Cognitive load theory & Instructional design in computer-assisted field orientations | Step 2
Learning Objectives

▪ **Identify** learning and instructional theories to support the design of field orientations.

▪ **Describe** the rationale for considering the integration of learning and instructional theories when designing field orientations.

▪ **Weigh** the rationale for the alignment of technology and learning theories to create an optimal learning environment.
Definitions

Seeing through the same lens
What are Orientations?

“Orientation programs are geared towards introducing new students to college and university services that support their educational and personal goals and they also assist students in gaining the knowledge, attitudes, and skills that will help them adjust and make a smooth transition into the college/university community” (Arhin & Wang’eri, 2018, p.2).
What are Orientations?

“Orientations typically occurs upon entry, or very soon thereafter, whereas training can occur throughout one’s career. Because of the timing difference between them, orientation occurs during a period of high stress, associated with entry, whereas training occurs when these issues probably have been resolved” (Wanous & Reichers, 2010, p. 440).
Orientations

Effectively prepare learners for success
What is Cognitive Load Theory (CLT)?

An Instructional theory

- Explains the impact of instruction on learning | psychological & behavioral phenomena
- Based on Human cognitive architecture
- Human cognitive architecture – two main components: working memory (WM) & long-term memory (LTM)
What is Cognitive Load Theory (CLT)?

An Instructional theory

Working Memory

- the primary processor of information
- limited capacity with new, unorganized information
- a small amount of information readily available for a short amount of time
What is Cognitive Load Theory (CLT)?

An Instructional theory

Long-term memory
- Unlimited capacity
- Storage of cognitive schemas
- Cognitive schemas are knowledge arrangements humans use to categorize information in preparation for use.
- May vary in degree of complexity & automation
What is Cognitive Load Theory (CLT)?

An Instructional theory

[Diagram showing the relationship between WM, LTM, ID, and Learning]
What is Cognitive Load Theory (CLT)?

An Instructional theory

• Intentionality in design | working memory is the primary way of acquisition of new knowledge in educational setting

• Organized knowledge arrangements | activated in LTM | moved into WM | reduced processing time in WM – prior knowledge as individual elements move towards one another to form schemas that WM views as one vs numerous individual = increasing WM capacity | Key... available knowledge base (prior knowledge)
What is Cognitive Load Theory (CLT)?

Capacity of WM dependent upon prior knowledge in LTM.
What is Cognitive Load?

- Working memory resources required to complete a learning task or activity with a specific level of prior knowledge (Kalyuga & Liu, 2015).
- Element interactivity: interconnectedness between related elements of information requiring simultaneous processing in WM.
- CL occurs when information transitions between WM & LTM.
Cognitive Load

- Higher levels of cognitive load occurs with learning tasks with high element interactivity (multi-processing)
- Cognitive overload – the amount of mental effort required to complete a task exceeds the capacity of working memory

E.g. learning how to use a computer and completing online assignments
Cognitive load theory

presupposes instructional strategy causes 3 types of cognitive load | similar to psychological constructs known as mental load & work load on the learner

- Intrinsic Load
- Extraneous Load
- Germane Load

Leppink, Paas, Van der Vleuten, Van Gog, & Van Merrienboer, 2013; Plass, Moreno, & Brunken, 2010
Types of Cognitive Load | Intrinsic

- learner’s perception of the complexity of information required in order to complete tasks | required to achieve proposed learning goals

Paas & Ayres, 2014; Ayers & Paas, 2012; & Kalyuga & Liu, 2015
Types of Cognitive Load | Extraneous

- irrelevant to learning, is present because the design of the instruction requires learners to engage in cognitive processes & activities not required (for acquisition of needed schemas)

Kalyuga & Liu, 2015
Types of Cognitive Load | Germane

- balance between the instructional format supporting the cognitive resources of the learner required to address the intrinsic cognitive load that occurs with assigned learning activities

Yuling, Yuan, Tzu-Chien, & Sweller, 2015
Use of technology-based learning

Cognitive balance

- High level of learner control
- Built in sequencing of content, pacing the presentation
- Built in navigation tools | information transiency
- Reduce extraneous cognitive load

Type of learner

- Novice learner
- Expert learner
Technology in action
Computer-assisted training
Technology in action

Computer-assisted learning

The University of Akron – College of Polymer Science and Polymer Engineering
Split-attention effect when processing and integrating multiple and separated sources of information
Worked Example – explicit guidance | novice learners

Overview:
Website navigation aimed to create continued familiarity with the field education website as an in-the-field learner with the help of a case study- Teresa Palmer Case.

Please follow the steps:
Step 1: finish the experiential learning activity document;
Step 2: submit the case study practice;
Step 3: check out the Teresa Palmer example;
Two messages on similar elements provided through different sensory modalities
Technology in action

Computer-assisted learning
Technology in action

Computer-assisted learning

The University of Akron – College of Polymer Science and Polymer Engineering
Technology in action

Computer-assisted learning

The University of Akron
College of Health Professions
Technology in action

Computer-assisted learning

The University of Akron
College of Health Professions
Technology in action

Computer-assisted learning

The University of Akron
College of Health Professions
Technology in action
Computer-assisted learning

The University of Akron – College of Health Professions
Sequencing

Technology in action

Computer-assisted learning

The University of Akron – College of Polymer Science and Polymer Engineering
Practical Application

Sequencing

Overview:
Website navigation aimed to create continued familiarity with the field education website as a in-the-field learner with the help of a case study- Teresa Palmer Case.

Please follow the steps:

Step 1: finish the experiential learning activity document;

Step 2: submit the case study practice;

Step 3: check out the Teresa Palmer example;

Step 4: complete and submit the signature document.

Technology in action
Computer-assisted learning
## Technology in action

**Computer-assisted learning**

The University of Akron – College of Health Professions
Naomi,

Welcome to your Online Field Education Orientation. Regardless of your role (undergraduate or graduate field student, field educator [field instructor/task supervisor, or faculty field liaison]), the School of Social Work is committed to your readiness. Each orientation is designed to ensure you are adequately prepared for your assigned role. As a result, there are different expectations for each role. This online field education orientation course is comprised of three parts with assessments threaded throughout. Upon completion and passing of Part 1, Part 2 will be opened and available for completion. Upon completion and passing of Part 2, Part 3 will be opened and accessible for completion. All roles must complete and pass Part 1, Part 2, and Part 3 in order to receive approval to continue in your requested or assigned role (e.g. field students cannot enter their field education experience until completion of all parts and passing of all assessments; field educators are not approved by the school until completion and passing of all assessments). Upon completion and passing of all assessments (within Part I, II, & III), a Certificate of Achievement will be automatically generated. Congratulations, this certificate documents you passed this online field orientation course. You are not expected to repeat this orientation, however, you will have unlimited access to this course, including all the information as a refresher.

Naomi, No worries! You have three (3) attempts to pass each assessment and you can review the information as often as needed (after 3 attempts, you will be forwarded to your field contact person). Our goal is to ensure you are adequately prepared for your role. We, the field education team is committed to your success. We are committed to you having the foundation knowledge and emerging skill set required for your role in our field education program.
Field Education Orientation I

Overview:
In this Part, you, the student learner will start your preparation to enter your field education experience by following four (4) major steps. Before you begin these very important 4 steps to enter your field experience, we need to ensure you have the necessary foundational knowledge to support your success in field education.

Self-regulation
Field Education Orientation Part II

Add dates and restrictions...

Overview:
Naomi, in this session, you will go through:

- Online Field Education Orientation interactive power point and quiz;
- Use a case study to practice documentation of three major field forms: Time & Task Log, Student Integrative Learning Contract, and Student Evaluation
- Review CSWE E-PAS 2015 Competencies

Technology in action
Computer-assisted learning
Technology in action

Computer-assisted learning

The University of Akron
College of Health Professions
Technology in action

Computer-assisted learning
Technology in action

Computer-assisted learning
Technology in action

Computer-assisted learning
Technology in action

Computer-assisted learning
Technology in action

Computer-assisted learning
Technology in action

Computer-assisted learning
No surprises

## Technology in action

**Computer-assisted learning**

---

**The University of Akron**

**College of Health Professions**
Rules change for experts - Classical design rules | instead of those based on cognitive load
Technology in action
Computer-assisted learning

The University of Akron – College of Health Professions
The University of Akron School of Social Work | Supplemental Readings for Field Instructors & Task Supervisors

doi:10.1080/08841233.2012.724046


Technology in action
Computer-assisted learning
Instructor
Hmm!

Technology in action
Computer-assisted learning
Questions
References


References


References


Cognitive load theory & Instructional design in computer-assisted field orientations | Step 2

Naomi White


naomi1@uakron.edu