Towards a Pedagogy of Multimodal Hybrid Delivery

Barbara O'Byrne, and Lisa A. Heaton

Marshall University Graduate College, 100 Angus E. Peyton Drive,
South Charleston, WV, 25303

Abstract. Hybrid delivery grew alongside e-delivery and has wide applications across diverse educational settings. By definition, it is both multimodal and involves multiple delivery formats. However, little direct research has examined the impact of multimodal, hybrid delivery on pedagogy. This paper will present preliminary results of a mixed methods research on the impact of a shift to multimodal or hybrid delivery on the online pedagogy of graduate education.

Keywords: online instruction, hybrid delivery, multimodal delivery, pedagogy, graduate education

1 Introduction

Hybrid learning, an outgrowth of e-delivery, is central to the current discourse on technology and learning both because of its connections to multimedia and its applications to a wide range of educations settings. For some hybrid learning it is, "any instruction where content is delivered both online and in onsite facilities" [1]. However, advances in electronic delivery, including CD ROM, podcasting and video conferencing, are bending and broadening this definition to include multimodal delivery [2-3]. Multimodal is a core concept of hybrid delivery, and links the latter with multiplying and morphing tools associated with Internet technologies. Fusion of multimodal instructional tools, together with different combinations of live and electronic delivery supports the underlying concept of hybrid as a combination of two or more distinct forms of delivery and a wide range of electronic tools to actualize instructional goals. As advances in technology propel the ongoing morphing of tools and delivery models, fundamental questions arise about the nature of learning, pedagogy and instructional design within hybrid learning environments [4].

Whatever the definition of hybrid delivery, educators caught up in the transformation of delivery models face significant questions that the profession must embrace and address. How have education courses changed as formats of delivery have both multiplied and diversified concurrent with advances in technology? How do instructors make decisions about the delivery medium and learning activities within a given delivery medium? These questions link hybrid delivery with a broader need to interrogate learning assumptions and methodologies, transformed by different

delivery models. The research goal is to capture some of the shifts in the instructional topography of education courses resulting from multimodal, hybrid delivery models and to begin to understand and articulate their meaning for pedagogy and learning.

2   Issues and Themes from the Literature

The literature on electronic learning parallels, overlaps and informs the topic of hybrid learning. One strand of early research focused on student learning and satisfaction with electronic forms of delivery. E-learning is associated with modest gains in learning [5-6] and some evidence suggests that these gains are extended when learners have the benefit of a mixed delivery model that blends live and electronic learning [2]. Greater participant satisfaction results once learner norms are clarified [7]. Recent research has attempted to match learning styles with online activities [1, 8-9]. While earlier research noted the affinity of independent or 'isolated' learners for the new technologies, Leu, Kinzer, Corio and Cammack [4] advanced the claim that learning associated with the new technologies is more successfully and more frequently socially constructed, a position supported by the research of Ghislandi and Job [10]. Su [11] established that online learning is equally effective with different learning styles, as measured by academic achievement.

A second strand of early research focused on the impact of different delivery models on programs. These investigations described and evaluated online delivery models for individual courses and programs. Bell and Lefoe [12] demonstrated the value of experimentation and identified an 'outcome-based integration model' as essential in refining online delivery. Other research focused on the development of online degree programs, and generally described the effectiveness of modular design in scaffolding learning [13]. Similarly, Wade, Riordan and Power [14] observed the importance of interactive approaches to course design to meet the learning needs of participants. A limitation of early studies on instructional design is the absence of systematic research. Both the newness of the field and the rapid pace of change in technology make such studies difficult to construct, and hence the dearth of broad generalizations associated with robust theory-making.

A consensus is emerging in the literature of the need for systematic research into the impact of the new technologies on teaching, as well as on learning. Considerable research on online instruction has isolated factors such as the new roles of instructors [15]. Console [16] drew attention to a lack of understanding about how e-learning is transforming both pedagogy and institutions and identified three main research themes: pedagogy of e-learning, the technology of e-learning, and strategies for integrating online courses within existing systems. Cook [17], echoing Console's call for the creation of theory, advocated 'evolutionary approaches' in establishing a theoretical basis for e-pedagogy, consistent with the newness and diversity of the field.

This study proposes that the relationship between instruction and multimodal, hybrid delivery is transformative in both directions. It assumes that different background knowledge, purposes, and epistemological positions of instructors shape decisions and assumptions about all learning activities and interactions, whether face-to-face or electronic. Further, it rests on acceptance of the premise that knowledge

construction is mediated through social interactions. Where others have focused on the features [15] or the design concerns [12] indigenous to any online environment, this research will explore the dynamic relationships between 'humans and machines'. Understanding the contours of these transactions is an essential first step in constructing a pedagogy of multimodal, hybrid delivery.

Little or no research has directly addressed the question of how and why instructors reach decisions to deliver learning activities live or electronically, or the impact of digital resources and online delivery on the construction of course learning activities. Addressing these questions is an essential epistemological task for hybrid or multimodal learning. Drawing upon the suggestions of Console [16], this investigation will enlarge the understanding of the impact of hybrid learning on pedagogy by conducting research on instructional methods and assumptions associated with the shift to multimodal delivery. The approach will draw upon the specific need in e-learning, derived both from its newness and the rapid pace of technological change to develop and articulate "evolutionary theory" rather than starting with an established theory. This investigation will demonstrate and evaluate changes in instructor design and delivery decisions associated with a shift to multimodal, hybrid courses.

3   Current Investigation

How to capture change? How to convey it in empirical terms? This is the challenge of the research. The task is further complicated because it presumes a longitudinal perspective that is only beginning to emerge in online technologies. Further, the ongoing and rapid transformation of educational technology gives the research field a mercurial character that eschews categorization and quantification. Two insights guided this investigation. Change in institutions such as education is more visible over time and when observed from different perspectives; it is evolutionary in character. Snapshots of data taken at different points in time and from different points of view may provide a starting point to illuminate how multimodal delivery is changing pedagogical assumptions and instructional methods. For this reason, this research will adapt a longitudinal methodology to uncover salient changes in pedagogy associated with hybrid delivery.

It is important to distinguish between superficial and significant changes. Some changes may readily surface. It might be that instructors elect to teach more hybrid courses but are using traditional instructional methods. For this reason it is important to develop a research that investigates not just the facts of hybrid delivery but evidence of fundamental changes of instructional assumptions and practices linked to hybrid delivery. Four research questions guided the current investigation:

1.   Did the option of online hybrid delivery have an impact on instructors' choices of delivery?
2.   Were there any significant changes in instructors' knowledge and use of technology tools associated with hybrid delivery?
3.   What were the long term changes in instructional methods associated with hybrid delivery?
4.   What was the impact of hybrid delivery on interactions with students?

Establishing and determining the meaning of changes in these four areas would begin to map some of the markers of a pedagogy of hybrid delivery. This piece of the

study will address these questions through the analysis of survey data; subsequent studies will amplify the meaning of the survey data through in-depth interviews with course designers and program directors and an analysis of online and live learning activities.

4   Methodology

4.1   Research setting

A detailed description of the research setting explains how these questions could be realistically addressed in this investigation. The Graduate School of Education and Professional Development of Marshall University in West Virginia began to evaluate electronic delivery in 1997 as an option to assist with its mission in graduate distance education. Instructors from different program areas were encouraged to experiment with different formats of online delivery within the WebCT, and later Blackboard, platforms. Instructors were free to select forms of delivery within the platform, ranging from use of electronic tools in conjunction with traditional face-to-face delivery to 100% electronic delivery. However, the majority of electronic graduate classes between 1998 and 2008 were taught as hybrid courses, defined as 80% electronic and 20% live (two to five live meetings). Since 2004, instructors and programs have been experimenting with 100% online delivery. It was within the context of a learning community with considerable experiences and expertise with electronic delivery and having the freedom to make course delivery decisions that the current research emerged.

4.2   Participants

Thirty-seven full-time instructors in 2001 and 43 full-time instructors in 2008 are the principal subjects of this study. These include representatives from several graduate programs including, special education, literacy education, curriculum and instruction, counseling, special education, leadership studies and school psychology. Of the 37 original instructors, 27 remained in 2008. In 2001, participants' range of experience with teaching online ranged from zero (0) to five (5) years, and averaged 1.9 years of experience. By 2008, 37% had been involved with different forms of electronic delivery for more than 8 years, 26%, for both 6-8 and 3-5 years, and 11% for 2 years and less.

4.3   Research design

This study will employ a mixed-methods approach to gain understanding of how faculty perceptions and use of hybrid, multimodal delivery changed between 2001 and 2008. This first component of the study will use a longitudinal approach to gauge

changes in instructor use, understanding, and attitudes connected with electronic delivery. The 2008 survey consisted of ten questions, seven of which asked respondents to select a response from four options. The remaining questions asked respondents to select multiple responses from a bank of ten possible items. Data from a survey administered in 2001 will be compared to data from the 2008 survey, using descriptive statistics. Twenty–four (63%) faculty completed the original survey in 2001. Twenty–eight (65%) faculty completed the follow-up survey in 2008. Subsequent extensions of the research will be based on thematic analysis of in-depth interviews with instructors and program directors and analysis of course assignments in live and online components of hybrid courses. To meet the exigencies of evolutionary theory, future extensions of the study will employ emergent theory methods of Glaser and Strauss [18].

5   Data analysis

5.1   Did the option of online hybrid delivery have an impact on instructors' choices of delivery option?

Instructors had the choice of teaching live or in different formats of online delivery. In 2001, there were 53 hybrid courses, all of which had some live meetings. By 2008, course offerings reflected blends of live and Internet delivery and total online asynchronous delivery. There were 54 hybrid courses and 41 e-courses, delivered totally online. These shifts demonstrate the flux in electronic delivery. In 2001, instructors, on average, had developed 3-4 courses utilizing online delivery, with 46% of faculty developing 0-2 courses, 25% developing 3-5 online courses, another 25% developing 6-8 online courses, and the remaining 4% developing more than 8 online courses. By 2008, 26% had constructed more than 8 courses and 15% had developed 6-8 courses. Another 26% had developed 3-5 courses. Thirty-three percent of respondents had developed between 0 and 2 courses. This number included both new instructors and instructors who did not teach online. The preliminary finding supports the contention that instructors shifted more of their courses to a hybrid delivery model between 2001 and 2008.

5.2   Were there any significant changes in instructors' knowledge and use of technology tools associated with hybrid delivery?

In 2001, the majority of instructors (58%) rated their technological skill level for using electronic delivery as "intermediate" and an equal percentage (21%) indicated "novice and "advanced". In 2008, users of electronic delivery rated themselves as advanced (44%), intermediate (44%), and novice (4%). Two respondents (7%) indicated they did not use electronic delivery and had limited observer knowledge of this form of delivery. The shift in perceived skill-level establishes that instructors were becoming more comfortable and proficient in the technology indigenous to

hybrid delivery. When juxtaposed with earlier findings of an increase in the number of hybrid courses constructed, these data support the contention that instructors were actively involved in shifting their courses to hybrid delivery as opposed to relying on university technological support to make the transition. The perceived growth in technological knowledge came at least in part from practice and experimentation involved with the construction of online components of hybrid courses.

It might be expected that instructors' growing technology expertise would be evident in different patterns of use of the tools within WebCT, and later Blackboard, learning platforms. Table 1 summarizes data on tool use from 2001 and 2008.

Table 1. Percentages of Tool Use in 2001 and 2008

Tool	2001	2008
Mail	100%	93%
Discussions	96%	85%
Dropbox	17%	85%
Paths/Links	46%	52%
Calendar	58%	82%
Quizzes	38%	44%
Video	13%	19%
Audio	8%	19%
Survey	NA	37%

In 2001, use of communication tools, including mail (100%) and discussions (96%) was universal. This remained true in 2008, with some counter-indication of less generalized use of the discussion tool. Use of the quiz tool was slightly higher in 2008 (44%), as were the use video (from 13% to 19%) and audio (from 8% to 19%) links and clips. Use of embedded links went up slightly (+6%). Use of surveys, not mentioned in 2001, appeared on 37% of responses in 2008. The use of the assignment dropbox (+68%), used for assignment submission and instructor feedback, and of the calendar tool (+24%), principally used to indicate due dates for learning activities, showed significant increases in use. The dramatic shifts in use of tools found on the WebCT and Blackboard learning platforms are significant because both of these tools are connected with course learning activities.

5.3 What were the long term changes in instructional methods associated with hybrid delivery?

Instructors were asked about changes in instructional methods and learning activities connected with online instruction. Table 2 summarizes the data on the impact of the online component on hybrid course construction.

In 2001, virtually all respondents (96%) indicated that hybrid learning had led to changes in courses, with 50% of respondents citing planning and organization as the chief impact of online delivery on their teaching. A significant shift evident in the data from 2008 was the refinement in identifying specific ways in which online delivery was influencing teaching. First, instructors had an enlarged awareness of how online delivery was affecting their teaching. Thirty-six percent cited planning and

organization as the central way in which online delivery was changing their teaching, while 32% indicated the importance of accommodating different learning styles. Twenty-four percent of faculty indicated that online delivery caused them to re-conceptualize the way their course was constructed.

Table 2. Impact of Online Delivery on Teaching

Impact on…	2008
planning and organization	36%
accommodating different learning styles	32%
changes in course construction	24%
% of respondents not teaching online	8%

The relationship between learning activities linked to use of electronic tools is crucial to any pedagogy of hybrid delivery. There was a tremendous expansion in the range of learning activities shifted to the online components of hybrid courses.

Table 3. Learning Activities Shifted to Online Delivery

Learning Activities	2008
No difference	4%
Collaborative projects	65%
Drafts or stages	50%
Assignments w/ multimedia features	35%
Peer feedback	61%
Digital demos	23%
Video segments	19%
Projects w/ web authoring tools	39%
Materials w/ multimedia	39%
% of respondents not teaching online	8%

In 2001, 79% of instructors indicated that online delivery had changed 'the type of assignments" they made, but few referred to the role of the tools in relation to the assignments. Changes in assignments were characterized by more writing, more reading, and more emphasis on independent learning. There was a general understanding that assignments were taking place "more in the students' world" but how less knowledge on how to connect the students' world to the online environment. While 96% of instructors used the discussion tool, few were utilizing the discussion board for group projects or saw its potential for work done in stages or drafts. In fact, 42% in 2001 believed online learning resulted in less group work and discussion. Few courses or programs had figured any way to accommodate practicum experiences in the online medium.

The data from 2008 illuminate the nature of learning activities shifted to online delivery. Some of these reflect growing technical knowledge, as indicated by 39% of respondents who indicated they created learning activities involving web-authoring and multimedia tools. Other responses captured the realization that learning online could be as social as that in a live class. Sixty-five percent (65%) of respondents were now using the electronic platform for collaborative projects and 61% were using online tools for peer feedback. These results demonstrated a growing realization that

online learning involved knowledge that was socially constructed, confirming the hypothesis of Leu, Kinzer, Coiro, and Cammack [4] that "the socially skilled learners will be advantaged over 'monastic learners' children who rely solely on independent learning strategies" (pp. 1598). These results confirm new uses for the tools built into the learning platforms. Instructors adapted and refined tool use to re-construct learning activities, informed by the tools of the learning platform and multimedia applications.

5.4   What was the impact of hybrid delivery on interactions with students?

Frequency and forms of interactions with students are essential components of pedagogy, and it is important to establish any impact of a shift to hybrid delivery. In 2001, 92% of instructors perceived that online delivery had changed their interactions with students. Most cited an increase in the number of interactions with students via mail and the discussion board. As opposed to 2001, when increase in contact with students was most frequently cited as the consequence of electronic delivery, the results in 2008 showed a sea change in that instructors acknowledged both more and diverse forms communication associated with hybrid delivery. Instructors characterized the effects on online delivery as resulting in more individual contacts with students (56%), more immediate feedback on assignments (52%) and students sharing information with instructor and peers (52%). In addition and perhaps more significant were the mutations in patterns of communication indigenous to hybrid delivery. Some of those were teacher to student, teacher to students, student to instructor, students to instructor, student to student, and student to whole group. It is highly significant that in 2008, 36% of respondents report that students interacted with each other as much or more than with the instructor.

6   Conclusions

This preliminary investigation set out to capture changes in pedagogy related to the use of hybrid, multimodal delivery through use of a longitudinal approach. Analysis of survey data from 2001 and 2008 from the same population illuminated key factors that contribute to an emerging pedagogy of hybrid, multimodal learning. While there was evidence that instructors shifted more of their course to the hybrid delivery model, there was no consensus about what this model entailed. There were significant variations in the proportions of the course conducted live and electronically, and even wider variations in the use of tools to support the learning. A defining feature of hybrid delivery seems to be it fluidity. Additional research will need to identify what is included under the hybrid umbrella, particularly addressing the possibilities extended by pod casting and video conferencing.

   Secondly, instructors expressed growing confidence in their technological expertise. This expressed itself in tool use in the WebCT and later Blackboard shells. Some tools, such as the assignment dropbox and the calendar, increased dramatically, but several showed consistent use in 2001 and 2008. The most significant findings about tool use were the tremendous increases in the use of the dropbox and calendar.

At the very least, this fact meant that instructors had learned to use these tools to organize learning use of the basic tools within the learning environment.

When juxtaposed with changes in learning activities, it becomes clear that changes in the use of these tools marked significant rather than superficial transformation related to assumptions and practices of learning activities in hybrid courses. It was evident that instructors emphasized planning and organized in ways that were different from traditional courses. Moreover, instructors both re-constructed assignments to accommodate different learning styles and took advantage of multimodal tools to construct diversified learning experiences, appealing to a wider range of learning styles. The shift to assignments featuring socially constructed knowledge is a solid indication of the adaptability of the hybrid model to authentic learning experiences.

When applied to the challenge of capturing changes in instruction, the longitudinal approach provided a window on the impact of hybrid delivery on instructors' thinking and professional practice. It illuminated some dimensions of the interactions between humans and machines that are shifting the typography of pedagogy in a multimodal, hybrid delivery model.

6.1 Extensions of the research

While the descriptive statistics provided some insights into changes associated with multimodal hybrid delivery, the results do not provide a complete or clear description of changes in pedagogy. To provide a fuller image of the emerging pedagogy, interviews with course developers and program directors will explore shifts in thinking and evolutions in practice as courses were moved to hybrid delivery. One of the fundamental questions to be addressed in the interviews is the delineation between live and electronic delivery; another is the evolution in course design evident in several iterations of the same course. This will be addressed partially through the interview and partially through the analysis of course activities from different hybrid courses. Particular attention will be paid to learning activities shifted from one mode of delivery to another, and to activities in which the same objectives were met in live and electronic forms.

Analysis of course learning activities will complement the interview data. The course activities from the different delivery models will be compiled and analyzed for similarities and differences. Particular attention will be paid to learning activities shifted from one mode of delivery to another, and to activities in which the same objectives were met in live and electronic forms.

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