

Listening to the Learner: Graduate Teacher Education Students' Preferences for Asynchronous Content Delivery

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Abstract

The research reported in this paper seeks to contribute to refinement of the definition of "best instructional practice" as it relates to delivery of asynchronous online course content to teacher education graduate students by answering the question, "What do teacher education graduate students perceive to be the best online delivery methods and timing for maximally effective learning of asynchronous content?" A convenience sample of 83 graduate students in different sections of a fully online, asynchronous graduate course was surveyed with 80 complete responses (96.4% response rate). Five different methods of asynchronous instructional content delivery were provided throughout the courses. Respondents indicated which methods most effectively facilitated their learning, the ideal length of time each method should last in a single sitting, and rationales for their responses. Survey findings suggest that even though the distance between instructor and student may be greater in the online learning environment, respondents highly value focused instructor interpretation of content as a crucial aspect of any delivery method. Additional implications to construction and delivery of asynchronous online content are presented.

Keywords: online pedagogy, graduate teacher education, asynchronous course delivery, instructional strategies, learner perspectives

Introduction

Best practice in teaching happens when teachers artfully and effectively combine what they know about their students, the curriculum, and the conditions under which teaching and learning will occur (Smith, 2012). Traditional conceptions of "best practice" (particularly for mastery learning) in face-to-face (F2F) classrooms include such instructional strategies as lecture, discussion, feedback to students, and individualization of content delivery (Good & Brophy, 1997, p. 313). In F2F settings, if instructional modalities or content delivery direction within the class should change, the instructor is able to sense this and make changes immediately. Within the past several years, the advent of internet-based online teaching and learning has created challenges for instructors relative to this definition. While the practice of offering online courses is practically expedient and economically profitable for institutions as well as convenient for adult learners, this trend creates an instructional atmosphere in which learner and teacher are increasingly distant from each other. In an asynchronous online learning environment, the instructor is no longer able to monitor the class and adjust approaches during content delivery in real time. Instructors making the shift from F2F instruction to the online environment must change many of their approaches to pedagogy and to a greater degree, their schema about what constitutes "best practice" in this new instructional environment. Those who are accustomed to the F2F teaching and learning environment no longer have the luxury of beginning a class with a chosen delivery method and reading the facial expressions and body language of the students as the class progresses to gauge attention, confusion, and learning. They no longer have the ability to respond to student questions and determine the effectiveness of the delivery modality and strength of the learning in the moment.

Because online instruction is fast becoming a mainstay for delivery of courses in graduate level teacher education, this study seeks to explore a redefinition of what constitutes best practice from the learner's

perspective by asking, "What do teacher education graduate students perceive to be the best online delivery methods and timing for maximally effective learning of asynchronous content?" In the context of teacher education, this study explored the question by presenting asynchronous course content to graduate teacher education students in a variety of ways throughout one of their core (online) courses. Students then completed a survey asking their preferences about the relative desirability of the different content delivery methods and included their comments about which method best facilitates their learning. Finally, they estimated the amount of engagement time required for each method to be maximally beneficial to them in a single sitting.

Results from this study will provide guidance for online instructors seeking to deliver asynchronous online content in maximally effective ways, thereby contributing to the refinement/redefinition of "best instructional practice" for online (100% asynchronous) content delivery to graduate teacher education students.

Literature Review

The Internet provides an extremely large and dynamic information resource that is constantly growing both as a repository for content and as a robust electronic delivery system. Use of the Internet as a means of disseminating information is increasing so much that it has become a common practice in not only daily life but in higher education as well (Harmumoto, Hakano, Fukumura, Shimojo, & Nishio, 2005; Kirkwood, 2008).

Internet-based instruction has grown simultaneously and has emerged as an increasingly popular alternative to F2F classroom instruction (Brotherton & Abowd, 2004; Crawford-Ferre & Wiest, 2012). Although all levels of education have begun to make greater use of the Internet as an instructional venue (Blaylock & Newman, 2005; Conceicao & Drummond, 2005; Schrum, 2004), higher education has experienced perhaps the greatest amount of growth in implementation of online course delivery. Higher education administrators, faculty, and student populations throughout recent years, along with changes in technology, have demanded and driven easier, faster, and less costly access to the Internet and online instruction (Restauri, 2005). Among the more common reasons for expanding use of the Internet are increases in convenience for both teachers and learners (Summers, Waigandt, & Whittaker, 2005), reach to geographically diverse and underserved populations of learners (Leasure, Davis, & Thievon, 2000), and enrollments and profitability for instruction providers (Reisetter & Boris, 2004). These reasons appear to have staying power, thus solidifying the place of the Internet as an instructional delivery system and cementing the foundation for a paradigm shift in educational content and program delivery.

As higher education, particularly at the graduate level, increasingly employs the options available for content and course delivery made possible by the nexus of advances in technology and the Internet, educators must not lose sight of the importance of determining and using the most effective instructional practices possible for delivery of online course content. Effective teaching and learning, whether traditional or online, must include approaches that are student centered, developmentally responsive, and achievement oriented (Smith, 2009). Hence, this study seeks the learners' perspectives.

According to Murphy, Rodriguez-Manzanares, and Barbour (2011), asynchronous online teaching "involves students working with online curricular materials on their own time, under the guidance of a teacher" (p. 584). While many studies have explored the key constituents of online course structure and conduct (Angiello, 2010; Beck, 2010; Fish & Wickersham, 2009; Journell, 2010; Weiner, 2003), less has been written about graduate student preferences regarding modalities for delivery of asynchronous content to them. Still, Parsad and Lewis (2008) report that asynchronous web-based online instruction is the most commonly adopted delivery method for Internet-based distance education. Because asynchronous delivery techniques offer the most flexibility for both teacher and learner and are likely to persist as the most commonly selected methods for content delivery, it is important to determine the nature of the most effective options for delivery of asynchronous instructional content in online graduate courses.

Method

This study used an original survey instrument (see Appendix A) to gather graduate teacher education students' preferences and opinions about the relative effectiveness of five different methods for

asynchronous content delivery. Resulting data were analyzed using Friedman's two-way analysis of variance by ranks followed by content analysis of anecdotal responses. Means and standard deviations were calculated for numerical responses.

Participants and Setting

A convenience sample of 80 graduate students in the College of Education at a Southeastern U.S. university participated in the study. At the time of their responses, all subjects were enrolled in the graduate foundations course, *Research for Today's Schools*, and had experienced all of the content delivery methods listed on the survey. Of the 80 students who responded, 61 were female (76.2%) and 19 were male (23.8%), so there were approximately three times as many females as males in the sample. The age range of respondents spanned 39 years from 23 to 62 years old with an average age of 31.04 years. Although the age range within the sample was 39 years, the range was skewed by the presence of one teacher who was 62 years old. The second to oldest respondent was 46 years old. Considering the oldest to be an outlier, a practical interpretation of the age range of respondents was 23 years. The average number of years of teaching experience in the sample was 9.81, with the outlier teacher reporting 31 years of teaching experience.

Respondents also reported the grades they were either teaching or licensed to teach (if they were not currently employed as full-time teachers). Of the total 80 respondents, 25 were high-school teachers (31.25%), 30 were middle level teachers (37.5%), and 25 were early childhood or elementary teachers (31.25%). For this study, the high school licensure category included grades 9-12, middle level included grades 6-8, and early childhood/elementary included grades PreK-5.

Instrument

The survey described below (see Appendix A) was administered to 83 graduate students in their *Research for Today's Schools* course via the Blackboard course management system. All subjects were asked to complete and return the document via email to the researcher. Of the 83 surveys sent to graduate students, 80 were returned complete and three were not returned (96.4% return rate). No information is available to explain why the three were not returned. Along with the survey instrument, subjects received the following brief descriptions of the five asynchronous content delivery methods used to deliver course content to them throughout their respective sections of the course.

- (1) PowerPoint (or similar) presentations without narration. This refers to presentation files that show text and some graphics. They are essentially user-controlled slide shows. Although they may have some sound effects, they have no narration.
- (2) Text-only documents. Typically, these are either Microsoft Word or Portable Document Format (PDF) documents that may have multiple pages, but must be manipulated by the user to move from page to page. This category includes the course textbook, which may be in an electronic format.
- (3) Videos of classroom lectures arranged in discrete topics. These were video files housed on a web server (like YouTube or similar) that addressed a single topic relevant to the course. For this study, the videos were *Audio Video Interleave* (AVI) files recorded of and by the instructor. Lectures included handwritten content notes on a whiteboard and consisted of the instructor acting as he would in a F2F classroom environment. Content delivered in each video was limited to discrete topics like "generalizability of results," "Piaget's concrete operational stage of cognitive development," and similar.
- (4) PowerPoint (or similar) presentations with narration. These are AVI files housed and retrieved in the same way as those in item 3 above. For this study, these included PowerPoint presentations that were begun by the student and then proceeded at the rate determined by the instructor while he concurrently narrated the content and recorded the process. For this study, the screen-capture program Camtasia was used to capture/edit these video files.
- (5) Videos of whole-class lectures. Some of these were greater than 1 hour in length, as they would be in on-campus courses. They were captured in the same way as those in item 3 above, but were inclusive of whole concepts consisting of multiple topics.

After supplying information about their age, gender, experience, etc., subjects were asked in separate survey items to rate, rank, and then verbally rationalize their responses for each by listing pros, cons,

and other characteristics explaining their choices for each method. Finally, respondents indicated their opinions about the optimal amount of time (in whole minutes) for engagement with each method in a single sitting. For example, a respondent might say the whole-class video option should never be more than 45 minutes in duration and provide the rationale, "because I am not able to ask questions in the middle of the lecture, 45 minutes is as long as I can focus on this content without becoming frustrated."

Respondents received the following scale with which to assign ratings to each of the asynchronous content delivery methods. The rating scale included the following options:

- 0 means I DO NOT LEARN information delivered this way
- 1 means I STRUGGLE WITH AND RARELY LEARN information delivered this way
- 2 means ALTHOUGH I MAY STRUGGLE, I USUALLY LEARN information delivered this way
- 3 means I EASILY LEARN information delivered this way
- 4 means I VERY EASILY LEARN information delivered this way

After rating all of the methods for asynchronous course content delivery, the subjects were asked to rank the options from 1 (the least effective) to 5 (the most effective) in terms of how effectively the method promoted their personal learning of the course content using all rankings only one time. For the whole-class video example above, the rating might be 1 (*"I struggle with and rarely learn information delivered this way"*) and the ranking 5, indicating that this is the least effective of the content delivery methods for this subject.

Results and Discussion

Ratings and Rankings

Because data collected to establish graduate student rankings of the different kinds of asynchronous content delivery were ordinal with the potential to be not normally distributed, Friedman's two-way analysis of variance by ranks was employed as a non-parametric test to determine if differences between the rankings were statistically significant. Table 1 summarizes the findings for the numerical rankings for each content delivery method. There was a statistically significant difference among graduate student rankings (preferences) for asynchronous instructional content delivery methods (based on Friedman's test, $\chi^2(4) = 12.8, p < .05$). This result indicates instructional content delivery via videos covering discrete topics was judged by graduate students to be the most efficient asynchronous format to facilitate their learning.

Table 1. Summary of graduate student rankings of five methods of asynchronous content delivery (n = 80)

| | Type of Content Delivery | | | | |
|-----|--------------------------|-----------------------|------------------------|-------------------------|-------------------------|
| | PPT NO Narration | PPT With Narration | Text Only Documents | Video by Disc. Topic | Full length Lectures |
| Mdn | 4 | 2 | 3 | 2 | 4 |
| Q1 | 2 | 2 | 2 | 1 | 3 |
| Q3 | 5 | 3 | 5 | 3.5 | 5 |

Note: Low ranks reflect a perception that the type of content delivery was perceived as highly effective and high rankings indicate low effectiveness.

Table 2 presents the rating means and standard deviations and the rankings of each type of online content delivery method experienced by respondents. Of the five methods for asynchronous delivery of course content, graduate students most strongly preferred videos of the instructor explaining content in discrete topics (2.75) followed by PowerPoint presentations with instructor narration of the slides (2.69),

PowerPoint without any narration (2.44), text-only documents (2.19), and finally, delivery of content via videos of whole-class lectures (2.13). The range of mean ratings given by graduate students, from high to low, spanned .62 and reflect responses from "I easily learn information delivered this way" to "although I may struggle, I usually learn information delivered this way."

Table 2. *Rating means, standard deviations, and rankings of asynchronous content delivery methods by online graduate students (n = 80)*

| Asynchronous Delivery Method | Rating Mean | Standard Deviation | Median Ratings |
|------------------------------------|-------------|--------------------|----------------|
| PowerPoint - NO Narration | 2.44 | 0.89 | 4 |
| PowerPoint - WITH Narration | 2.69 | 0.79 | 2 |
| Text-Only Documents | 2.19 | 1.05 | 3 |
| Videos by Discrete Topics | 2.75 | 0.64 | 2 |
| Videos of Whole-Classroom Lectures | 2.13 | 0.96 | 4 |

Note: High scores indicate high perceived effectiveness.

Graduate students appear to be robust in their ability to learn from different methods of content delivery. Their responses to the survey indicate they prefer a balanced approach in terms of the amount of instructor involvement in content delivery. While graduate students rate and rank videos of whole-class lectures (exclusively instructor delivered) lower than any of the other options, they also rate and rank authoritative text-only resources (where the instructor is absent from the delivery) as second to the lowest. The other methods where the instructor is present to varying degrees either through artistic, vocal, or in the context of brief lectures in video presentations about discrete topics, were all rated and ranked higher than the two extremes of perceived instructor presence. More than half of the graduate subjects' anecdotal responses indicated that the video of lecture in discrete topics was most effective for them because it provided "*focused content*" in "*manageable chunks*" that was delivered in a way similar to "*how I'm accustomed to learning in face-to-face classes.*" Graduate students preferred the discrete topic lecture videos to the narrated PowerPoint presentations (which they rated as second most effective).

Optimal Engagement Times

Respondents provided feedback about how long the ideal single-sitting learning session should take for each method in order for it to be maximally effective as a support for their learning. Table 3 presents the five varieties of asynchronous content delivery used in this study and the means and standard deviations for amounts of time respondents judged each to be maximally effective for a single sitting relative to facilitating their learning of the content. Considering all content delivery methods together, graduate students' average estimation of how much time should be allotted for engagement in a single sitting to be maximally effective was 21.57 minutes. This average was skewed somewhat by the estimate of 33.93 minutes for whole lectures. In order from least to greatest amount of time required for a content delivery method to be maximally effective, the data revealed that videos by discrete topics required less time to be maximally effective than all other options. The second most efficient content delivery method was PowerPoint presentations with narration followed by PowerPoint presentations without narration, text-only documents, and last, videos of whole-class lectures.

Table 3. *Means and standard deviations for single-sitting time periods judged to be maximally effective for asynchronous delivery methods by online graduate students*

| Asynchronous Delivery Method | Mean time in minutes (n = 80) | Standard deviation (in minutes) | Median ratings |
|------------------------------|-------------------------------|---------------------------------|----------------|
|------------------------------|-------------------------------|---------------------------------|----------------|

| | | | |
|--------------------------------|-------|------|---|
| PowerPoint - NO Narration | 17.77 | 2.51 | 4 |
| PowerPoint - WITH Narration | 16.62 | 3.38 | 2 |
| Text-Only Documents | 22.17 | 6.74 | 3 |
| Videos by Discrete Topics | 15.36 | 2.13 | 2 |
| Videos of Whole-Class Lectures | 33.93 | 9.88 | 4 |

Note: Higher median ratings indicate that the type of content delivery was perceived as highly effective and low ratings indicate low perceived effectiveness.

Implications of Findings to Best Online Instructional Practice

According to the data in Table 3, respondents indicate the average optimal time for their formal interaction with course content, regardless of the delivery method, is approximately 21.5 minutes. The combination of rating and ranking data reported in Table 2 and the timing data reported in Table 3 indicate graduate teacher education students prefer content delivery that includes concise (about 15 minutes in duration) expert explanation of conceptual material in discrete topics. With the exception of the whole-class lectures, as the presence of the instructor becomes less overt in the delivery method, the amount of time necessary for it to be maximally effective increases. In other words, learning efficiency appears to be positively correlated with levels of instructor input. The exception to this relationship in the data occurs with the whole-class videos. Although respondents judged whole-class videos to require in excess of 33 minutes to be maximally effective, much of the anecdotal data provided makes it clear that listening to the instructor for that long tended to create questions in students' minds, which they were not able to ask in the moment. One anecdotal response summed up the phenomenon. *"When I can't ask questions I get worried that I won't understand the next information. This makes me frustrated and I get distracted from what the instructor is talking about. By the time I refocus on what's being said, I'm usually lost."* Respondents also reported *"browsing"* the longer lecture videos for *"shots of the notes on the whiteboard"* and then starting the video from the beginning to *"get the flow of the lecture."*

Further anecdotal evidence revealed that the discrete topic videos of shorter length provided focus to students' experiences and tended to be clearer, thereby raising fewer questions. This finding supports the notion that graduate students appear to value the interpretive verbal input of the instructor, but they reach a point where there is *"too much talk and not enough teaching."*

Finally, the variance in ratings was approximately 3.16 times higher for the text-only documents compared to videos by discrete topics. This finding suggests that graduate students are in close agreement with one another about the ranking of videos by discrete topics as being most effective. The finding also reveals what appears to be a considerable difference of opinion with respect to the value of text-only documents for asynchronous content delivery. Although this finding may be attributable to a number of student differences (student learning preferences, prior experiences with online instruction, age, etc.) this study did not investigate these phenomena.

Findings from this study suggest several considerations when designing methods for delivery of asynchronous content to graduate teacher education students.

- Keep asynchronous content delivery brief – Graduate students prefer to spend an average of just over 21 minutes with asynchronous content per single sitting, but they reported that the method they preferred most (videos by discrete topics) should be only about 15.5 minutes long per single sitting.
- Keep asynchronous content delivery focused – Graduate students reported they learn better from focused content. That is, content addressing a single topic at one time.
- Provide instructor commentary/interpretation – Graduate students want to hear and/or see the instructor parse content for clarity.

Numerical and anecdotal data from graduate teacher education students suggest that presence of the following characteristics, when employed in content delivery methods, auger together to best facilitate their learning of asynchronous content in online courses.

- Content delivery methods must include multimedia (video and/or audio) elements wherein the instructor is seen and/or heard interpreting content. To be effective, online instructors must create tightly focused learning objects where they are recorded preferably by a video camera with sound or (less desirably) by a microphone only.
- Brief video lecture presentations by the instructor of asynchronous content should last approximately 15 minutes. Longer times lead to learner frustration because of inability to converse directly with the instructor, particularly to ask questions.
- When video of the instructor cannot be included, video files like the PowerPoint presentations with voice-over narration (created with the Camtasia or similar software) may be used. Learning objects using this delivery method should not exceed approximately 16.5 minutes in duration.
- It is clear from both the numerical and anecdotal data gathered in this study that asynchronous content delivery methods should not exceed 33 minutes in duration for a single sitting, and when possible, use of whole-class videos as described above should be avoided.

Results from this study indicate that graduate teacher education students have definite preferences about maximally effective delivery methods for asynchronous content. These preferences differ from traditionally valued instructional practices used in F2F classes. Consequently, traditional lecture-based instructional methods are variously not effective or impractical in the asynchronous delivery of content. Because online instruction typically includes at least some asynchronous content delivery, and because online delivery of courses, and even whole programs, is not a passing fad, higher educators should engage in refining or completely redefining their schema for best practice for online instruction.

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Appendix A: Learner Preferences for Online Content

There are many different options for presentation of asynchronous content in online courses. Below are several of the options that I have used for your class. This survey seeks your input about the ways you prefer to receive information in an online course. **Would you please respond to the questions below and those on the next page with your opinions and some reasons for why you feel the way you do?** Then, please send the survey back to me via email ASAP.

Please describe yourself as an online learner by answering the following questions.

1. How many years have you been teaching? _____
2. What grade(s) do you teach? (If not currently teaching, please tell what grades you hold licensure to teach.) _____
3. How many years old are you? _____
4. What is your gender? (Please delete the option that does NOT apply to you.) **M F**
5. How many **undergraduate** courses have you taken in an *online* format? _____ ... in a *hybrid* (part online and part face-to-face) format? _____
6. How many **graduate** courses you taken in an *online* format? _____ ... in a *hybrid* (part online and part face-to-face) format? _____

On the next page, you are asked to consider several possible content delivery modes, their characteristics, and to give your opinions about them.

- **The first column** presents the delivery modes for your consideration – *there should be NO response in the first column.*
- **The second column** asks you to select a rating and ranking. For the rating, please give each content delivery mode a rating using the scale of 0 to 4 where

0 means I DO NOT LEARN information delivered this way

1 means I STRUGGLE WITH AND RARELY LEARN information delivered this way

2 means ALTHOUGH I MAY STRUGGLE, I USUALLY LEARN information delivered this way

3 means I EASILY LEARN information delivered this way

4 means I VERY EASILY LEARN information delivered this way

In the same column, **please rank order** the delivery modes in terms of how effectively you learn from them. The one that supports your learning MOST should be ranked as #1 and the one that is the LEAST effective should receive #5. ***PLEASE USE EACH RANKING ONLY ONE TIME.*** To respond either highlight your selection or eliminate all answers that do not apply to the modality in the corresponding first column.

- **The third and fourth columns** ask you to state pros and cons about the content delivery mode. This is where you explain your rating. For example, if you gave something a rating of 0, please tell WHY the delivery mode is so ineffective for you. Likewise, if you gave a 4, please tell WHY the delivery mode is so effective for you.
- Finally, **the last column** asks about how long each of the modes should take to be as effective for you as it can be. If you do not think that it matters, or if you do not see the connection between a mode and "how long," please use the "NA" option. Otherwise, please follow the directions to provide your answer and then at the bottom of the box, please tell why that amount of time is ideal for you.

If you need to write more than there appears to be room for, just keep typing, the boxes will expand to accommodate. Thanks for your responses and please return this ASAP!

| <i>Content Delivery Mode</i> | <i>Rating Ranking</i> | <i>Positive things about this option for receiving course content (BRIEFLY)</i> | <i>Negative things about this option for receiving course content (BRIEFLY)</i> | <i>Please enter the ideal amount of time (in minutes) for this delivery modality for a single sitting</i> |
|---|---------------------------------|--|--|--|
| <i>PowerPoint (or similar) presentations without narration</i> | Rating 0 1 2 3 4 | | | _____ minutes |
| | Ranking 1 2 3 4 5 | | | NA Why this time period? |
| <i>Text only documents</i> | Rating 0 1 2 3 4 | | | _____ minutes |
| | Ranking 1 2 3 4 5 | | | NA Why this time period? |
| <i>Videos of classroom lectures arranged in discrete topics</i> | Rating 0 1 2 3 4 | | | _____ minutes |
| | Ranking 1 2 3 4 5 | | | NA Why this time period? |
| <i>PowerPoint (or similar) presentations with narration</i> | Rating 0 1 2 3 4 | | | _____ minutes |
| | Ranking 1 2 3 4 5 | | | NA Why this time period? |

| | | | | |
|---|-----------------------------|--|--|---------------------------------|
| <i>Videos of whole-class lectures (greater than 1 hour in length) as they would be in on-campus courses</i> | Rating 0 1 2 3 4 | | | <hr/> minutes |
| | Ranking 1 2 3 4 5 | | | NA Why this time period? |



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