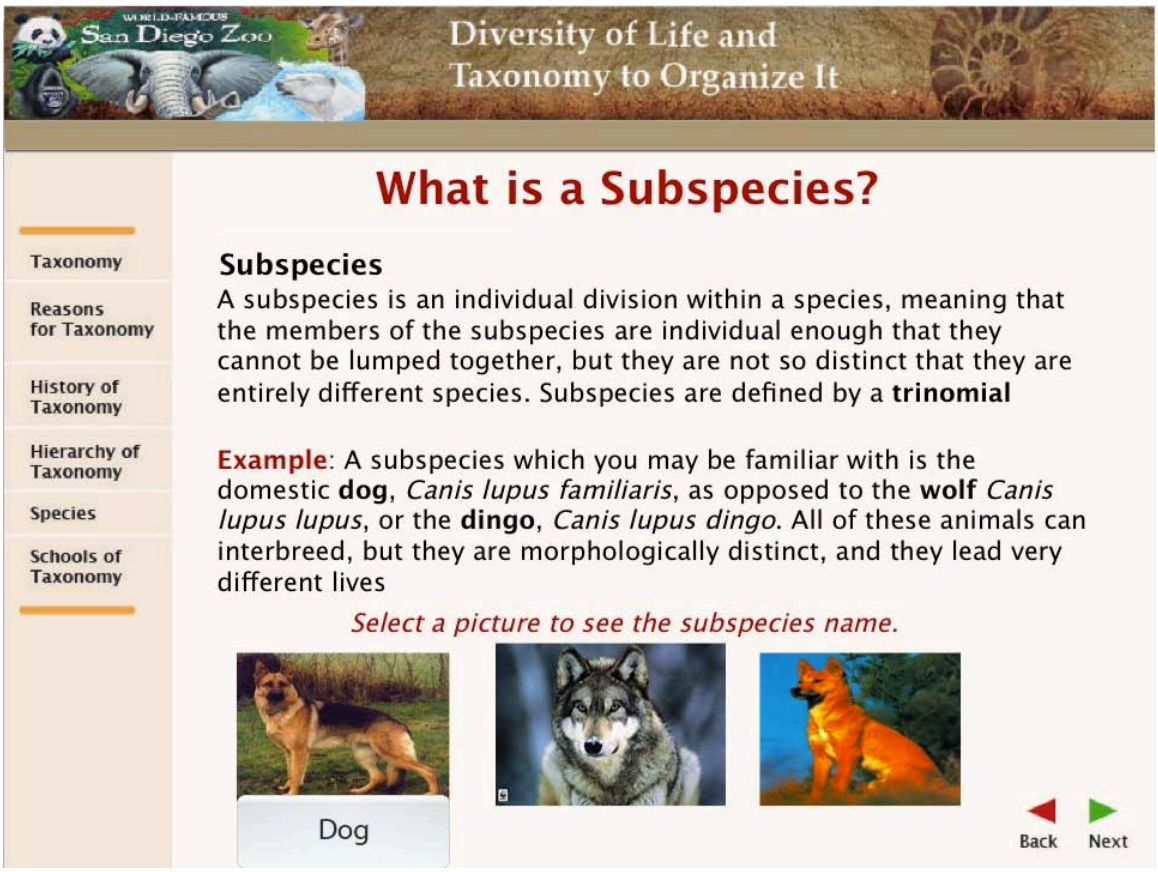
Slide #	56
Description	Species True or False quiz. Question: Species are able to breed with other groups of animals. Answers: B Bottom left text: shows current number of question.
Links	Submit button (slide 57) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



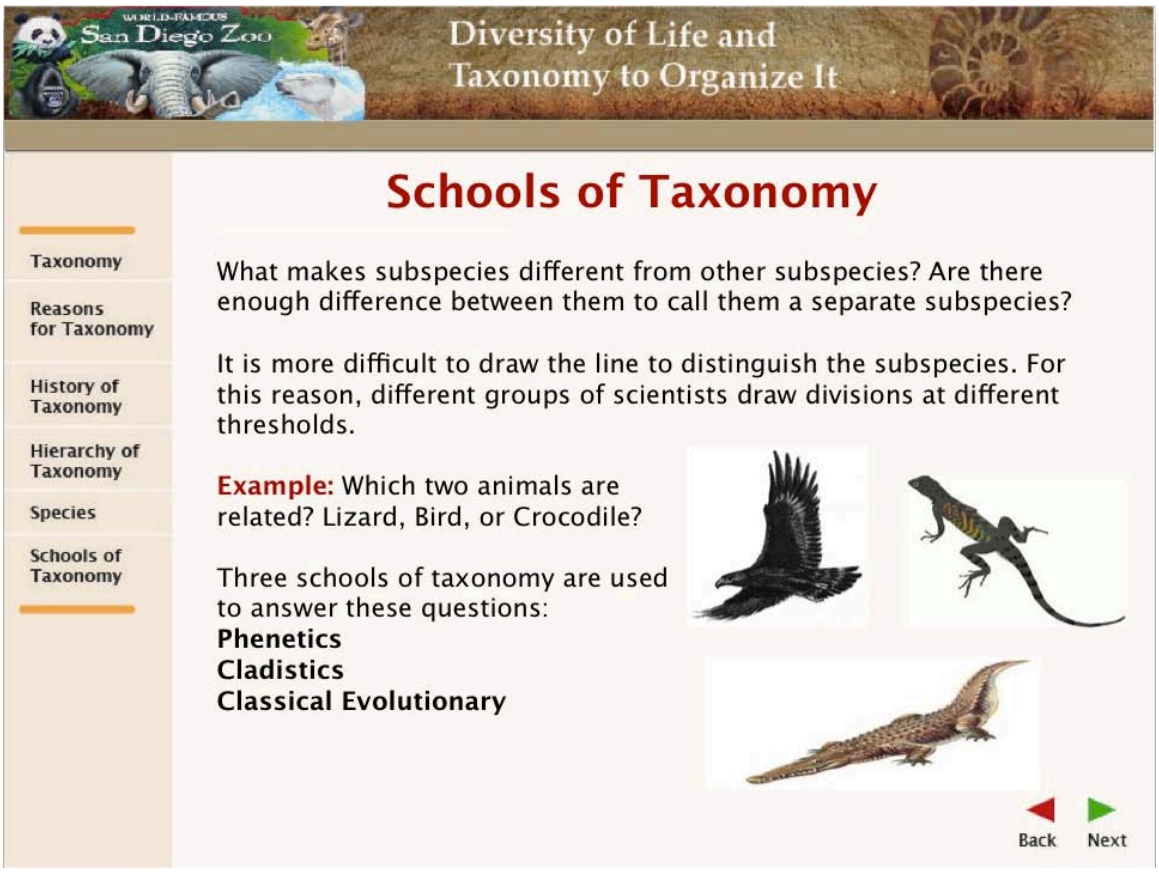
Slide #	57
Description	Species True or False quiz. Question: Species are identified by Kingdom and Class. Answers: B Bottom left text: shows current number of question.
Links	Submit button (slide 58) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



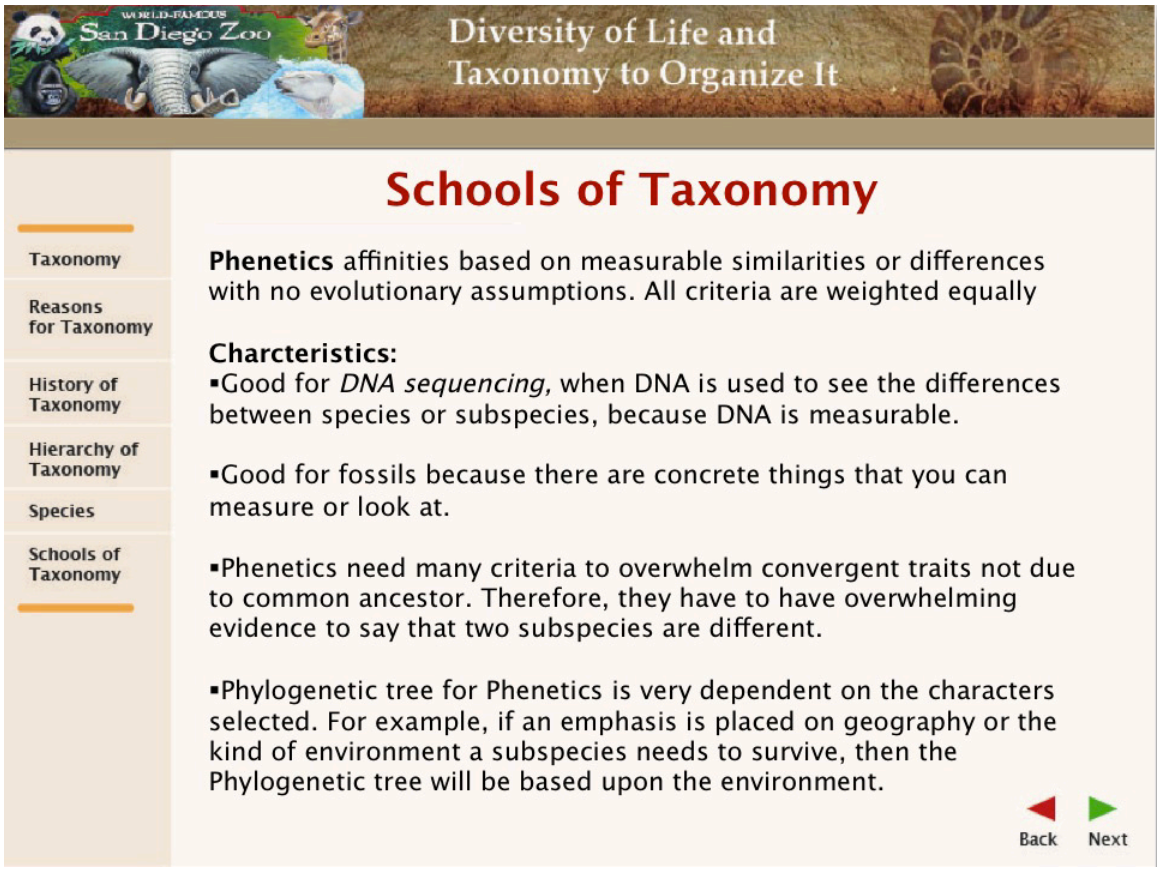
Slide #	58
Description	Species matching quiz. Question: Match the correct Method of Species Recognition. Answers: D,A,E,C,B Bottom left text: shows current number of question.
Links	Submit button (slide 59) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No Media



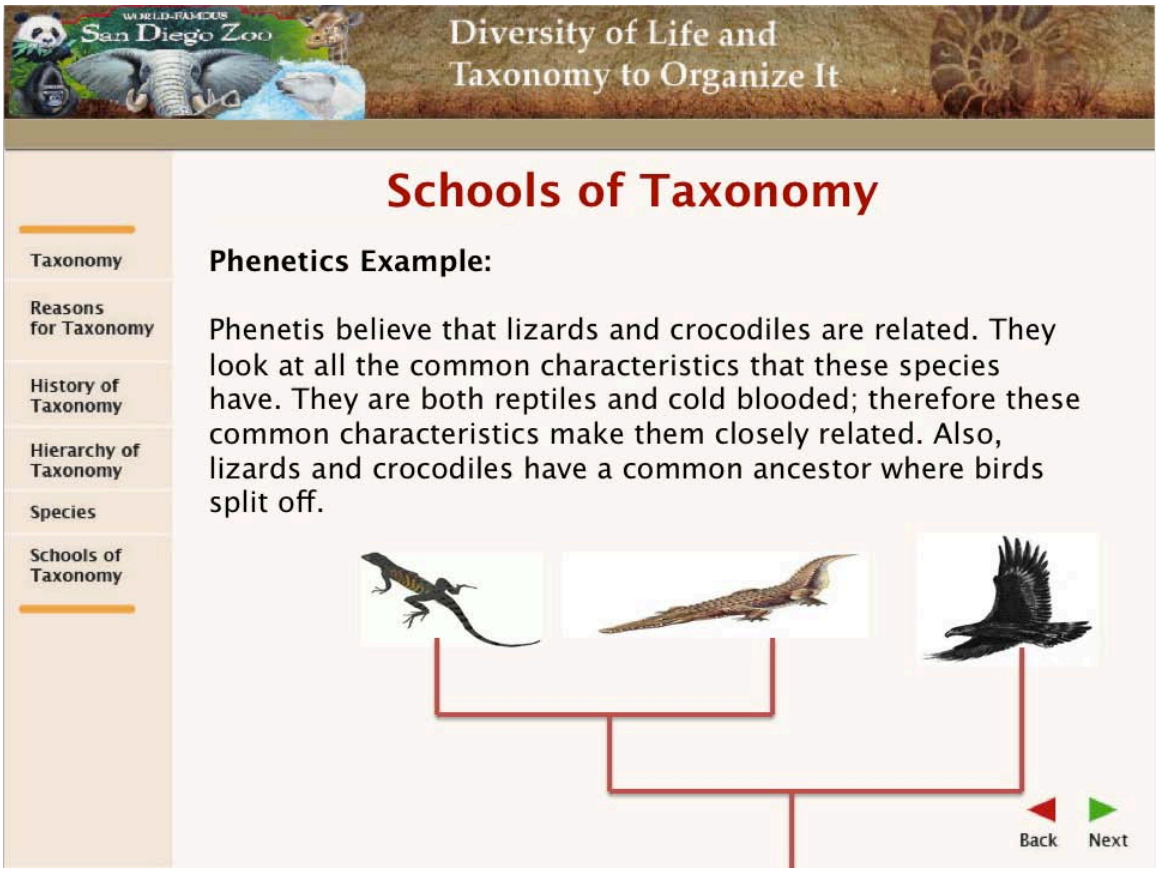
Slide #	59
Description	Introduction to What is a Subspecies? Subspecies is defined with example. Learner is asked to select picture to reveal subspecies name.
Links	Next button (60) Back button (58) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of three species.



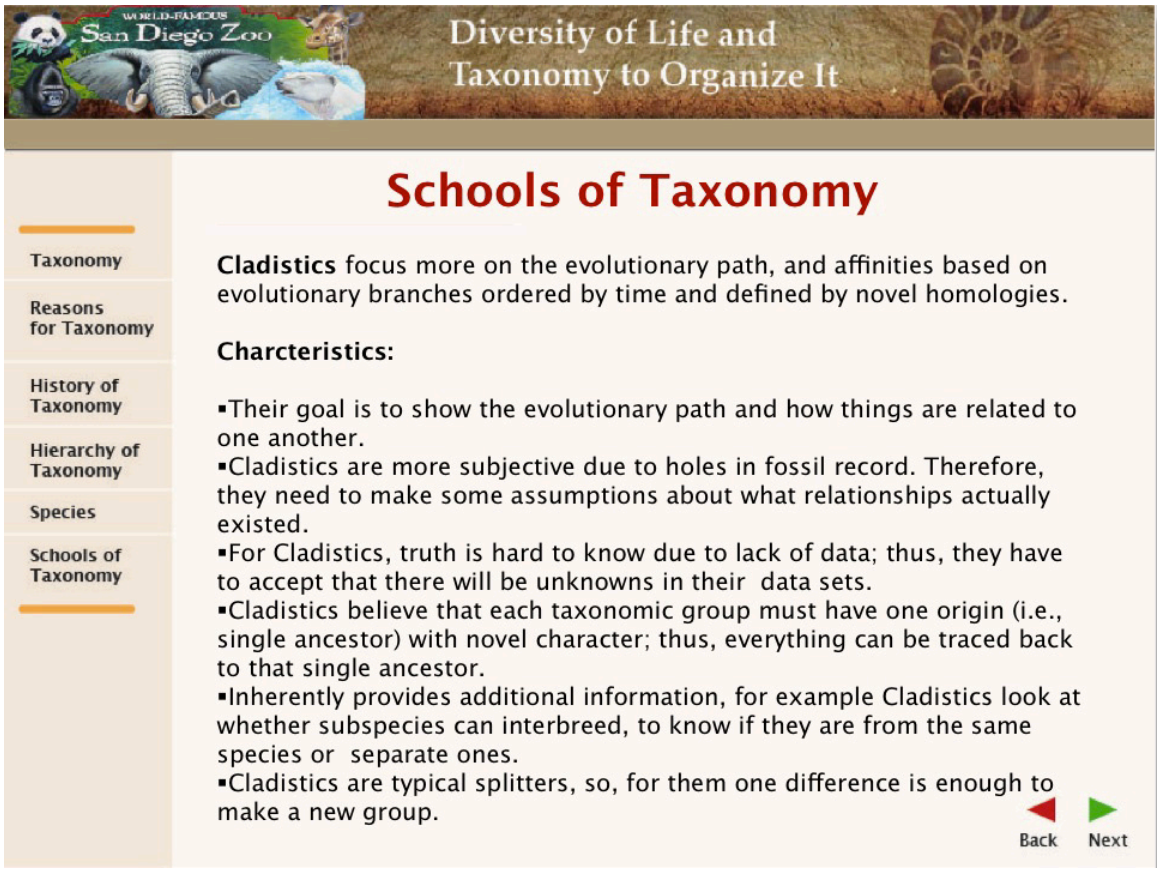
Slide #	60
Description	Introduction to Schools of Taxonomy Schools of Taxonomy is defined with example. Inquiry arousal: Which two animals are related? Lizard? Bird? or Crocodile?
Links	Next button (61) Back button (59) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of three species.



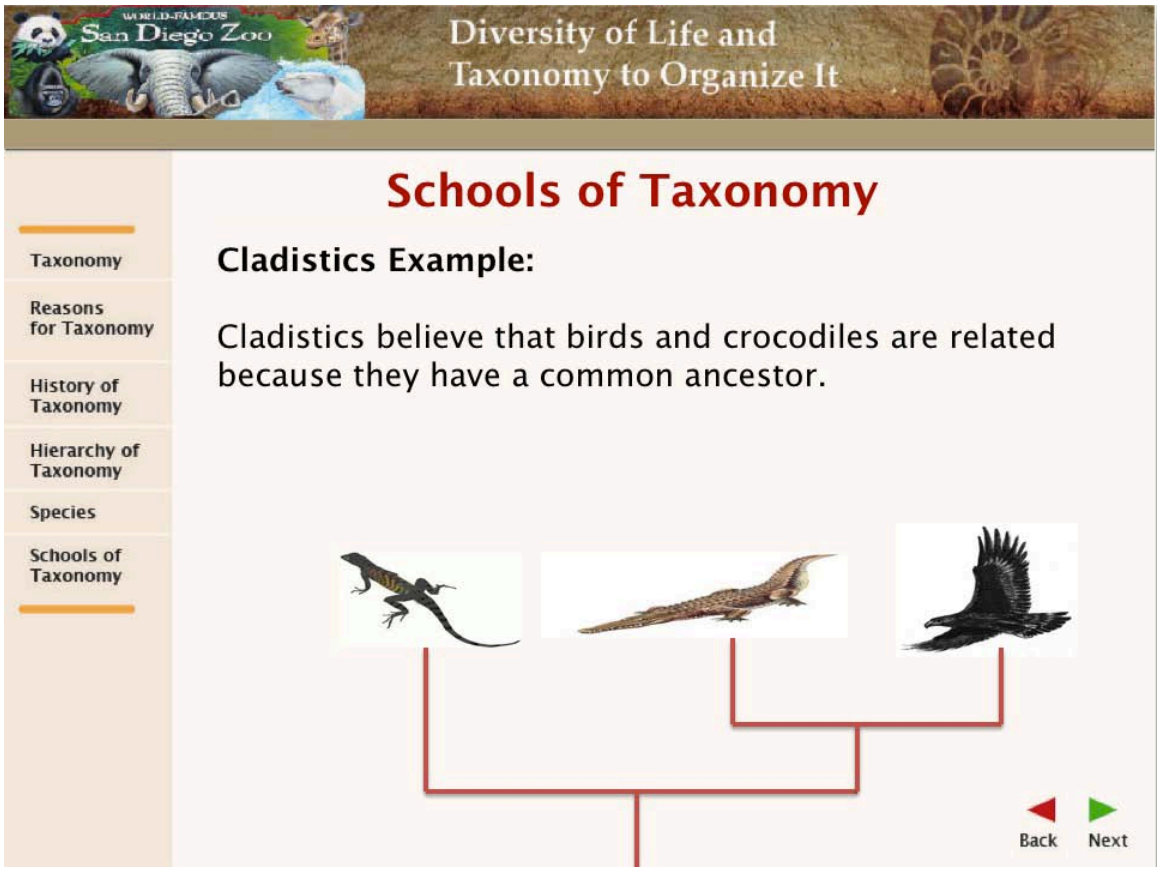
Slide #	61
Description	Introduction to Schools of Taxonomy Phenetics is defined and characteristics are explained.
Links	Next button (62) Back button (60) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media



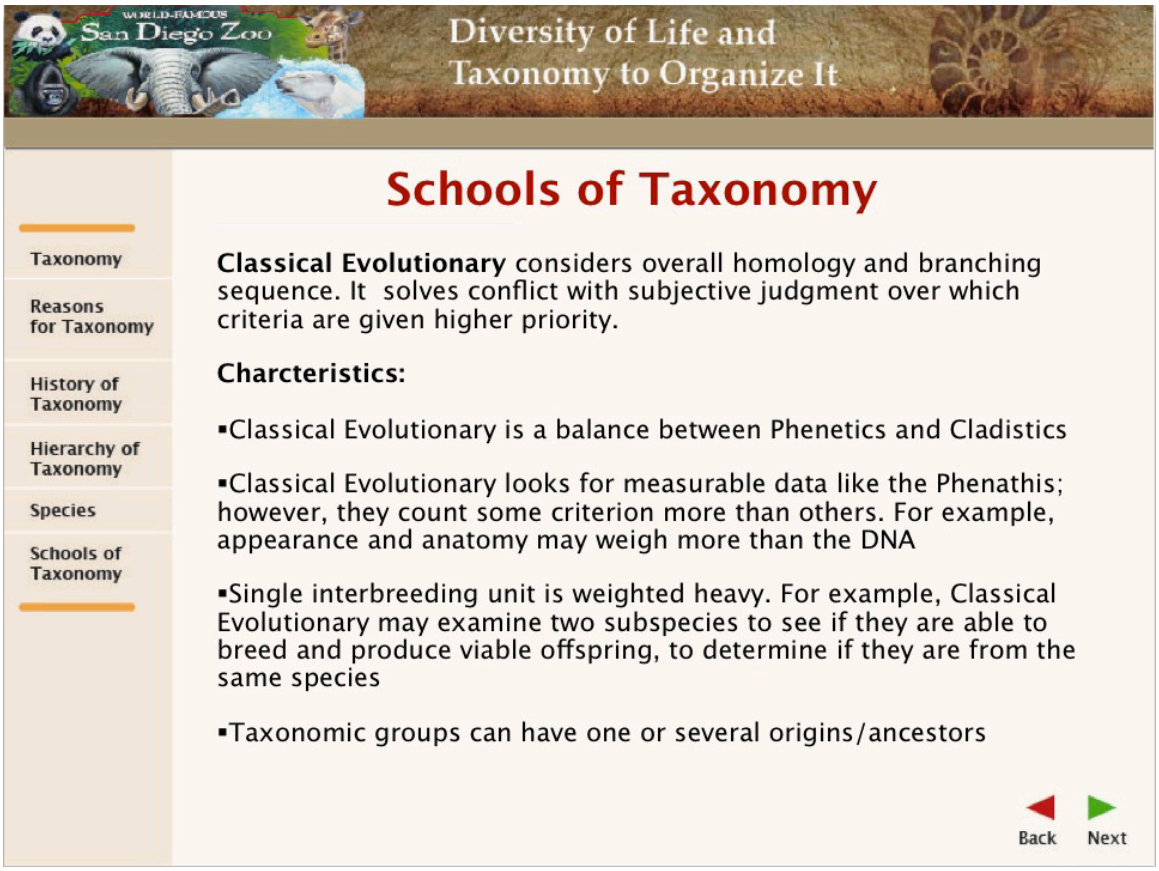
Slide #	62
Description	Introduction to Schools of Taxonomy Phenetics example is defined by using graphic imagery.
Links	Next button (63) Back button (61) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of three species are separated by a tree to defined Phenetics.



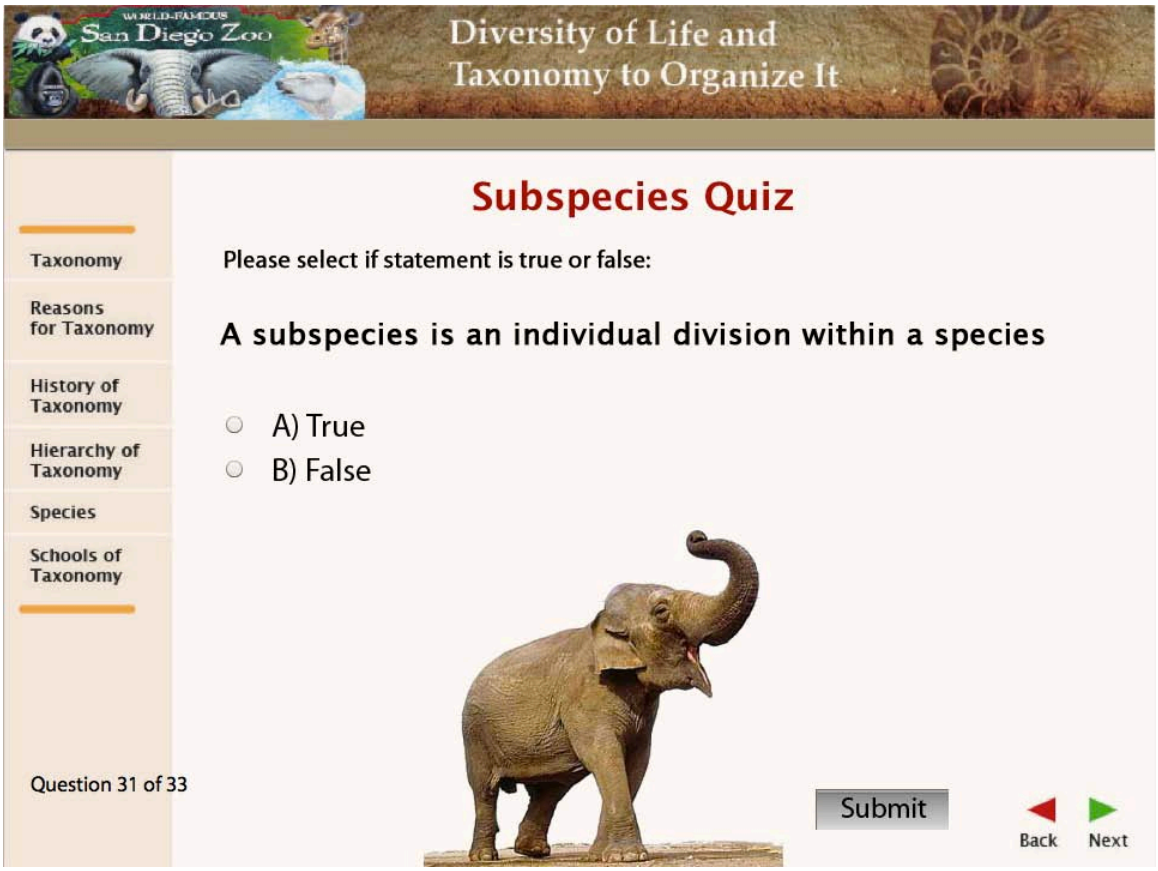
Slide #	63
Description	Introduction to Schools of Taxonomy continued. Cladistics is defined and characteristics are explained.
Links	Next button (64) Back button (62) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media



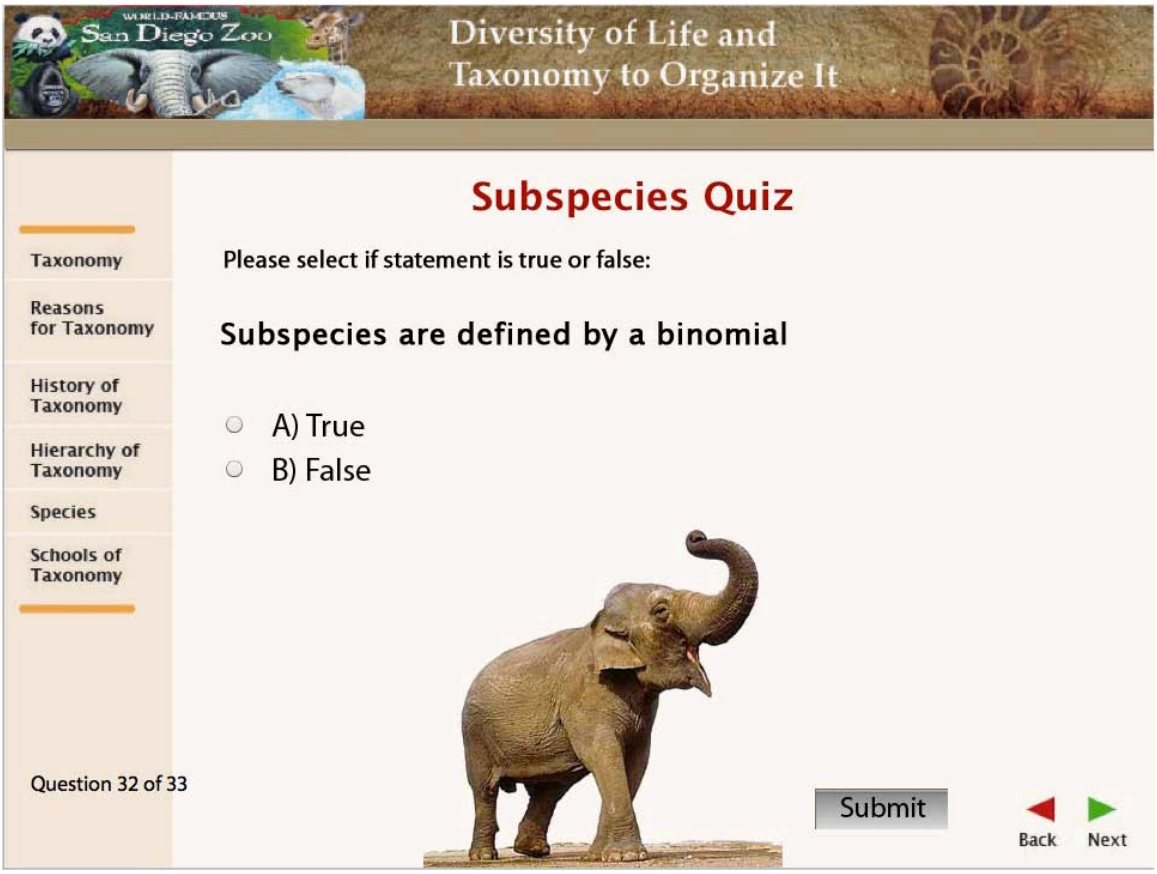
Slide #	64
Description	Introduction to Schools of Taxonomy continued Cladistics example is defined by using graphic imagery.
Links	Next button (65) Back button (63) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of three species are separated by a tree to defined Cladistics.



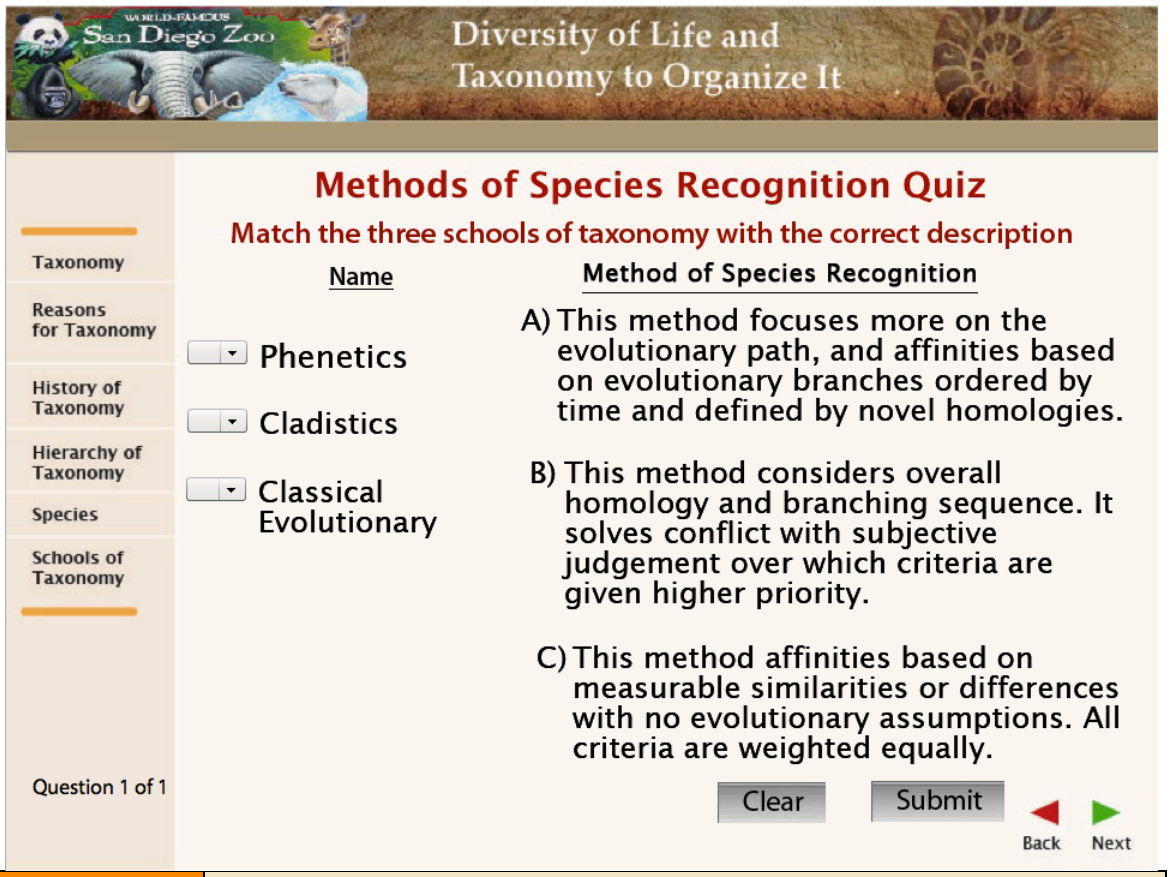
Slide #	65
Description	Introduction to Schools of Taxonomy continued Classical Evolutionary is defined and characteristics are explained.
Links	Next button (66) Back button (64) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media



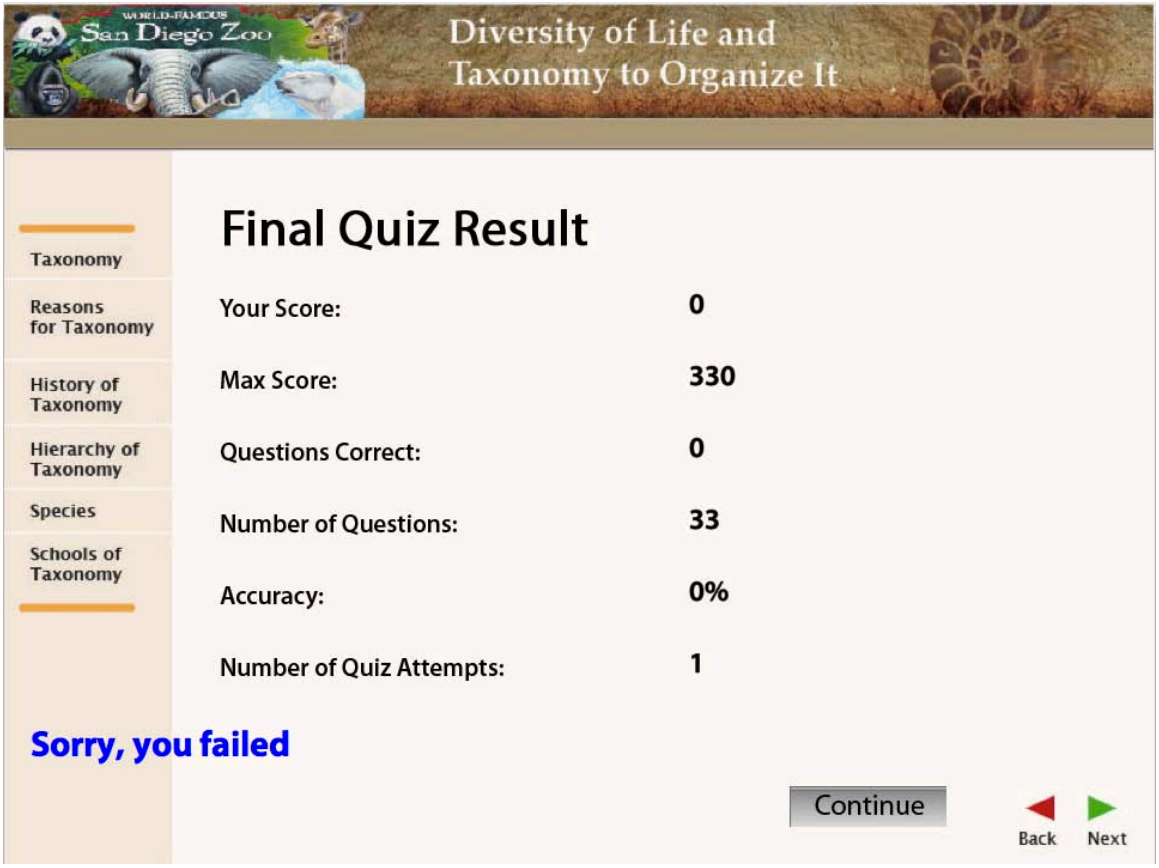
Slide #	66
Description	Subspecies True or False quiz. Question: A subspecies is an individual division within a species Answers: A Bottom left text: shows current number of question.
Links	Submit button (slide 67) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



Slide #	67
Description	Subspecies True or False quiz. Question: Subspecies are defined by a binomial. Answers: B Bottom left text: shows current number of question.
Links	Submit button (slide 68) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



Slide #	68
Description	Species Matching quiz. Question: Match the three schools of taxonomy with the correct description. Answers: C,A,B Bottom left text: shows current number of question.
Links	Submit button (slide 69) Clear button clears choices. Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	Photographic image of elephant is used to show correct answer or incorrect answer.



Slide #	69
Description	Final Quiz Results are shown. Learner will be prompted with positive feedback if accuracy is 80% or more. Learner will be prompted with negative feedback if accuracy is below 79%.
Links	Continue button (ends course) Next button (disabled) Back button (disabled) <u>Sidebar/Navigation bar:</u> **Taxonomy: Introduction** (slide 1) **Reasons for Taxonomy** (slide 4) **History of Taxonomy** (slide 16) **Hierarchy of Taxonomy** (slide 33) **Species** (slide 47) **Schools of Taxonomy** (slide 60)
Media	No media