



TEACHING IN COMMUNICATION SCIENCES AND DISORDERS DURING COVID-19: A TUTORIAL

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— ABSTRACT —

During the first quarter of 2020 universities across North America quickly transitioned from in-person on-campus instruction to remote learning. While many instructors familiar with the pedagogy and practice of distance education were able to make the transition with limited disruption to their planned educational content other instructors struggled. Moving forward to the fall 2020 semester instructional faculty are facing an unclear academic landscape. It is unclear if there will be a return to in-person instruction, a continuation of remote learning/distance education or some combination thereof. This brief tutorial provides information on the pedagogy of teaching beyond in-person instruction and a roadmap for instructors to create academic content that can be provided under three different scenarios, in-person instruction, hybrid learning or remote learning.

Keywords: course design, hybrid, flipped, blended instruction

By March of 2020 SARS-CoV-2 (COVID-19) was declared a global pandemic (WHO, 2020). Subsequently many universities in the United States closed, finishing the term via remote learning (Crawford et al., 2020). The educational continuity provided following the transition to online learning is described by Hodges et al., (2020) as emergency remote teaching (ERT). ERT is a temporary shift in instructional delivery during a crisis situation. The temporary nature of ERT implies the online methods will terminate once the emergency has passed (Hodges et al., 2020). The content provided during ERT was not designed for that purpose. Thus, online presentation of content designed for in-person delivery may negatively affect student learning. Additional research

in the coming months and years will evaluate the effect of COVID-19 and ERT on educational outcomes during the first half of 2020.

In contrast to ERT, online education is purposefully designed (Hodges et al., 2020). The robust pedagogy of online education includes careful instructional planning and design of systematic methods and models to create original and curated content for student learning (Cennamo & Kalik, 2019). High quality online education has five primary components a) authentic and relevant course materials connected to practice in the discipline b) a variety of multimedia resources c) an opportunity for students to create digital content individually and collaboratively d) an opportunity for students to regularly reflect on their

learning e) and a clear explanation of the purpose of the activities, the technologies and the assessments that occur during the course (Martin et al., 2019).

As instructional faculty prepare for a return to campus there is no consensus as to whether courses initiated as face-to-face will remain such for the entire academic term. Further, due to the guidelines for social distancing of 6ft (2 meters), the recommended use of face coverings and recommendations to not share items (Pearce, 2020) it may be difficult for in-person instruction to occur in the manner practiced pre- COVID-19. These factors represent a problem for instructional faculty as they design courses for the upcoming term. A reliance on in-person content delivery may leave the unprepared instructor facing a second episode of ERT. There are however, three methods to prepare for and resolve this problem. One is to design a blended course, the second is to design a hybrid course. The third option is to design a fully online course.

This text will provide a brief description of the pedagogy behind these three instructional models followed by a description of the pedagogy and purpose of the flipped classroom. The purpose of this work is to provide discourse regarding the implementation and delivery of course content during the time of COVID-19. The text concludes with an example of how a graduate level course can be structured using the provided techniques. The techniques presented here are suitable for use with both graduate and undergraduate courses.

Instructional models blended, hybrid and online Courses

In a blended course some class sessions are face-to-face, and others are comprised solely of online content. The online materials presented in the blended course are used to support and supplement, not replace the face-to-face instruction. In a hybrid course, the learner attends in person classes, but receives new material as online content. In the hybrid course the online content is not a supplement. It replaces portions of the content the instructor would typically provide. The hybrid course can occur entirely in a virtual environment with learners attending live lectures using an online meeting platform (e.g. Zoom, WebEx, Teams etc.,). The final method, online learning is a contrast to both blended and hybrid learning.

The best online learning experiences include well planned components of the RASE model *resources* (R) expertly curated digital resources such as educational videos, e-books, simulations and interactive multimedia content used to enhance the instructor provided lectures; *activities* (A) instructor designed

opportunities for learners to apply the knowledge they have gained and create products that demonstrate their learning; *supports* (S) institutional technological support for the learning management system, along with student-to-student, student-to-content and student-to-instructor support from page navigation to trouble shooting; and *evaluations* (E) explicit opportunities for student comments on activities and assignments through informal (what did you learn today responses to activities) and formal faculty designed questionnaires (Churchill, King, & Fox, 2013). The online learner consumes prepared lectures and curated modular content that is self-paced and self-contained. The learner may demonstrate learning mastery through traditional examination or by creating practical content. The online instructor remains an integral part of the learning experience by grading assignments and providing feedback on work products, commenting on and directing student learning, and communicating with students individually or in small groups over the course of the instructional term.

The Flipped Classroom

Regardless of the type of instruction, face-to-face, blended, hybrid or fully online, in the traditional classroom model the learner listens to lectures during the class period and completes the homework or additional learning assignment outside of the classroom. Rutherford & Rutherford (2013) describe the flipped classroom this way. Prior to class the learner consumes the instructional content and completes a pre-assessment of the presented material. The instructor evaluates the learner's responses and designs activities to target weak or missing foundational concepts. The activities are completed during the class period with instructor supervision.

Learners work individually or in small groups to develop the specific knowledge and apply the required skills to demonstrate mastery of both the theoretical concept and its practical application. The learner turns in the assignment at the end of class for additional comment and instructor feedback. The guided in-class practice is sometimes considered a superior method of learning compared to the unguided homework practice. Learning research suggests the flipped classroom is successful due to three key components a) the learner develops a deep foundation of factual knowledge before b) practicing the newly learned knowledge in a conceptual framework and c) organizing the new knowledge through guided practice that facilitates learner retrieval and application of the new material (Bransford, Brown & Cocking, 2000). In short, during the instructor directed class activity learner errors and content misconcep-

tions are redirected along the intended path to the practical application of the novel concept. Instructor and learner discussions of alternative options occur in real time as the learner follows a guided model to the desired result.

Create modular learning content

The instructor seeking to create a course that can be effectively and efficiently moved to a hybrid or online presentation model without resorting to ERT will need to design the course following a modular design. Donnelly & Fitzmaurice (2005) describe the three modular course design components:

1. Define the learning outcomes
2. Choose the methods (teaching content, learner activities) required to attain the outcomes
3. Assess student learning and gather student feedback on the learning process.

By applying these components to a class in Communication Sciences and Disorders, the instructor can design a course that could be implemented in a variety of instructional formats. The next section provides a brief step by step example of course design for a graduate level Articulation and Phonological Disorders course that has been taught as a face-to-face course, an online course and a hybrid course. The course is designed as a flipped classroom with learners consuming content prior to the class meeting, completing guided practice during the class meeting and creating an independent project each week to demonstrate mastery of content.

Designing the course

Step 1. Define learner outcomes: It is estimated that between 2.3% to 24.6% of school-aged children have speech delay or speech sound disorders (Black, Vahratian, & Hoffman, 2015; Law, Boyle, Harris, Harkness, & Nye, 2000; Shriberg, Tomblin, & McSweeney, 1999; Wren, Miller, Peters, Emond, & Roulstone, 2016). Of those identified with a speech sound disorder (SSD) a majority are between the ages of 3 -10 years. More boys than girls are identified with SSD (Shriberg et al., 1999; Wren et al., 2016) and a higher proportion of African American children 5.3% than White children 3.8% are identified (Shriberg et al., 1999). Finally, children identified with poor speech sound production skills in kindergarten have a 2.5 times greater likelihood of having a reading disorder than peers with no history of SSD (Peterson, Pennington, Shriberg, & Boada, 2009). Therefore, a learner who is competent in the diagnosis and treatment of SSD must know the following.

- A. Typical Acquisition of Speech
 - a. Universals of speech acquisition
 - b. Ages and stages of speech acquisition
 - c. Phonetics, phonemes, allophones
- B. Regional and socio-ethnic variation in speech
 - a. Minimal pairs, open vs closed syllables, onset, rime and word meaning
 - b. Phonetic variation and homophones
 - c. Morpho-phonology, stress, sub- and supra-segmental aspects of speech
- C. Speech Sound Disorder versus speech difference
 - a. Circle back to ages and stages
 - b. Phonological processes
 - c. Non-linear phonology and mapping phonology to orthography for literacy

The content presented in the previous paragraphs would have been provided to the learners in a brief 5-minute video recorded lecture along with the text you see above. At the conclusion of the lecture the instructor would provide a video tour of the online content. This tour is the same whether the students are in a face-to-face class or fully online because all of the content is housed in the same online location. The simple outline presented above shows three core concepts and the three supporting components identified as the foundational course knowledge. This outline serves as the homepage for the learners. Clicking on the first word of each line takes the learner to the next level of content. All outside readings and assignments are linked to this outline as illustrated in the next section. The only difference between the text presented here and the learner's online content view is the omission of due dates for assignments and a course calendar.

Step 2. Choose the methods (teaching content, learner activities) required to attain the outcomes

To demonstrate competence in this course the learner must demonstrate knowledge of the following concepts. First that all spoken languages are composed of sounds that distinguish word meanings e.g., /pit/ and /bit/ are different words; second the meaningful contrasts of those sounds is relative to that language e.g. /pit/ is actually produced as /p^h it/ by native English speakers. The little /h/ is the puff of air (aspiration) native speakers learn without thinking about. Leaving the puff of air off will make the /p/ sound in /pit/ sound like /b/ as in /bit/ to a native speaker. The final required concept is knowledge of the rules of sound order and syllable creation. These

rules are learned in the same relative sequence over time by all children regardless of their native language (Ladefoged & Johnson, 2014). For example, vowels are acquired first, followed by stops and nasals. These are language universals (Ohala, 1980).

The textbook chosen for this course provides learners with general knowledge on these concepts however mastery is demonstrated through applied practice activities. Instructions for the activities are provided along with an example. Class discussion and questions are an integral part of the in-class work. Learners may work independently or in small groups (3-5). In-class work can be completed online via a web meeting application. The next section provides examples. Learners complete the italicized activities prior to the class meeting and the bolded activities during the class meeting.

Typical Acquisition of Speech

- a. Universals of speech acquisition (*Review instructor provided lecture on the International Phonetic Alphabet (IPA) -15 minutes; Go to the online Interactive IPA and listen to the production of the vowel sounds as produced in the words heed, hid, hayed, head, had, hod, whod, hood, howed, hawed, hoyd, hide, heard. Are these General American English productions consistent with your own? Explain why or why not. Based on your current knowledge of articulation can you describe why your productions are the same as or different from the ones you heard on the site. Upload your answers to your online notebook.*)
 - i. **Use the International Phonetic Alphabet (IPA) to describe the order of speech sound acquisition for the sounds of General American English from front to back and top to bottom of the IPA chart**
 - ii. **Describe, verbally or in writing, the articulatory production of the sound /u/ from lungs to lips**
- b. Ages and stages of speech acquisition (*Review instructor provided lecture on the ages and stages of speech acquisition vegetative sounds to first words-20 minutes; Watch video of 6 month old typical child and 6 month old child with pervasive developmental disorder participating in an interdisciplinary assessment [Speech, Occupational Therapy, Physical Therapy]; Read Liberman and Mattingly, 1985 and Galantucci, Fowler & Turvey, 2006); In 500 words or less compare the arguments proposed by each and determine based on your present level of knowledge who presents the more compelling argument. Upload your APA formatted document to your online notebook.*)

i. **Using the IPA as a guide describe, from the perspective of the Motor Theory of Speech, why the word for mother and father in most languages of the world is composed of a front stop or front nasal and a lax vowel (e.g. mama, dada)**

ii. **Using the Motor Theory of Speech as a guide, describe why the late 8 sounds of English are difficult for some children to acquire.**

c. Phonetics, phonemes, allophones (*Review instructor provided lecture-15 minutes on sounds and syllables, phonemes and allophones; Watch video on phonetic transcription from the Virtual Linguistics Campus-12 minutes; Provide an example of three phonemes and their allophones. Upload your examples to your online notebook.*)

i. **Describe and provide an example of broad transcription and narrow transcription**

ii. **Listen to 2-minute recording of a child speaking and transcribe what you hear**

iii. **Listen to a 2-minute video of a child speaking and transcribe what you hear**

iv. **Compare and contrast your impression with online (live transcription), a recording and a video? What are the benefits and drawbacks of each version? Share your results with a peer in class. How are the results the same, different?**

The material presented in these modules follows the RASE recommendation for online learning, *resources, activities, support, evaluation*. Resources are available on each page which contains clickable links, so the learner does not have to navigate away from the page to link to any of the content. Activities are described above. Support is provided by the university computer services department. Learners have access to a 24-hour help desk when they are away from campus. During the class period, support is also provided by the instructor and peers. Evaluation of student learning and preferences is discussed below.

Step 3. Assess student learning and gather student feedback on the learning process.

As illustrated in the italicized portion above each student completes some fact-based activity prior to the start of class. The activities are turned in 24 hours prior to class, providing the instructor time to evaluate the learner knowledge and to modify, if necessary the classroom learning activities. All the learning activities presented above can be completed virtually or in a face-to-face setting.

The first component in assessing learning is to determine what knowledge students are bringing to class. The first module, universals of speech acquisition and the IPA, requires the learner to have some background information on phonetics and speech acquisition. This knowledge is foundational. Weaknesses and incomplete or error learning must be remediated prior to moving forward as the remainder of the course is scaffolded from this foundational knowledge. Module 2 requires learners to integrate knowledge from the Motor Theory of Speech to the information in Module 1. Finally, Module 3 requires the student to recognize how their perceptions and those of their peers influence each other's judgment of accurate speech sound production. By evaluating all three of these skills: the learner's knowledge of the IPA and child development; the learner's ability to acquire and apply an unfamiliar theory; the learner's ability to recognize their linguistic bias (the phoneme and allophone exercise), the instructor has an idea of what the student's already knew and what they need to learn to be successful in the course. This evaluation of student learning is not a static test of what the student can recall. It is an evaluation of their ability to use all the available resources to answer theoretical and practical questions. These are the exact tasks the learners will perform as practicing clinicians.

The final component of the three modules series listed above is the comparison of two videos. One is a recording of a typically developing and the other is a child with SSD. Over the course of a week the learners complete a full transcription of both children participating in standardized and non-standardized speech production tasks. Learners write a brief report of the results and make a diagnostic statement of the presence or absence of SSD. The brief reports are graded based on a standardized rubric provided to all students at the beginning of the course. Testing examinations are a component of this course. Learners complete timed tests on material consistent with the PRAXIS examination.

The final component of this course is learner feedback to the instructor. At the conclusion of each class session learners are required to complete an online check-out ticket that asks the following questions: The activity that most challenged my thinking today was _____ because _____. The activity that I did not find useful was _____ because _____. The thing we did not do that I believe would help my learning is _____ because _____.

From the material we have covered so far I am most concerned about my knowledge of _____ because _____. The check-out tickets provide the student an opportunity to reflect on their learning and share the most and least successful aspects of the learning experience.

Conclusion

The information provided in this brief tutorial is designed to provide instructors with a roadmap to design a modular course that can be presented in a face-to-face, a blended, a hybrid or an online format. The tutorial presented for an example a flipped graduate level Articulation and Phonological Disorders course from a Communication Sciences and Disorders curriculum. The tutorial presented the five key components to effective online teaching using the RASE model, providing appropriate **resources**, creating learning **activities**, providing instructional and technological **support** and **evaluating** learning; and the three key alignments required to create a modular course, defining learning outcomes, choosing the teaching and learning methods, assessing student learning and gathering student feedback. By combining these instructional components, the instructor tasked with creating course content during the time of COVID-19 will have the necessary tools to provide the course content with fidelity regardless of the mode of instruction.

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