

Scholarship of Teaching and Learning Grant Proposal

**Faculty Perceptions and Needs  
Regarding Application of Universal Design Principles  
in Online Courses**

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October 20, 2017

## **I. Abstract**

Online course delivery is on the rise at many higher education institutions (Allen & Seaman, 2016) including the University of North Carolina at Charlotte (UNCC). Additionally, UNCC aims to become more socially and culturally diverse. Therefore, consideration should be given to delivery of content across all modalities, including online. Universal Design for Learning (UDL) provides a set of principles to guide faculty in designing online or face-to-face courses that effectively reach a variety of learners with different levels of prior knowledge, abilities, and education levels from multiple cultural backgrounds. However, designing online courses with the UDL principles takes significantly more planning and resources. The purpose of this two-year project is to identify and prioritize needs for successful application of Universal Design principles in the design of online courses at UNCC.

II. Budget

**Budget Request for SOTL Grant**

**Year 2018-2019**

Joint Proposal?  X  Yes   No

Title of Project  Faculty Perceptions and Needs Regarding Application of Universal Design Principles in Online Courses

Duration of Project  January 15, 2018 – July 1, 2019

Primary Investigator(s)  Dr. Carl Westine & Dr. Beth Oyarzun

Email Address(es)  [cwestine@uncc.edu](mailto:cwestine@uncc.edu) & [beth.oyarzun@uncc.edu](mailto:beth.oyarzun@uncc.edu)

UNC Charlotte SOTL Grants Previously Received (please names of project, PIs, and dates)  None

Allocate operating budget to Department of  EDLD

		<b>Year One</b>
<b>Account #</b>	<b>Award</b>	<b>January to June</b>
Faculty Stipend	Transferred directly from Academic Affairs to Grantee on May 15	\$3,850
911250	Graduate Student Salaries	
911300	Special Pay (Faculty on UNCC payroll other than Grantee)	
915000	Student Temporary Wages	
915900	Non-student Temporary Wages	
920000	Honorarium (Individual(s) not with UNCC)	
921150	Participant Stipends	
925000	Travel – Domestic	
926000	Travel - Foreign	
928000	Communication and/or Printing	
930000	Supplies	
942000	Computing Equipment	
944000	Educational Equipment	
951000	Other Current Services	
	<b>Year One Total</b>	\$ 3,850

		<b>Year Two</b>
<b>Account #</b>	<b>Award</b>	<b>July to June</b>
Faculty Stipend	Transferred directly from Academic Affairs to Grantee on May 15	\$ 3,850
911250	Graduate Student Salaries	4,100
911300	Special Pay (Faculty on UNCC payroll other than Grantee)	
915000	Student Temporary Wages	
915900	Non-student Temporary Wages	
920000	Honorarium (Individual(s) not with UNCC)	
921150	Participant Stipends	200
925000	Travel - Domestic	
926000	Travel - Foreign	
928000	Communication and/or Printing	
930000	Supplies	
942000	Computing Equipment	
944000	Educational Equipment	
951000	Other Current Services	
	<b>Year Two Total</b>	\$ - 8,150
	<b>GRAND TOTAL (Year One + Year Two)</b>	\$ - 12,000

The budget include summer stipend support for two faculty members, one in each summer, and support for a graduate student at 20% time for one year. In the first summer Dr. Carl Westine will be utilizing the survey data to inform the collection of data for document review and follow-up interviews, as well as the analysis and evaluation of select documents (i.e., online courses). During the first summer and throughout the academic year, both faculty will work with a graduate student to conduct course reviews, interview, and analyze data from a purposeful sample of UNCC faculty in order to more comprehensively document decision-making and insight with respect to the application of UDL principles and assess needs. In the second summer Dr. Beth Oyarzun will be spent compiling information from the analysis and preparing next steps toward securing external funding for the facilitation of professional development in the area of UDL.

Additional budget items include participant stipends as incentives for completing the online survey and follow-up interviews. The incentives will be structured as a lottery with the specific prizes chosen as useful tools to enhance online course delivery. The incentives include an HD web camera (e.g, LogiTech - \$49.99 + tax and shipping) and noise cancelling headset with microphone (e.g., LogiTech - \$39.99 + tax and shipping). The set containing a camera and headset will be awarded for participation to one survey respondent and one interview participant at the conclusion of the data collection period.

Has funding for the project been requested from other sources?  Yes  No.

If yes, list sources.

### **III. Letters of Support**

See attached letter of support from Dr. Ellen McIntyre, Dean of the Cato College of Education.

An additional letter of support has been provided by Dr. Lynn Ahlgrim Delzell.



UNC CHARLOTTE  
CATO COLLEGE of EDUCATION

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October 20, 2017

To whom it may concern:

I am pleased to recommend the Scholarship of Teaching and Learning Grant proposal, *Faculty Perceptions and Needs regarding application of Universal Design Principles in Online Courses*. This project has the potential to impact the quality of online teaching and learning at UNCC and nationally. Led by Drs. Westine and Oyarzun, this project seeks to examine faculty interest, knowledge and current application of UD principles in online course design. They will share the information gained with faculty, staff, and administrators by offering reports, discussions and workshops both internally and externally. Our campus values quality online learning experiences and have adopted Quality Matters to lead in that effort. Supplementing Quality Matters with UDL principles aims to further enhance quality by ensuring online courses for designed to ensure types of learners who are connecting with multiple types of devices and network speeds have the opportunity to succeed.

This project will also enhance collaboration between the Cato College of Education, Distance Education and the Center for Teaching and Learning. I highly recommend this project. It will assist in adding to our knowledge base about quality online teaching and learning. The project faculty are well equipped to carry out the project while informing stakeholders both internally and externally. I am fully supportive of this effort.

Sincerely,



Ellen McIntyre  
Dean  
Cato College of Education



The UNIVERSITY of NORTH CAROLINA at CHARLOTTE

An Equal Opportunity/Affirmative Action Employer





October 19, 2017

SoTL Grants Committee  
Center for Teaching and Learning  
[ctl@uncc.edu](mailto:ctl@uncc.edu)

Dear Committee Members:

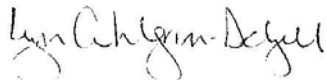
I am writing this letter in support of the SoTL proposal, *Faculty Perceptions and Needs regarding application of Universal Design Principles in Online Courses*, submitted by Dr. Carl Westine and Dr. Beth Oyarzun from the Department of Educational Leadership in the Cato College of Education at University of North Carolina Charlotte. As an educational research faculty in the Cato College of Education that often works with researchers in Special Education, I can attest to the importance of Universal Design for Learning for all students, particularly those with special needs. Additional research to document practice in this area is most certainly needed.

Each year, in my RSCH 8112 Survey Research Methods course, I seek external researchers that are willing to serve as clients for the students in my class. The students work in concert with the faculty clients to develop, administer, and analyze a survey during the course. These partnerships provide an excellent opportunity for applied learning, and enable the clients to initiate a project they may otherwise not have been able to commence. As part of this process, faculty agree to lead the submission of the research proposal through the University of North Carolina Charlotte Institutional Review Board prior to or early on in the semester. This enables the students to complete the full survey administration during the course. I have discussed the project with Drs. Westine and Oyarzun and feel it is appropriate and well suited for the students in my class, many of whom are likely to be enrolled in a Special Education degree program. They have agreed to seek IRB approval immediately to meet this requirement. Recognizing this project is just the first piece of the broader mixed methods needs assessment they have planned, I see it as an integral step, that I am happy to support, and have my students support. As I will already be compensated for my contributions to the effort through teaching, I have requested not to be included as a collaborator on the grant budget, but will fully support the effort to the extent that I can within the structure of the RSCH 8112 course.



I hope you will agree with me that this project plays an important role in documenting and ultimately informing faculty about Universal Design for Learning within the UNCC community, and has the potential to inform research practice in this area well beyond the university. Please let me know if you require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Lynn Ahlgrim-Delzell". The signature is written in a cursive style with some loops and flourishes.

Lynn Ahlgrim-Delzell  
Professor, Department of Educational Leadership  
Cato College of Education

#### **IV. Project Narrative (2493 words)**

##### **A. Specific Aims**

1. The overall purpose of the project is to identify and prioritize needs for successful application of UDL principles in online course design at UNCC.
2. The specific objectives to be achieved are as follows:
  - i. Assess faculty knowledge of and interest in the application of UDL principles in online course design at UNCC.
  - ii. Determine the current state (Summer 2017 – Spring 2018) of application of UDL principles in online course design at UNCC.
  - iii. Identify gaps between established UDL principles and the current state of application at UNCC.
  - iv. Make recommendations for resources and future professional development with respect to UDL principles at UNCC.
3. The specific research questions to be answered as a result of the project are as follows:
  - i. How much value do the faculty at UNCC place on the design and application of principles of UDL?
  - ii. What are the most pressing needs for UNCC in order to adhere to the design and application principles of UDL?
4. Rationale for the proposed project is grounded in the UNCC mission. Within the UNCC mission statement is a declaration that the university will invest in infrastructure to support accessible learning for the broader UNCC

community (2014); two key priorities at UNCC are a strategic aim to be accessible, as well as to establish “an environment that values social and cultural diversity, free expression, collegiality, integrity, and mutual respect.” These priorities align with the concept of UDL. Thus, it is essential that the university invest in ongoing research and evaluation efforts which strive to further implement UDL principles in practice.

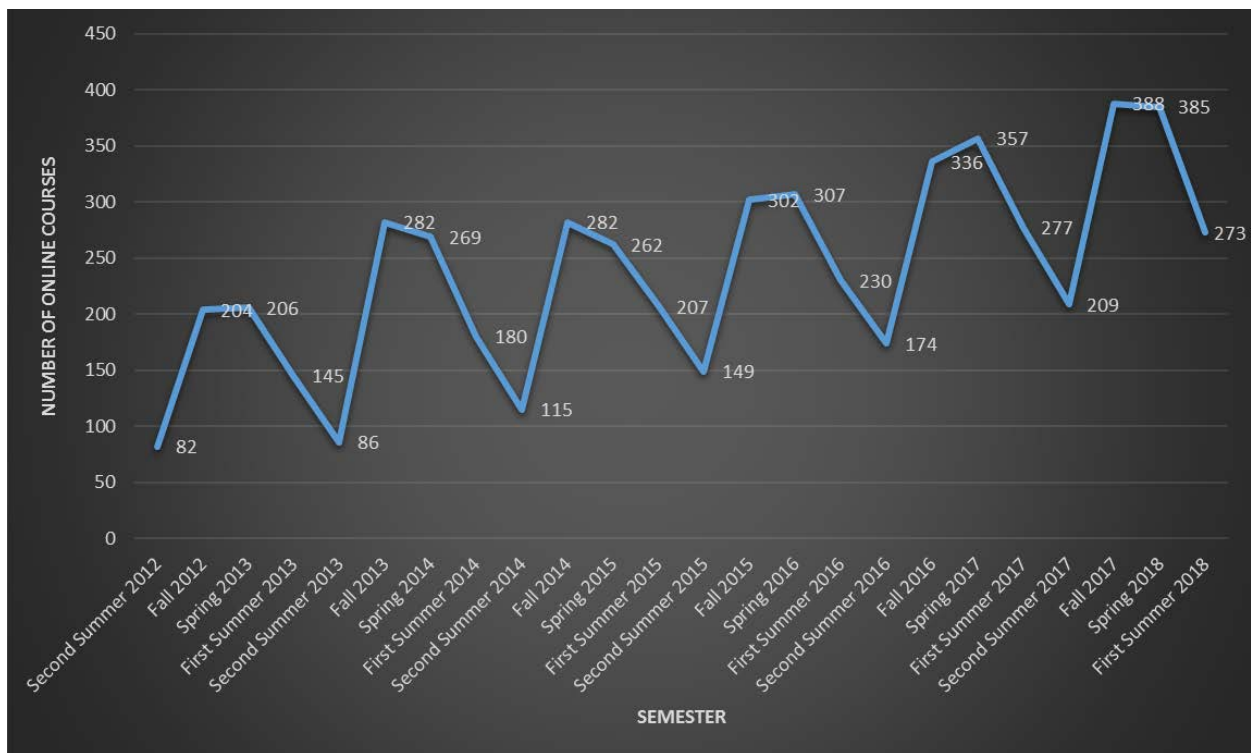
5. This study will impact undergraduate and graduate teaching and learning through the prioritization of activities the university can take to increase application of UDL in online course delivery. As UNCC aims to become more socially and culturally diverse, it must consider the delivery of content across all modalities, including online learning. Conducting a needs assessment with respect to UDL provides a baseline from which future studies of strategic interventions can demonstrate gains in adherence to UDL principles over time.

## **B. Literature Review**

Online courses and programs have continued to rise over the past 13 years. According to Allen and Seaman (2016) more than a quarter of higher education students are enrolled in at least one online course. This is a growth trend that has also occurred at UNCC, where the number of online courses has more than doubled in the past five years, as shown in Figure 1. Part of UNCC’s mission statement (2014) promises “an *accessible* and affordable *quality* education that equips students with intellectual and professional skills, ethical principles, and an international perspective”. To ensure students are able to access high quality online courses UNCC has

adopted the Quality Matters (QM) rubric and process. The QM process requires online course to be collaboratively reviewed by three peers using the rubric as their guide. The rubric is based on eight general standards: course overview and introduction, learning objectives, assessment and measurement, instructional materials, course activities and learner introduction, course technology, learner support, and accessibility and usability (Quality Matters, 2015).

Figure 1. Number of Online Course Sections across Time



UNCC’s mission (2014) also promises to “provide a robust intellectual environment that values social and cultural diversity, free expression, collegiality, integrity, and mutual respect.” Three of QM’s standards address this mission: (1) The assessment instruments selected are sequenced, varied, and suited to the learner work being assessed, (2) variety of instructional materials is used in the course, and (3) the course provides alternative means of access to course

materials in formats that meet the needs of diverse learners. However, ensuring that assessment and instructional materials are varied and accessible does not automatically ensure that the environment values the things promised in this mission. The UDL principles were created to ensure that all individuals have equal opportunities to learn (CAST, 2011). There are three principles: (1) representation, (2) engagement, and (3) expression. Representation refers to how information is designed and delivered to the class. Engagement refers to how learners interact with course materials, each other, and the instructor. Expression refers to how learners express mastery of course materials. UDL recommends having various forms of all three principles.

The benefits of the use of UDL are well documented in the face to face classroom. For example, Al-Azawei, Serenelli, and Lundqvist (2016) conducted a content analysis of twelve studies regarding the adoption of UDL principles from 2012-2015. Ten of the studies were conducted in traditional or blended classrooms and two studies were conducted in the online environment. Eleven of the twelve studies yielded positive results from implementing UDL principles. The two studies in the online learning environment were included in the group that yielded positive results. The authors suggest material designed with UDL principles can effectively reach a large variety of learners with different levels of prior knowledge, abilities, and education levels from various cultural backgrounds.

There is less research on the benefits of the use of UDL in online course design. Robinson and Wizer (2016) integrated the QM and UDL frameworks into the development of online courses to create a set of guidelines to create quality online courses. The recommendations include: (a) begin with a small amount of content, (b) recruit students to make change decisions, (c) provide various methods to access the content, (d) provide choices for

students to demonstrate understanding, and (e) provide multiple content engagement methods. There are similarities between these recommendations and the QM standards mentioned above. However, the interpretation or application of the QM standards can be different. For example, an instructor may apply the use of “a variety of instructional materials” by using different instructional materials in each module such as a lecture video in module 1, a research article in module 2, etc. Instead, UDL recommends “providing various methods to access the content”. This implies having the same content represented in multiple ways which differs from having a variety of instructional materials.

Tobin (2014) argues that applying UDL principles will help increase retention rates and ease technical problems with accessing materials given the rise in use of various devices to access course content. For example, if a student is traveling and has limited wifi connection and only a mobile device, they could opt to access the text version of the content instead of a lecture video that may not be readily accessible given the circumstances. He recommends five strategies for faculty to apply UDL principles to online course design: (1) Build the text foundation, (2) Create video and audio alternatives, (3) allow students to express their understanding of material in their own way, (4) break content into chunks, and (5) use tools that are user friendly. Roa, Tanners, and Manoa (2011) confirmed that students value multiple options to access content and options to demonstrate mastery of content throughout the course.

The purpose of this needs assessment is to explore UNCC campus needs regarding the mission statement and supplementary application of the UDL principles in the online learning environment. To that end, the faculty knowledge of and interest in the application of UDL principles in online course design will be assessed and the current state of UDL principle

application in online course design will be determined. The data will be used to identify knowledge gaps and professional development opportunities.

### **C. Methods**

The research effort will be carried out using a needs assessment framework developed by Kaufman and Guerra-López (2013). Specifically, the aim is to use a mixed-methods approach to identify gaps between current results and desired results. With a focus on UDL in the online community, we seek to engage in survey research to broadly describe faculty knowledge of UDL principles and application within their online courses and seek permission to engage in more in-depth investigation. We intend to review a purposeful sample of online faculty courses to verify application and use follow-up interviews more comprehensively assess faculty interest, decision-making, and associated resource needs.

Kaufman and Guerra-López (2013) outline five elements (*inputs, processes, products, outputs, and outcomes*) in their Organizational Elements Model. The focus on this research will be on the micro (*products*) needs assessment level, which considers the organizational accomplishments and contributions (competence of employees and courses delivered).

#### **Population of interest**

We are interested in assessing the collective needs of UNCC with respect to providing instructional practices in accordance with UDL. UDL is central to online or multi-modal instructional delivery, which could exist within a particular course, or through collective course offerings within a department. Thus, the target population of interest is the faculty of UNCC who teach in an online or hybrid capacity.

## **Sampling Frame**

Not all courses are offered each year, and not all faculty teach courses online every year. However, due to turnover in faculty positions, extending focus beyond a one-year time frame would significantly restrict our response rate since faculty teaching these courses may not be employed at UNCC. Additionally the focus of a needs assessment is captured in the context of the present, thus creating a list of courses (and associated faculty) that have been offered online between Summer 2017 and Spring of 2018 will best balance these competing issues. In order to address multiplicity of courses among faculty, each faculty participant will be asked to answer questions about the course they feel is the most well developed online course they taught during the specific time-frame.

Responses to the survey will be used to rank faculty according to their level of self-report application of UDL principles. Document review and follow-up interviews will be performed using a subset of responses from faculty that agree to participate further, with the goal of achieving maximum variation in adherence to UDL.

## **Instrumentation and Data Collection Procedure**

Data collection will be conducted in two phases. The first phase will involve online survey research to identify UDL knowledge and application, seek permission to access to online courses, and rank faculty with respect to self-report compliance with UDL. The second phase will involve document review of online courses and follow-up interviews of associated faculty.

In the first phase of the study, the online survey will be developed and administered by students as part of RSCH 8112 in Spring 2018, which is being taught by Dr. Lynn Ahlgrim-



Delzell (see attached letter of support.) During the course, Dr. Westine and Dr. Oyarzun will consult with students in the course to ensure the appropriateness of the sampling frame, instrument items, and data collection procedures. Surveys will be distributed using SurveyShare during the spring 2018 semester. It is a course expectation that students provide a descriptive analysis of the collected data. The survey will also be used to seek further participation in the second phase of the study involving online course review and follow-up interviews.

For the second phase, we seek to assess the motivations surrounding UDL principles are being implemented in the course design and delivery. Two researchers will review each course using a checklist of UDL principles to score the courses for compliance. Additionally, follow-up interviews will aim to better understand faculty interest and decision-making regarding compliance or a lack of compliance with applying UDL principles in their courses.

### **Analysis**

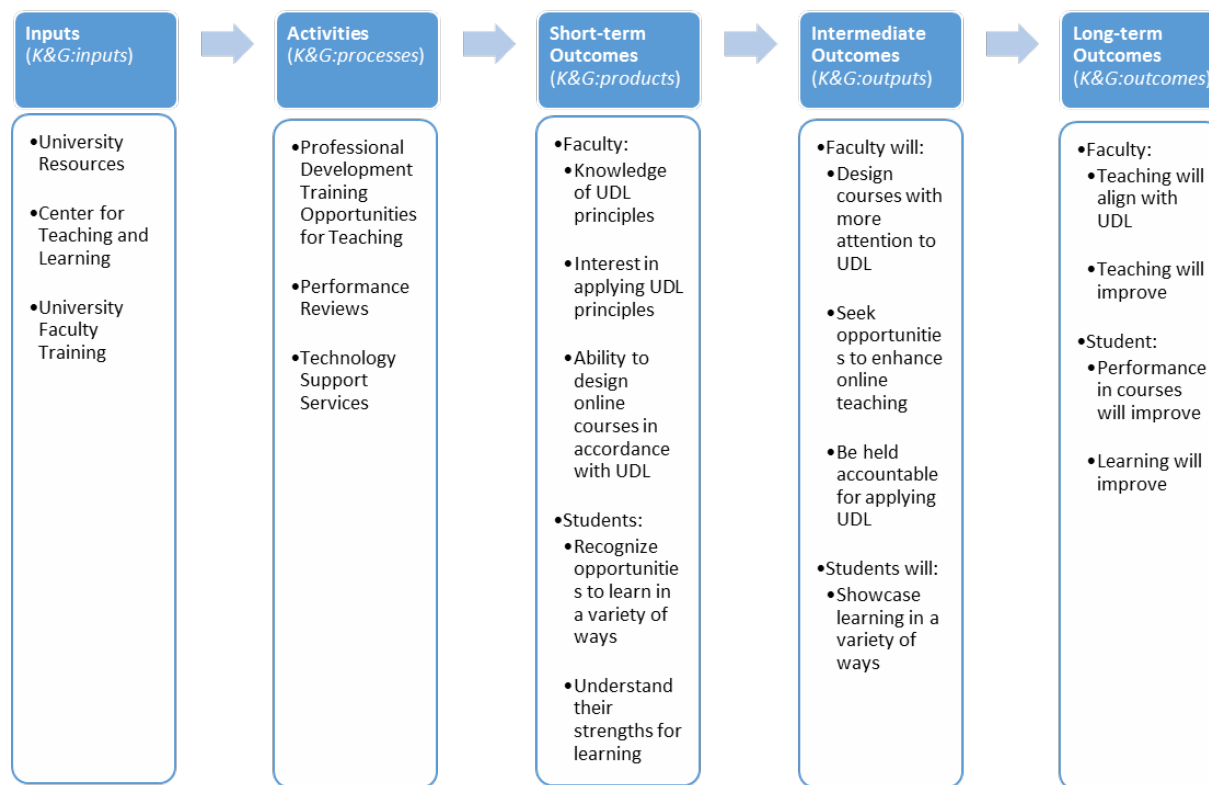
As noted above, descriptive results of the survey will be provided by students in the RSCH 8112 course. Additional relational analyses (e.g., chi-square analyses) will be used to identify relevant associations that may be predictive of UDL interest and application, which can be explored in the interviews. Document review of participating online courses will involve the application of a checklist, and tables showing the frequency that the principles are applied will be produced. Follow-up interviews will be recorded and transcribed by the graduate research assistant. Qualitative content analysis will be performed to explore themes. The themes expected to be examined in the interviews include the process of faculty interest and motivation, how faculty approached UDL, the availability of resources, and challenges/barriers faced.

### **D. Evaluation**

The aim of this project is to improve student learning through the expansion of adherence to UDL principles in online course delivery (see Figure 2 below for a proposed model of how to influence UDL application.) An initial step in this processes is to understand the current state of UDL application, which we aim to accomplish with this effort. By employing a Utilization-focused evaluation (UFE) approach (Patton, 2008) our efforts to documenting the current state of short-term outcomes (Kaufman and Guerra-López [2013] - *products*) will help us engage key stakeholders in order to better identify and prioritize programming (*inputs* and *processes*) to address the identified gaps limiting faculty in the application of UDL, an intermediate outcome (*outputs*).

Thus, evaluation of these efforts should address both the procedure and expected outcomes. To evaluate the procedures of this project we will determine the extent that we are able to execute the planned research methods effectively. Response rates for the initial survey and follow-up interviews will be compared to similar studies. It will be important that participation broadly encompasses the university faculty community to promote generalization. Furthermore, the expectation is that the data generated will be useful in identifying gaps, and developing recommendations that will lead to changes in outcomes (*products*, *outputs*, and *outcomes*). The extent that we are able to generate buy-in and engage stakeholders is fundamental to the UFE approach and improving the utility of a needs assessment to impact change (Yarbrough, Shulha, Hopson, and Caruthers, 2011). Within the timeframe our efforts will be evaluated by considering in context the quality and quantity of our research products (e.g., presentations, publications, workshops.)

*Figure 2. Proposed Logic Model for Impacting*



## E. Knowledge Dissemination

Findings will be disseminated in multiple ways. First, findings in the form of a report with follow-up discussion will be shared with interested internal stakeholders such as university administrators, the center for teaching and learning (CTL), and the office of distance education. Additionally, Drs. Westine and Oyarzun would present at the annual SoTL Showcase at UNCC and offer UDL workshops on UDL techniques for faculty through UNCC CTL. Second, the findings will be shared externally through presentation at a national conference (e.g., Online Learning Consortium, Quality Matters, or Lilly Conference), and through publication with

relevant journals (e.g., *Online Learning Journal*, *Online Journal of Distance Learning Administration*, or *Quarterly Review of Distance Education*.)

**F. Human Subjects**

UNCC Institutional Review Board (IRB) approval will be obtained prior to data collection to ensure protection of human subjects.

**G. Extramural Funding**

We are not seeking simultaneous support for this research effort, but plan to use SoTL grant support as leverage for seeking funding for the provision of resources and future professional development training to the UNCC faculty community.

**H. Timeline**

<b>Timeline</b>	<b>Research Activity</b>
Spring 2018	<ul style="list-style-type: none"> <li>● Survey Development</li> <li>● IRB approval</li> <li>● Survey Data Collection</li> <li>● Survey Data Analysis</li> </ul>
Summer 2018	<ul style="list-style-type: none"> <li>● Course Content Analysis</li> </ul>
Fall 2018	<ul style="list-style-type: none"> <li>● Faculty Interview Data Collection</li> <li>● Faculty Interview Data Analysis</li> </ul>
Spring 2019	<ul style="list-style-type: none"> <li>● Internal and External Knowledge Dissemination</li> </ul>
Summer 2019	<ul style="list-style-type: none"> <li>● Reports</li> <li>● Grant Writing</li> </ul>

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