FRAME WORKS INSTITUTE

The Stories We are Telling

How Digital Media and Learning is Communicated by Education Reformers

A Field Frame Analysis

A FRAMEWORKS RESEARCH REPORT

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The FrameWorks Institute is an independent nonprofit organization founded in 1999 to advance science-based communications research and practice. The Institute conducts original, multi-method research to identify the communications strategies that will advance public understanding of social problems and improve public support for remedial policies.

The Institute's work also includes teaching the nonprofit sector how to apply these sciencebased communications strategies in their work for social change. The Institute publishes its research and recommendations, as well as toolkits and other products for the nonprofit sector, at www.frameworksinstitute.org.

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INTRODUCTION

In 2011, a group of education advocates and experts met at a Digital Media and Learning Conference sponsored by the John L. and Catherine T. MacArthur Foundation to learn about efforts to use digital media to improve student learning. In addition to sharing ways in which they are using digital media for learning skills development, participants discussed how they might expand support for digital media and learning (DML) programs in the wider education reform field. Over the course of the meeting, there were two questions on which the group continued to focus: "To what extent are DML issues part of the education reform agenda?" and, more specifically, "How do organizations in the education reform field talk about and understand learning and technology issues?" As researchers, we decided to investigate these questions, using techniques from the social and cognitive sciences to document the answers.

This report presents results from a Field Frame Analysis of influential organizations in the education reform field.[1] A Field Frame Analysis captures the patterns of communications that organizations within a given sector use to frame issues.[2] This type of analysis is an important part of the FrameWorks Institute's Strategic Frame Analysis™[3] approach to evidence-based communications research. It allows researchers to map networks of influential organizations within a given field and identify the ways in which these organizations communicate. Since influential organizations act as "gatekeepers" for their field and shape the direction of programs and policies,[4] the ways in which they communicate have direct implications on whether and how an issue will be more widely adopted. In short, a Field Frame Analysis provides an understanding of how a field communicates about a given issue,[5] as well as how new issues find their way into the field.

Specifically, this study uses a Field Frame Analysis approach to identify whether and how DML issues are presented in the education reform field. FrameWorks researchers, in conjunction with members of the DML Emerging Scholars Group[6], first identified a set of leading organizations in the field of education reform. The researchers then analyzed the extent to which these organizations discuss DML issues and how they do so. This analysis also looked at more general patterns of organizational communication on education reform issues. By so doing, we identified strategic openings into which DML advocates could embed and position their messages in order to improve understanding of their issues and support for their programs — both within the field of education reform, and among the public exposed to messages from these organizations.

This research is informed by FrameWorks' previous studies on education reform,[7] and builds more directly upon three recent reports conducted specifically on DML. Those reports include:

- *"Faster and Fancier Books": Mapping the Gaps Between Expert and Public Understandings of Digital Media and Learning*, which details the results of a set of open-ended cultural models interviews with members of the general public and with DML experts to compare how each group conceives of learning and technology. Experts outlined two major premises that form the foundation for DML: (1) learning is about both basic and higher-order skills development, and (2) technology (and digital media in particular) can be used to enhance basic and higher-order skills acquisition. In contrast, members of the public espouse the dominant cultural model that learning should be mainly about building basic skills and that digital media is a distraction, or a danger, to learning.[8] The comparison between public and expert understandings revealed significant perceptual gaps regarding DML principles and programs.

- *Where's the Learning? An Analysis of Media Stories of Digital Media and Learning*, which examines the messages embedded in the presentation of issues related to DML in the nation's newspapers, radio and TV news sources. When mainstream news outlets discuss issues related to DML, the focus is mainly on uses in the business and political sectors. The potential of digital media as interactive pedagogical tools for K-12 children is largely ignored. The report underscores significant opportunities to shift public understanding of this issue by reframing digital media as a hands-on tool for learning.[9]

- *Informational Not Pedagogical: Peer Group Perceptions of Digital Media and Learning*, which assesses the findings from a series of Peer Discourse Sessions with groups of U.S. citizens on DML. This study illustrates socially entrenched ways of thinking about digital media use by children as recreational or dangerous. Woven throughout some of these group conversations, though, is the idea that digital media could be used for learning when its use is mentored by adults, and as a way to address inequities in resources among students.

The current report takes into consideration the findings gleaned from these reports and moves this research forward by examining the ways in which education organizations discuss learning and technology issues, and education reform more generally. Considering that these organizations help shape education reform policy, understanding how they present learning and technology issues is of key interest to those interested in promoting DML programs.

One of the most important findings of this study is that there *are* prominent supporters of DML in the education reform field. The analysis finds, however, that the ways in which these organizations discuss DML, and learning and technology issues more generally, may actually hinder rather than build wider support for DML programs. For DML advocates to gain

support, it is necessary to reframe learning and technology issues in a way that shifts dominant thinking away from a basic-skills emphasis and an ill-defined understanding of how technology fosters learning. It is also helpful to consider how the goals of DML align with the goals of other prominent issues on the field agenda. The results of this study inform FrameWorks' testing and evaluation of reframing tools and strategies designed to shift public and field-level conceptions of learning and technology for greater support of DML programs and policies.

EXECUTIVE SUMMARY

This research finds both challenges and opportunities for those advocating for DML programs and policies within the education reform field. Those challenges and opportunities relate to existing communication patterns about DML, learning and technology issues, as well as to the potential for embedding DML within other related issues on the field agenda.

Finding #1: DML is not a priority issue for most organizations in the field of education reform. Only 11 percent of the total documents in our sample make any mention of issues specific to DML programs or policies. Furthermore, 80 percent of these mentions originate from just four (out of 20) organizations.

Finding #2: The education reform narrative on learning is dominated by "Just the Basics." Most discussions of learning in the education reform field focus on building basic skills in traditional content areas (41 percent of all mentions of learning). In this context, digital media is often discussed, at best, as a "fancy" supplement to learning, or, at worst, as a distraction to basic skills. Learning discussions also tend not to pay attention to *how* learning happens (39 percent). When simply mentioning that "learning is important" or that organizations "should work to improve learning," organizations leave the process of learning unspecified and open to interpretation.

Despite these unproductive features of the discourse strategies, there were some more productive discussions that mentioned learning (19 percent) for higher-order skills. These discussions tended to use the "21st century skills" terminology. However, conforming to the general lack of depth in these discussions, even these seemingly more productive themes tended to be without explanation of what these target "21st century skills" actually are, how they are conferred and why they matter.

Finding #3: The education reform narrative on technology does not specify how technology can facilitate learning. When education reform organizations talk about technology, discussions frequently focus on administrative applications (28 percent of all technology mentions) or standardized testing (19 percent). When technology is mentioned as a vehicle for learning, organizations make vague references to "using computers in classrooms" (33 percent). These references again fail to specify *how* learning and technology are connected, and lack explanations of how technology may facilitate learning. These trends stand in stark contrast to the views of DML experts, who stress the pedagogical value of technology and the power of digital tools in building specific skills.

When organizations do speak directly about issues of interest to DML experts and advocates (19 percent of all technology mentions), discussions focus on using digital media to build

higher-order skills by engaging students in "personalized" learning, "games-based" learning and "collaborative" learning. While it is encouraging that some of the DML terminology is starting to be adopted in the education reform field, it is also important to recognize the ways in which these emerging communicative patterns may actually hinder further adoption of DML issues. In particular, none of the documents that reference DML programs actually explain *how* digital media facilitates learning or helps students become producers of knowledge. In addition, two key issues that emerge prominently on the agendas of DML experts and advocates — mentored use of technology and digital equity — are noticeably absent in the discourse.

Implications: Together, these findings suggest that DML is on the education reform agenda, but in a shallow, limited and largely unproductive way. Without explaining the mechanisms by which digital media facilitates learning, it is likely that the dominant cultural models of digital media (as a form of recreation and distraction) will persist, and continue to impede attempts to bring these tools into the learning domain.

Opportunities: By fitting more robust and strategic explanations of how learning happens and of the potential for technology to facilitate this process into these openings, DML advocates can provide deeper understandings that structure more productive discussions of the utility of digital media as a tool for more effective learning. In addition, we found that there are strategic opportunities for aligning the goals of DML with those of other, more prominent issues on the education reform agenda, including teacher training, college readiness and educational inequalities.

BACKGROUND LITERATURE: GAPS IN UNDERSTANDING DIGITAL MEDIA AND LEARNING

To situate the present inquiry, we draw upon past FrameWorks research on education reform and DML. From these earlier studies,[10] we learn that there are significant gaps between DML experts and the public and media with regards to learning and technology use. Those gaps include:

1. **Perceptions of Learning:**

   DML experts and advocates stress that *learning should be interactive, collaborative, and foster higher-order thinking.* According to this view, students need competencies that extend beyond, or run beneath, basic skills in traditional content areas. Such skills include problem-solving, critical thinking, and learning to be producers of

knowledge.[11] This type of learning is enhanced through interaction and collaboration between peers, with teachers and adults who act as mentors. Many DML experts believe that this type of learning should be promoted and implemented irrespective of the use of technology, but see technology as a particularly ideal medium for the learning of such skills.[12]

Patterns in public thinking and media framing present a decidedly different picture — where learning is assumed to be primarily about *"the basics."* Scholastic learning is understood using a transmission model that requires a teacher who "dumps" educational content into passive students recipients. In this way, learning happens through "books and facts," requires limiting distractions, and focuses on building student proficiency in traditional content areas, mainly the "3 R's."

2. **Perceptions of Digital Media:**

Digital media experts promote the idea that *digital media enables interactive learning.* According to this view, digital media is used to facilitate interest-driven learning, provide a context for students to apply their skills, and connect students to communities beyond the classroom. These experts also espouse the notion of *digital equity*, which refers to the integration of interactive learning and technology programs within both in-school and out-of-school institutions so that all children have the opportunity to be mentored in the development of DML skills, competencies and practices.

In contrast, the public views digital media use *as recreational, distracting and/or dangerous for children.* This notion is also prevalent in the media, where it serves to reinforce public fears about children's use of digital media. When digital media is discussed in terms of its applications for learning, it is accorded a passive role as a "fancier book" or "something you just pop in to watch."

The perspectives of organizations actively involved in influencing education reform are, as of yet, missing from this story, and are particularly important to understand. Such organizations play a major role in shaping the public discourse on this issue, and exert a powerful influence over the policies and programs that become institutionalized as part of the larger education reform agenda. By taking into account how influential organizations in the field frame learning and technology issues (especially vis-à-vis other prominent issues on the reform agenda), this analysis can help DML advocates both avoid communications traps and take advantage of opportunities evident in current communications practice.

METHODS AND DATA: FIELD FRAME ANALYSIS

A Field Frame Analysis captures both the explicit and implicit patterns of communications — or frames — within a sector.[13] It provides insight into the extent to which issues are discussed and contested, as well as the communication patterns that may promote or hinder further adoption of issues in the field. Since frames are "continuously articulated and elaborated during the course of conversation and debate," a Field Frame Analysis documents both current challenges and opportunities for strategic (re)framing of an issue.[14]

The first step in this analysis involved a link analysis[15] to identify influential organizations in the education reform field. Communication materials were then gathered from these organizations to form a sample for the inquiry. These materials were then subjected to a frame analysis which identified patterns used in presenting information and discussing issues. These patterns were compared with results from previous FrameWorks research[16] on how experts and the public think about DML. This comparison allowed researchers to detect how existing communications may help or hinder further adoption of DML issues in the wider field. A more detailed explanation of Field Frame Analysis methods is provided in Appendices A through D.

RESULTS

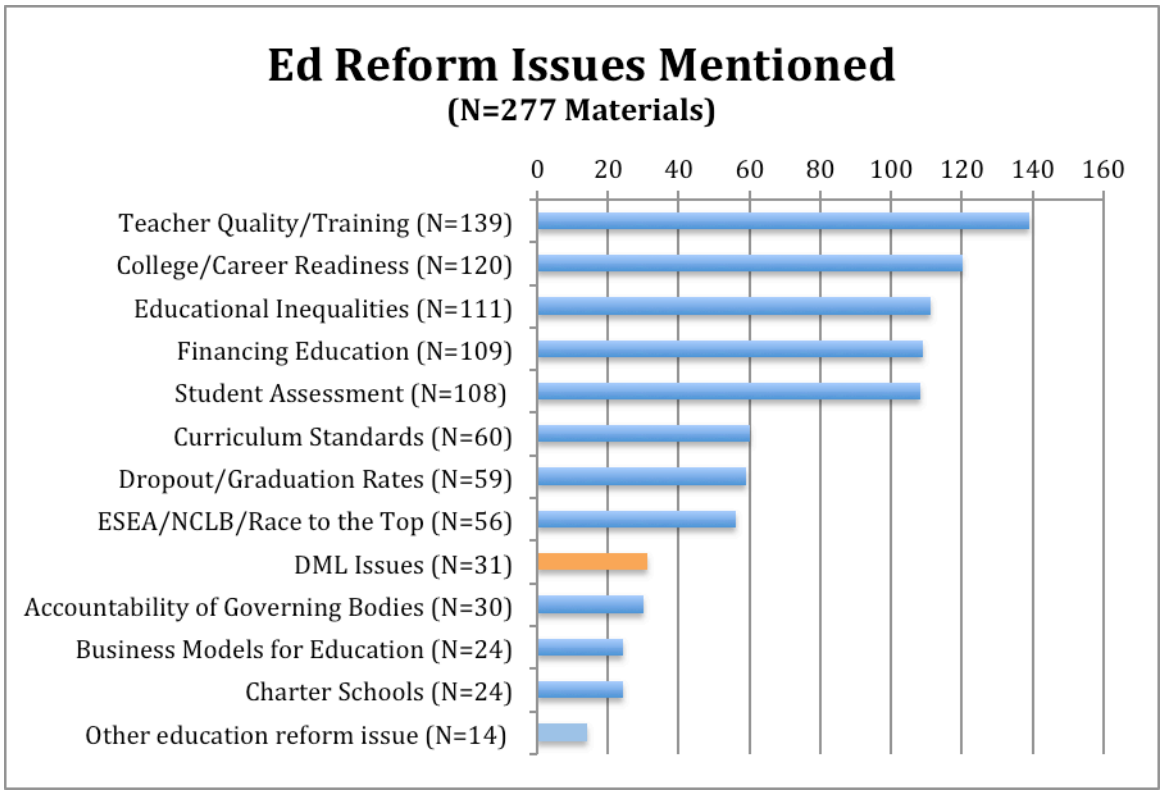
Part I describes the specific findings from the analysis. Part II explores the implications of these findings. Part III identifies communicative opportunities for moving DML in the wider education reform field.

Part I: Findings

Overall, the results of this study find that DML programs and policies are infrequently discussed within the education reform field. However, when DML issues *are* mentioned, a set of communication patterns becomes apparent. Several of these patterns present significant challenges to DML advocates looking to broaden support in the education field. Fortunately, there are also patterns in the field's communications that are more promising and represent opportunities that DML advocates can leverage to create new conversations about a productive role for technology to play in effective learning.

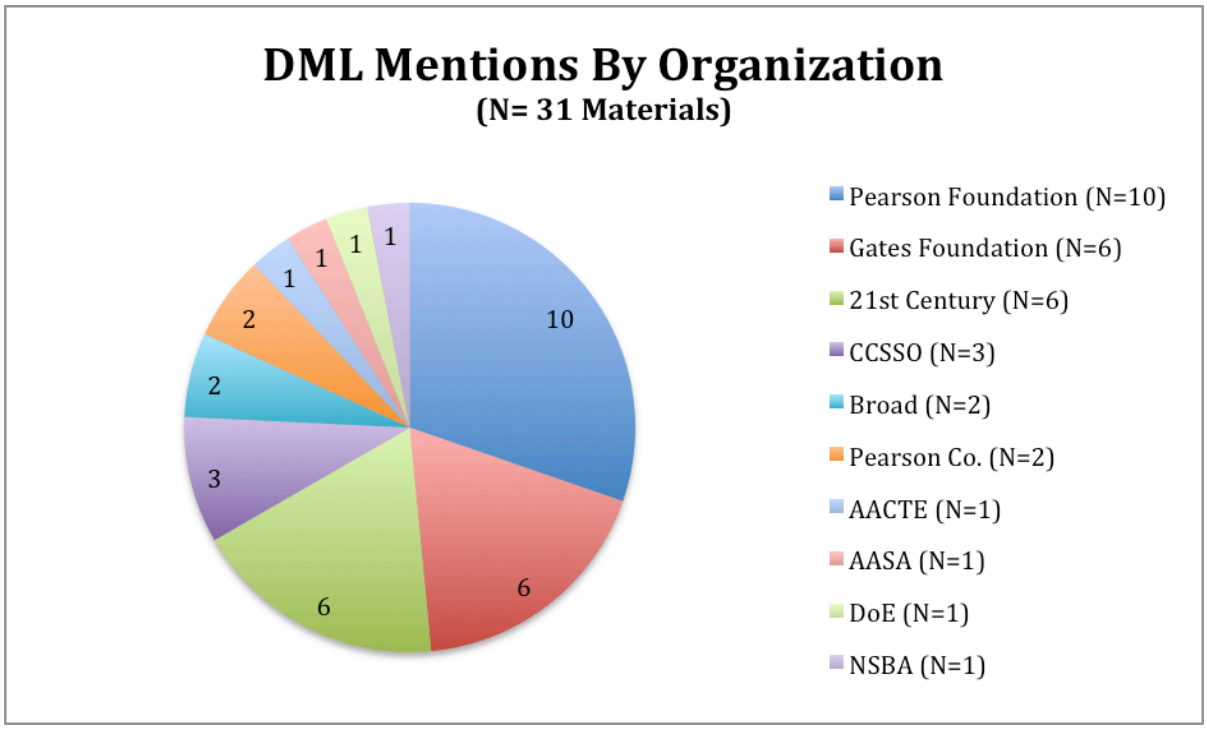
Finding #1: DML issues are infrequently discussed in the education reform field.

There is currently limited attention given to DML in the field of education reform. Based on findings from FrameWorks research with DML experts,[17] we operationalized DML as any discussion related to three more specific, constituent issues: (1) technology use for interactive learning and/or higher-order skills development[18], (2) mentored use of technology, and (3) digital equity. The chart below groups these three constituent issues together as "DML issues," and presents the frequency at which these and other dominant issues areas were mentioned in the materials that were analyzed.



DML issues are mentioned in only 11 percent of the sample, whereas issues such as teacher quality and training (50 percent), college readiness (43 percent) and educational inequalities (40 percent) appeared much more frequently. In a later section, we discuss how DML advocates may take advantage of discursive opportunities to embed DML issues within these more prominent issues.

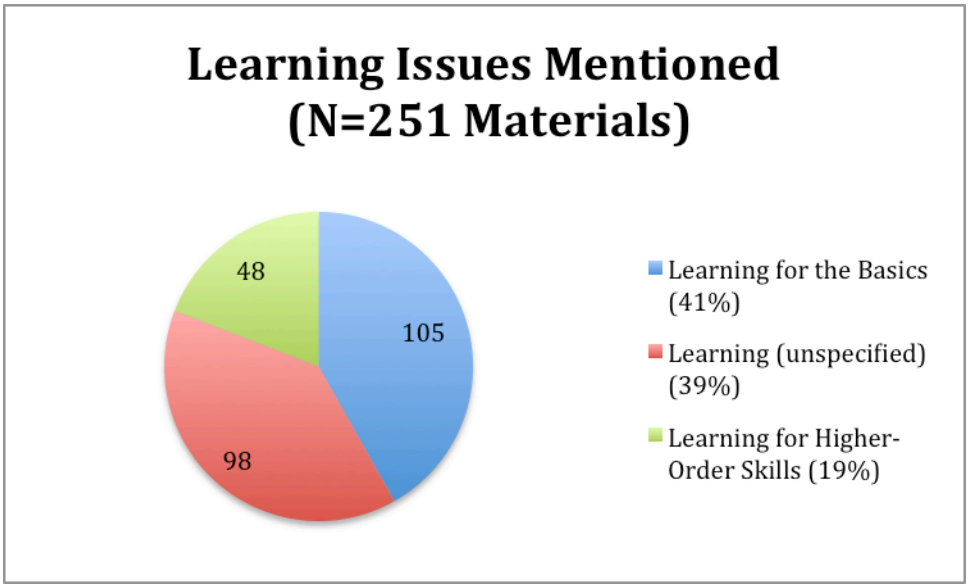
When we examine where these DML issue mentions come from, we find that four organizations (out of 20) account for over 80 percent of these mentions. This suggests that not only is DML infrequently discussed in the field, but that the discussions that do appear are propagated by a small set of organizations influential in the education reform field.



Finding #2: The education reform narrative on learning is dominated by "Just the Basics."

DML experts and advocates focus their attention on interactive and collaborative learning for both basic skills and higher-order skills acquisition as a cornerstone for DML programs. They view digital media as a tool to use in creating more effective learning processes and outcomes. In considering how best to frame this message, it is important to understand how education reform organizations currently communicate about learning. To accomplish this, we included a detailed analysis of all discussions related to learning in the materials that comprised the sample. Analysis of these discussions reveals three general communication patterns: learning for basic skills, learning for higher-order skills, and vague mentions of "learning" that contain no discussion of specific skill development.

Just the Basics: Forty-one percent of all materials that mention learning fall into the "learning for basic skills" category. This focus on basic skills acquisition is entirely consonant with what FrameWorks knows from past research on how members of the American public think about skills and learning.[19] This represents a major challenge to DML advocates who wish to build support in the education field for interactive learning that fosters *both* basic and higher-order skill development.



These discussions of basic-skills learning tend to focus on how specific programs and policies build competence in traditional content areas — mainly reading and math. In addition, there is often a "laundry list" quality to discussions that enumerate basic skills competencies. The following is an example of this theme:

> *English standards must cover reading basics (e.g., word attack skills, vocabulary), reading comprehension (e.g., exposure to a variety of literary genres), writing conventions (e.g., spelling, writing mechanics) and writing forms (e.g., narrative, persuasive, expository). Math standards must cover number sense and operations, measurement, geometry, data analysis and probability, and algebra and functions. Science standards must cover earth, physical and life sciences. Social studies standards must cover specific content in U.S. history, world history and civics.* (American Federation of Teachers, 2008[20])

Undefined Learning: In 39 percent of the mentions of learning, organizations address learning in a vague and highly unspecified way — paying no attention to specific skills, processes of acquisition or application. For example, the Educational Testing Service (ETS) discusses a "Race to the Top" competition in Delaware. In this document, there are mentions of "visionary thoughts" around instruction and learning, though it remains unclear what specifically is being taught or learned in this competition.

> *"The Race to the Top competition has brought people to the table who have characteristically been on the sidelines watching education," Dr. Lowery said. "In Delaware and at the national level these educators are now helping us think visionary thoughts around improving instruction and student learning."* (Baran, 2011[21])

Higher-Order Learning: In 19 percent of the mentions of learning, organizations discuss the importance of learning for higher-order skills development. Discussions of learning for higher-order skills are frequently accompanied by the term "learning for 21st century skills." For example:

> *High-quality professional development should exist as part of an aligned system of teaching and learning that includes 21st century skills standards, curriculum, instruction and assessments. Successful high-quality professional development initiatives around 21st century skills: a) ensure that educators understand the importance of 21st century skills and how best to integrate them into daily instruction; b) enable collaboration among all participants; c) allow educators to construct their own learning communities; d) tap expertise within a school or school district through coaching, mentoring and team teaching; e) support educators in their role as facilitators of learning; and f) use 21st century technology tools.* (Partnership for 21st Century Skills, 2011[22])

Most of these discussions lack any explanation of what "21st century skills" mean or why they are important. However, in some instances, organizations are more explicit in defining what is meant by "21st century skills." They mention the need for students to develop problem-solving and critical-thinking skills to prepare for lifelong learning beyond the classroom. For example:

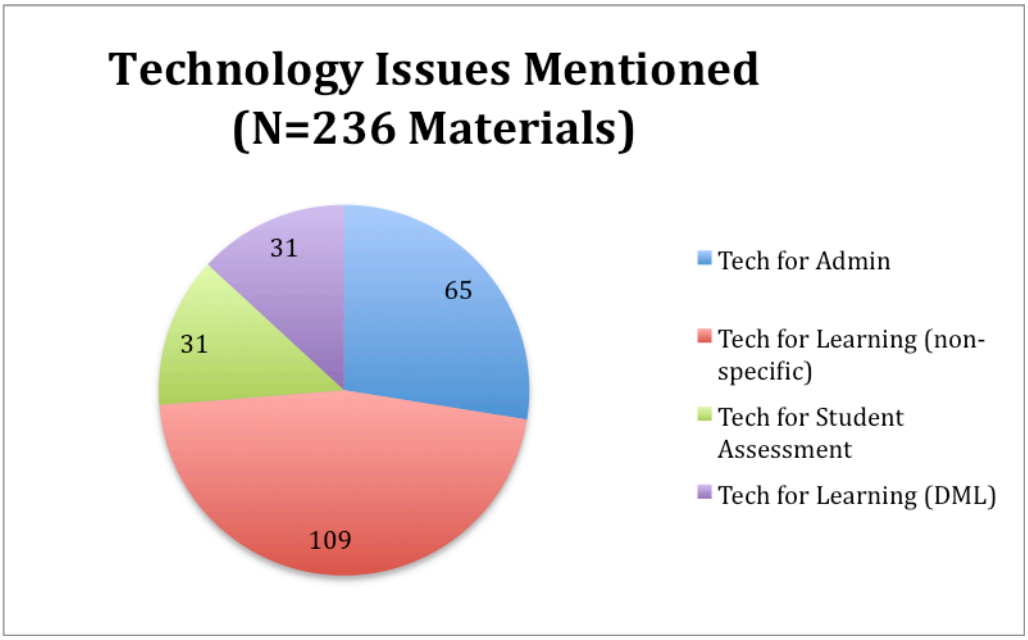
> *To be college and career ready today, student learning must go beyond mastery of core subjects and include 21st century knowledge and skills like critical thinking, communication, collaboration, and technology literacy.* (American Association of Colleges of Teacher Education and the Partnership for 21st Century Skills, 2010[23])

Despite this and other examples of specific skills mentioned, this study found no substantive explanations of how learning of "21st century skills" actually happens or how those skills and competencies are developed.

Finding #3: The technology narrative does not specify how technology facilitates learning.

Looking at how education reform organizations discuss technology use, we find that most of these discussions are not in line with the view of DML advocates. For example, many discussions frequently focus on technology use for administrative purposes or for standardized student assessment. Furthermore, when organizations do discuss technology and *learning* — a significant percentage of the technology mentions — they do so in ways that

actually work against the end goals of DML advocates by limiting understanding of how technologies can enhance learning.



The discussions of technology that mention learning fall into two categories — technology for learning that is not specifically related to any skills development, and technology for learning that mentions DML notions of skills development.

Tech for Learning (non-specific): Most of the technology discussions that relate to learning do not specify how technology can enhance learning and, in so doing, leave space open for the public to fill in this meaning. For example:

> *The Bill & Melinda Gates Foundation today announced the Next Generation Learning Challenges. The program will provide grants to organizations and innovators to expand promising technology tools to more students, teachers, and schools. It is led by nonprofit EDUCAUSE, which works to advance higher education through the use of information technology.* (Gammon, 2010[24])

In this case, it is not clear how "technology tools" or "information technology" will actually lead to learning. Based on the results of previous FrameWorks research, we would expect the public to fill in these open slots by accessing the ways in which they have the most practice and are the most comfortable bringing these concepts together. At best, technology will be seen as a "faster and fancier" way of accessing information, and, at worst, it will be understood as a threat to learning and educational outcomes.[25]

Tech for Learning (DML): When organizations do speak about technology in ways that are consonant with DML learning perspectives — a smaller, but still significant, percentage of the technology mentions — they employ terminology similar to DML experts: using digital media to engage students in "interest-driven" learning, problem solving, collaboration, cross-cultural understanding, "games-based" learning, and using technology to connect students to communities. Below, we provide examples of some of these discussions that thematically align with DML issues.

In- and Out-of-School Learning: Many of these DML-related technology discussions refer to the use of technology in allowing learning to happen in multiple places. For example:

> *In a next generation system of learning, schools — as the nexus of learning resources in the community — will also be nodes in a broader learning network connecting a wide range of institutions, partners, and resources. In a system that leverages technology to extend and expand learning opportunity, students might have virtually unlimited access to an expanded base of learning resources, including teaching specialists and content repositories that provide opportunity to find, access and contribute high-quality, digital content that meets specific instructional needs.* (The Council of Chief State School Officers, 2009[26])

Personalized Learning: We also found that many DML-related technology discussions focus on technology's potential to facilitate personalized learning. For example:

> *Because of technology, we have a remarkable opportunity to personalize learning.* (The Council of Chief State School Officers, 2010[27])

The materials of other organizations delve deeper into this notion of personalized, student-centered learning:

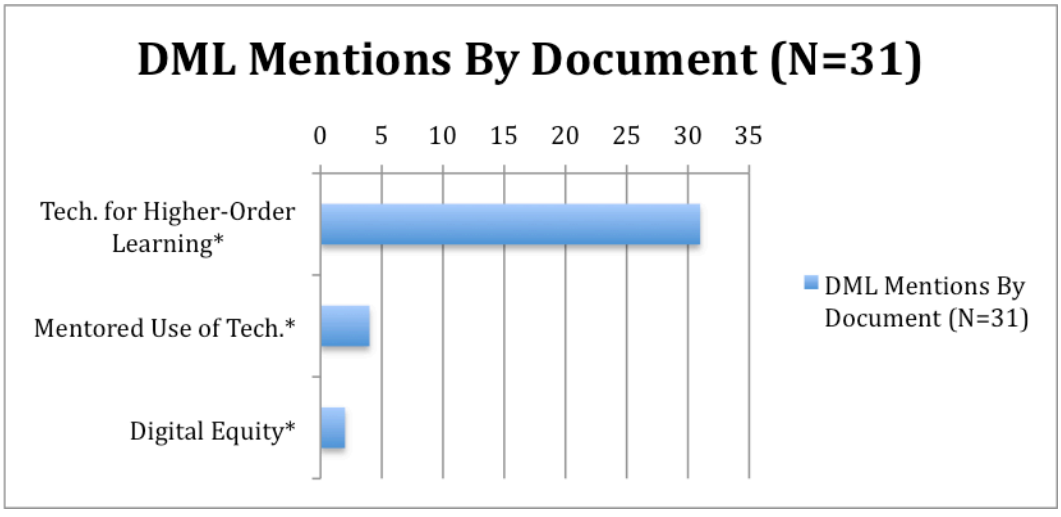
> *Personalization is often confused with the related terms individualization and differentiation, which are frequently employed in education, but sometimes represent tweaks within the long-standing, mass-production approach. True personalization goes further and requires a major shift in focus from an institution/teacher-centered approach to an authentic, student-centered approach. True personalization provides a learning program and approach specifically tailored to the abilities, interests, preferences, and other needs of the individual student.* (The Council of Chief State School Officers, 2010[28])

Specific Program Examples: Organizations also discuss the use of technology for interactive learning by mentioning specific programs currently in use. For example:

> *Mobile Learning Institute programs help young people transfer the digital media, social, and technological skills they have developed on their own and turn them into authentic catalysts for learning. Using innovative curriculums developed in partnership with leading educators, MLI programs guide young people to best practices using mobile phones and digital media applications to investigate what interests them, solve problems, collaborate with others, produce media products, and publish them to a worldwide audience. MLI professional development gives educators the training and perspective they need to introduce and integrate MLI practices in the classroom, in afterschool programs, in cultural institutions or wherever learning takes place.* (Pearson Foundation, n.d.[29])

While it is encouraging to see elements of the DML discourse espoused by education reform organizations, we found no passages that actually explained how digital media enables learning to happen. There is substantial description of DML programs, but no identification of (1) why learning for higher-order skills is important, or (2) how digital media acts as a mechanism for learning those skills.

Moreover, two key DML considerations — mentored use of technology and digital equity — are noticeably absent in this slice of the discourse. When we examined the materials that mention specific DML issues, this study found only four materials that referenced mentored use and two materials that referenced digital equity.



Part II: Implications

Together, these findings suggest that DML is on the education reform agenda, but in a shallow, limited and largely unproductive way. While seemingly daunting, this thin presence

can be seen as a communications opportunity. By fitting more robust and strategic explanations of how learning happens, and of the potential for technology to facilitate this process, into these openings, DML advocates can provide deeper understandings that structure more productive discussions of the utility of digital media as a tool for more effective learning. We outline below further implications of these findings.

Implications for Communicating Learning

- **Focus on basics is problematic.** The fact that much of the field's discussion of learning is in line with dominant public understandings of learning, as needing to get "back to basics," represents a major challenge to DML advocates. This focus leads away from the types of skills and outcomes that DML advocates wish to prioritize and more fully develop in education curricula.

- **Undefined learning leads to unproductive understandings.** Much of the discussions around learning issues are vague. This leaves a host of important questions — such as what is learned, how it is learned, and why it should be learned — unanswered. These questions represent key slots that people will fill in with their own meaning if they are not clearly defined. Past FrameWorks research suggests that the understandings people are likely to fill these slots with — understandings such as "back to basics," the assumption that real learning must be hard, or the idea that for learning to "work," educators must eliminate outside distractions — will work against many of the messages that DML advocates are seeking to communicate.[Mark]

- **Discussions of learning for higher-order skills can be more clearly defined.** The presence of a discourse that connects learning to higher-order skills is promising, and represents an opportunity for DML advocates. If these discussions can become both more numerous and, more importantly, strategically framed, DML advocates stand a good chance of opening up new ways of thinking about learning and the power of digital media as an educational tool.

- **Reliance on "21st century skills" in discussing higher-order skills will likely be ineffective in increasing support for DML programs and policies.** FrameWorks has shown that the use of the term "21st century skills" without sufficient definitional or explanatory attention actually strengthens and calcifies people's support for a narrow focus on the basics and moves them away from innovative approaches to both learning and skills.[30]

- **There is a strong need to communicate *how* interactive and collaborative learning leads to higher-order skills development.** The DML perspective of

learning is based on interactive, scenario-based environments that foster shared learning experiences and build competencies for knowledge production.[Mark] However, when learning and higher-order skills are connected, there are no explanations of how learning leads to these particular outcomes. For education reform organizations, and the public more generally, to better appreciate the potential of technology as a tool for more effective learning of higher-order skills, they must first provide better explanations of how this learning actually happens.[Mark]

Implications for Communicating Technology and Learning

- **The ways in which the education reform field discusses technology are problematic in relation to goals of DML experts and advocates.** Overall, the findings show that the ways the field discusses technology are problematic in communicating the DML story, and may limit support for DML programs and policy objectives both in the field and among the public more generally. More specifically, the ways in which technology and learning are coupled in these discussions reinforces perceptions of technology which FrameWorks has found to limit the public's ability to see the core message of the DML field — that digital technologies don't just make information easier to access, but actually structure more effective ways of learning. Undefined technology and learning references default to "Faster and Fancier Books."[31] When using an empirically tested metaphor that explains how experiential and interactive learning enables students to become knowledge producers, the role of digital media in this process will be much easier "to think" and more effective to communicate.

- **Two missing elements will continue to be underrepresented without effective reframing strategies.** Two elements of the DML expert story — digital equity and mentored use of technology — are noticeably absent from these discussions and therefore can only be expected to remain underappreciated in the field and among the public. These issues warrant careful reframing work that can develop and test strategies to best position these parts of the DML message within the larger discussions of learning and technology.

As the FrameWorks Institute moves into prescriptive stages of research, we aim to test more effective ways of communicating about learning and technology use that facilitate the adoption of digital media as an issue and policy priority in the education reform field. To aid in this endeavor, it is helpful to examine any available discursive opportunities to embed DML with more prominent issues on the field's agenda. In the following section, we describe a number of these opportunities.

Part III: Opportunities for Expanding DML Discussions in the Education Reform Field

It is clear that DML swims among a set of diverse issues in the education reform field — the current analysis found 11 other issues, programs or policies that receive regular attention in the field. Below, we focus on the top three prominent issues on the field's agenda (teacher quality, college/career readiness and educational inequalities), and discuss how these issues may be leveraged to advance support for DML issues.

- **DML and Teacher Quality:** Teacher Quality and Training is mentioned in 50 percent of the total materials in this sample. The general narrative employed in these discussions is highly standardized: Teacher quality is the most important school-based factor in predicting successful outcomes for young people; therefore, the focal point of education reform should be improving teacher quality through training. The following excerpt typifies these stories:

  In the years to come, our grants will also focus on effective teaching. This approach aligns with a growing body of research showing that effective teaching is the most important school-based factor in student achievement. (The Gates Foundation, 2008[32])

  This narrative is used to set up myriad proposals for new approaches to training, evaluating and retaining teachers. Implicit in these recommendations is a belief that current teacher training and retention programs are insufficient and ineffective.

  Opportunity: **There is an opening to communicate how teachers can benefit from training in digital fluency.** The focus on teacher training matches calls from DML advocates for increasing digital fluency among teachers. For example, in a recent Progressive Policy Institute brief, DML proponents call for a program akin to Teach for America that trains teachers in digital competencies to boost literacy skills.[33] DML advocates should be able to take advantage of the current focus on teacher training to advance understanding of, and support for, policies that provide teachers with specific training in how to use digital media as a teaching and learning tool. The analysis suggests that, by framing communications around the issue of teacher training for digital fluency (and, more specifically, how this training equips teachers to be cognitive guides or mentors for student learning), DML advocates are likely to find traction for their messages.

- **DML and College Readiness:** Another prevalent issue on the reform agenda is college and career readiness, mentioned in 43 percent of the total materials in this

sample. These messages are concerned with making education relevant to the "real world" and responsive to economic and social changes. These discussions frequently fail to move beyond platitudes such as the need to "prepare kids to succeed in tomorrow's economy" or to "be successful in college, work and life," and generally lack discussion of what college readiness means or how it is achieved.

Opportunity: **There is an opportunity to explain how the use of digital media can equip students for college and careers.** College readiness is a central issue for DML advocates who focus on how digital media can be used to cultivate specific skills that prepare students for college and beyond. In short, DML advocates are centrally concerned with addressing the questions that the current stories on college readiness leave unaddressed. This represents a strategic opportunity for DML advocates. Advocates can communicate the message of DML in a way that demonstrates the role of digital media in building skills needed for college and career success. This analysis shows that such messages will have space in the field and will also address strategic questions left unanswered in current discussion: How does learning work to produce skills, and why do these skills matter?

- **DML and Educational Inequalities:** Discussions of educational inequalities appear in 40 percent of the materials in this study. In these discussions, organizations focus on the need to address the "disparities" in educational outcomes between class- and race-based groups in the U.S. This issue is unique among dominant issues in the discourse in an important way. This is the only issue on the agenda that strongly and explicitly acknowledges the influence of out-of-school factors on educational outcomes. This structures a unique perspective on effective education policies and programs. In this story, some children are disadvantaged before they even enter the classroom, due to effects of poverty on health, nutrition, and social and cognitive development. As such, messages about educational inequality call for resources to be applied beyond the traditional school context. The following is an example of this messaging:

  "It is becoming increasingly clear that the conventional six-hour, 180-day school year is insufficient to give many disadvantaged students the education they deserve," said Nancy Devine, director of communities at The Wallace Foundation. "This long-awaited and timely RAND study, 'Making Summer Count,' confirms the disproportionate impact of the 'summer slide' on low-income students, and suggests that high-quality summer learning programs, though challenging to develop, are a promising path forward." (RAND Corporation, 2011[34])

  Opportunity: **The focus on out-of-school contexts as sites for education reform represents a key opportunity for DML advocates.** This storyline offers a number of

opportunities for DML advocates, and at the same time remains somewhat disconnected from parts of the existing DML story that would have natural overlap. The most prominent of these disconnects is the overall lack of references to equity issues surrounding digital media, including both access and mentorship around technology, for those coming from economically disadvantaged backgrounds. At the same time, the emphasis on out-of-school contexts offers a key opportunity for DML advocates.

DML advocates speak about an emerging "two tier" education system. In this narrative, one tier occurs in school and the other takes place out of school, where students engage in increasingly digitally mediated activities that provide enrichment, higher-order problem-solving, and leadership skills. The two-tier narrative argues that there is not only a gap in the in-school tier, but that there is perhaps an even wider gap with respect to the out-of-school tier, where informal educational contexts such as libraries, museums, camps, afterschool programs and youth-directed engagement in online learning communities constitute powerful learning opportunities. Young people from disadvantaged backgrounds, then, are in a doubly bad position — they lack access to these advantageous experiences in both learning tiers.[35] There is potential symmetry between this two-tier narrative and the current way in which educational inequalities are discussed. Both of these accounts focus on the power of out-of-school learning contexts and the potential of harnessing these sites to improve educational outcomes. There is, therefore, an opportunity for DML advocates to leverage the educational inequality discussion to get more of their two-tiered argument into the discourse.

CONCLUSION

The findings, implications and opportunities outlined in this report suggest that DML advocates and experts are well situated within the larger field of education reform to expand their influence and build support for related programs and policies, but this will require serious and intentional reframing work. Developing and testing strategies to deal with these problematic communication patterns is critical as FrameWorks moves into prescriptive reframing research.

Furthermore, we know that organizations are not devoid of established institutional priorities that influence whether to adopt and support a relatively new issue. To be able to command a significant place on the (already fully loaded) education agenda, it is important to understand what other issues occupy the agenda and how they are treated within the field. To this end, this analysis has identified features of the larger discourse that afford particularly ripe sites into which DML advocates can strategically embed their issues as they continue to work to gain more support for their programs and policies.

The findings from this research provide DML advocates and experts with key insights into both how their particular issues are discussed and how these issues fit into the larger context of the education reform field. Equipped with this knowledge, and forthcoming, empirically validated reframing strategies, advocates and experts can build the support in the field that is needed to place interactive learning and technology issues solidly on the education reform agenda.

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[1] Supported by The John D. and Catherine T. MacArthur Foundation.

[2] Lounsbury, M., Ventresca, M.J., & Hirsch, P. (2003). Social movements, field frames, and industry emergence. *Socio-Economic Review, 1*(1), 71-104.

[3] Strategic Frame Analysis™ includes a variety of methods, such as: cultural models interviews, focus groups, media content analysis, cognitive media content analysis, field frame analysis, simplifying models development and empirical testing of frame effects using experimental surveys.

[4] Carpenter, C. (2007). Setting the advocacy agenda: Theorizing issue emergence and nonemergence in transnational advocacy networks. *International Studies Quarterly, 51*, 99-120.

[5] We use the term Field Frame Analysis to refer to the study of existing communication patterns within a given field and their implications for strategic reframing by experts and advocates.

[6]The DML Emerging Scholars Group consists of graduate-level researchers pursuing doctoral degrees in the learning sciences and related areas. This group was organized under Prof. James Gee at Arizona State University in 2010 and has had a particular interest in DML framing research. Four researchers from this group (Rafi Santo, Dylan Arena, Peter Wardrip and Barbara Z. Johnson) contributed to the formulation, data analysis and write-up of the present report.

[7] For access to FrameWorks' body of research on education and education reform, see http://www.frameworksinstitute.org/education.html

[8] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute.

[9] Arvizu, S., Simon, A., Lindland, E., & O'Neil, M. (2011). *Where's the learning? An analysis of media stories of digital media and learning.* Washington, DC: FrameWorks Institute.

[10] Published in Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute.); an analysis of 412 articles and broadcast news stories from major U.S. news outlets from February 19, 2010, to November 19, 2010 in Arvizu, S., Simon, A., Lindland, E., & O'Neil, M. (2011). *Where is the learning?: An analysis of media stories of digital media and learning.* Washington, DC: FrameWorks Institute.; and an analysis of six peer discourse sessions of groups of civically engaged adults in three U.S. cities in O'Neil, M., & Arvisu, S. (2011). *Informational not pedagogical: Peer group perceptions of digital media and learning.* Washington, DC: FrameWorks Institute.

[11] This type of learning guides the use of technology in the classroom, but is not necessarily dependent on the use of technology. John Seely Brown, New Culture of Learning, http://www.newcultureoflearning.com/

[12] John Seeley Brown, http://www.newcultureoflearning.com/

[13] Lounsbury, M., Ventresca, M.J., & Hirsch, P. (2003). Social movements, field frames, and industry emergence. *Socio-Economic Review, 1*(1), 71-104.

[14] Benford, R., & Snow, D.A. (2000). Framing processes and social movements: An overview and assessment. *Annual Review of Sociology, 26*, 611-639.

[15] Rogers, R. (2010). Internet research: The question of method — A keynote address from the YouTube and the 2008 election cycle in the United States conference. *Journal of Information Technology & Politics, 7*(2), 241–260.

[16] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute; Arvizu, S., Simon, A., Lindland, E., & O'Neil, M. (2011). *Where's the learning? An analysis of media stories of digital media and learning.* Washington, DC: FrameWorks Institute. http://www.frameworksinstitute.org/assets/files/DML/dml_pds_report_final.pdf

[17] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute.

[18] Includes discussions of interest-driven, personalized and "connected learning."

[19] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute.

[20] American Federation of Teachers. (2008). *Sizing up state standards 2008.* http://www.aft.org/pdfs/teachers/sizingupstandards0308.pdf

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[22] Partnership for 21st Century Skills. (2011). *21st century readiness for every student: A policymaker's guide.* Retrieved from http://www.p21.org/storage/documents/policymakersguide_final.pdf

[23] American Association of Colleges of Teacher Education and the Partnership for 21st Century Skills. (2010). *21st century knowledge and skills in educator preparation.* Retrieved from http://www.p21.org/storage/documents/aacte_p21_whitepaper2010.pdf

[24] Gammon, M., Gates Foundation. (2010, October 11). *New initiative will advance the best uses of technology to improve college readiness and completion.* [Press Release]. Retrieved from http://www.gatesfoundation.org/press-releases/Pages/next-generation-learning-challenges-101011.aspx

[25] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute.

[26] The Council of Chief State School Officers. (2009). *Transforming education: Delivering on our promise to every child*. Retrieved from http://www.ccsso.org/documents/2009/transforming_education_delivering_2009.pdf

[27] The Council of Chief State School Officers. (2010). *Innovate to educate: System [re]design for personalized learning.* Retrieved from http://www.siia.net/pli/presentations/PerLearnPaper.pdf

[28] The Council of Chief State School Officers, (2010). *Innovate to educate: System [re]design for personalized learning.* Retrieved from http://www.siia.net/pli/presentations/PerLearnPaper.pdf

[29]Pearson Foundation. (n.d.). *We Give Books*. Retrieved June 11, 2011, from http://www.pearsonfoundation.org/literacy/programs/we-give-books.html

[30] For access to FrameWorks' body of research on education and education reform, see http://www.frameworksinstitute.org/education.html

[31] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute.

[32] Bill and Melinda Gates Foundation. (2008). 2008 *Annual report: Progress and pressing needs*. Retrieved from http://www.gatesfoundation.org/annualreport/2008/Pages/2008-annual-report.aspx

[33] http://progressivepolicy.org/wp-content/uploads/2011/09/09.2011-Levine_Gee-The_Digital_Teachers_Corps.pdf
Levine, M.H., & Gee, J.P. (2011). *The Digital Teachers Corps: Closing America's literacy gap* (pp. 1-7). Washington, DC: The Progressive Policy Institute.

[34] RAND Corporation. (2011, June 13). *Investment in summer learning programs can help stop the "summer slide."* [Press Release]. Retrieved from http://www.rand.org/news/press/2011/06/13.html

[35] This might be considered a 21st-century version of the "Hidden Curriculum." The "Hidden Curriculum" spoken of often in past decades referred to cultural experiences that well-to-do young people were exposed to that served to complement the baseline education received in schools. According to this narrative, well-to-do young people have access to high quality learning experiences in these spaces as well as in their school environments.

APPENDIX A: METHODS

Identifying Influential Organizations

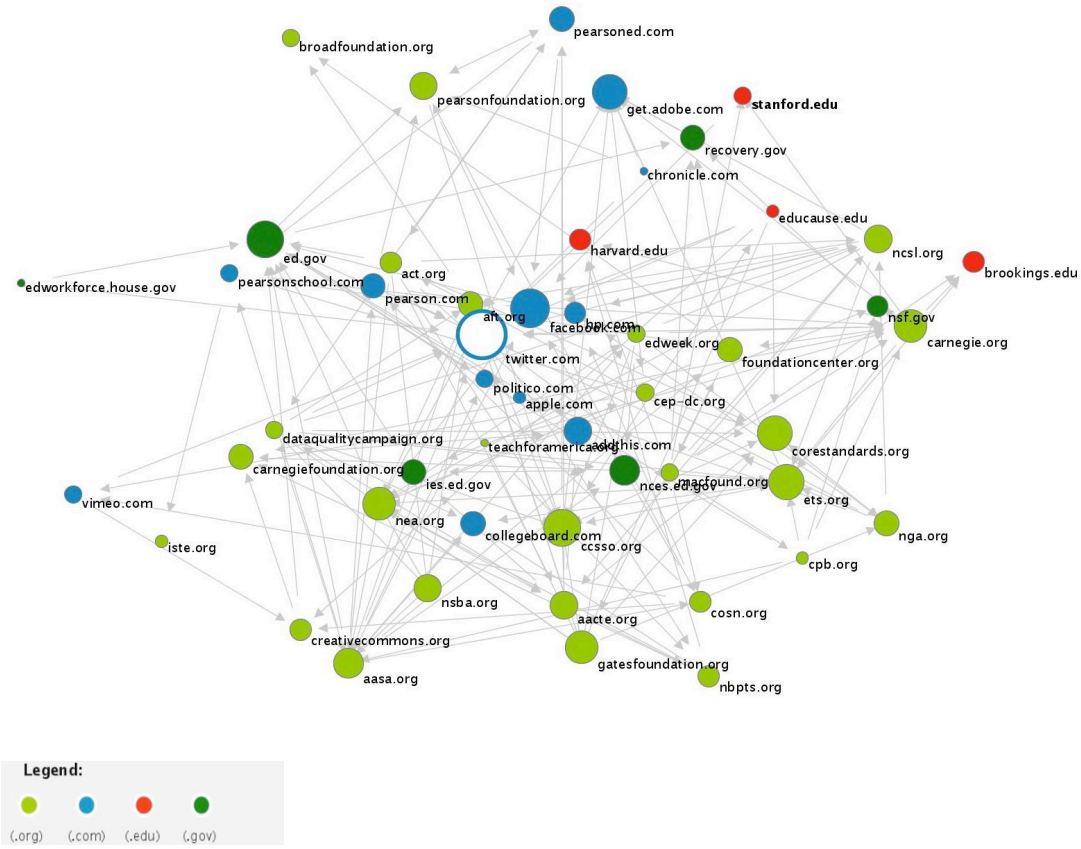
An organizational field represents "those organizations that, in the aggregate, constitute a recognized area of institutional life."[36] In the education reform field, several types of organizations, including non-profits, member associations, government agencies, for-profit companies, foundations, research organizations and education institutions play a role in shaping education programs and policies, and constitute the "field" of education reform organizations. While these organizations can be said to share the overall goal of improving the education system, there are marked differences in ideological perspectives on how to achieve this end. As such, the education reform field is in an "episode of contention," in which new forms of action and meaning are continually being proposed and negotiated.[37] These groups, therefore, are engaged in framing struggles as they vie for consensus around particular policy positions and conceptions of their field and its work and goals. A Field Frame Analysis is designed to capture and interpret the implications of these framing struggles for those advocating specific issues and positions. A more detailed background on organizational field framing research can be found in Appendix B.

To identify specific organizations and assess their relative influence and reputation within networks, researchers are increasingly turning to link analysis.[38] Link analysis uses hyperlinks on organizational websites as raw data to determine issue networks and organizational prominence within those networks. This social science method is based on the premise that "modern communication is increasingly organized around computer-mediated technologies," and that the Internet serves as a public repository for information about organizations and their goals, activities, networks and relative influence.[39] On the Web, an organization's influence is "strongly correlated with the organization's reputation for providing reliable and credible information." [40] This reputation can be measured through the density of links between organizational sites as a proxy for the reliability and credibility of that information.

In the current study, we used Issue Crawler[41] software to identify organizations from which to draw materials that would form our sample. Issue Crawler "crawls" an identified set of organizational sites, looking for links and outlinks to other sites. The software then compiles these as data for analysis.[42] Issue Crawler must first be provided with a set of organizations from which to begin a particular crawl. In this case, the research team (in consultation with education reform experts) generated a list of over 100 organizations active in the education reform field.[43] These included governmental agencies, non-profit organizations, foundations, research organizations, member associations and for-profit companies. The team then provided Issue Crawler with the URLs from each of these organizations and began the crawl.

Issue Crawler identified all the outgoing and incoming links from each organizational site, then compiled the shared links (or co-links) between organizations. From this list of shared links, Issue Crawler generated a sociogram of the relationships between organizations most actively linked to in the education reform field.

Sociogram of Influential Organizations in the Education Reform Field



Each node in the sociogram depicted above represents an organization. The size of the node indicates the number of times that an organization is linked to by other organizations in the field. In this way, the size of the point associated with each organization provides a proxy for that association's reputability and influence in their network.[44] It should also be noted that Issue Crawler detects the use of social media platforms, such as Twitter, Facebook and Vimeo, which are used as intermediary platforms for sharing links between organizations. In the sociogram above, Twitter has the largest node. This does not mean that Twitter is necessarily an influential organization in the network, but rather that it is a "middle man" frequently used by organizations in this network to share information with one another.

A group of education experts[45] were then consulted to triangulate the Issue Crawler results and winnow the number of organizations that the crawl had identified as "influential." From this triangulation and refinement process, we selected 20 organizations to include in our content and frame analysis (A complete list of organizations is found in Appendix C).

The research team then formed a sample of materials for analysis by collecting the following from each of the organizations that emerged from this multi-method identification process: 10 randomly selected press releases, two recent reports, and "about us" information on the organization's website. In total, the sample consisted of 277 materials drawn from 20 organizations.

Codebook Construction and Analysis

The next step was to construct a codebook that could be used to gather data from the sample of materials.

The codebook was constructed based on a qualitative thematic analysis of a randomly chosen sub-sample of 50 materials from the larger sample of 277. Our codebook included coding categories drawn from literature on framing education reform and DML, including types of learning and types of technology use mentioned.

Additionally, we subjected the sub-sample to a qualitative thematic analysis that used a grounded theory approach to identify primary issues, policies and programs regularly mentioned in the education reform field. A more detailed description of the codes included in the codebook, and more specific justifications and criteria for their inclusion, are described in Appendix D.

After the codebook was developed, two researchers were trained in its application and participated in an inter-coder reliability test through Dedoose qualitative software.[46] After achieving a satisfactory measure of inter-coder reliability, the full sample of documents was coded out. All materials were coded at the paragraph level.[47] The quantitative data that resulted from this coding process were statistically analyzed to examine code frequencies.

The final part of our research involved a frame analysis in which we qualitatively examined the language patterns used to communicate about DML, and learning and technology more generally. This analysis focused on identifying productive and counterproductive patterns of communication.

[36] DiMaggio, P.J., & Powell, W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*, 147-160.

[37] McAdam, D. (2007). Legacies of Anti-Americanism: A sociological perspective. In P.J. Katzenstein & R.O. Keohane (Eds.), *Anti-Americanisms in world politics* (pp. 251-269). Ithaca, NY: Cornell University Press; Fligstein, N., & McAdam, D. (2011). *Toward a general theory of strategic action fields*. Washington, DC: American Sociological Association. Retrieved from http://www.asanet.org/images/journals/docs/pdf/st/Mar11STFeature.pdf

[38] Carpenter, C. (2007). Setting the advocacy agenda: Theorizing issue emergence and nonemergence in transnational advocacy networks. *International Studies Quarterly, 51*, 102; McNutt, K., & Marchildon, G. (2009). Think tanks and the Web: Measuring visibility and influence. *Canadian Public Policy/Analyse de Politiques, 35*(2), 219-236.

[39] Rogers, R. (2010). Internet research: The question of method — A keynote address from the YouTube and the 2008 election cycle in the United States conference. *Journal of Information Technology & Politics, 7*(2), 244.

[40] McNutt, K., & Marchildon, G. (2009). Think tanks and the Web: Measuring visibility and influence. *Canadian Public Policy/Analyse de Politiques, 35*(2), 220.

[41] https://wiki.issuecrawler.net/Issuecrawler/WebHome

[42] Rogers, R. (2010). Internet research: The question of method — A keynote address from the YouTube and the 2008 election cycle in the United States conference. *Journal of Information Technology & Politics, 7*(2), 244.

[43] Link analysis is used to maximum effect, however, when triangulated with established research methods to validate a sample of influential organizations. As critics have noted, there are several social factors that underlie link creation that may hinder a completely quantitative framework for assessing and sampling influential organizations based on link analysis. Thelwall, M. (2005). Interpreting social science link analysis research: A theoretical framework. *Journal of the American Society for Information Science and Technology, 57*(1), 60-68. In order to remedy these shortcomings, we used link analysis in conjunction with a snowball sampling method with established education reform experts and scholars.

[44] Each node has a particular color as well, which denotes whether the organizational site is a .org, .com, .edu or .gov.

[45] Using our extensive academic networks, our group sought guidance from eight experts known for their knowledge and research of education field dynamics and influence.

[46] To test for inter-coder reliability, each researcher coded a set of 25 randomly selected pieces from the sample. The two researchers each achieved a respectable inter-coder reliability score of 0.85 using Cohen's kappa statistic. Cohen's kappa statistic is a widely used and respected measure to evaluate inter-rater agreement based on the coding behavior of each rater.

[47] We coded at the paragraph level to capture the context within which the issue is discussed, as well as to analyze the frequency of the issue within the document as a whole. Coders were allowed to apply as many codes as corresponded to a given excerpt. In total, 4,603 excerpts were coded from these materials. An average of 1.5 codes were applied per excerpt, for a total of 6,904 codes applied.

APPENDIX B: THEORETICAL BACKGROUND

Organizational Framing and Issue Emergence in the Field

How do organizations influence the emergence of issues on the agenda in a given field? What role does framing play in shifting the adoption of issues by organizations? This section provides a brief overview of the scholarly literature that informs these questions.

An organizational field represents "those organizations that, in the aggregate, constitute a recognized area of institutional life."[48] An organizational field may be composed of non-profit organizations, member associations, government agencies, for-profit companies, foundations, the media, research organizations and other various groups. The concept of an organizational field is helpful because it brings our focus to the entire realm of relevant organizations that are active in shaping communications in a given sector. These communications, in turn, shape the issue agenda of the field that leads to implementation of specific programs and policies.

Organizations communicate about issues and priorities through several channels, including through organizational materials.[49] Typically, such materials are targeted at the media and the wider public or, more specifically, at policymakers and organizational members. These materials describe organizational goals, issues of importance, and proposed programmatic or policy solutions. They reflect the overall orientation of the organization and provide a perspective into how they promote their issues to others in the field.

The ways in which issues are presented in organizational materials is called framing. Organizational framing refers to a group's use of "metaphors, symbols, and cognitive cues that cast issues in a particular light and suggest possible ways to respond to these issues."[50] Consistent with FrameWorks' approach to this literature, framing is a part of the standard repertoire of action for influencing change within a given field.[51] Frames play a pivotal role in shaping interpretations of the larger political and cultural context, and in creating motives for action.

A Field Frame Analysis captures the patterns of communications that organizations use to frame issues within a sector.[52] This analysis provides insight into the extent to which issues are discussed, as well as the productive and limiting communication patterns that may promote or hinder further adoption of the issues in the field. Since frames are "continuously articulated and elaborated during the course of conversation and debate" in the discursive field,[53] this type of analysis shows issue advocates the current challenges and opportunities available for the application of strategic framing among organizations that matter most for implementation of specific programs and policies.

[48] DiMaggio, P.J., & Powell, W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*, 148.

[49] Carpenter, C. (2007). Setting the advocacy agenda: Theorizing issue emergence and nonemergence in transnational advocacy networks. *International Studies Quarterly, 51*, 99-120.

[50] Campbell, J. (2005). Where do we stand? Common mechanisms in organizations and social movements research. In G.F. Davis, D. McAdam, W.R. Scott, & M.N Zald (Eds.), *Social movements and organization theory*. New York, NY: Cambridge University Press.

[51] Benford, R., & Snow, D.A. (2000). Framing processes and social movements: An overview and assessment. *Annual Review of Sociology, 26*, 611-639.

[52] Lounsbury, M., Ventresca, M.J., & Hirsch, P. (2003). Social movements, field frames, and industry emergence. *Socio-Economic Review, 1*(1), 71-104.

[53] Benford, R., & Snow, D.A. (2000). Framing processes and social movements: An overview and assessment. *Annual Review of Sociology, 26*, 611-639.

APPENDIX C: INFLUENTIAL ORGANIZATIONS IN THE EDUCATION REFORM FIELD INCLUDED IN ANALYSIS

Member-Based Associations:

1. Council of Chief State Schools Officers (CCSSO)
2. National Governors Association (NGA)
3. National Conference of State Legislatures (NCSL)
4. American Association of School Administrators (AASA)
5. American Association of Colleges for Teacher Education (AACTE)
6. National School Boards Association (NSBA)
7. National Education Association (NEA)
8. American Federation of Teachers (AFT)

Philanthropic Organizations/Foundations:

9. Gates Foundation
10. Broad Foundation
11. Pearson Foundation

Government Agencies/Offices:

12. U.S. Department of Education (Race to the Top Group, Office of Innovation and Improvement)
13. White House Office of Science and Technology Policy (OSTP)

Non-Profit Organizations:

14. Achieve Network
15. Educational Testing Service (ETS)
16. Common Core State Standards Initiative
17. Partnership for 21st Century Skills
18. Teach for America

Research Organizations:

19. RAND Corporation

For-Profit Companies:

20. Pearson

APPENDIX D: CODEBOOK DESCRIPTION

Education Reform Issues: A great deal of the content analysis was directed towards detecting patterns in the mention of specific issues in education reform found in organizational materials. We examined the types of issues covered in the texts, how issues were defined and conceptualized, how the materials attributed responsibility for issues, the causal stories employed, and the solutions proposed. Through a qualitative analysis of the sub-sample, we identified the following issues: Educational Inequalities, Dropout and Graduation Rates, College and Career Readiness, Student Assessment, Accountability, Government Policy (including ESEA, No Child Left Behind and Race to the Top), Financing, Teacher Quality and Training, and Curriculum Standards.

Student Learning: Given the particular focus on learning within the DML community, we aimed to identify how learning was characterized within the policy discourse. We coded for instances where learning was conceptualized in terms of basic skills, learning (unspecified), and learning for higher-order skills.

Role of Technology: Given the particular focus on technology within the DML community, we aimed to document particular trends in the discourse with regard to the use of technology in education, highlighting in particular the ways in which certain forms of learning were associated with technology. The codes in this category included: technology for administration, technology for assessment, technology for learning (unspecified), technology and equity, mentored use of technology, and technology for learning (DML-related).