

PRE-10W - New Technology & Accessibility in Higher Ed

eBook Promises and Challenges

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Topics

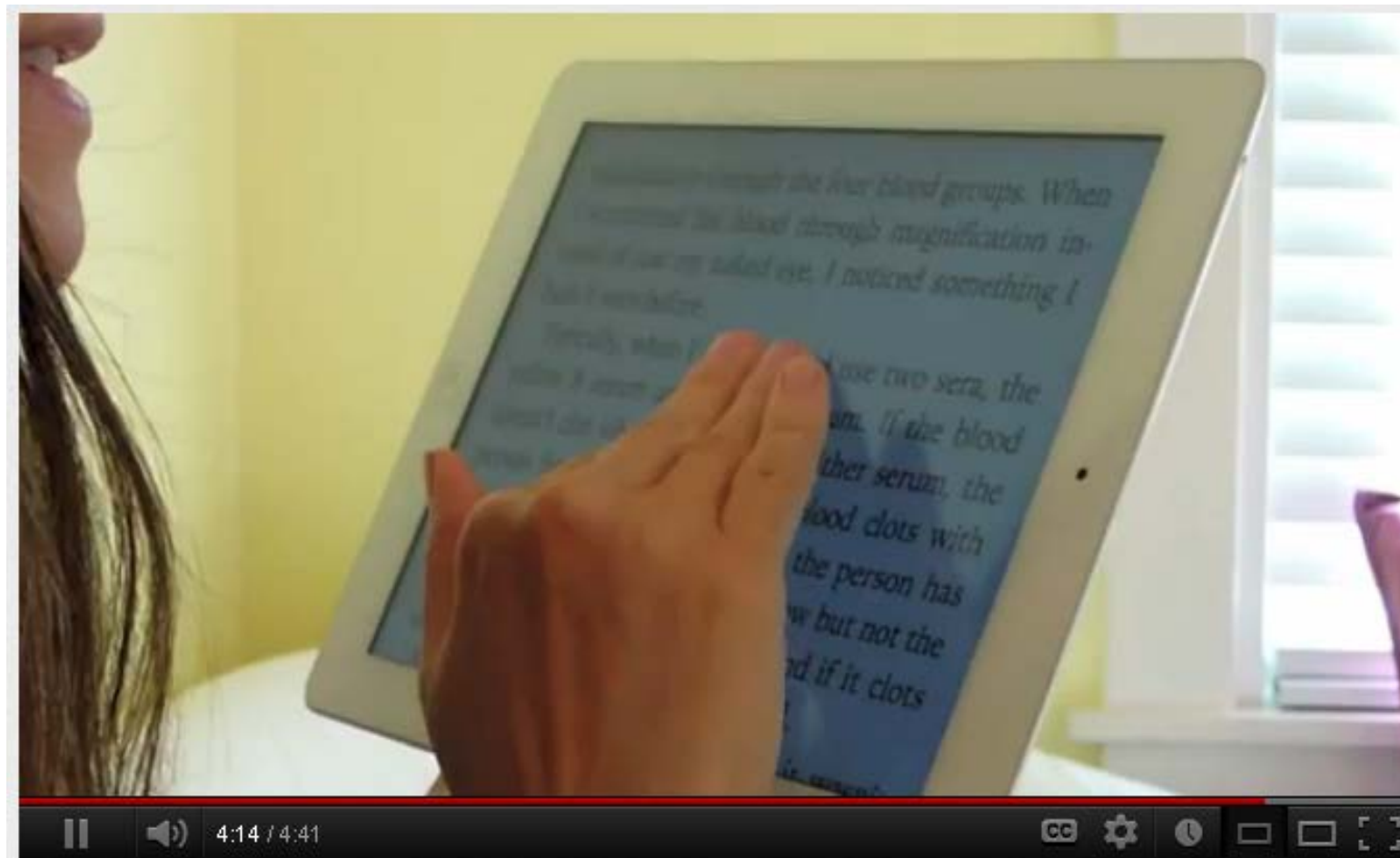
- What are eBooks?
- Opportunities
- Devices
- eReader formats
- Challenges
- Generating eBooks
- Considerations for accessibility

What are eBooks?

- eBook refers to electronic publishing
- Numerous formats but converging
- Accessibility improving; serious challenges remain
- Targeted primarily at mobile devices but also for PC and Mac

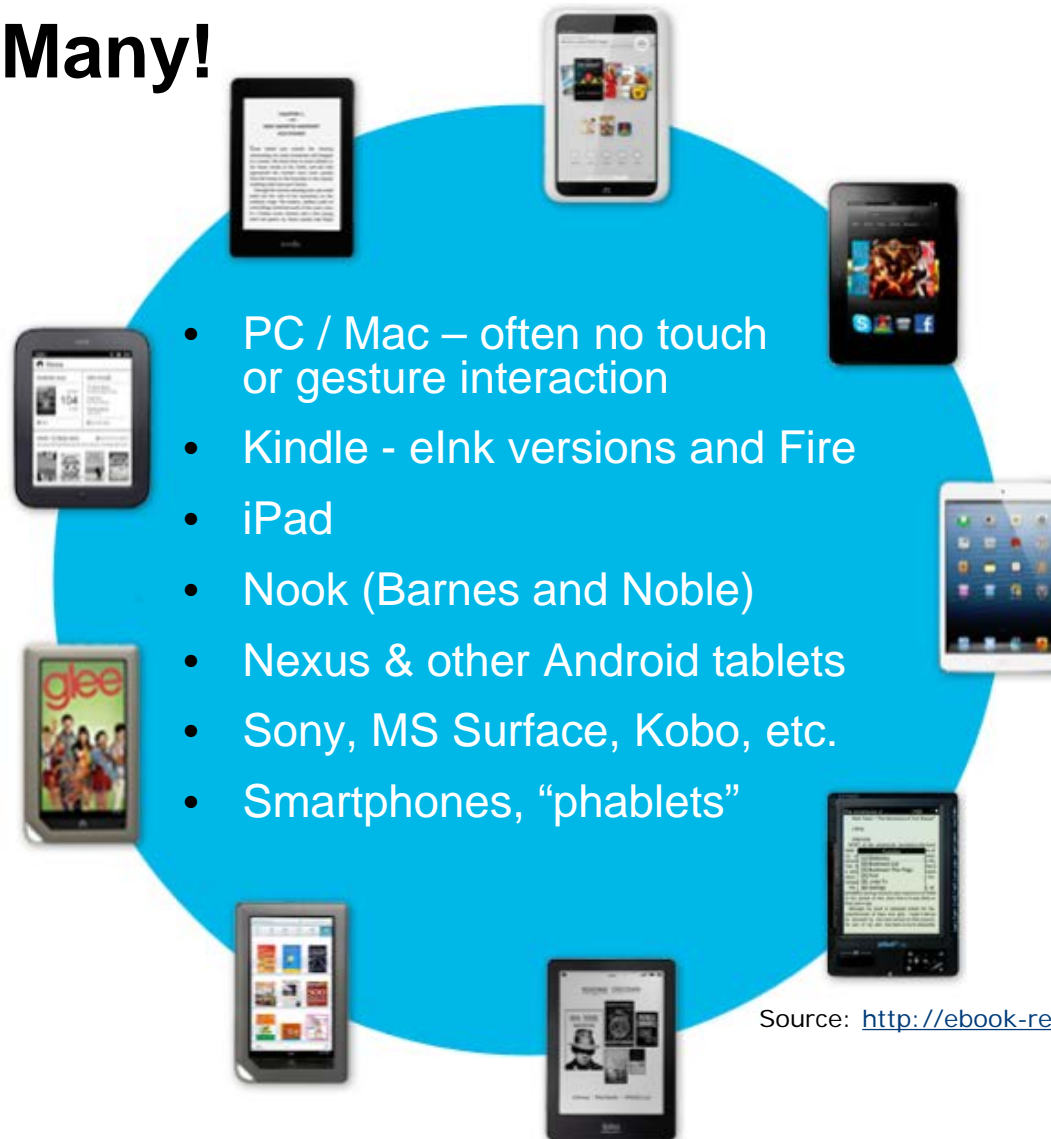
Opportunities

- Generally excellent availability
 - Sales of adult eBooks exceeds adult hardcover
 - Amazon 1.8M titles, Barnes & Noble 3.1M, Google 3M
 - Educational publishers are active
- More affordable content
- Reader devices exploding in popularity; cheaper
- Portable
 - Users who need large print do not have to carry the heavy bulky books
- Much more interactive and rich content
 - Audio / video
 - Interactive manipulation / selection of content
 - Highlighting and annotating – can be shared
 - Active with content – better for some learners
 - Support for more sophisticated features and layout coming



Video: <http://youtu.be/2pVhPscH9M8>

Devices – Many!



- PC / Mac – often no touch or gesture interaction
- Kindle - elnk versions and Fire
- iPad
- Nook (Barnes and Noble)
- Nexus & other Android tablets
- Sony, MS Surface, Kobo, etc.
- Smartphones, “phablets”

Source: <http://ebook-reader-review.toptenreviews.com/>

Devices & Features

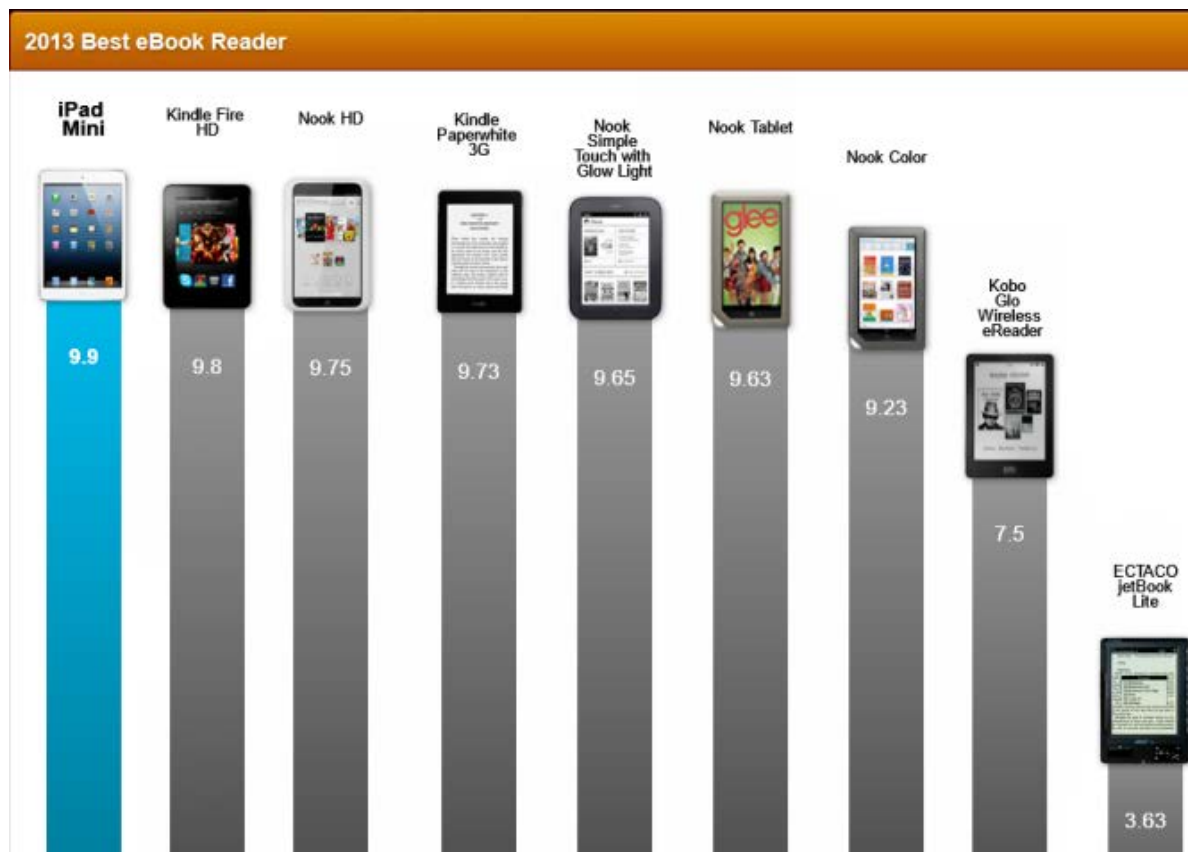
Display type affects
features

elink is not as suitable
for video, animations,
etc.

Most are geared
toward plain reading
Regular screen and
iOS /Android are
easier for interaction,
multimedia, (color)

Apps allow some cross-
use of devices and formats

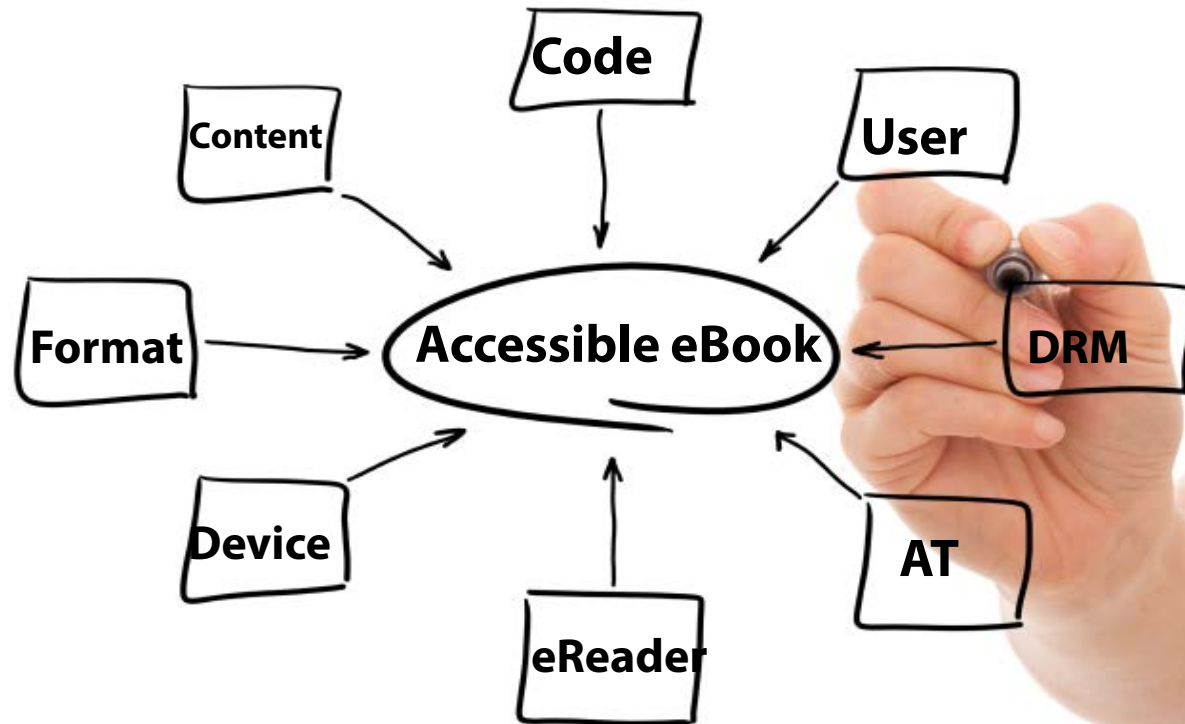
Overall Feature Rating from <http://ebook-reader-review.toptenreviews.com/>



Challenges

- 10% have some degree of print impairment
 - Visual impairment, dyslexia, macular degeneration, mobility impairment, etc.
 - http://www.editeur.org/files/Collaborations/Accessibility/WIPO_v2.html
- Many formats and devices
- Standards vary in support of accessibility needs
- Devices vary in support of features in standards
- Publishers vary in use of features for accessibility
- Users have to know how to use it all!
- Commitment to accessibility varies

Accessibility Depends On



Standards

- AZW – Amazon Kindle
 - Proprietary
 - Not accessible
 - Might be changing
- EPUB
 - Open standard
 - Supported by numerous devices
- EPUB 3
 - New as of Oct. 2011 – accessibility a major goal
 - Based on HTML5 and CSS3
 - Better Layout, font control
 - MathML support for equations
 - Enhanced multimedia, scalable vector graphics
 - Overlays for audio / media synchronization
 - Customize pronunciation of words for speech to text
 - Special words
 - Formulas
 - Also supports CSS3 speech feature



Other Formats

- PDF and PDF/A – might lose some formatting
- HTML
- MOBI – for PDAs
- Plain text
- Rich text
- DAISY
 - Not widely used by publishers
 - Converging with EPUB 3

Kindle - Inaccessible

- Proprietary standard – Amazon defines / controls it
- Does not support EPUB standard
- Amazon pushing hard to introduce to schools
 - Donating devices
 - “Whispercast” delivery of Amazon-format content to other devices in schools
 - National Federation of the Blind actively protesting and challenging legality
- NFB is pressuring Amazon to enhance Kindle

eBook Applications Comparison

- Excerpt from NFB video by Amy Mason
<https://www.youtube.com/watch?v=M5VZ3f9QL3s>



What is an Accessibility eBook?

- Book that can be used by people with or without disabilities
 - Text and interactive content can be accessed
 - Similar experience for all users
- One that provides flexibility of user experience for all readers
 - Alternative background colors and variable line spacing help users with dyslexia
 - Text to speech (TTS) capability is needed for the print impaired users
 - Navigation aids such as hierarchical table of contents and headings allow users to easily navigate through the book
 - Ability to change font size, style and color helps all users but especially those with low vision

How to produce it

- Export from authoring program
 - Adobe InDesign
 - Most accurate, high-quality option
 - Requires some setup but then just export
 - Very common in publishing; many use it
 - Pages on Mac, which can also open Word files
 - Open Office (not all features supported, e.g. chapters)
- Customized editors to create / edit
 - Sigil
 - eCub
 - Calibre converter
 - Scrivener (Mac)
 - Atlantis (PC)
- Validators check conformance to the standard
 - EPUBCheck
 - Flightcrew
- Word: not directly – save to HTML then use Calibre

See

<http://wiki.mobileread.com/wiki/EPub>
for links and more options.

Accessibility Considerations

- Accessibility requirements similar to PDF & websites
 - Follow WCAG 2.0 AA
 - Standards and guidelines apply to all formats
- Match physical book to eBook
 - Running headings and page numbers
 - Reader can stay in synch with conventional readers
- Ensure that the eBook can be used with assistive technology
- Choose eReader/device platform that offers accessible tools and options for readers
 - iPad is accessible but the Kindle reader on iPad is not

Document Style

- Text layout
 - Left align the body text
 - Keep the text layout clear, simple and consistent
 - Emphasis will be vocally stressed
 - Have text in the same orientation on the page
 - Provide adequate space between columns of text

iPad 4:08 PM 89%

25.2 Animal Body Plans and Evolution

Features of animal body plans include levels of organization, body symmetry, differentiation of germ layers, formation of body cavities, patterns of embryological development, segmentation, cephalization, and limb formation.

Animal phyla are typically defined according to adult body plans and patterns of embryological development.

• radial symmetry	• pseudocoelom
• bilateral symmetry	• zygote
• endoderm	• blastula
• mesoderm	• protostome
• ectoderm	• deuterostome
• coelom	• cephalization

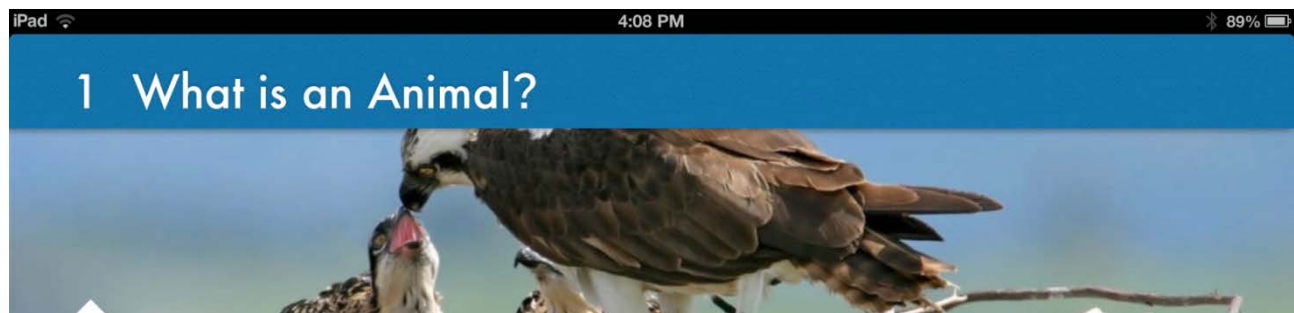
Think Visually Using information from this chapter, complete the following concept map.

```

graph TD
    A([Animals]) -- "that have" --> B([1])
    A -- "that have" --> C([Radial symmetry])
    B -- "have" --> D([One plane of symmetry])
    C -- "have" --> E([2])
            
```

Fonts

- Font should be clear and open, avoiding anything stylized
- Text size should be 12–14 pt.
- Test eBook at all different font sizes



THINK ABOUT IT

An osprey circles a salt marsh searching for prey. Suddenly, it dives, extending razor-sharp talons. With a triumphant whistle, it carries a struggling fish back to its young. On the bottom of the bay, worms burrow beneath rocks carpeted with orange sponges. In the air above, mosquitoes swarm, searching for a blood meal. All these different inhabitants of the Atlantic coast are animals.

Key Questions

- *What characteristics do all animals share?*
- *What characteristics distinguish invertebrates and chordates?*
- *What essential functions must animals perform to survive?*

Vocabulary

- invertebrate
- chordate
- notochord
- pharyngeal pouch
- vertebrate
- feedback inhibition

Taking Notes

Outline As you read, make an outline about the features of animals.

Color Contrast

- Provide good color contrast between the text and background
- Make sure links are visually apparent



Reading Order

- Match the intended visual order
 - Check for reflow issues
 - Tables
 - All information conveyed
- Look good at the different screen sizes and orientations

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The Crowded Cell

Swipe your finger over the image below to control the concentration of the cell

0% 25% 50% 75% 100%

Interactive The Crowded Cell

Use the slider to hide or show components of the cell interior.

We will also bring readers breaking news from the frontiers of biological research. Renowned scientists have joined us in planning and developing *Life on Earth*, and many of them will share with students their tales of discovery and communicate the intellectual richness of a life in science.

Movie Pioneer of Cell Division

Sir Paul Nurse, winner of the 2001 Nobel Prize in Physiology or Medicine, prepares students to learn about the cell cycle.

"All living things reproduce. And cells reproduce as well."

8

Alternate Text for Images

- Convey same information as the image
- Not redundant to information in the text or caption
- Be concise and clear
- Don't describe appearance unless that is what is important

Figure Sample Survey Record

Location	Boat Channel Bridge	Date	12/14/11	Time	2:35 p.m.
Team	Sarah, Mia, Carlos	Slope	20°	Tidal Height (+/-)	-1, 0, +1, +2
GPS Device	Garmin eTrex #4	Latitude	32.737612	Longitude	-117.208634

	SUBSTRATE (ROCK/ SAND/OTHER)	SAMPLE 1 (rock)	SAMPLE 2 (sand)	SAMPLE 3 (rock)	SAMPLE 4 (rock)
1	Acorn Barnacle			7	
2	Bay Mussel	3			3
3	File Limpet				
4	Rough Limpet				
				1	
			1		
					2
		1			



Figure The Re-Wilding of Gorongosa

Ecological balance is restoring itself in Gorongosa as herds grow and vegetative zones return to their historical character. The cheetahs once present, however, were gone. In summer 2011, three cheetahs were imported from South Africa for release into the wild. Here one is seen in the sanctuary area before

kins Marine Station discovered intertidal biodiversity in the 1930s and repeated those surveys in the same region in the 1970s. Several intertidal invertebrates no longer live in the region as far to the north. Overall, more than 90% of species

Document Structure

- Semantic tags describe content to assistive technology
 - Document metadata
 - Logical and consistent hierarchy of headings
 - Parts, chapters, sections, and subsections
 - Alternate tags for images
 - Tables are marked up properly

****** see ipdf.org/accessibility for more details

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25.2 Animal Body Plans and Evolution











	 Sponges	 Cnidarians	 Arthropods	 Roundworms	 Flatworms
					
Levels of Organization	Specialized cells	Specialized cells, tissues	Specialized cells, tissues, organs	Specialized cells, tissues, organs	Specialized cells, tissues, organs
Body Symmetry	Absent	Radial	Bilateral	Bilateral	Bilateral
Germ Layers	Absent	Two	Three	Three	Three
Body Cavity	—	Acoelom	True coelom	Pseudocoelom	Acoelom
Embryological Development	—	—	Protostome	Protostome	Protostome
Segmentation	Absent	Absent	Present	Absent	Absent
Cephalization	Absent	Absent	Present	Present	Present

FIGURE 2.6 Body Plans: Part I

The body plans of modern invertebrates and chordates suggest evolution from a common ancestor.

Navigational Aids

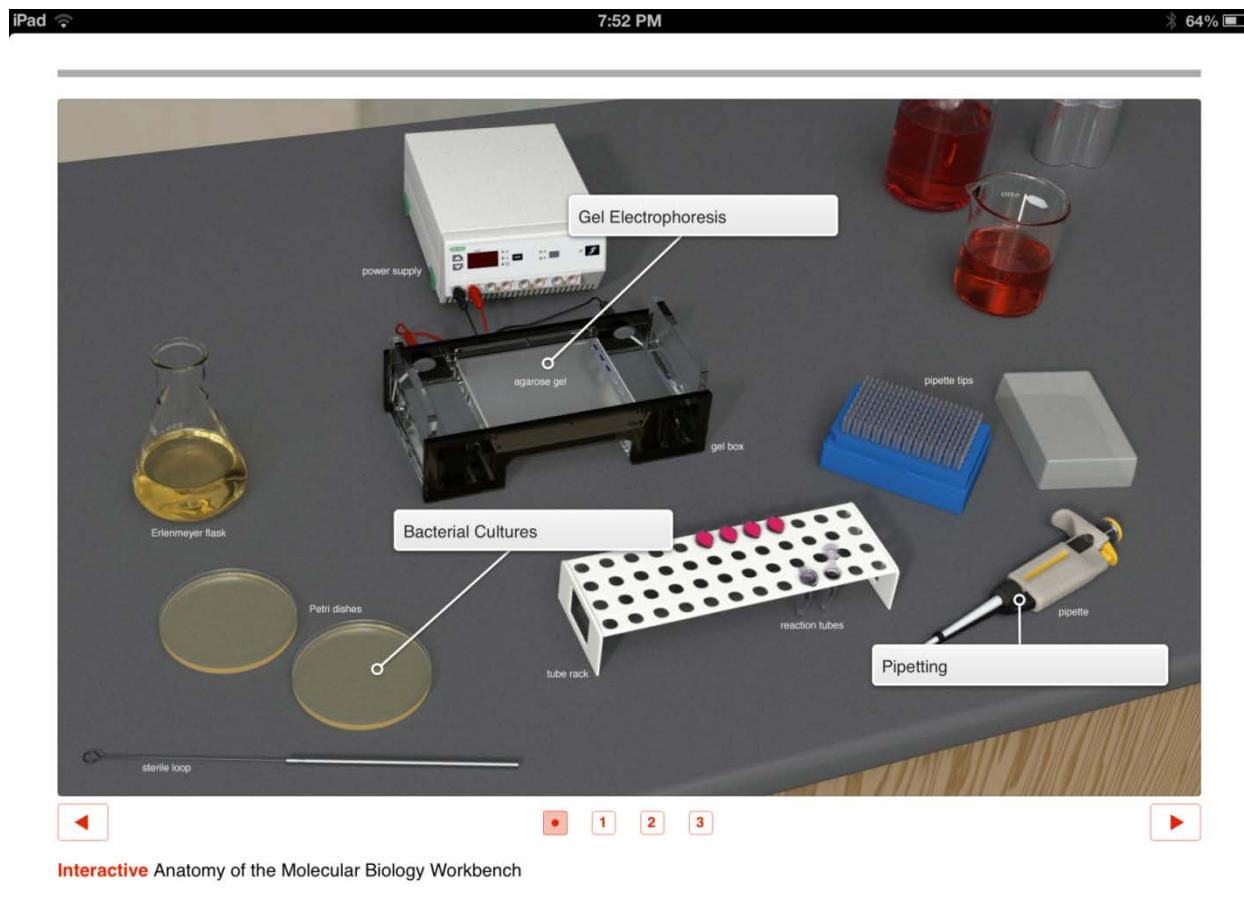
- Allows all users to find content
 - Content / index with active links
 - Hierarchical table of contents
 - Index
 - Footnotes and references
 - Match page number to physical books

The screenshot shows an iPad interface with a black status bar at the top displaying 'iPad', '7:48 PM', and '65%' battery. The main title 'Life on Earth' is centered at the top in a large serif font. Below it is a table of contents with a light gray background and horizontal dividers between sections. The sections are numbered 1 through 2, with sub-sections 1.1 through 1.5 under section 1. Each section has a small blue downward-pointing triangle to its right, indicating it is expandable. Section 1 is 'Welcome', and section 2 is 'Introduction to Ecology'. At the bottom, there is a 'Credits' section with a gray downward-pointing triangle.

1	Welcome	▼
	This Is Biology's Century	
1.1	Molecular Pageant	
1.2	Cells Are the Unit of Life	
1.3	Small Creatures Rule the Earth	
1.4	Green Planet	
1.5	Project-Based Learning	
2	Introduction to Ecology	▼
	Credits	▼

Interactive Content

- Reach elements
 - Tab gesture
 - External keyboard
- Interact with elements
 - Can you manipulate as necessary without visual?



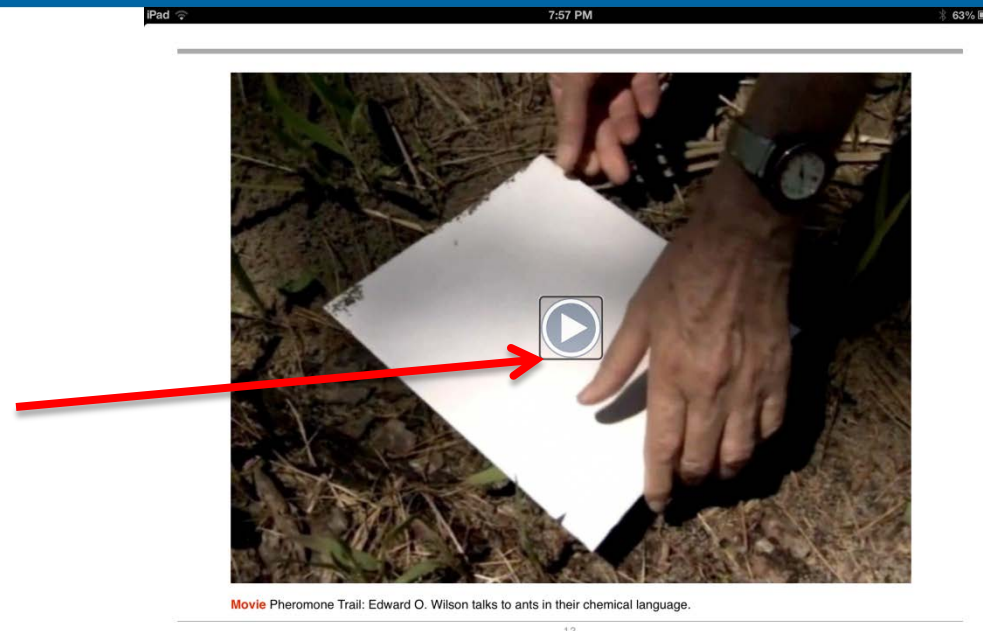
Video

- Captions
- Audio descriptions
- Reach / activate player controls



Movie Grazing rejuvenates habitat.

© 2013 Interactive Accessibility



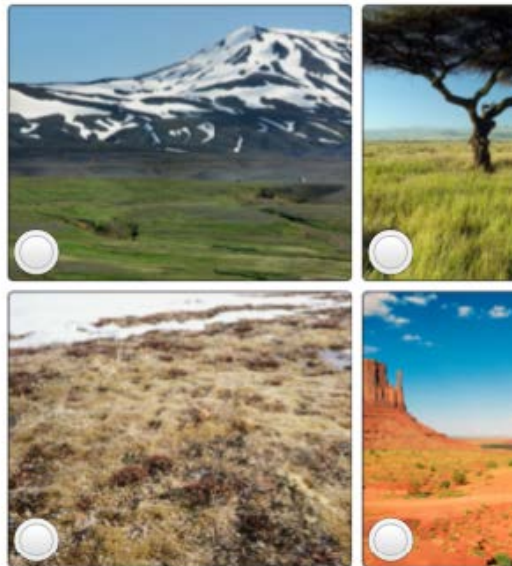
Quizzes & Maps

- Provide similar experience for sighted and blind users

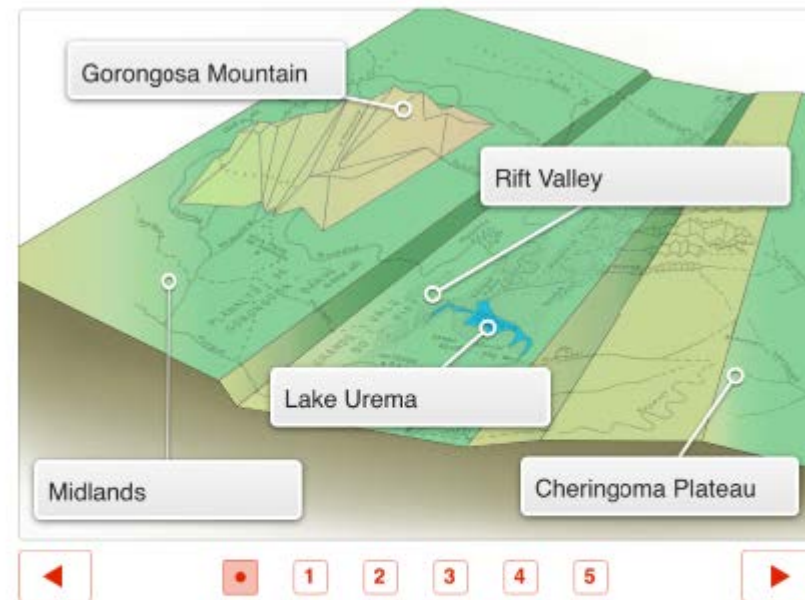
Review 1

Question 1 of 5

Which one of the following is a savanna?



Check Answer



Interactive Schematic Map of Central Gorongosa

During the wet season, water from east and west runs into the central rift valley, which slopes very gently to the sea and drains slowly. This structural diagram is derived from work by ecologist Ken Tinley.

Slideshows

- Not limited to one picture
- Slideshows possible
- Alt text for each should read
- Read “2 of 3”

Desert

All of life depends on water. **Desert** is the biome where there is the least of it, and where living organisms are most sparse. (In sparseness of life, desert is rivaled by the polar regions, which some ecologists interpret as an ice-covered desert biome.) What life can be found in deserts is extensively adapted physiologically and behaviorally to the lack of water. In many desert plants, unique metabolic pathways contribute to the conservation of water that other plants surrender through plant respiration and transpiration (loss by evaporation). The kangaroo rat, native to deserts of North America, never drinks through its entire life, harvesting water instead from the metabolic breakdown of fats, during which released hydrogen atoms combine with respired oxygen to form tiny amounts—just enough—of H₂O. To lessen their need for water, the activity of many desert animals is confined to the cooler nights and evenings.



Gallery Desert

The Pinnacles Desert is an artifact of former plant life. Roots stabilized the surface as chemical leaching below formed the pinnacles. Erosion exposed these shapes when the surface became barren.

• • •

Future?

- EPUB 3 standard
 - Will be more widely supported by devices
 - Content takes advantage of HTML5 & CSS3 features
- Possible improvements in Kindle accessibility?
- Greater interactivity, design for eBooks
 - Take advantage of the standards
 - Check keyboard access
- Licensing and Digital Rights Management
 - Publishers will continue to compete on and work out costs, logistics, ease of use, borrowing/ownership transfer, etc.
- The end of books as we know it?
 - The report of my demise is premature
 - But: large increase in use of interactive learning and ePublishing

References

- Standards
 - <http://www.daisy.org/daisy-epub-3-developments>
 - <http://idpf.org/forums/epub-accessibility>
 - <http://idpf.org/accessibility/guidelines/>
- Tools
 - InDesign EPUB:
 - http://idpf.org/sites/idpf.org/files/digital-book-conference/presentations/db2012/DB2012_Kiyo_Toma.pdf
 - <http://www.theindesigner.com/blog/epub-changes-in-adobe-indesign-cs6#more-310>
 - Pages EPUB: <http://support.apple.com/kb/HT4168>
 - Adobe Tools: <http://www.adobe.com/products/digital-publishing-suite-family.html>
 - Validator: <http://validator.idpf.org>

References

- Radium: Digital Publishing Meets Open Web (IDPF project)
<http://readium.org>
- Non-profit organization for creating accessible images:
<http://diagramcenter.org>
- Source for eBooks: <http://www.gutenberg.org>
- Best practices:
http://www.editeur.org/files/Collaborations/Accessibility/WIPO_v2.html
- Free “Accessible EPUB 3” eBook:
<http://shop.oreilly.com/product/0636920025283.do>

DISCUSSION

Thank you for attending this session

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