

Did That Email Hurt Your Brain? Cognitive Load Theory Can Help!

Teaching, Learning & Student Development Conference |
April 9, 2021

Introductions



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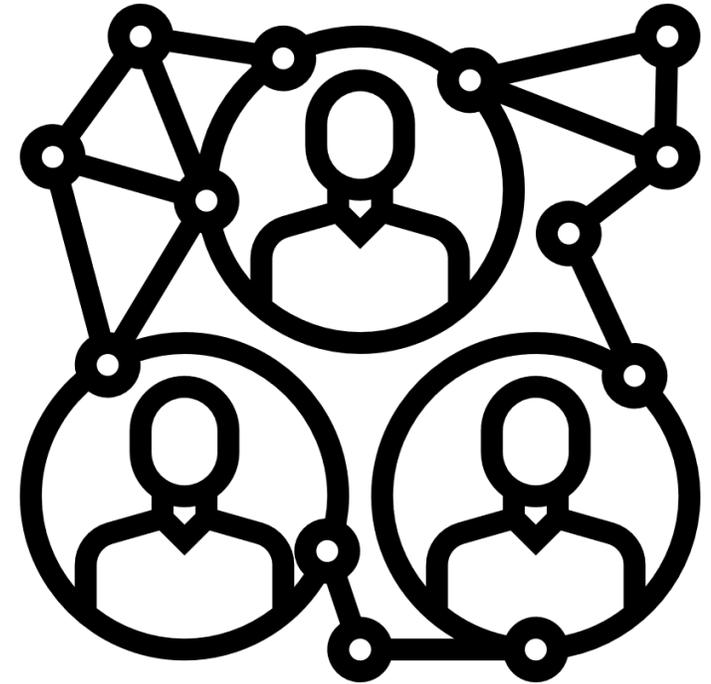
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Dean of Teaching & Learning Innovation,
Berkshire Community College

Getting to Know You

Poll Questions

- You and your role
- Your prior knowledge of Cognitive Load Theory
- Your interest(s) in this session



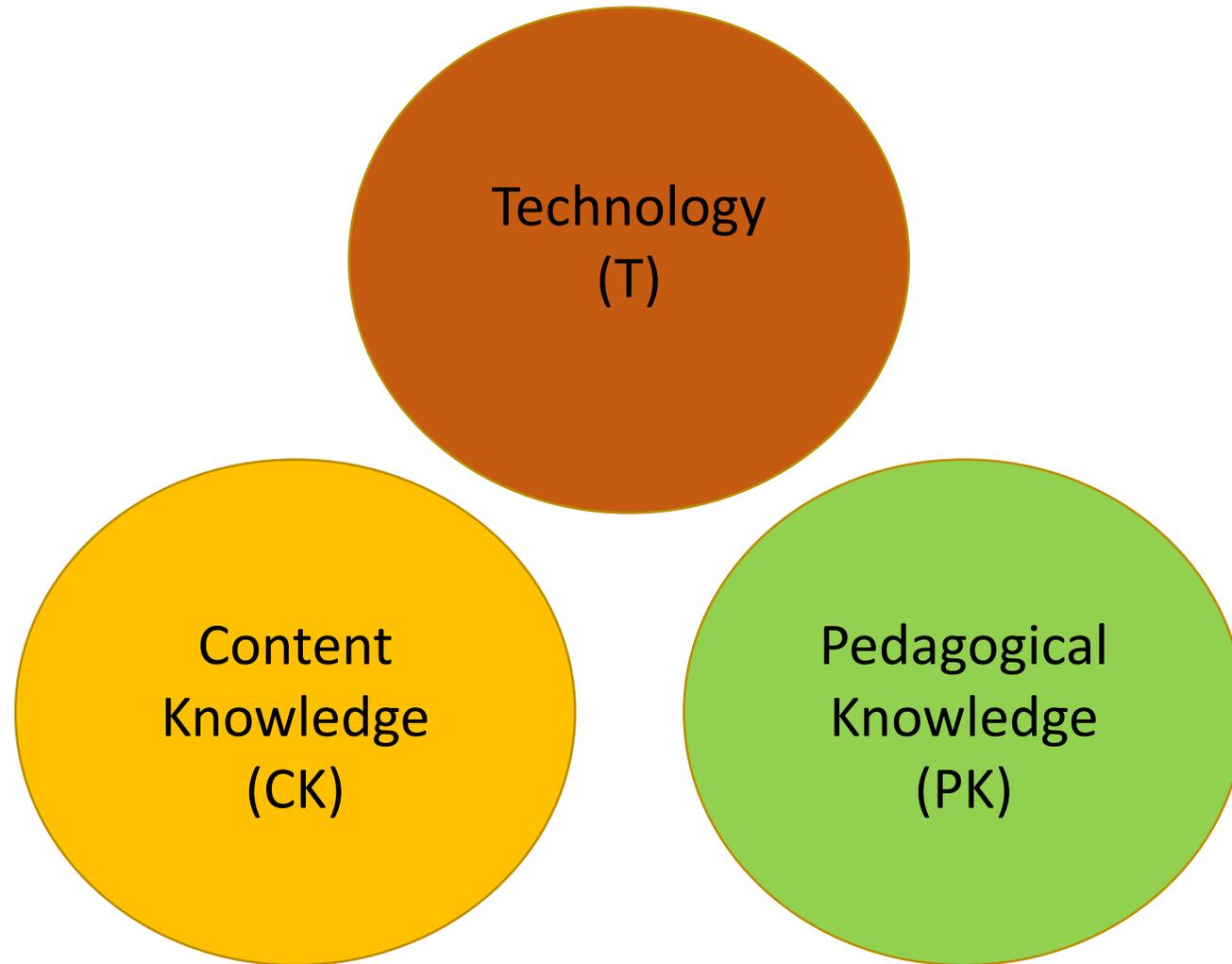
Session Outcomes

- Understand the basics of **Cognitive Load Theory** and how this relates to **Universal Design for Learning (UDL)**
- Apply **strategies for reducing extraneous cognitive load** to help your audience retain more information
- Understand the **basics of accessibility in digital environments**, and why this is a crucial component of equitable design

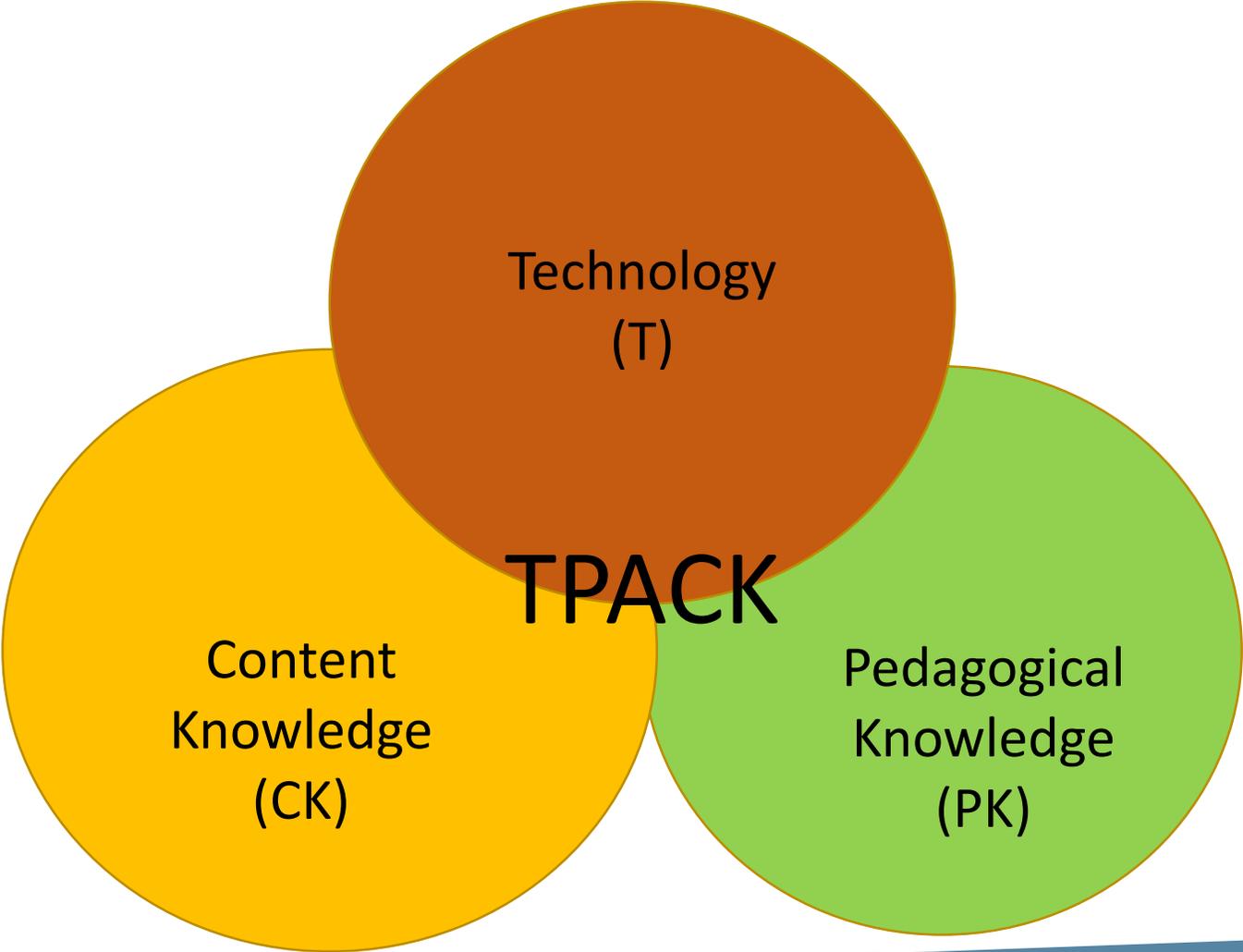
Theoretical Foundations



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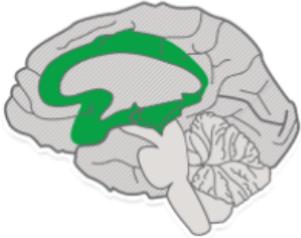
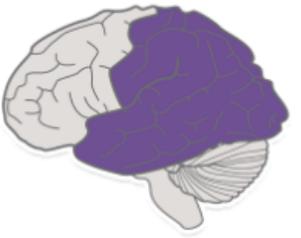
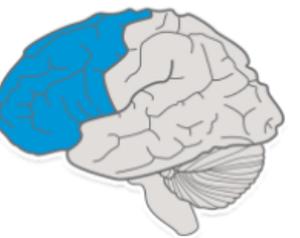


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Universal Design for Learning (UDL)

Universal Design for Learning (UDL) is a framework to **improve and optimize teaching and learning for all people** based on scientific insights into how humans learn.

<p>AFFECTIVE NETWORKS: THE WHY OF LEARNING</p>  <p>Engagement</p> <p>For purposeful, motivated learners, stimulate interest and motivation for learning.</p> <p>Explore Engagement </p>	<p>RECOGNITION NETWORKS: THE WHAT OF LEARNING</p>  <p>Representation</p> <p>For resourceful, knowledgeable learners, present information and content in different ways.</p> <p>Explore Representation </p>	<p>STRATEGIC NETWORKS: THE HOW OF LEARNING</p>  <p>Action & Expression</p> <p>For strategic, goal-directed learners, differentiate the ways that students can express what they know.</p> <p>Explore Action & Expression </p>
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Cognitive Load Theory



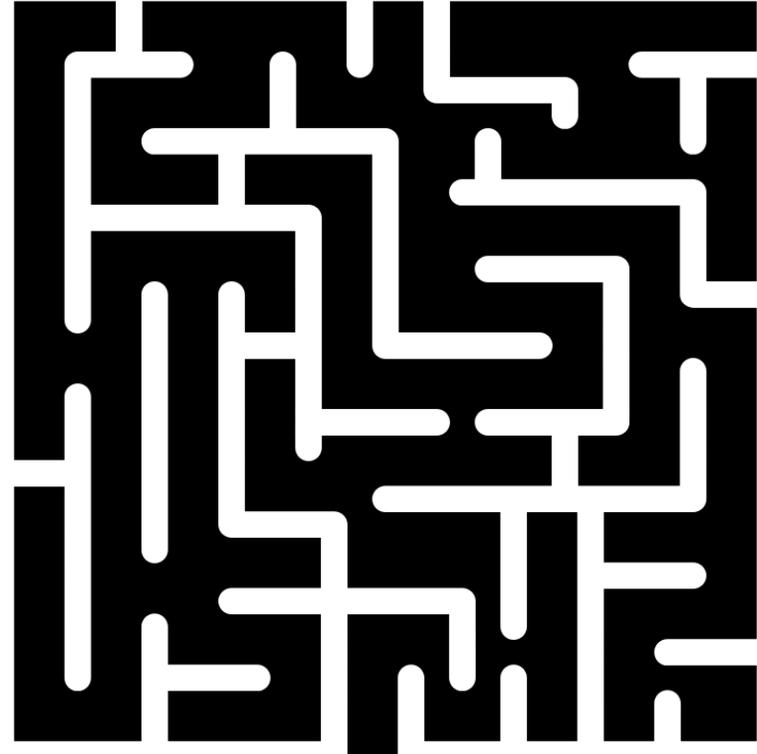
Cognitive Load Theory

In this **model of memory**, every learning experience has three components:

- Intrinsic Load
- Germane Load
- Extraneous Load

Intrinsic Load

- Inherent to the subject under study
- Determined in part by degrees of connectivity within the subject



你好 = Hello

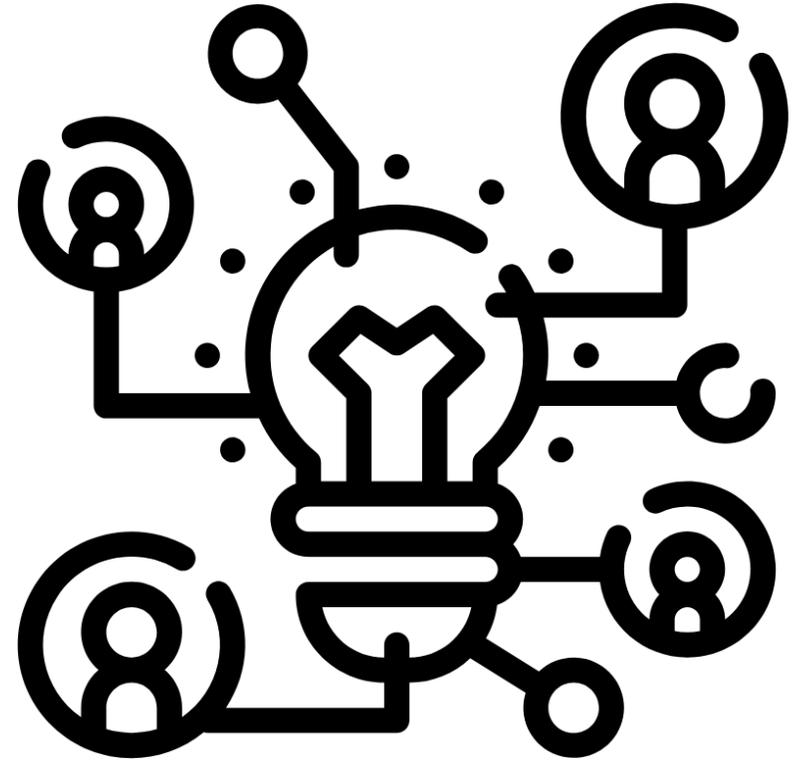
什么	what	这是什么?	What is this?
什么 + N	what kind of N	那是什么书?	What book is this?
不是	not to be	我不是美国人	I am not an American.
是	to be	她是老师。	She is a teacher.
吗?	right?	你是老师吗?	You're a teacher, right?
谁	who	她是谁?	Who is she?
哪 + M + N	which N	哪个人?	Which person?
(的)	's	她是我(的)老师。	She is my teacher.
N 呢?	what about N?	我是中国人, 你呢?	I am Chinese, what about ?
几 + M + N	how many N	你有几个汉语老师?	How many teachers do you
一~九十九	1 ~ 99	九十一	91
age 了	became age	我40岁了。	I'm 40 years old.
多大	how old	你女儿多大了?	How old is your daughter?
会 V	know how to V	我会写。	I know how to write.
很	very	我很好	I am good .
怎么 + V	how to V	这个怎么读?	How do you read this?
月、号/日、星期	telling dates	九月二号/日星期四	Thursday September 2
	omitting 是	我汉语老师33岁	My Chinese teacher is 33

*Word Pairs have low
intrinsic load*

*Grammar has high
intrinsic load*

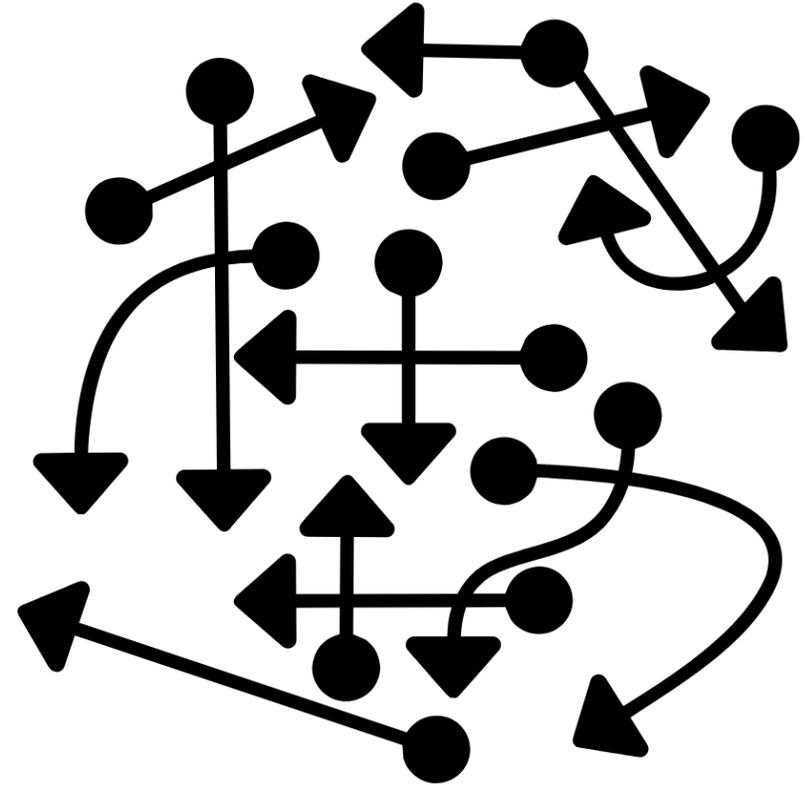
Germane Load

- Level of relevant cognitive activity necessary to learn
- Goal of these activities is for learners to incorporate new knowledge into scheme of connected ideas



Extraneous Load

- Cognitive effort that does not help the learner toward the desired learning outcome



Cognitive Load Theory – Guiding Principle

- For designing and building any learning experience, we should always seek to:
 - **Minimize extraneous** cognitive load
 - **Consider the intrinsic** cognitive load of the subject, **carefully structuring experiences** with high intrinsic load

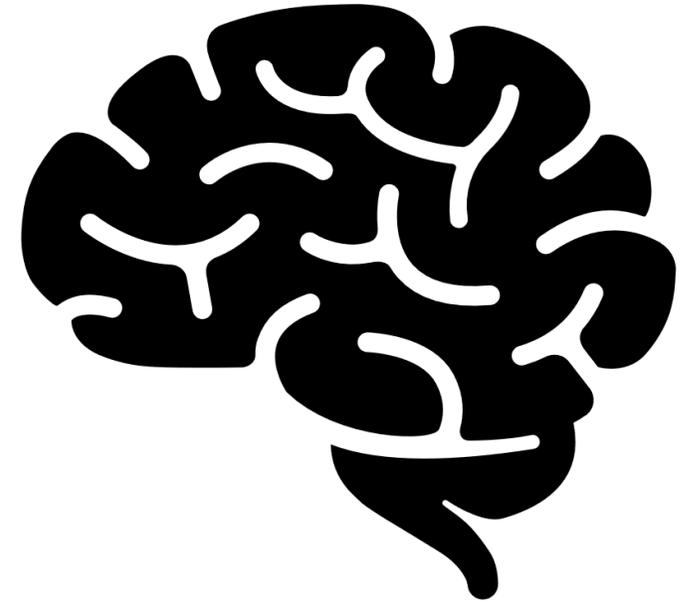
Cognitive Load Theory - Examples



Cognitive Load Theory – Example

Cognitive Load = How hard our working memory needs to work to process information

We almost always want to **reduce cognitive load** – especially extraneous load – so that learners can most effectively process information and achieve their goals.



An example of Cognitive Load theory for you to consider

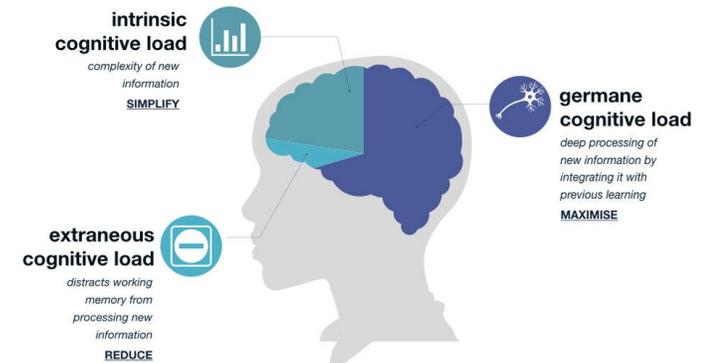
- **Cognitive Load** = How hard our **working memory** needs to work to process **information**

We almost always want to **reduce cognitive load** – especially *extraneous load* – so that learners can most effectively process information and achieve their goals.



cognitive load

mcdreeamiusings.com @mcdreeamie



How Do I Take This Tutorial?



This tutorial is helpful for all BCC students, but especially for those taking online and hybrid courses. This tutorial is self-led. There are self-check quizzes with several of the lessons. You may retake these as many times as you like in order to master the material in that Lesson.

Some BCC courses will require that students take this Tutorial and complete all the requirements to receive the certificate. Below are listed the requirements:

- **Complete** [Is Online Learning Right for Me?](#)
- **Complete** [Online Learning: Truth or Fiction](#)
- **Complete** [Key Points for Online Course Success](#)
- **Complete** [Check Your Understanding: Editing Text in Moodle](#)
- **Submit a** [Practice Forum post](#)
- **Complete** [Check Your Understanding: Plagiarism](#)
- **Submit the** [Practice Upload File Assignment](#)
- **Submit the** [Practice Online Text Assignment](#)
- **Complete the** [Final Quiz with a score of 80% or better](#)

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-  [Example Single Simple Discussion Forum](#)
 -  [Example Standard Forum for General Use](#)
 -  [Example Q&A Forum](#)
 -  [Example Standard Forum Displayed in a Blog-Like Format](#)
 -  [Example Each Person Posts One Discussion Forum](#)
 -  [Test Quiz](#)
 -  [Example Separate Groups Forum](#)
(Research Paper 1) 5 unread posts
 -  [Example Separate Groups Forum \(copy\)](#)
(Research Paper 1)
-

DEMO Summer 2020 CTLI Hybrid & Online Course Development Workshop

Home / My courses / DEMO Summer 2020 CTLI Hybrid & Online Course Development Workshop



Getting Started



1. Fundamental Course Decisions



2. Designing Around Student Learning Outcomes



3. Course Design & Organization



4. Assessment Design & Creation



5. Assessment Evaluation



6. Using & Creating Content



7. Engagement & Interaction



8. Bringing it All Together

Text Example

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

At vero eos et accusamus et iusto odio dignissimos ducimus qui blanditiis praesentium voluptatum deleniti atque corrupti quos dolores et quas molestias excepturi sint occaecati cupiditate non provident, similique sunt in culpa qui officia deserunt mollitia animi, id est laborum et dolorum fuga. Et harum quidem rerum facilis est et expedita distinctio. Nam libero tempore, cum soluta nobis est eligendi optio cumque nihil impedit quo minus id quod maxime placeat facere possimus, omnis voluptas assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et aut officiis debitis aut rerum necessitatibus saepe eveniet ut et voluptates repudiandae sint et molestiae non recusandae. Itaque earum rerum hic tenetur a sapiente delectus, ut aut reiciendis voluptatibus maiores alias consequatur aut perferendis doloribus asperiores repellat.

Text Example

- Lorem ipsum **dolor sit amet**, consectetur adipiscing elit.
- Excepteur sint **occaecat cupidatat** non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
- Et harum quidem rerum facilis est et expedita distinctio. **Nam libero tempore**, cum soluta nobis est.
- Itaque earum rerum hic tenetur a sapiente delectus, ut aut reiciendis voluptatibus maiores alias **consequatur aut perferendis doloribus asperiores repellat**.

Cognitive Load and Online Learning Design - Tips

- No distracting/irrelevant media (images, video, audio)
- Use consistent naming conventions
 - Week 1, Week 2, Week 3...
 - Week One, Week Two, Week 3
 - ~~Week 1, Week Two, Week of 1/4/21~~
- Use as **consistent** a format and schedule as possible
- Use as **simple** a format as possible

Cognitive Load and Online Learning Design - Tips

- Write clear instructions and double-check key information (important dates, URL's, etc.)
- Use **signaling** to help guide learner's attention
 - If writing to two different audiences, signal the reader
 - ***Students:*** Do this thing...
 - ***Faculty:*** Do this thing...

Accessibility in Digital Environments

- Use alternative text (alt-text) for images
- Caption videos and provide transcripts for audio
- Meaningful content must [also be] text-based

TAKE ANOTHER LOOK AT YOUR BLOG POST

TITLE

- | | |
|---|---|
| <input type="checkbox"/> CATCHY: INSTANTLY APPEALING OR MEMORABLE | <input type="checkbox"/> USEFUL |
| <input type="checkbox"/> GRABS POTENTIAL READERS' ATTENTION | <input type="checkbox"/> MAKES THE READER CURIOUS |
| <input type="checkbox"/> DESCRIBES YOUR POST | <input type="checkbox"/> KEYWORDS |
| <input type="checkbox"/> MEANINGFUL | <input type="checkbox"/> WHAT-WHEN-WHY- HOW? |

QUALITY WRITING

- VERY INFORMATIVE OR DEEPLY REFLECTIVE
- INFORMATIONAL POST: SYNTHESIZES LEARNED CONTENT AND CONSTRUCTS NEW MEANING
- WELL ORGANIZED

VOICE

- WRITTEN IN INTERESTING STYLE & VOICE
- WORDS ARE CAREFULLY CHOSEN
- WORDS BRING CONTENT TO LIFE
- SENTENCE FLUENCY IS SMOOTH, NATURAL & EXPRESSIVE

PRESENTATION

- CORRECT SPELLING & GRAMMAR
- FORMATTING MAKES THE POST MORE INTERESTING TO READ

MULTIMEDIA

- PIECES OF MULTIMEDIA ARE EMBEDDED
- MULTIMEDIA ADDS NEW INFORMATION OR PERSPECTIVE TO POST

COMMUNITY

- SEVERAL LINKS TO PLACES THAT ADD TO READERS' UNDERSTANDING
- LINKS ARE RELEVANT AND "FLOW" WITHIN THE CONTENT
- POST IS CLEARLY WRITTEN WITH A GLOBAL AUDIENCE IN MIND
- POST IS CATEGORIZED

SILVIA ROSENTHAL TOLISANO ~ LANGWITCHES.ORG

Accessibility in Digital Environments

- High-contrast (i.e. white background, black text) text & images
 - Here's a bad example
- Color used sparingly and does not convey meaning
 - Bad – (You'll know it's a forum if it's written in red) –
Homework Week 4
 - Better - **FORUM: Homework Week 4**

Using Cognitive Load Theory

In our daily work...

Key Elements

to minimize extraneous load

- Easy to read and visually appealing
- Less is more
- Size is important
- Limit distractions
- Color integration
- Left to right cognition

Visual vs Verbal Cognitive Load

- Battle of what we see and what we should be reading
- What captures our attention?
- What do we glance over?
- What do we need people to focus on?
- What we say is also considered in this theory.

JANUARY 5, 2019

TIME

THE SUPERPOWER OF PASSION

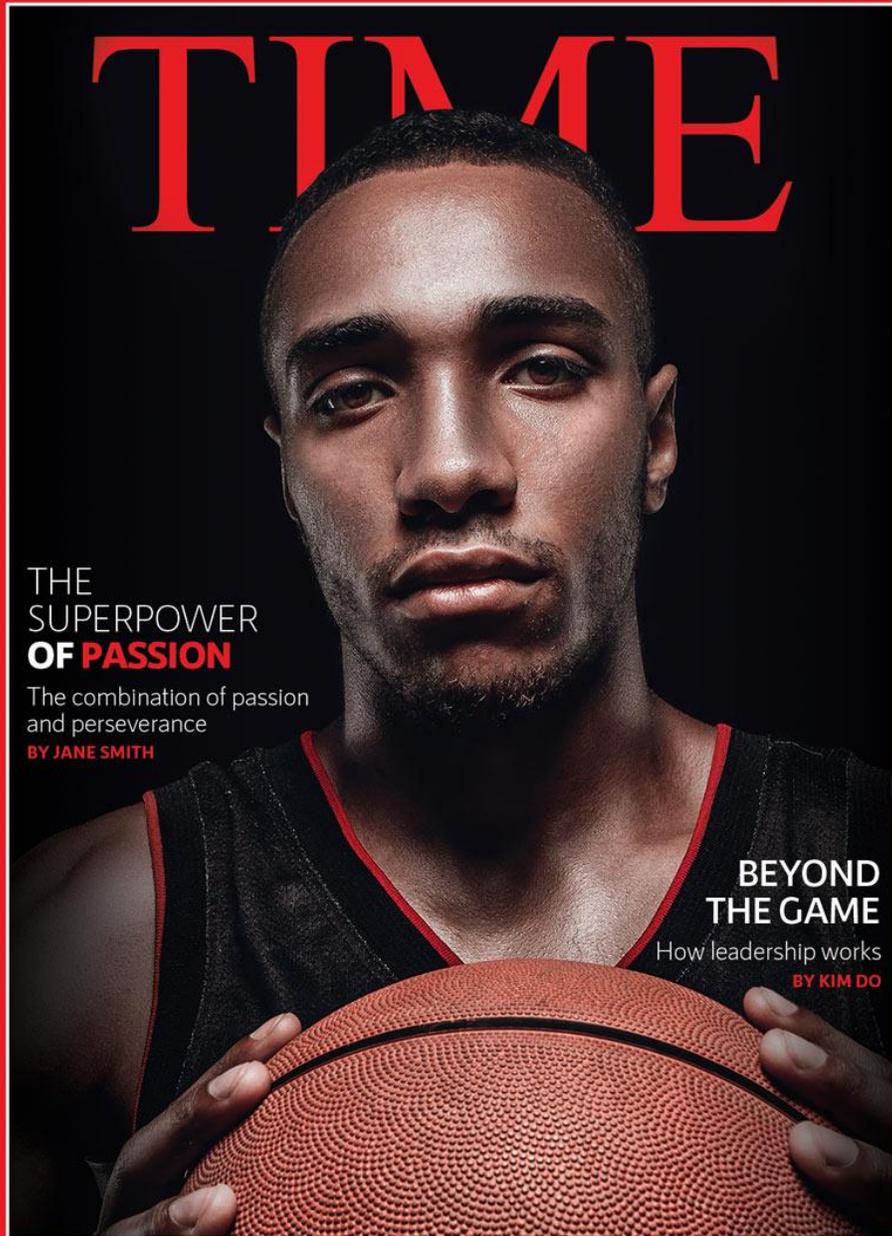
The combination of passion and perseverance

BY JANE SMITH

BEYOND THE GAME

How leadership works

BY KIM DO



COSMOPOLITAN

September 1985 • 80p

If porn's free why is erotica under wraps?

The bucks start here Our report means business!

Chic Labour Kinnock & Co have designs on you

- Make a man talk
- Win a £5000 holiday
- Spot the Hollywood brats
- Mange-tout in Paris

Jerry Hall and other Scarlett women

Why D H Lawrence is love's fallen angel

Is fashion going off the rails?

Mad about books? Meet

Angela Carter
Margaret Drabble
D M Thomas
Fay Weldon
at Cosmo's Book Day



Using this in our everyday work:

- Emails
- Flyers
- Power Point Presentations
- Webpages
- Bulletin Boards
- Newsletters
- Brochures

New Framework of Thinking

- Conduct Letters
- Job Descriptions
- Evaluations
- Strategic Plans
- End of the Year Reports
- Success Coaching
- Course/Workshop Design

3 Key Reminders:

“Bite Size”

Interactive=Memorable

Accessible

Questions & Discussion



More questions? Be in touch!

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Lauren – lgoodman@berkshirecc.edu

References

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- [W3C: Web Accessibility Initiative](#) (including WCAG Accessibility Guidelines)