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Multimedia Evaluation of Universal Design for Learning (UDL)

The Robbins' Multimedia Competition evaluates the effectiveness of learning objects in a

universal design for learning, adaptive curricula that address student diversity. The goal of UDL

is to provide a cost efficient method to remove barriers from the learning environment for all

students through curriculum modifications, focusing on Reeves and Hedberg's (2003)

pedagogical and user interface multi-dimensional approach. This approach is flexible, and

addresses learner individuality and learning differences, and fosters student engagement,

collaboration, and accessibility, visualizing complex information processes (Leacock & Nesbit,

2007). This is the approach used to compare the quality of two reusable digital learning

resources in the grid below.

Description of the two finalists

The finalists integrated UDL's principles through learning examples, strategies and UDL

resources as alternatives for engaging learners in meaningful and accessible learning

experiences. The finalists were:

- Universal Design for Learning, Part I (UDL), is a PowerPoint presentation with an

    appropriate mix of compensatory multimedia to engage, motivate, and gain learner interest.

    The course introduces UDL concepts to faculty and staff, using a passive learning

    methodology. The course provided a framework for accommodating all learning styles, in an

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efficient, user-modelling interface that address student diversity, and achieve behavioral and

cognitive learning outcomes.

Center for Applied Special Technology (CAST) UDL Online Modules is an interactive

online course that introduces theory, principles and application of UDL in a reusable learning

content to students and faculty. The course uses various media, book-based lesson plans with

unobtrusive text, course outlines, clearly stated objectives, consistent color coordination and

coding of topics, pictures, live narration, and video and audio, to provide a flexibility and

accessibility to course content, ensuring an effective learning experience. This design

accommodates individual learning differences through user-modeling techniques, such as

adaptation tools, easily controlled or modified by the user, eliminating learning barriers

(Oppermann, 2002). The course has two modules, one for students and one for faculty that

identifies course objectives, and topics, with learner supports to engage learner participation, and

interest.

Learning Object Review Instrument (LORI)

The LORI instrument was an appropriate tool for this evaluation because it elicits ratings

and comments for evaluators, substantiating the use of learning objects and interactive

multimedia (Leacock & Nesbit, 2007). The grid that follows focuses on the theoretical concepts

of behaviorist and cognitive learning, which are integral for formulating knowledge and

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experience into practice, and accommodating individual differences to empower users (Reeves &

Hedberg, 2003).

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LORI Multimedia Evaluation Instrument												
Rating Scale: 5 = Meets Standards 4 = Acceptable 3 = Most items met 2 = Poor 1 = Too easy/ difficult												
	CAST Universal Design for Learning Online modules		**Rating**					**Universal Design for Learning PowerPoint presentation**		**Rating**		
			5	**4**	**3**	**2**	**1**			**5**	**4**	**3**	**2**	**1**
Usability/interaction, ease of use, predictability of user interface, and quality of the interface help features	Design accommodated visual and textual challenges of learner, used electronic controls, and help features	Headings and topics identified, color coded icons with instructor and student tips for ease of navigation, hypermedia access to resources,	√					Identified topics, titles, headings, sequencing, easy to follow, but no help features or voice variation for diverse learner	Provided textual examples but no learner interaction, collaboration, tasks, demonstrate learning			√		
Presentation of Screen/ Content Design, Quality Interface and accessibility		CAST incorporated visual and auditory information for enhanced learning to achieve efficient mental processing.	√						Provided links to resources, but all hyperlinks not readily accessible to users			√		

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			5	4	3	2	1			5	4	3	2	1
Learning Goal alignment, stated, activities, assessments Cognitive	Aligned learning goals to objectives present-ed with activities, assessments, based on learner characteristics	Provided small and large group samples/case studies for learner review and assessment	√						Engaged/ requested learner interaction with questions, paused to allow user to reflect and answer but no interactivity with content		√			
Motivation/ interesting to learners	Provided sufficient content, interact-ion, held learner's interest, clearly identified headings, topics, used controls to help, and links to resources, cues	Self-regulated, directed learner tasks to promote cognitive learning and engagement	√					Easy sequencing, but no variance in sound or hands-on activities	Passive learning environment/ lecture, does not allow for behavioral/ construc-tive learning, not appropriate for all learning styles				√	
Feedback/ Adapta-tion: Adaptive content	Summative feedback of	Provided learner feedback in task	√					PPT lack assistive capability – no						√

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			5	**4**	**3**	**2**	**1**			**5**	**4**	**3**	**2**	**1**
or feedback driven by differential learner input or learner modeling	module, supported design, key points emphasized, tasks appropriate, and design sensitive to diversity of learners, assistive supports, and	completion, motivated learner, showed relevance to course content						accommodation for visual or hearing impaired/ variance of font sizes/ sound, color coding, graphics, or highlighting						
	included faculty survey to evaluate usability and effectiveness							Included faculty survey to evaluate usability and effectiveness		√				
TOTAL			25							19				

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Summary of selected winner

The winner of the competition introduced clear UDL practices and procedures, passed the LORI 9-step instrument assessment with an overall score of 25, and demonstrated behavioral and cognitive learning outcomes through task completion, activities, and reflection. Although the CAST UDL course was heavily text-based, it was more engaging and interactive than the UDL PowerPoint presentation. CAST UDL Online Course was the winner. It provided a true technology-based course, and engaged this learner in the learning process. This learner constructed learning paths using the interactive materials, reflected on key points, completed, and applied real-world tasks, and activities, practicing both cognitive and behavioral learning processes. The adaptation tools or methods allowed the user to control and individualize the course content, which also accommodated individual learner differences—the goal of the UDL.

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