

# **Differentiating Instruction Using Technology**

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## Goals of the Call

- Learn about Differentiated Instruction (DI)
- Collaborate to plan
- Learn about resources to support next steps

# Agenda

- Introductions
- Definition and Dimensions
- Key Practices using Technology
- Planning for Differentiating Instruction
- Reflection
- Next Steps
- Additional Resources

# Introductions

- Meet Judy and Jenna



- Who are you?

## Definition of DI

By differentiating instruction, we mean the planning and delivery of classroom instruction that considers the varied levels of readiness, learning needs, and interests of each student. Teachers can do this most effectively by using a range of technology tools to engage learners at varying levels of readiness in multiple ways and by offering students options for demonstrating their understanding and mastery of the material.

## Dimensions of DI

- Three teacher-dependent dimensions  
(1) Content, (2) Process, (3) Products
- Three student-dependent dimensions  
(1) Interest, (2) Profile, and (3) Readiness

# Teacher-dependent Ways to Differentiate

<b>By Content</b>	Different levels of reading or resource materials, reading buddies, small group instruction, curriculum compacting, multi-level computer programs and Web Quests, tape-recorded materials, etc.
<b>By Process</b>	Activity choice boards, tiered activities, multi-level learning center tasks, similar readiness groups, choice in group work, varied journal prompts, mixed readiness groups with targeted roles for students, etc.
<b>By Products</b>	Tiered products, students choose mode of presentation to demonstrate learning, independent study, varied rubrics, mentorships, interest-based investigations

## Student-dependent Ways to Differentiate

<b>By Interests</b>	Options in content, topic, or theme, options in the tools needed for production, options in methods for engagement
<b>By Profile</b>	Consideration of gender, culture, learning styles, strengths, and weaknesses
<b>By Readiness</b>	Identification of background knowledge/gaps in learning, options in amount of direct instruction, options in amount of practice, options in pace of instruction, options in complexity activities, options in level of analysis/exploration of a topic



## Key Practices

- Embrace student differences
- Use assessment data to guide instruction
- Use choice to engage and motivate
- Offer flexible groupings
- Expect a variety of products to demonstrate learning

# Embrace Student Differences

- Provide assistive and accessible tools
- Encourage students to create customized tools




# Technology Resources

<p>TechMatrix</p> 	<p>Search by subject, learning support, feature and/or product list in order to identify tools for your students and your setting. Customize your matrix results, and share your search with colleagues.</p> <p><a href="http://www.techmatrix.org/">http://www.techmatrix.org/</a></p>
<p>Backpack</p> 	<p>Make pages with to-do lists, notes, files, and images. Also features a Calendar and Reminders that can be sent via email or to your cell phone at predefined times.</p> <p><a href="http://www.backpackit.com/">http://www.backpackit.com/</a></p>
<p>Word2Word Language Resources</p>	<p>Online dictionaries in students' native languages help to build vocabulary and background knowledge. Word2Word is a syndication of multiple language dictionaries.</p> <p><a href="http://www.word2word.com">www.word2word.com</a></p>

## **Use Assessment Data to Guide Instruction**

- Employ progress monitoring and diagnostic tools
- Facilitate students in tracking their own progress
- Interpret data to guide your future instruction




## Technology Resources

	<p>National Center on Student Progress Monitoring provides you with information on progress monitoring tools to track and to chart student progress over time. See the list of reviewed tools at <a href="http://www.studentprogress.org/">http://www.studentprogress.org/</a></p>
<p>Online Grading</p> 	<p>Allows teachers to create online grade, attendance, or assignment books. Parents and students can see grades online, homework calendars, and progress reports. Free! <a href="http://www.engage.com">http://www.engage.com</a></p>
<p>Graphing</p> 	<p>Let the students do the tracking! Teach young children how at <a href="http://nces.ed.gov/nceskids/createagraph/">http://nces.ed.gov/nceskids/createagraph/</a></p>

## Use Choice to Engage and Motivate

- Provide an array of tools that captivate students' interest




# Technology Resources

<p>Podcasts</p> 	<p>Search from among thousands of podcasts at the Apple store. Browse by category, review descriptive summaries, and read ratings and reviews.</p> <p><a href="http://www.apple.com/itunes/store/podcasts.html">http://www.apple.com/itunes/store/podcasts.html</a></p>
<p>Webcams</p> 	<p>"National Geographic: WildCam Africa" gives your students an up-close look at wildlife gathering at Pete's Pond in Botswana.</p> <p><a href="http://www.nationalgeographic.com/ngm/">www.nationalgeographic.com/ngm/</a></p>
 <p>Discovery EDUCATION unitedstreaming™</p>	<p>Gain access to Discovery Education's rich collection of more than 50,000 video segments from among 5,000 full-length educational videos from Discovery School and other award-winning producers.</p> <p><a href="http://www.unitedstreaming.com/index.cfm">http://www.unitedstreaming.com/index.cfm</a></p>

## **Offer Flexible Groupings**

- Mix whole class orientations with small group and peer tasks
- Collaborate with groupings outside of the classroom




# Technology Resources

<p>Online projects</p> 	<p>Rock Our World is a site for music making with global collaborations that also involve families. <a href="http://www.rockourworld.org/">http://www.rockourworld.org/</a></p>
<p>Virtual field trips</p> 	<p>Take your students on Virtual Field Trips from NASA, Discovery and the Weather Channel will give your students unique experiences. <a href="http://www.ciconline.org/windward">http://www.ciconline.org/windward</a></p>
<p>Handhelds</p> 	<p>Make the most out of handhelds in the classroom! Learninginhand.com is an educator's resource for using handheld computing in schools. <a href="http://learninginhand.com/">http://learninginhand.com/</a></p>

## **Expect a Variety of Products**

- Utilize tools that allow students to express their creativity
- Encourage interaction and participation

# Technology Resources

<p>Blogs &amp; wikis</p> 	<p>Blogger</p> <p>Learn what a blog is and how to create your own in three easy steps at <a href="http://www.blogger.com">www.blogger.com</a>.</p> <p>pbwiki</p> <p>Get an ad-free wiki started with pre-made templates, free videos, and lots of help. <a href="http://pbwiki.com/">http://pbwiki.com/</a></p>
<p>Presentation software</p> 	<p>Add voice to presentations, pictures, or text with VoiceThread. <a href="http://www.voicethread.com">www.voicethread.com</a></p>
	<p>Use digital stories to motivate students to share their stories in a unique and creative way. Digital stories can be used as alternatives for projects, summaries, and presentations. <a href="http://www.storycenter.org/">http://www.storycenter.org/</a></p>

# Planner

	<i>Readiness</i>	<i>Profile</i>	<i>Interests</i>
Content			
Process			
Products			

# Collaborative Planning #1

## Bio-Cube

[http://readwritethink.org/materials/bio\\_cube/](http://readwritethink.org/materials/bio_cube/)



**BIO-CUBE**

Fill in the requested information in the cube.

Click on a number to rotate the cube.

1 2 3

4 5 6

PRINT EXIT

**Side 1**

Person's name

Time period

Place

read-write-think  
International Reading Association NCTE marcopolo

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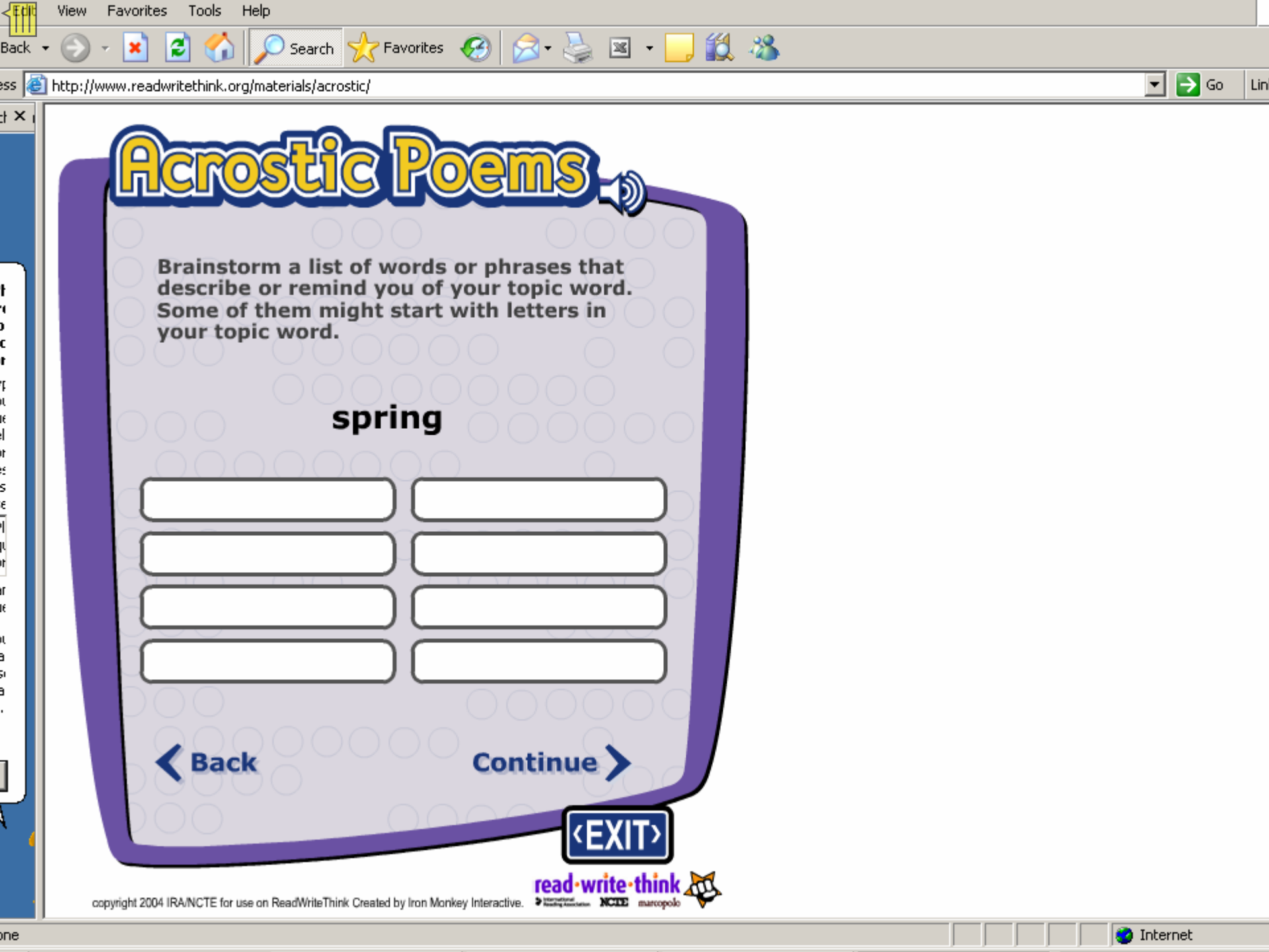
# Planner

	<i>Readiness</i>	<i>Profile</i>	<i>Interests</i>
Content			
Process			
Products			

# Collaborative Planning # 2

## Acrostic Poems

<http://www.readwritethink.org/materials/acrostic/>



# Acrostic Poems

Brainstorm a list of words or phrases that describe or remind you of your topic word. Some of them might start with letters in your topic word.

spring


< Back

Continue >

<EXIT>

# Acrostic Poems



MY WORDS

Use the words you brainstormed to help write your acrostic poem. Your poem should be about the topic word and each line should begin with a letter from the word.

**spring**

S  
P  
R  
I  
N  
G


< Back

Continue >

<EXIT>

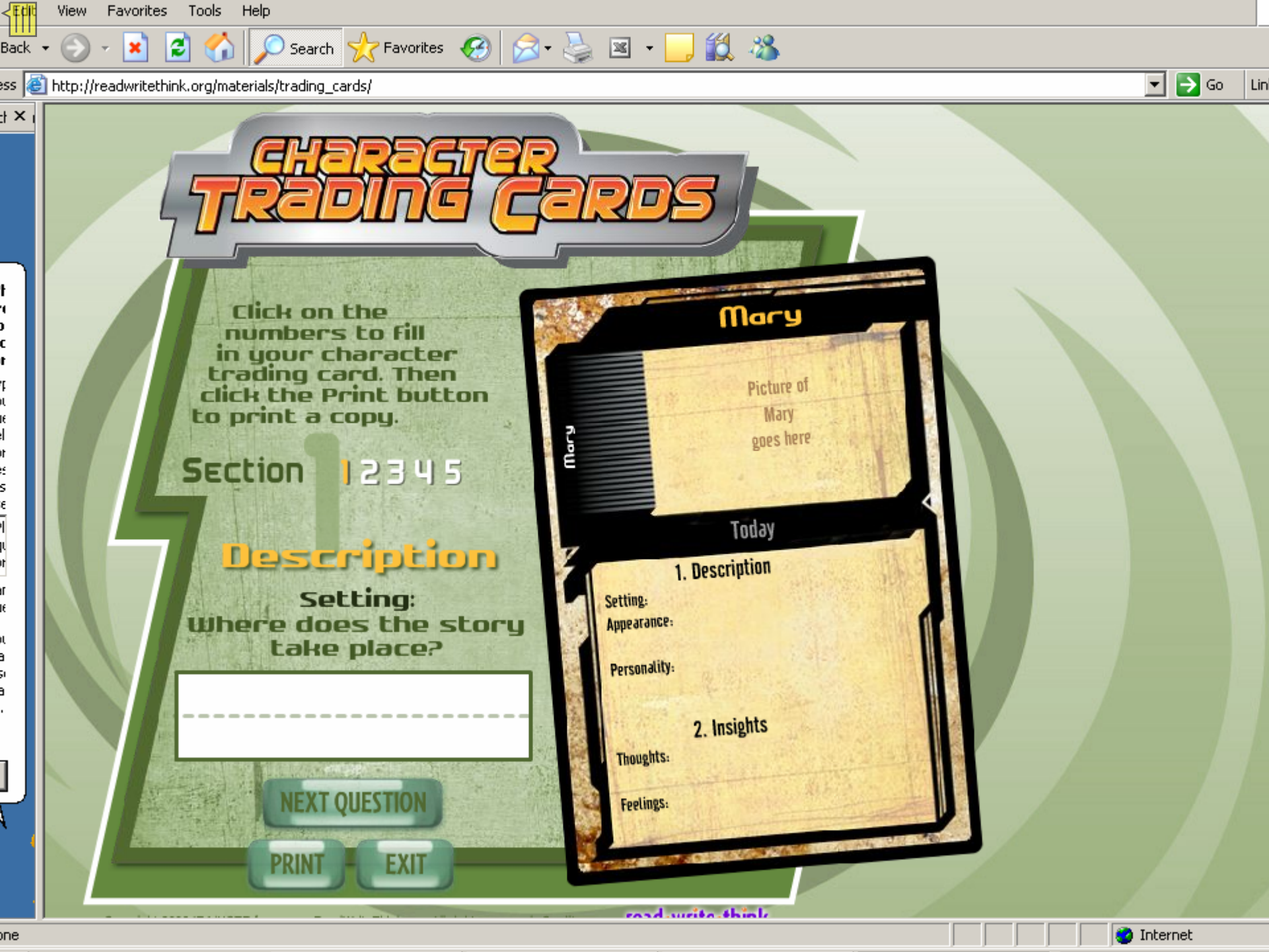
# Planner

	<i>Readiness</i>	<i>Profile</i>	<i>Interests</i>
Content			
Process			
Products			

# Collaborative Planning # 3

## Character Trading Cards

[http://readwritethink.org/materials/trading\\_cards/](http://readwritethink.org/materials/trading_cards/)



# CHARACTER TRADING CARDS

Click on the numbers to fill in your character trading card. Then click the Print button to print a copy.

Section 12345

## Description

Setting:  
Where does the story take place?

NEXT QUESTION

PRINT

EXIT

Mary

Mary

Picture of Mary goes here

Today

1. Description

Setting:

Appearance:

Personality:

2. Insights

Thoughts:

Feelings:

# Planner

	<i>Readiness</i>	<i>Profile</i>	<i>Interests</i>
Content			
Process			
Products			

# Collaborative Planning # 4

## Comic Creator

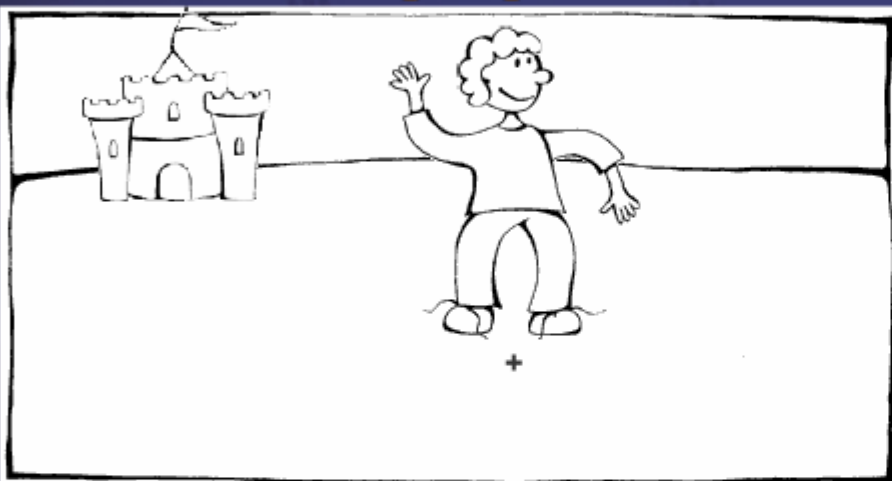
<http://www.readwritethink.org/materials/comic/index.html>



spring: where is the warmth?

◀ 1 ▶

Finish



Caption:

**read•write•think**  
International Reading Association NCTE marcopolo

# Reflection

- In what ways can DI benefit your students?
- What are the implications for your instructional planning?
- How will you know if you are successfully meeting students' needs?

## Next Steps

- Who will you share this information with?
- How can you use the planning tool?
- Which technology resources will you access?
- Who can you recruit to help you?
- What additional resources do you need?

# Resources

# Technology and DI

## **Enhance Learning with Technology: Strategies for Differentiating**

This web page presents a variety of strategies to use in the classroom – adjusting questions, providing alternative activities, flexible grouping, peer teaching, etc.

<http://members.shaw.ca/priscillatheroux/differentiatingstrategies.html>

## **Technology to Support Diverse Learners**

Consult WestEd's review of the research on technology tools and features to support differentiated instruction. Practical suggestions are presented in specific areas of support, such as visual aids or audio aids.

<http://www.wested.org/cs/tidl/print/docs/tidl/home.htm>

## **The Promise of Accessible Textbooks**

This information brief provides practical information on accessibility legislation and information about what CAST and other organizations are doing to overcome barriers to accessible textbooks.

[http://www.k8accesscenter.org/training\\_resources/udl/AccessibletextbooksHTML.asp](http://www.k8accesscenter.org/training_resources/udl/AccessibletextbooksHTML.asp)

# Technology and DI

## Teachnology

This web site uses technology to inform teachers about current practices, literature, and the law in education, as well as professional development. Links to articles related to research on educational practices, including links to information on differentiated instruction, are included. Create customized rubrics, calendars, lesson plans, etc. with a subscription.

[http://www.teach-nology.com/litined/dif\\_instruction/](http://www.teach-nology.com/litined/dif_instruction/)

## Virtual Reality/Computer Simulations and the Implications for UDL Implementation

In this brief you can discover how virtual reality/computer simulation can support Universal Design for Learning at both the theoretical and teacher practice levels.

[http://www.k8accesscenter.org/training\\_resources/udl/virtualreality.asp](http://www.k8accesscenter.org/training_resources/udl/virtualreality.asp)

# By Content Area: English

## **Differentiated Instruction in the English Classroom**

One chapter of book is available for free download “How Do Teachers Manage a Differentiated Classroom?”

<http://books.heinemann.com/shared/onlineresources/E00577/chapter4.pdf>

# By Content Area: Reading

## **Learning to Read with Multimedia Material**

There is a steadily growing body of research showing that digital text and multimedia environments can play a significant supporting role in reading instruction. Explore the literature base and cutting-edge innovations while finding implementation strategies, guidance on choosing programs, and resources to power up your reading instruction.

[http://www.cited.org/index.aspx?page\\_id=144](http://www.cited.org/index.aspx?page_id=144)

## **Computer-Assisted Instruction in Reading**

This short brief gives an overview of Computer-Assisted Instruction (CAI) and explains how it can be applied to enhance reading instruction.

[http://www.k8accesscenter.org/training\\_resources/computeraided\\_reading.asp](http://www.k8accesscenter.org/training_resources/computeraided_reading.asp)

## **Starfall**

The Starfall learn-to-read website is offered free as a public service. It contains various interactive activities and games related to the essential components of early reading. Primarily designed for first grade, Starfall is also useful for pre-k, kindergarten and second grade.

<http://www.starfall.com/n/level-a/learn-to-read/play.htm?f>

# Content Area: Writing

## Computer-Assisted Instruction and Writing

This brief explains how Computer-Assisted Instruction (CAI) can be used to improve writing instruction.

[http://www.k8accesscenter.org/training\\_resources/computeraided\\_writing.asp](http://www.k8accesscenter.org/training_resources/computeraided_writing.asp)

## Using Assistive Technology to Support Writing

Technology—and especially the subset of technology tools known as assistive technology—can be an effective, if not necessary, element of the writing curriculum for students with disabilities. Read more about the research that supports the use technology in a writing curriculum.

[http://www.cited.org/index.aspx?page\\_id=108](http://www.cited.org/index.aspx?page_id=108)

# Content Area: Math

## **Learning Mathematics with Virtual Manipulatives**

Abstract concepts are essential to understanding and performing mathematics. Manipulatives represent concretely the abstract concepts and link these concepts to prior knowledge. Virtual manipulatives are basically digital “objects” that can be manipulated, usually with a computer mouse, much like the more familiar physical manipulatives. Discover the research support and practical suggestions for incorporating these powerful learning tools into mathematics instruction. See the extensive list of resources.

[http://www.cited.org/index.aspx?page\\_id=151](http://www.cited.org/index.aspx?page_id=151)

## **Computer-Assisted Instruction and Math**

This brief gives a quick overview of CAI and explains how it can be used effectively in math classrooms.

[http://www.k8accesscenter.org/training\\_resources/computeraided\\_math.asp](http://www.k8accesscenter.org/training_resources/computeraided_math.asp)

## **Web-Based Resources for Mathematics: Tools and Activities for Teaching and Learning**

This valuable resource includes a large annotated list of free web-based tools and activities. Each tool and activity focuses on a specific mathematics concept or skill

[http://www.k8accesscenter.org/training\\_resources/MathWebResources.asp](http://www.k8accesscenter.org/training_resources/MathWebResources.asp)

# Content Area: Science

## Using Multimedia Tools to Help Students Learn Science

Scientists routinely use a number of technology tools in their daily practice. Students can use similar technologies and multimedia tools to work like scientists and build their reasoning and scientific inquiry skills. Review the research on and strategies to implement these powerful technology tools in the science classroom. See the extensive list of resources.

[http://www.cited.org/index.aspx?page\\_id=148](http://www.cited.org/index.aspx?page_id=148)

## Computer-Assisted Instruction and Science

This short brief gives an overview of Computer-Assisted Instruction (CAI) and explains how it can be applied to enhance science instruction.

<http://www.nwrel.org/scpd/sirs/5/cu10.html>

## Differentiation for Science

This article discusses differentiated instruction and explains how it can be implemented in the science classroom.

[http://www.k8accesscenter.org/training\\_resources/sciencedifferentiation.asp](http://www.k8accesscenter.org/training_resources/sciencedifferentiation.asp)

# Background on DI

The Association for Supervision and Curriculum Development (ASCD) Web site  
[www.ascd.org/pdi/demo/diffinstr/differentiated1.html](http://www.ascd.org/pdi/demo/diffinstr/differentiated1.html)

*Educational Leadership* Research Link  
[www.ascd.org/readingroom/edlead/0009/holloway.html](http://www.ascd.org/readingroom/edlead/0009/holloway.html)

Guild, P.B., and Garger, S (1998). *What Is Differentiated Instruction? Marching to Different Drummers* 2nd Ed. (ASCD, p.2)  
<http://www.ascd.org/pdi/demo/diffinstr/differentiated1.html>

Holloway, J.H., (2000). Preparing Teachers for Differentiated Instruction. *Educational Leadership*, 58 (1).  
<http://web.uvic.ca/~jdurkin/edd401su/Differentiated.html>

Theroux, P. (2001). Enhance Learning with Technology. *Differential Instruction*.  
[www.cssd.ab.ca/tech/oth/learn/differentiating.htm](http://www.cssd.ab.ca/tech/oth/learn/differentiating.htm)



Tomlinson, C.A., (1995). Differentiating instruction for advanced learners in the mixed-ability middle school classroom. ERIC Digest E536.

[http://www.ed.gov/databases/ERIC\\_Digests/ed389141.html](http://www.ed.gov/databases/ERIC_Digests/ed389141.html)

Tomlinson, C.A., (2000). Differentiation of instruction in the elementary grades. ERIC Digest. ERIC\_NO: ED443572.

<http://ericir.syr.edu/plweb-cgi/obtain.pl>

Tomlinson, C.A., & Allan, S. D., (2000). *Leadership for differentiating schools and classrooms*. Association for Supervision and Curriculum Development.

<http://www.ascd.org/readingroom/books/tonlinson00book.html>

Web Article: Mapping a route toward differentiated instruction.

<http://www.ascd.org/pdi/demo/diffinstr/tomlinson2.html>



Web Site: for Teachers, Administrators, and Higher Education

[www.teach-nology.com/litined/dif\\_instruction/](http://www.teach-nology.com/litined/dif_instruction/)

Willis, S. & Mann, L., (2000). Differentiating instruction: Finding manageable ways to meet individual needs (Excerpt). Curriculum Update.

<http://www.ascd.org/readingroom/cupdate/200/1win.html>