



## SOOC: Addressing Varied Learning Needs through Online Professional Learning and UDL

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### Abstract

The typical classroom does not exist - face to face or online. Learner variation is today's reality, in what our students need and consequently what teachers need, and it is primary to effective course design. Learner variability is based in neuroscience and supported by the concept of neuroplasticity, and should drive development of effective instructional design for today's diverse population of learners. Universal Design for Learning (UDL) provides a framework to vary curriculum and instruction by intentional design (National Center on UDL, "What is Universal Design for Learning?"). Emerging from the concept of universal design (Center for Universal Design), and constructivist learning principles (Vygotsky), UDL addresses learner variation in designing goals, assessment, methods, and materials in all learning environments, online, blended, and face to face. The SOOC uses UDL as a primary framework to model and teach UDL principles, to apply UDL in the intentional use of digital applications (apps), and to address research-based weaknesses in the use of MOOCs in education.

### Keywords

Online learning, Universal Design for Learning, open access, professional development.

## Introduction

Universal Design for Learning (UDL) is a framework to support and improve teaching and learning by effectively addressing the widely varied needs of all students from the onset through innovative curriculum design, rather than through retroactive adjustments and accommodations (Rose and Meyer). The term UDL was coined over 30 years ago by the Center for Applied Special Technology (CAST), and over time CAST has built upon the initial UDL concept, moving from its original focus on a medical model intended to address those “in the margins” to focus now on learner variability with the goal of developing expert learners (Meyer, Rose, and Gordon 8-10). UDL has three core principles: 1) Multiple means of engagement to create purposeful, motivated learners; 2) Multiple means of representation to develop resourceful, knowledgeable learners; and 3) Multiple means of action and expression to support strategic, goal-directed learners (Meyer, Rose, and Gordon 90-104). UDL's goal to develop expert learners through the application of these principles and their related guidelines is explained in graphic form (see Fig. 1.). The potential for UDL to be achieved in an online learning environment is high. Engagement, access and expression can be enhanced through the use of varied online digital content and tools.



Massive Open Online Courses (MOOCs) are one kind of instructional design through which “open pedagogy” has been made available. MOOCs are designed to deliver free content, are open to anyone, and are often offered without university credit. Millions of citizens from around the world have participated in some sort of MOOC, but the role MOOCs play in effective professional development and their outcomes is still either unknown or not well defined. Studies indicate that while many educators aspire to implement principles of effective online teaching (student directed learning, interactivity & social presence), the reality of MOOCs tends to reduce interactivity, rather than support it (Henry and Thornewill).

Peer assessment, common in MOOCs, is often problematic (Watters). One study at University of Edinburgh showed that participants felt there was no professor 'present' in the course (Parr). The design of MOOCs, often a ‘one size fits all’ model, does not lend itself to support learners who have differing needs and/or disabilities. MOOCs are often replications of traditional content delivery models of education, and their size limits personal choice and options which diverse learners need to make the learning environment work for them.

Concerns regarding MOOCs, opportunities for implementing UDL in online learning environments, the goal of effective teacher professional learning, and technology's ability to vary and support professional learning led the authors to design an alternative model for online professional development. The intent of the model is to deliver instruction in a manner that teaches content about UDL and at the same time models the use of UDL in teaching and learning, using constructivist pedagogy. This model is a SOOC - Small, Short, Supported and Social Open Online Course.

## **Discussion**

The SOOC uses UDL as a guiding framework, incorporating these goals: 1) Ensure content, resources and interactions are accessible to all participants; 2) Provide descriptive (not prescriptive) learning paths for participants, integrating options, choice, multiple means of representation and of action and expression; 3) Model seamless integration of technology; 4) model the dual role of instructor and participant in a constructivist learning environment; and 5) Support participants' deep understanding of UDL principles through sharing and self-reflection.

UDL principles and guidelines are embedded in instructional design and delivery in two specific areas: course materials and environments (course website, webinars, weekly tasks) and

communication and feedback (synchronous sessions, asynchronous instructor & participant postings, digital badges).

### *Course Materials and Environments*

The course website was the central location for the SOOC, including the course syllabus, access to videos, images, websites and other resources, and descriptions of weekly tasks offering choice for demonstrating understanding of UDL. The WordPress platform provided flexibility and support for accessibility, using a plugin to provide keyboard accessibility for pull-down menus to meet W3C's Web Content Accessibility Guidelines.

The course was four weeks long, with engaging videos introducing each weekly section. The videos featured experts in the fields of UDL and educational technology, and covered an overview of UDL as well as its three overarching principles. Transcripts were available to participants for alternative representation. After each video, guiding questions highlighted key ideas and concepts to help frame the learning experience. Each week, learners were presented activities to choose from to demonstrate understanding of the key concepts and ideas for that week. The SOOC intentionally optimized individual choice and autonomy in order to emphasize relevance, value and authenticity in task choices (CAST, "UDL Guidelines"). Activities varied in the types of apps and tools learners could use as well as the approaches they could take. Learners were also provided with an open choice to suggest their own task, further optimizing course personalization. Links to all products submitted by the course participants were posted to the course website. Participants were required to submit their task in more than one format, reinforcing the UDL principle of multiple means of representation. By seeing the variety of ways that activities could be completed, the learner's self-efficacy as UDL practitioners was further facilitated and supported.

### *Communication and Feedback*

To ensure participants had ample opportunities for support and feedback, and thus ensure the rapid development of a community of practice, a decision was made to limit course enrollment to 80 participants. Each week, the instructors set aside time for virtual office hours when learners could chat with them using the Hangouts feature integrated into Google+. Twitter chats supplemented these Google Hangouts on a different day. At the end of each chat, a Storify

archive of the conversation and shared resources was created and posted to the Google+ community for those who missed it.

Participants were encouraged to be reflective of their practice throughout the course. This was accomplished through the intentional design of the task questions and was supported through instructor questions and requests for clarification after participant posts. To further build community, participants were encouraged to provide peer feedback and comment on submitted tasks via the Google Community. Instructors actively participated in the course by completing weekly tasks and reflecting on their learning within the community. As one participant noted, “Their insights and modelling gave a sense of comfort in my own contributions.” This served as both motivation and as a model of best practice. Participants recognized the role the instructors’ played, stating “I loved that instructors were showing the progression of their own products. This was extremely useful in building a community of practice in a short amount of time.”

Digital badging was incorporated in the course to document completion of the tasks and as a tangible recognition system for weekly progress and final completion that was linked to ISTE technology standards. Separate badges were designed for each week of the SOOC and for completion of the full SOOC (see Fig. 2), providing flexible means of recognition for participants’ varied involvement.



Fig. 2. Badge Designs for SOOC: UDL & Apps.

## Results

The SOOC was offered twice, in 2014 and 2015, with 53% of participants completing the 2014 course, and 58% of participants completing the 2015 course. Most participants brought some knowledge of UDL with them. However, more people said they applied UDL in their practice than actually understood it. This could be based on a misconception that UDL is just

“good teaching” or that providing access to technology is enough. Many participants recognized their knowledge and application of UDL was not as advanced as they initially assumed and were more cautious in their evaluation of their application to practice in the post-survey (see Fig. 3).

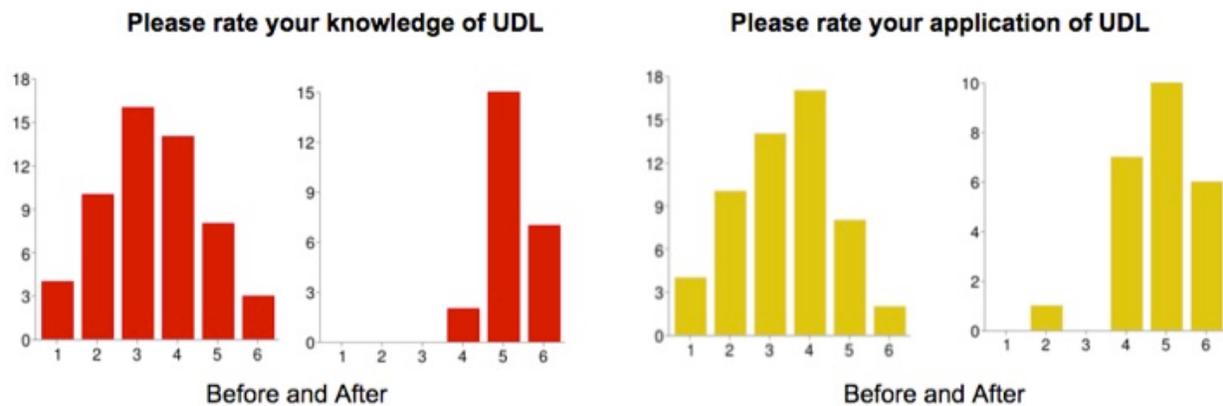


Fig. 3. Participant Knowledge and Application of UDL.

When asked the question: “Looking back on your application of UDL to your practice, what has or will change after taking the SOOC?” participants referenced five categories in their written responses from most to least referenced: 1) They now use UDL as a lens to reexamine their current practice; 2) They have increased awareness of and clarity of UDL principles; 3) They apply UDL intentionally, moving from theory to practice; 4) They will include, explore, and share more apps with fellow teachers; 5) They will advocate for the use of UDL and share their knowledge of UDL with others.

Participants understood the course was designed to serve as both a model of UDL and accessibility, and of how to create engaging online learning spaces. In both versions of the SOOC numerous comments specifically identified the instructors as key to participant engagement in the course and completion of same. Additionally, participants were unanimous in their positive response to instructor presence, feedback and commitment to the SOOC experience, with 91.3% rating instructor comments as very helpful in motivating them to stay engaged. When asked whether they would participate in this type of learning again and whether they would recommend a SOOC to a colleague, 100% said yes.

## Conclusions

A key to the successful implementation of the SOOC model in both iterations of the course was the instructors' role as not only designers of the learning environment and facilitators of the weekly learning activities, but as lead learners themselves. Learning was made visible through instructors' posts of their own work and their comments to others' submissions in the Google+ community. This modeling of metacognition was cited by participants as a key component of the SOOC that differentiates it from a traditional MOOC design.

From the learner's perspective, the SOOC received overwhelmingly positive feedback. Participants noted that it was a flexible way to learn that met their professional needs. Multiple pathways for learning were evident in the choice of activities learners could select to demonstrate their understanding, in keeping with the UDL principle of multiple means of action and expression. Given this flexibility, each person approached the learning differently and took away something unique, which was intentional within the course.

Unlike traditional MOOCs, students had extensive interactions with the instructors in a variety of settings and modes. The feeling that "there is no teacher" which has been reported by some participants in traditional MOOCs was not evident in this course, possibly explaining the high levels of participation and satisfaction reported by participants. Despite the positive outcomes of this course, the instructors view the SOOC findings as a baseline design that should continue to be refined. Key areas considered for improvement include providing additional options for student participation, further exploration and refinement of badge integration, and a greater focus on researching learning outcomes.

Early enthusiasm for MOOCs as a model for online education has lessened or changed in recent years, but these results suggest that an open online course format holds promise for promoting, enhancing and supporting engaged learning if specific design modifications are made. While MOOCs focus on delivery of content in the most efficient ways possible to the greatest number of learners, the SOOC course model focuses on developing an interactive community of practice, multiple pathways for learning, and ongoing support.

These aspects of the SOOC are consistent with recent literature findings about MOOCs and their effectiveness (or ineffectiveness). The instructors focused on the implementation of best practices in education and accessibility before considering the tools used in this course. They modeled UDL, which exemplifies the type of technology-enabled learning recommended

by Ertmer and Ottenbreit-Leftwich, where the tools are no longer an isolated goal to be achieved separately from pedagogical goals, but are the means by which students engage in relevant and meaningful learning. These findings indicate that this new SOOC model warrants further exploration of its effectiveness for online professional learning, its effectiveness as a vehicle to demonstrate and model UDL implementation, and its appropriateness for modeling how other professional areas can provide engaging online learning opportunities.

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