Toward a Philosophy of Multimedia in the Online Classroom: Aligning Multimedia Use with Institutional Goals

Emily Donnelli
Assistant Professor of English
emilyd@park.edu

Amber Dailey
Associate Professor of Education
amber.dailey@park.edu

B. Jean Mandernach
Associate Professor of Psychology
jean.mandernach@park.edu

Park University
Parkville, MO 64152
USA

Abstract

Institutions desiring to move their online programs to the next generation in innovation often focus their efforts on multimedia development. Because multimedia is now a common benchmark for online course content, institutions encounter the paradox of multimedia inclusion, being forced to consider not only their technological resources but also how multimedia will affect their *culture* of teaching and learning. As such, the effective integration of multimedia is likely about everything *but* multimedia; multimedia incorporation has much more to do with institutional culture than with technological tools, faculty education, and infrastructure. Although the literature on multimedia in online learning presents compelling arguments for the educational value of multimedia, this information must be filtered through the lens of the particular institution's culture and mission. Such an examination will enable institutions to determine a successful, sustainable approach to the integration of multimedia in online courses. The following integrative review presents empirical guidelines and a sequential model to assist universities in creating a workable multimedia philosophy framed within their particular institutional context.

Keywords: Multimedia, online course development, inclusion, institutional mission, instructional culture

Introduction

The increasing growth and popularity of online learning in academia, combined with rapid advances in educational technology, are forcing faculty to examine the role of multimedia within their online course content (and subsequently, the content housed in supplemental online sites that accompany many face-to-face and hybrid courses). Research indicates that effective online multimedia is content-relevant and pedagogically intentional; as such, it should support learning outcomes, and most importantly, serve as a teaching tool for facilitators (Mayer, 2001). Institutions must be able to articulate policy and rationale beyond mere expectations of online instructors and their use of multimedia in the online classroom, even those expectations that address technically focused topics.

Although the current literature on multimedia in online learning presents compelling arguments for and evidence of the educational value of multimedia (Harris, 2002; Hede & Hede, 2002; Mayer, 1997; Mayer 2001; Moreno & Mayer, 2000; Burg, Wong & McCoy, 2004), this information must be filtered through the lens of the particular institution's culture and mission. One of the perils of multimedia inclusion in higher education occurs when decision-makers assume multimedia to be outside the scope of curriculum rationale or institutional approval processes and requirements. As such, empirical guidelines are needed to assist institutional change and multimedia inclusion in online programs of academia. The guidelines

presented here contribute to the evolving methods needed to help institutions consider key stakeholder groups, to identify institutional strengths and tacit values, and to create a sustainable plan for ensuring the institutional philosophy toward multimedia develops over time.

Multimedia Research

Traditionally, the emphasis of multimedia design and development has been on the presentation of information in multiple formats (Hede & Hede, 2002). According to Doolittle (2001), "[W]eb-based multimedia represents the presentation of instruction that involves more than one delivery media, presentation mode, and/or sensory modality"(p. 3). Multimedia has also been defined as "the use of multiple forms of media presentation" (Schwartz & Beichner, 1999, p. 8) and "text along with at least one of the following: audio or sophisticated sound, music, video, photographs, 3-D graphics, animation, or high-resolution graphics" (Maddux, Johnson, & Willis, 2001, p. 253). Although numerous definitions exist to capture the essence and meaning of multimedia, "one commonality among all multi-media definitions involves the integration of more than one media" (Jonassen, 2000, p.207). Examples of multimedia include, but are not limited to, text in combination with graphics, audio, music, video, and/or animation.

Empirical results indicate and support the effectiveness of multimedia inclusion for online student learning. The *cognitive theory of multimedia* learning is based on: 1) constructivist learning theory in which meaningful learning occurs when a learner selects relevant information, organizes the information, and makes connections between corresponding representations; 2) cognitive load theory in which each working memory store has limited capacity; 3) and dual coding theory emphasizing that humans have separate systems for representing verbal and non-verbal information (Moreno & Mayer, 2000). In supporting this inclusion of multimedia, the *multimedia principle* finds that "students learn better from words and pictures than from words alone" (Doolittle, 2001, p.3). Hede & Hede (2002) find games and simulations to afford goal-based challenges that trigger interest and increase user motivation, and also suggest that providing tools for annotation and collation of notes promotes learner engagement. Moreno & Mayer (2000) provide additional information to suggest "active learning occurs when a learner engages in three cognitive processes – selecting relevant words for verbal processing and selecting relevant images for visual processing, organizing words into a coherent verbal model and organizing images into a coherent visual model, integrating corresponding components of the verbal and visual models" (p.3). However, multimedia users are also cautioned to ensure research-based principles are applied to the design.

Faculty, then, must ponder the inclusion of multimedia and methods to make their design pedagogically intentional, while also balancing increasing demands to integrate multimedia as a "best practice" for effective online learning (Mandernach, 2006). Clark and Mayer (2002) provide the following empirically-based guidelines for multimedia inclusion with a foundation in cognitive theory as it applies to virtual learning environments:

- Relevant, instructional graphics to supplement written text should be incorporated to improve learning through the dual coding of verbal and visual information (*multimedia principle*).
- Place graphics and text close together so that limited working memory is reserved for learning content rather than coordinating various visual components (*contiguity principle)*.
- Include audio to explain graphics as audio enhances learning more than text by expanding cognitive resources to simultaneously tap both visual and phonetic memory (*modality principle)*.
- Supplement graphics with audio alone rather than audio and redundant text to reduce cognitive overload (*redundancy principle)*.
- Avoid using visuals, text and sounds that are not essential to instruction as unnecessary information impedes learning by interfering with the integration of information (*coherence principle*).
- Use a conversational tone and/or a personalized learning agent to enhance learning via social conventions to listen and respond meaningfully (*personalization principle)*.

As reflected by these six principles, the inclusion of multimedia into the online classroom cannot be summarized by either the less-is-more or the more-is-more approach to course design. While such

principles are critical in providing recommendations and guidelines for successful multimedia inclusion, it is even more critical to consider the application of such recommendations in the anticipated and desired learning outcomes of the institution. These principles highlight the need to have mandates concerning the inclusion of multimedia framed within an institutional context that can guide the thoughtful application of empirical design principles.

Institutional Context

Institutional context is an encompassing term that acknowledges the myriad forces shaping the internal life and external representations of a university. The history, mission, and vision of the institution are arguably the most prominent indicators of this context, but faculty and student cultures are equally influential. Both the explicit and subtle factors shaping institutional context must be the filter through which all decisions, curricular or otherwise, are made. Often, it is the tacit, or unspoken, dimensions of an institution that most shape the reality of its daily culture. The more closely aligned the mission and vision are to the day-to-day operations and relationships of a university, the more cohesive and productive the institution.

While the literature on multimedia inclusion in online courses deals effectively with issues of learning theory, instructional design, usability, and even administrative infrastructure, what most research fails to acknowledge is the importance of institutional context in decisions regarding multimedia. Since the majority of literature does not address institutional context, it promotes a view of multimedia as a technological tool, external to content or the need for consideration within the larger programmatic or institutional goals. Whereas other decisions about curriculum—those concerning learning outcomes, assessment measures, course sequencing—pass through various faculty and administrative channels to ensure collaborative process and buy-in, decisions about multimedia are rarely made in conjunction with these stakeholders.

The role and importance of institutional context is most often discussed in the literature of higher education in regards to institutional accreditation. This literature identifies the key barrier to the successful integration of multimedia: the lack of an articulated and sustained connection between multimedia as a curricular component and institutional context. Writing about the gap that often exists between institutional context and institutional decisions, Samuel Hope, executive director of the National Office for Arts Accreditation in Higher Education, states: "…it is not unusual to see tremendous rhetorical emphasis on the mission-goal objectives equation within institutions and programs. It is also not unusual to see failure to work the real meaning in various operational areas" (Hope as qtd in Diamond, 1999, p. 3). Into the category of "operational areas" often falls a university's online education program. Decisions about technology, readily perceived as outside of curriculum, are often made by an "operational area" and thus only consider institutional context in the most generic sense, if at all. A sustainable approach to multimedia requires consideration of all facets of institutional context.

The Paradox of Multimedia Inclusion

Because multimedia has become a common benchmark for online learning programs, institutions desiring to advance e-learning on their campuses encounter what has been called the "paradox" of multimedia inclusion (Simmons, 2004), being forced to consider not only their technological resources but also how multimedia will affect their *culture* of teaching and learning. Because the technical dimensions of multimedia often overshadow its identity as a curricular tool, and because multimedia often falls outside the expertise area of the typical university curriculum committee, decisions about how multimedia will factor into online learning are often left to individuals outside of the faculty and student cultures. In fact, existing integration models, the most notable among them presented in Finch and Montambeau's (2000) "Beyond bells and whistles: Affecting student learning through technology," do not consider faculty readiness or amenability.

As a result of this absence, while institutional mission and vision may be considered in policy statements about multimedia, the full scope and influence of multimedia on the broader institutional culture is left unexamined. Because faculty and students are arguably the arbiters of how multimedia is received in the online environment, the sustainability of content-relevant, pedagogically-intentional multimedia becomes limited if policy statements, education, and infrastructure do not reflect institutional culture in the broadest sense.

A Model for Institutional Alignment of Multimedia Use

The following model presents four guidelines central to developing a philosophy of multimedia consistent with institutional context. Recognizing that a wealth of literature dealing with the technological dimensions and learning theory contexts of multimedia exists, these guidelines specifically reflect ways that institutional *culture* can be identified and integrated into decisions about multimedia inclusion. Thus the guidelines in no way represent a comprehensive or exhaustive set of factors to consider when implementing multimedia, but rather supplement and extend existing decision-making processes to include larger institutional dimensions.

Guideline One: The institutional philosophy of multimedia starts with a strengths assessment. Identify the strengths and weaknesses of the institution's existing online program, both technological capability (platform, course management system) and in policy and infrastructure. A critical component of this process is also to assess the particular interests, strengths and areas of needed professional growth among the faculty body.

Key questions to consider during this self-assessment include:

- What are considered to be the greatest strengths and weaknesses of the online program? According to which stakeholders?
- What makes the program unique in the marketplace of online education?
- What distinguishes the faculty from faculty at other institutions?

Guideline Two: The institutional philosophy of multimedia considers the institution's tacit values alongside its published mission and vision. Determine the assumptions, values, and beliefs tacit in your institution's mission/vision – not only what the documents explicitly state, but how students, faculty, staff, and administrators live the mission/vision on a daily basis. To help explore an institution's tacit values, key questions to consider include:

- What are the three most important words in the university's mission and vision statements?
- How are the values implicit in that terminology realized in daily operation?

Guideline Three: The institutional philosophy of multimedia results from collaboration with key stakeholders. Bring key stakeholders into policy-making processes, and develop a comprehensive communication plan to educate the campus community. When expanding policy decisions concerning multimedia to include key stakeholders, key questions to consider include:

- Who are the key stakeholders – both the "green" and "red"-light people – and what will their involvement be in making course-level decisions regarding multimedia?
- What established communication mechanisms (already successful) can be harnessed to educate the campus about the online learning program?
- How will decisions regarding multimedia inclusion be made? Who will be responsible for implementing them?

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Guideline Four: The institutional philosophy of multimedia is revisable.

Revise philosophy as institutional culture changes over time and based on the results of qualitative and quantitative research. Key questions to consider during this process include:

- How will "successful" implementation of multimedia be defined and assessed in the program?
- How will the program create a flexible, yet sustainable, plan for ensuring that the philosophy develops over time?

Conclusions

The reflective process proposed by this model encourages active and deliberate consideration of the role of multimedia in facilitating instructional goals relative to unique institutional culture. To be sure, we are not advocating the development or implementation of a specific policy regarding multimedia; rather, we advocate consideration of institutional identity and faculty culture when determining guidelines and expectations for online course development. This model promotes a more comprehensive decision-making process, including factors beyond student learning and emergent technology, to guide the appropriate use of multimedia within the particular context of each institution. This approach helps ensure that policies related to multimedia inclusion in the online classroom are appropriate and that resources supporting multimedia development are used effectively.

This model does not encourage a "one-size-fits-all" strategy for multimedia inclusion; rather, it provides guidelines to assist each institution in determining a stance toward multimedia inclusion that is uniquely relevant to institutional mission, vision, and culture. Institutions utilizing this model to facilitate multimedia policy development can move beyond simple creation of rules concerning multimedia usage in the online classroom to create a philosophy; such a philosophy, we argue, has more potential to foster a sustainable institutional approach to multimedia inclusion than policy based solely on decontextualized benchmarks. Equally valuable, the reflective processes proposed in this model can serve as a catalyst to spark dialogue about those key areas like multimedia, where policy and instructional design intersect with larger questions of curriculum development and academic freedom.

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