Enterprise and Electronic Learning:

References and Resources

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I. Distance Education (DE) & Educational Technology

These references and resources provide background information about distance education, e-learning, its historical context, its theorists, its technologies, and its different delivery modes.

History, theories, theorists, and applications in DE:

Ally, M. (2008). Chapter 1: Foundations of educational theory of online learning. In T. Anderson (Ed.), *The theory and practice of online learning* (2nd ed., pp. 15-44). AU Press, Athabasca University.

Ally highlights that well-designed online learning offers flexibility in time and location, real-time updates, multitasking, self-paced learning, and personalization of learners' needs.

The article discusses four learning theories: (1) Behaviorism, which emphasizes observable behavior and the role of immediate feedback for correction and reward; (2) Cognitivism, which highlights memory, motivation, thinking, and reflection in processing information; (3) Constructivism, which focuses on learners constructing knowledge through interpretation, observation, and personal connections; and (4) Connectivism, which stresses learning and unlearning in response to the vast, dynamic networks of information.

Ally emphasizes that online learning is effective when well-designed courses have learner-focused principles and adequate support services. This insight is valuable for the GHGP e-learning program, particularly in instructional design and learner support.

Burns, M. (2023). ***Distance education for teacher training: Modes, models and methods***

(2nd ed.). Education Development Center, Washington D.C.

Online learning is delivered synchronously or asynchronously. Burns explains that synchronous learning occurs in real-time via web conferencing, while asynchronous learning happens independently. Asynchronous learning faces challenges such as requiring careful design, error-free media, engaging content, motivated learners, limited communication, higher attrition, increased transactional distance, and a greater sense of isolation. Burns' insights are crucial for the WRI e-learning team in course design and learner support.

Saba, F. (2003, September 22). Distance education theory, methodology, and

epistemology: A pragmatic paradigm. In M. G. Moore & W. G. Anderson (Eds.),

Handbook of distance education **(pp. 3-20). Lawrence Erlbaum Associates.**

Saba highlights two perspectives in DE theory: one emphasizing learner-learner interaction (Holmberg, Wedemeyer, Moore) and another focusing on structural factors like industrialization (Keegan, Peters, Garrison, Anderson). Holmberg's "guided didactic conversation" and Moore's "transactional distance" stress the importance of learner-instructor connections for success. Saba's key argument is that DE's evolution is shaped by complex, dynamic factors—human, socio-economic, political, and technological—requiring a multifaceted approach to understanding its challenges and opportunities.

E-learning:

Ahmed, R. (2022, November 28). *What is eLearning and top 10 benefits of eLearning*.

eLearning Industry. https://elearningindustry.com/what-is-elearning-and-top-10-benefits-of-elearning

Ahmed argues that e-learning offers many benefits, such as 1) fulfilling everyone's requirements, 2) affordability, 3) flexibility, 4) frequently updated content, 5) self-paced, 6) personalized course content, 7) scalability, 8) strong analytics, 9) sensory interactions, 10) consistency.

Ahmed's point on individualized course content for learners is something WRI/GHGP has not done. Yet, it is something to consider for future enhancements and expansions.

Peck, D. (2022). *How to design effective e-learning* [Video]. YouTube.

https://www.youtube.com/watch?v=k2nGe5xXugw

Peck's e-learning design focuses on story-driven, scenario-based simulations, which are ideal for soft skills, decision-making, and process training. His six steps include identifying needs, creating an action map, storyboarding, designing mockups, prototyping, and final development. While informative, his approach may not be suitable for text-heavy WRI/GHGP e-learning materials.

Knowles' Adult Learning Theory - Andragogy

Pappas, C. (2023, September 8). *The adult learning theory - Andragogy - of Malcolm Knowles*. eLearning Industry. https://elearningindustry.com/the-adult-learning-theory-andragogy-of-malcolm-knowles

The article explores adult learning principles and andragogy, which are essential for designing effective instruction. While WRI/GHGP learners fit adult learning assumptions, compliance-focused training may limit learner involvement. However, post-course surveys can help gather feedback to improve course delivery.

The Herzberg's Theory of Human Motivation

Gitman, L. J., McDaniel, C., Shah, A., Reece, M., Koffel, L., Talsma, B., & Hyatt, J. C. (2018). 9.5 Herzberg's motivator-hygiene theory. In *Introduction to business* (pp. 345-347). OpenStax. https://openstax.org/books/introduction-business/pages/9-5-herzbergs-motivator-hygiene-theory

Herzberg's motivation theory distinguishes between satisfiers (motivation factors) and dissatisfiers (hygiene factors). Motivation factors, such as achievement, recognition, and growth, directly impact job satisfaction, while hygiene factors, like salary and work conditions, influence dissatisfaction. In relation to GHGP e-learning, its role is indirect—acting as a tool that supports learners' job satisfaction by providing opportunities for achievement, recognition, responsibility, advancement, and growth.

Learning Styles and Preferences

Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2009). Learning styles: Concept and evidence. *Psychological Science in the Public Interest*, *9*(3), 105-119. http://journals.sagepub.com/doi/pdf/10.1111/j.1539-6053.2009.01038.x

The authors argue that the concept of learning styles promoted by vendors in the learning assessment industry suggests that people learn differently. Popular learning styles include cognitive style, Dunn & Dunn, Kolb's inventory, Honey & Mumford's questionnaire, and Myers-Briggs. While the concept is widely accepted, further research is needed before incorporating learning styles into mainstream education. Regarding GHGP e-learning, the relevance is minimal for now, as it focuses on enhancing existing knowledge for adult, educated professionals.

Educational Technology (EdTech)

Kurt, S. (2015, November 18). *Educational technology: An overview*. Educational Technology. https://educationaltechnology.net/educational-technology-an-overview/

Educational or instructional technology has played a significant role in solving and advancing educational problems, such as course creation and development, facilitation, delivery, and assessments. EdTech examples are 1) software tools, 2) software types, integrated learning systems, 4) hardware, 5) multimedia integration, 6) audio/video conferencing, and 7) web and Internet.

EdTech is an essential part of creating and developing e-learning courses. In fact, the expansion of e-learning today is made possible thanks to the advancement of technology. Thus, instructional technology knowledge is indeed crucial for the GHGP e-learning team and

Miller, P. (2001). Learning styles: The multimedia of the mind. *Research Report*.

https://files.eric.ed.gov/fulltext/ED451140.pdf

Miller shares similar insights about learning styles as those found in the journal article by Kurt et al. (2009). The other information Miller provides in his article about GHGP e-learning and its learners' styles includes the VARK learning styles inventory.

The VARK learning styles refer to the visual, aural, reading/writing, and kinesthetic sensory modalities utilized in learning. Miller's article emphasizes the importance of considering multimedia and adhering to learning styles when developing educational materials.

For GHGP Corporate Standard e-learning, which is self-paced and text-heavy, combining VARK with Mayer's multimedia design principles is essential for optimal learning outcomes.

II. Instructional Design and Informational Literacy

These references and resources provide information on instructional design, use of media, technology integration, and accessibility requirements for inclusive learning.

ADDIE (Analyze, Design, Develop, Implement, Evaluate) Model

Bates, A. W. (2019). The ADDIE model. In *Teaching in a digital age* (pp. 128-131).

Bates argues that the ADDIE model is widely used due to its structured framework and detailed analysis, making it ideal for large, complex designs. It ensures high-quality design with clear objectives, structured content, and assessments but can be costly and redundant for smaller courses. Additionally, it focuses more on content than learner-instructor interaction, and its inflexibility may limit its usefulness in the digital age. Given GHGP e-learning's limited scale and budget, the ADDIE model might be too expensive, and exploring alternatives like the SAM model could be more suitable.

SAM (Successive Approximation Model)

Herrholtz, K. (2021, May 12). *Rapid instructional design with SAM*. eLearning Industry. https://elearningindustry.com/sam-successive-approximation-model-for-rapid-instructional-design

The author explains that SAM is an iterative design and delivery model that works with projects requiring more immediate delivery. The shorter cycle in production allows earlier testing of the course for revision based on the three cycles of the feedback loop.

SAM allows for modifications throughout the process, which signifies greater flexibility than the rigid ADDIE model. Due to its non-linear structure, SAM enables issues to be resolved quickly, unlike ADDIE.

SAM is a more cyclical process. It could be an instructional design model that works for GHGH e-learning, particularly for developing its upcoming Land Sector and Removals Guidance course.

The Kirkpatrick Model of Evaluation

Kurt, S. (2018, September 6). *Kirkpatrick model: Four levels of learning evaluation*.

Educational Technology. https://educationaltechnology.net/kirkpatrick-model-four-levels-learning-evaluation/

The Kirkpatrick model evaluates learning outcomes across four levels: reaction, learning, behavior, and results. While comprehensive, the evaluation can be costly, especially at levels 3 and 4. The GHGP team used this model only once, some years ago. Given the WRI/GHG Protocol's goal to generate more revenue through e-learning, re-evaluating the program after the Land Sector and Removals Guidance course is published in 2026 is essential.

Mayer's Multimedia for Learning Principles

Mayer, R. E. (2009). Principles of multimedia design. In *Multimedia learning* (2nd ed.,

pp. 265-280). New York: Cambridge University Press.

Multimedia learning refers to learning from words and visuals; multimedia instruction aims to promote learning. Mayer's multimedia design has two approaches: 1) technology-centered and 2) learner-centered.

Mayer's technology-centered approach emphasizes using current technology for course design instructions. The learner-centered approach emphasizes how instructional designers design instruction to help learners acquire knowledge.

WRI/GHGP offers its e-learning program as multimedia learning; the courses are multimedia instructions. However, some courses, like Scope 1 and 2 Standards, need updating from recorded webinars to interactive and engaging multimedia instructions.

Mayer, R. E. (2009). The promise of multimedia learning. In *Multimedia learning*

(2nd ed., pp. 3-27). Cambridge University Press.

Mayer's multimedia design learning has 12 principles: 1) coherence, 2) signaling, 3) redundancy, 4) spatial contiguity, 5) temporal contiguity [multimedia design function]; 6) segmenting, 7) pre-training, 8) modality [managing essential function]; 9) multimedia, 10) personalization, 11) voice, and 12) image [fostering generative function].

How does WRI/GHGP e-learning multimedia instruction and learning compared to Mayer's guidance? If the GHGP team redesigns Scope 1 and 2 courses, one must consider learners' cognitive capacity and limitations.

To redesign Scope 1 and 2 from recorded webinars to e-learning instructions, besides ensuring that the content remains relevant, information chunking is deemed necessary to accommodate cognitive limitations when interacting with information, for example.

Presenting animation and narration simultaneously also follows Mayer's principle of spatial contiguity, for example. Following Mayer's 12 principles will result in better GHGP multimedia instructions.

Gagne's Nine Events of Instruction

Nanda, H. (2021, May 12). Applying Gagne's nine events of instruction in eLearning.

eLearning Industry. https://elearningindustry.com/9-events-of-instruction-in-elearning-applying-gagnes

A systematic guide to arranging instructions to achieve the intended outcome. Gagne's nine events are often used alongside Bloom's taxonomy for engaging and meaningful course design.

Applying Gagne's nine events of instruction can be done during storyboard creation, ensuring that the contents incorporate Gagne's instructional. The goal is to create effective and engaging GHG Protocol e-learning instructions.

Keller's ARCS Model of Motivation

Pappas, C. (2023, September 15). ***Instructional design models and theories: Keller's ARCS model of motivation*****. eLearning Industry. https://elearningindustry.com/arcs-model-of-motivation**

The ARCS model refers to attention, relevance, confidence, and satisfaction. Incorporating this model when designing e-learning materials is vital because it ensures that the courses are more engaging for knowledge transfer and retention.

The ARCS model provides easy-to-follow steps. How does it relate to GHGP e-learning? Arguably, regardless of what instructional design principles are followed, the ARCS model of motivation must be incorporated because it helps to identify and solve specific motivational challenges that GHGP learners have.

Bloom's Taxonomy

Zhou, M., & Brown, D. (2017). Bloom's taxonomy. In ***Educational learning theories*** **(2nd ed., pp. 89-102). Galileo, University System of Georgia. https://oer.galileo.usg.edu/education-textbooks/1**

A framework to write effective learning objectives and outcomes using key verbs on six levels of learning. Bloom's taxonomy is a must-implement when creating learning objectives. Bloom's taxonomy provides a list of verbs that instructional designers can use when creating learning objectives depending on the levels of learning.

GHGP e-learning team consistently implemented Bloom's taxonomy when creating learning objectives for their corporate standard and guidance e-learning courses.

Accessibility

CAST. (n.d.). *The UDL guidelines*. UDL. https://udlguidelines.cast.org/

The Universal Design Learning guidelines are a tool to improve and optimize teaching and learning for everyone. The UDL guidelines allow for personalization depending on individual learner's needs. The guidelines provide ways for engagement, representation, action, and expression. The UDL application in e-learning is meant to provide accessible learning opportunities to all learners, including those with disabilities. Learners can access learning that is catered to their diverse and specific needs.

***Section 508*. (n.d.). Section508.gov. https://www.section508.gov/**

Although Section 508 implementation is mainly expected from organizations that work with the U.S. government or federally funded projects, it has become the norm to incorporate accessibility features into any work product. For e-learning projects, comprising 508 means ensuring accessible learning to all—the website guides to ensure that e-learning instructions are 508 compliant.

Unfortunately, the WRI/GHGP e-learning program has not rigorously implemented accessibility features, especially in the older courses. Under the new e-learning lead, the upcoming Land Sector and Removals Guidance course will be 508 compliant.

W3C Web Accessibility Initiative (WAI). (n.d.). *WCAG 2 overview*. Web Accessibility Initiative (WAI). https://www.w3.org/WAI/standards-guidelines/wcag/

WCAG2 is the international standard for making web content accessible to people with disabilities. This is another vital Standard that the WRI/GHGP e-learning team must pay attention to when developing the content of their web pages and e-learning instructions. WCAG2 has 12 guidelines organized under four principles: perceivable, operable, understandable, and robust.

Information Literacy

***Creative commons*. (2023, October 27). Creative Commons. https://creativecommons.org/**

It is a global movement for open knowledge and creativity. It provides access to available creative works that people can use for free or with some conditions, known as Creative Commons licenses. Citation is still required for free or conditional creative works.

Kline, D., & Kappos, D. (2021). Chapter 3. Copyright basics. In *Introduction to intellectual property*. OpenStax. https://openstax.org/books/introduction-intellectual-property/pages/3-introduction

The book by Kline and Kappos provides insightful knowledge about intellectual property that is critical to comprehend. As society enters the Digital Age, digital/information literacy becomes an immediate need to navigate the immense amount of information available.

Knowledge of the basics of copyright is necessary because it helps one to be literate in the digital world, where abundant information is available at the tip of a finger. Information literacy allows us to find, sort, evaluate, and determine the value of the information before we use and share it. Knowledgeable about information literacy also means one understands the importance of giving lawful credits when due.

***Open educational resources*. (n.d.). OER Commons. https://oercommons.org/**

OER Commons is a public good digital library for the general public to access and use for free. OER allows learning to be more cost-effective. For a global goal of Sustainable Development Goals, OER allows for the democratization of education. Despite some existing challenges, OER remains promising for the greater good.

***Open educational resources*. (n.d.). UNESCO: Building Peace through Education, Science and Culture, communication and information. https://www.unesco.org/en/open-educational-resources**

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) is a UN agency that promotes world peace through education, the arts, science, and culture. The UN's Sustainable Development Goal 4 is to provide quality education that is inclusive and equitable, promoting lifelong learning opportunities. UNESCO OER is a significant element in achieving goal #4.

UNESCO OER offers online courses produced and provided in partnership with numerous multilateral organizations. The courses are also available in many different

languages. Learners only need to create an account at the UNESCO Open Learning site. The courses are available at no cost.

WRI/GHG Protocol might want to consider partnering with UNESCO. WRI/GHGP could offer Scope 1 and 2 Standard at UNESCO Open Learning. Both courses are already offered for free access on the GHG Protocol e-learning webpage. This partnership has the potential to significantly expand WRI/GHGP's visibility.

III. Leadership

Black, J. S., Bright, D. S., Gardner, D. G., Hartmann, E., Lambert, J., Leduc, L. M., Leopold, J., O'Rourke, J. S., Pierce, J. L., Steers, R. M., Terjensen, S., & Weiss, J. (2019).

Chapter 12. Leadership. In *Organizational Behavior*. OpenStax.

https://openstax.org/books/organizational-behavior/pages/12-introduction

Leadership is the ability to influence others to achieve common goals, employing various approaches such as contingency, transformational, visionary, and charismatic leadership.

- **Contingency leadership** adapts to situations, utilizing models such as Fiedler's (matching style to a problem), Hershey-Blanchard's (adjusting to team experience), Path-Goal (guiding teams to achieve goals), and Cross-Cultural (leading diverse teams).
- **Transformational leadership** drives significant changes through trust, justice, and integrity, enhancing follower satisfaction and performance.

- **21st-century global leadership**, as outlined by Professor Conger, requires strategic opportunism, global awareness, decentralized management, sensitivity to diversity, strong interpersonal skills, and community-building.

WRI's president, Ani Dasgupta, is a global team leader. The organization's leadership positions are filled with professionals with international experience. Multiculturalism is a key organizational value and strength of WRI.

Sparks, J. (n.d.). Understanding transformational leadership during a time of uncertainty. https://files.eric.ed.gov/fulltext/EJ1322100.pdf

Transformational leadership emphasizes leading with motivation and inspiration, empowering teams to achieve shared goals. The five elements essential to transformational leadership are that good leaders model the way, share vision, challenge the process, enable others to act, and encourage the heart. Sparks argues that transformational leadership has been one of the most influential models for education, business, and politics, especially during uncertain and challenging times.