PCC/UCLA Evaluation Partnership

Exploring the Use of Evidence to Reform Practice in Community College

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EXECUTIVE SUMMARY

Study Purpose

- This study explored the processes by which faculty and administrators at PCC acquire, interpret, and communicate evidence; it also featured an in-depth contextual analysis of individual and organizational factors that contribute to classroom and curriculum reform.
- This study has important implications for bridging the research to practice gap, as it provides scholars with further insight into the limited use of data-driven decision-making among community college faculty and administrators.

Method

- Qualitative data (interviews, observations, and documents) were gathered from January to May of 2014.
- Eleven faculty members and administrators participated in the study; all participants were involved in classroom and/or curriculum redesign geared towards improving the quality of instruction.
- Participants were interviewed within a few weeks of recruitment, and were observed in settings in which accessed information was disseminated to fellow faculty, college committees, and administrative staff.

Findings

- Processes of data access and use were embedded within the organizational context, which consisted of unstable leadership, access to institutional data, contextual norms, and social relations.
- Study participants found a wide range of information to be credible, including colleague experience, personal experience, other program models, institutional data, and social media. Empirical research was deemed credible, but was rarely utilized in daily practice; participants preferred information that was easily operationalized and modified, making it ready for classroom implementation.
- The nature of how participants shared information depended on the mode of communication, purpose of that communication, and intended audience. Within networks, information was primarily communicated through storytelling, cognitive mapping, hands-on activities, and group discussions. Across networks, information was principally communicated through short presentations and summary reports.
- Interpretation of information was largely determined by what is already known and believed; participants interpreted information by relating it to their personal experiences and pedagogical practices.

Conclusion/Recommendations

- To develop a "culture of evidence", the college climate ought to be more collaborative, trusting, and accepting, and IPRO must provide accurate, timely, useful, and user-friendly information to all governing board members, administrators, faculty, and staff.
- The practicing community could promote the use of research in pedagogical practices by teaching practitioners how to utilize research, by creating a supportive climate, and by establishing collegial relationships with researchers.

INTRODUCTION

Statement of the Problem

In 2012, expenditures on higher education research and development totaled 65.8 billion dollars (Britt, 2013). Further, expectations about the role of research in improving educational practices are at their highest in the history of the study of education (Coburn & Stein, 2010). Federal and state policies require school leaders to use evidence-based research to ground their educational improvement efforts (Honig & Coburn, 2008). Judging by the large budget and policies emphasizing evidence-based practices, research should play a formidable role in educational practices and reform. Yet, the research community has expressed concern that practitioners take action without being sufficiently informed of the research base, thereby creating a gap between research findings and educational practices that affect large populations of students (Nutley, Walter, & Davies, 2003; Hemsley-Brown & Sharp, 2003).

The gap between research and practice is largely attributable to policies that fail to elaborate on the process by which such research evidence should be accessed, interpreted, or leveraged. This ambiguity leaves teachers and school administrators with a limited understanding of evidence-based research and leaves researchers with a narrow understanding of what teachers and school administrators perceive as credible (Coburn & Talbert, 2006). To narrow this gap, researchers must identify *what* information practitioners consider credible (e.g., classroom vignettes, standardized tests), *how* they process the information, and most importantly, *how* the information is ultimately used. Only after understanding these patterns can researchers begin to develop a theory of action and provide an accessible evidence base that will point practitioners toward a clearer understanding of the types of systematic evidence needed to address specific educational problems (Roderick, 2012).

In response to the growing concern regarding the effective utilization of research, there has been renewed interest in identifying the extent to which research evidence is central to practitioners' work (Nutley et al., 2003) and a growth of empirical inquiry geared towards identifying the ways in which educational decision-makers and practitioners access, engage, and make use of research (Rickinson, 2005). Although the growth in empirical investigation of these issues has been useful to some degree, most of the studies in this domain have relied exclusively on self-report data (Hemsley-Brown & Sharp, 2003), which are often biased by false positive embellishment of the participants' true behavior (Rickinson, 2005). Given this shortcoming of self-report data, observational studies may provide a more unbiased account of how practitioners make their decisions. Furthermore, educational scholarship focusing on research evidence use primarily focused on the K-12 educational system. The use of evidence-based research to reform educational practice is imperative at all levels of education, and should therefore also be explored within the context of higher education.

Study Purpose

This study explored the processes by which faculty and administrators at Pasadena City College (PCC) acquire, interpret, and communicate evidence. For the purpose of this study, evidence was defined as information gathered to support a conclusion. Research evidence was defined as information gathered in a systematic way to answer a question, and data was defined as systematic information retrieved for analytical purposes. Using a case study approach, I explored the types of information community college faculty and administrators access and use as evidence to reform educational curricula. This study also featured an in-depth contextual analysis of individual and organizational factors that contribute to classroom and curriculum reform. As described, the study explored a community college undergoing educational program

development, thereby uncovering the processes related to the acquisition and interpretation of evidence within the higher education system. It has important implications for bridging the research to practice gap, as it provides scholars with further insight into the limited use of data-driven decision-making among community college practitioners.

METHOD

Overview of Study Procedures

To build a holistic body of evidence, data from observations, interviews, and documents were collected. The data collection process evolved organically, as interviews and observations were aligned to the participants' agenda. There was no pre-determined number of interviews or observations conducted, nor was there a pre-defined order in which the data were collected. Instead, the process of data collection was adapted to the natural setting in which it took place. The documents, which were collected during the interviews and observations, were examined in conjunction with the interviews and observations. Because data were collected from human participants, the study's design was submitted to and approved by the University of California Los Angeles Institutional Review Board.

Participants. PCC Faculty and administrators were selected using purposeful sampling. That is, the sample was deliberately chosen in such a way that participants would yield the most relevant and abundant data (Yin, 2011). The sample included faculty and administrators currently involved in classroom or curriculum redesign geared towards improving the quality of instruction. Participants were identified through UCLA's evaluation team, the Office of Institutional Research (IPRO), and the Teaching and Learning Center.

In total, eleven faculty members and administrators participated in the study. The sample of interviewees was drawn from several departments, including English, Mathematics,

Engineering, Languages, and Media Arts. Participants were also widely varied in terms of their tenure at the college; their respective times as employees ranged from five years to thirty years.

Procedures. All data collection was systematically conducted from January to May of 2014. Prior to data collection, each respondent provided informed consent to participate in the study. Each participant was interviewed within a few weeks of recruitment, and was contacted regularly to obtain his or her weekly schedule in an effort to select dates and times for observations. Participants were observed in all settings in which accessed information was disseminated to fellow faculty, college committees, and administrative staff; these settings included, but were not limited to, classrooms, meetings, workshops, and college-wide retreats. Participants were never pressured or persuaded to inform me of their schedule, and observations were conducted only when notified and permitted. The degree to which I engaged with participants varied as a function of their inclusivity, as well as the degree to which they were involved with data and other forms of evidence.

Analytic Procedures. Data analysis was conducted in two phases. During the first phase, data were assigned preliminary codes, and categorized in accordance with those codes. The second phase consisted of eliminating, reorganizing, and elaborating on codes to "develop a sense of categorical, thematic, conceptual, and/or theoretical organization" (Saldaña, 2014, p. 207). Findings were further interpreted and compared to information gleaned from previous social science research (Creswell, 2008).

REVIEW OF FINDINGS

Effects of College Community Climate on Data-Driven Decision Making

Data findings revealed multiple contextual factors that influence the use of systematic information, recognizing the intimate link between social context and political climate, and their

collective influence on perceived credibility, interpretation, and ultimate utilization of systematic evidence. More specifically, findings revealed that the processes of data access and use were embedded within the organizational context, which consisted of unstable leadership, access to institutional data, contextual norms (i.e. system of reward), and social relations.

Unstable leadership. Leadership and power relations were particularly influential at PCC, as the community college administration played a crucial role in the flow, and credibility, of institutional data. Because this college has adopted a hierarchical structure, several years of unstable leadership had a negative effect on the campus. The college has been subjected to leaders who failed to invest in innovation, technology, and personnel, as well as leaders who were marginally ineffective communicators. The widespread perception of administrations' disregard for faculty needs contributed to animosity, distrust, and poor information exchange between a subset of faculty and administration. Said one participant:

> "[There is a] history of lack of attention, oversight, management, and leadership in the area of instruction, which is inarguably our most important area of concern. [In] over a period of 12 to 15 years, the effects of this lack of leadership are evident with dysfunction."

This tension has permeated other domains within the college, shaping the ways that different departments and offices at the college function. One important by-product of this climate of tension and animosity is the evolution of what IPRO has become relative to what it *should* have become. Because IPRO was established as stand-alone office commissioned to provide the college community with objective data, it was thought to be shielded from the college's political climate. Nonetheless, its alignment with the administration has forced the office to adopt the additional responsibility of protecting the administration by filtering data

requests from individuals who they believe will manipulate accessed data to sabotage the administration's efforts. As a result, an office that was intended to maintain neutrality has been heavily influenced by the college's political climate. Because of the subjective nature of the process by which data are provided, a mutual distrust emerged between a subset of faculty and IPRO, resulting in limited request fulfillment, restricted access, and minimal utilization of relevant institutional data. As stated by one participant, "There are some people who do not trust what IPRO does."

System of reward. Community colleges were established to emphasize teaching, and as a result, typically employed faculty on the basis of their pedagogical interests and expertise. Because community colleges, such as PCC, focus more on pedagogy than empirical research, monetary and social incentives are primarily reserved for teaching practices rather than research-based activities. As a result, research-related activities have been significantly restricted within community college settings.

Data showed that faculty rarely explore in educational research because of time constraints and workload. Because they were hired primarily to teach, faculty are not expected, incentivized, or provided with time to participate in meaningful research activities. One participant succinctly stated, "We are teachers that teach." This exemplifies their collective attitude towards their job; they are hired to teach, and thus, focus primarily on teaching rather than research. Said another participant:

> "Community college teachers don't have time to do the research. There is no time built into their job description to do research. We are teachers that teach, and university teachers are teachers that do research and teach a little bit maybe. We don't have any requirements to do research, so we don't have that pressure."

It should be noted that several faculty members prioritized curriculum redesign and explored educational research. These efforts, however, were likely motivated by intrinsic rewards because the college has limited funds available for research activities. More plainly, faculty and administrators engaged in scholarly activity because they found it interesting and derive satisfaction from the activity itself. One faculty member described the need for self-initiative for participating in such efforts, given the limits on space, time, and recognition for doing so.

> "When you are just teaching and are on committees, there is no real incentive except your own incentive because there is no place to really talk about it here."

Although incentives for reforming the college's stance on scholarly activity were likely self-motivated, the current institutional climate cannot sustain this system of reward. Past research has shown that for people to experience high level of intrinsic motivation, they must feel competent and autonomous (Deci & Ryan, 1985; Deci, Koestner, & Ryan, 1999; Ryan & Deci, 2000). The current political climate of the college, however, may create a feeling of uncertainty among faculty and administrators, which may limit the college's reliance on a system of rewards for scholarly activity that is exclusively contingent on intrinsic motivation. Only after the college climate becomes more collaborative, trusting, and accepting will a sustainable intrinsic reward system effectively complement an extrinsic reward system to promote engagement in educational and research activities outside their specified job description.

Social networks. Data showed that the nature and dynamics of the college's social networks were critical to information access and flow therein. Political tensions among a subset of faculty members and administrators contributed to the formation of distinct intra-college networks. As one participant stated, "There is a lot of tension. Some like the administration and

some don't, so there is a lot of fighting as a result of everybody suffering." The data corroborated this participant's claims; there was a clear divide among faculty members.

One intra-college network—comprised of both faculty and administrators—welcomes institution-wide pedagogical reform, while another network—exclusively comprised of faculty members and more formal in nature—is closely aligned with the faculty union. Communication, and ultimate sharing of information, differed considerably across the two observed groups.

Members of the former network were able to share information more effectively and efficiently, as participants were observed interacting in multiple contexts, exchanging data, anecdotes, resources, and ideas. Alternatively, observed faculty members in the latter network were observed communicating primarily during structured meetings, and were not observed engaging in casual communication elsewhere. It is possible that the formal nature of communication discouraged faculty within this network from developing personal relationships, and engaging in more causal, uninhibited conversations. As a consequence, the flow of information was slower and potentially limited.

What Constitutes Credible Evidence in a Community College Setting

Extant research has shown that practitioners broadly define credible evidence as local research, local data, personal experience, personal communication, gut instinct or intuition, and the experience of others (Honig & Coburn, 2008; Nelson, Leffler, & Handsen, 2009). Study findings corroborate this result. Study participants found a wide range of information to be credible, including colleague experience, personal experience, other program models, institutional data, and social media. Although educators acknowledged empirical research to be credible as well, it was rarely utilized in daily practice. Data revealed that most participants did not have the time, expertise, or interest in deciphering research and integrating them into their

practice. Some participants went so far as to claim that the integration of abstract concepts into the classroom was impossible due to their irrelevance. Instead, participants preferred information that was easily operationalized and modified, making it ready for classroom implementation.

> "Measures that [the administration] use to test the effectiveness of something generally in my opinion are too broad…they care about success rate, they care about completion, they care about transfer rate. But as teachers, we are like troops on the ground level – completion rate of a sequence is the last thing on our minds. We are more concerned with tactics, pedagogy, and strategy."

Study findings also showed that participants experienced a form of dissonance with respect to credible evidence. Their definition of credible evidence, though appropriate academically, did not match their attitudes and behaviors. Observations revealed that the sources of information participants referenced and utilized were not necessarily systematically produced or published by reputable sources.

The stark difference between how participants defined quality evidence, and the evidence they regularly referenced and actively chose to utilize in their daily practice highlights the gap between research and practice. My findings suggest that this gap may not only stem from limited knowledge, but also from practitioner interests and personal belief system. Most participants could accurately define evidence-based information and discern quality, and yet they chose to value information sources that do not reflect this knowledge.

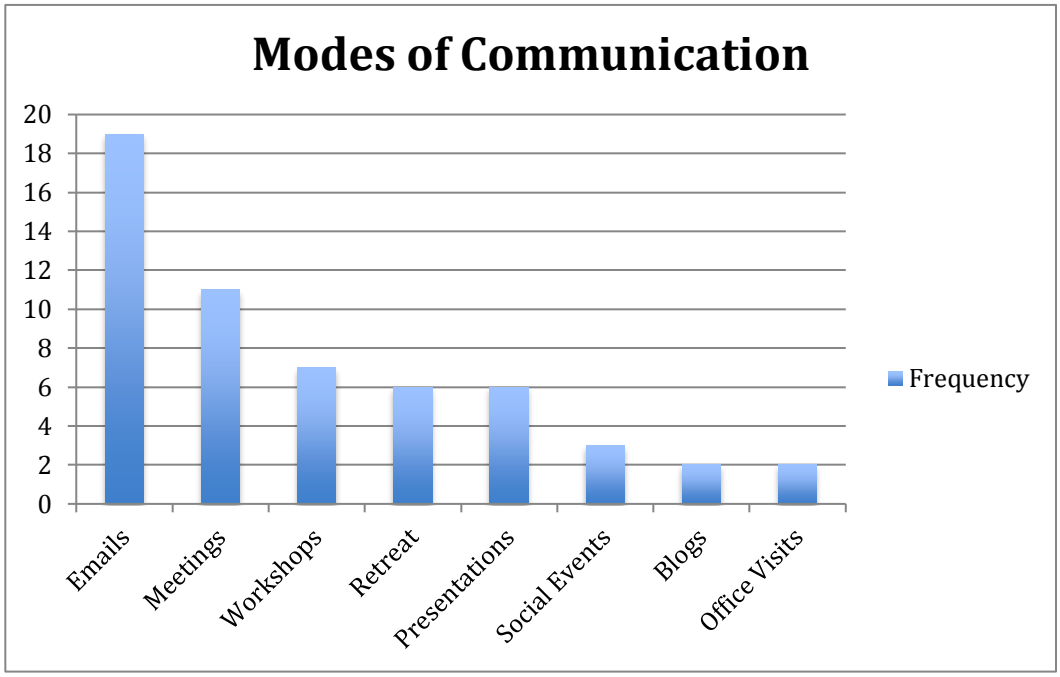
This discrepancy likely resulted from three issues: relevance, time, and political context. First, in terms of relevance, participants found research to be devoid of context and difficult to implement. Members of the faculty and administration believed that researchers do not have a clear understanding of that which takes place within classrooms, and make unfounded inferences

as a result. Second, with respect to time, participants rarely engaged in empirical research and scholarly inquiry because the aforementioned constraints related to time and workload. Because they were hired primarily to teach, faculty were not expected, incentivized, or provided with time to participate in meaningful research activities. Because they had limited familiarity or experience accessing and interpreting peer-reviewed research and data, participants invested more time and energy into understanding the information before they were able to effectively integrate it into their classroom practices. Finally, while study findings revealed that practitioners characterized institutional data as credible, the political context created a sense of apprehension and distrust in the data. For an institution to maintain a systematic process of inquiry, it is critical for the institutional research office to remain apolitical and staffed by educational statisticians. This is particularly true here, given that the current study illustrated a pervasive desire among faculty to incorporate institutional data into their work. However, it will be difficult to do so until the college adopts an infrastructure that provides accurate, comprehensible data in a timely fashion and without political agenda.

Communication of Information at Community College Setting

How participants chose to communicate their information varied significantly as a function of what they were communicating, who they were communicating to, the purpose of their communication, and the mode of communication they used. Data revealed that participants primarily communicated information through eight channels: e-mail, meetings, workshops, retreats, presentations, social events, blogs, and impromptu office visits. Multiple sources of data identified the number of times participants communicated information through these channels (see figure 1).

Figure 1
Frequency of Modes of Communication



As demonstrated in figure 1, e-mail was identified as the most common mode of communication, followed by meetings, workshops, retreats, and presentations. The data showed that participants did not frequently communicate through social events and impromptu office visits. However, it should be noted that this finding might not accurately reflect the realities of communication among college personnel as casual social gatherings were not formally referenced, and rarely occurred in my presence.

The nature of how participants shared information depended not only on modes of communications, but also the purpose of that communication and the intended audience. The process by which participants shared information within their community of practice strongly reflected their pedagogical philosophies. Within communities of practice, information assisted in the creation and refinement of educational curricula, and was primarily communicated through storytelling (see figure 2), cognitive mapping (i.e., textmapping, concept mapping, and flow charts) (see figure 3), hands-on activities, and group discussions. These participatory methods

empowered practitioners to take ownership of information, interact with it, challenge it, contextualize it, and ultimately believe in it. Observations offered me the opportunity to witness how these processes provided faculty with the space needed to create and refine their pedagogical practices.

Figure 2
Reflection Activity

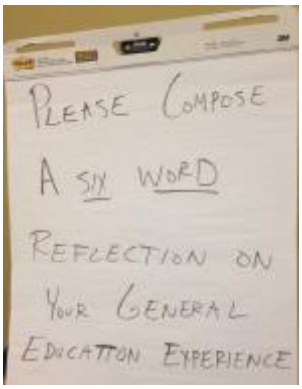
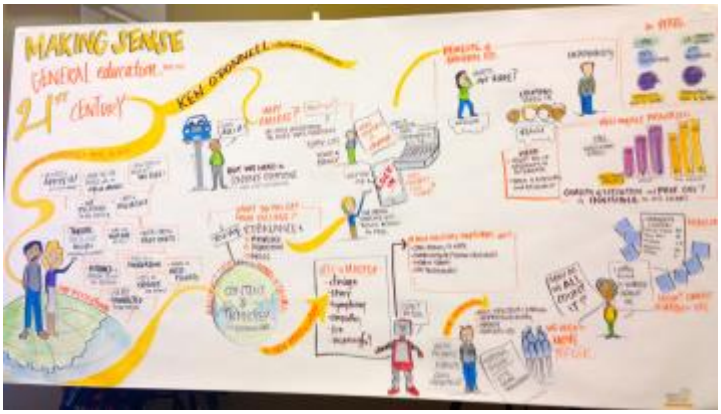


Figure 3
Flow Chart of General Education Retreat



Alternatively, the process of information sharing was more structured and formal when participants communicated with audiences outside their networks (i.e., other faculty, the college administration, the academic senate, the Board of Trustees). Participants relied primarily on data and occasionally empirical research when communicating with these networks. The use of institutional research may have been attributable to the belief that this form of evidence would

have been viewed as objective, and to the fact that the settings were not conducive to collaborative information sharing. Further, because of the time limitations to which these outside networks were subjected, information was also principally communicated through short presentations and summary reports. Said one participant, "[Be] careful about talking too much or providing a handout that's too heavy…you have to present information as quickly and clearly as possible."

As noted, how practitioners communicate information is heavily contingent upon the mode of communication they employ, the purpose of the communication, and the audience to which it is presented. Future research may benefit from exploring this interaction, and assessing whether practitioners access and utilize a source of evidence on the basis of its alignment with the communication process. By understanding the nuances of this relationship, researchers may be able to modify their work to bring it into accordance with practitioners' preferred method of communication.

Interpretation and Integration of Information

Extant research in cognitive and social psychology suggests that the process of interpreting evidence involves attending to the information, constructing its meaning, and developing a plan for action (Coburn et. al. 2009). How practitioners interpret new information is largely determined by what they already know and believe. Practitioners have a tendency to discount evidence that challenges existing beliefs or actions, and seek out evidence that corroborates their current knowledge and expectations (Coburn et al. 2009;Greeno, Collins, & Resnick, 1996).

Results of this study were consistent with this research, as participants interpreted information by relating it to their personal experiences and pedagogical practices. Further,

participants had difficulty making sense of information that did not align with their preexisting knowledge and personal experiences. This was particularly true with respect to data, as participants admitted to discounting evidence that challenged their ingrained belief system; they sought and utilized data that reinforced their perspectives, and discounted data that did not match their interests or personal experiences. In fact, institutional data were considered credible only when it confirmed personal interests or preexisting beliefs. Said one straightforward participant, "Experience trumps data, especially when it contradicts anecdotal data."

Furthermore, study findings showed that participants primarily integrated institutional data, information obtained from professional development activities, and anecdotal evidence into their daily practices. Although participants admitted to accessing and valuing empirical research, I observed it being integrated in their daily practice only rarely. This finding highlights the limited integration of scholarly work into daily practices, further illustrating that practitioners recognize the value of research, but deem it irrelevant to their day-to-day practices.

REFLECTIONS ON THE FINDINGS

Building a Culture of Evidence

A culture of evidence has been defined as a collection of common values and practices that transition the institution away from a culture of anecdotal learning towards a culture of deliberate use of data and research (Bailey & Alfonso, 2005). *Achieving the Dream: Community Colleges Count* was a national initiative established to assist community colleges in creating a culture of inquiry, evidence, and accountability. As outlined in the literature review, an inventory was established to provide a framework for analyzing and discussing the use of evidence. Although this theoretical framework is not empirically derived, it is nonetheless used pervasively to spur review, reflection, and discussion (McClenney & McClenney, 2003).

In reflecting upon these indicators, I would conclude that PCC's institutional climate is impeding it from developing a "culture of evidence." In accordance with the indicators, the institution has shown a commitment to collecting, analyzing, and reporting data pertaining to student persistence and successful completion. It has also been committed to regularly assessing the progress of newly implemented educational practices and measuring its contributions to student persistence and retention. As evidenced, the institution has demonstrated the intention, and gathered the resources necessary, to become a "culture of evidence." However, the political climate and limitations of IPRO has impeded the institution from reaching its potential in this regard. For instance, one of the indicators states that institutional research provides "systematic, timely, useful, and user-friendly information (McClenney et al., 2007, p.2)." The results of this study show that although many practitioners seek institutional research, they have difficulty accessing it in a timely fashion. Moreover, they often receive data that is difficult to interpret, and in some cases, incorrect. Furthermore, given the contentious political climate, participants doubt the objectivity of institutional data. As a result, participants neglect to routinely utilize it to inform institutional decisions regarding program development.

Another indicator states, "The institutional climate promotes the willingness to rigorously examine and openly discuss institutional performance among governing board members, administrators, faculty, staff, and students (McClenney et al., 2007, p.3)." My findings show that the current political climate has closed several lines of communication between faculty and administration; distinct groups have formed on the basis of mutual interests, and in turn, information sharing has generally been kept within networks. Finally, the institution's beliefs about "what works" in promoting student learning are not necessarily evidence-based. The results of this study demonstrate that practitioners have a number of conceptions as to "what

works," many of which are not based on evidence-based research. Instead, participants tended to trust information that worked for their colleagues at the college (or at neighboring colleges), believing that information to be worthy of implementation. Interestingly, my findings indicated that often participants utilized anecdotal evidence when designing a program, and utilized systematic evidence to secure resources and ensure sustainability.

Barriers to Research Use

Past research has suggested that some of the more significant barriers to the utilization of research include the overwhelming amount of research available, the inability of practitioners to access relevant research, practitioners' lack of time to consume and assimilate the research, a lack of readability, inconsistent results, general ambiguity, and a failure of researchers to synthesize their findings across contexts (Cousins & Leithwood, 1993; Hemsely-Brown & Oplatka, 2005; Levin, 2010; MacColl & White, 1998; Shkedi, 1998). In addition, other studies have similarly shown that practitioners express concern about their inability to interpret and apply research findings to their own work. As a consequence, they become intimidated by research and dismiss it as inaccessible (Nelson et al., 2009, Radcliffe, 2013). Study findings corroborated this, as participants were reluctant to access research because they believed it to be too far removed from practice. To participants, researchers investigate educational practices with little (if any) experience in the classroom. They are perceived as having a limited understanding of teacher practices, and thus, produce research that is either irrelevant or impossible to implement. Some participants were also deterred from the jargon inherent to much academic writing, as it made the research even more inaccessible.

Additionally, most faculty rarely engaged in research because of time constraints and workload. Because community colleges focus primarily on pedagogy, monetary and social

incentives were established to motivate teaching practices rather than educational research. Said one participant, "It's not like we have time for research, we are teachers." Because they were hired primarily to teach, faculty were not expected, incentivized, or provided with time to participate in meaningful research activities. For practitioners to take the time to access empirical research and incorporate it into their classroom practices, they must first believe that empirical research is relevant and beneficial. They must also be intrinsically motivated to use the time and exert the effort to seek out that research.

Promoting the Utilization of Systematic Information

Although my findings indicated that the utilization of empirical research and institutional data are heavily contingent on organizational context in which it occurs, there are steps the research and practicing community can take to promote the incorporation of systematic information into daily practice. The results of this study show that practitioners benefit from contextualizing research and including it in professional development conferences and workshops. Indeed, participants requested that researchers attend these conferences and present their research to the practicing community. By doing so, researchers would have the opportunity to teach practitioners how to utilize research, ultimately rendering their work much more comprehensible. Moreover, the presentations would assist in the interpretation of the research findings through contextualization and (in some cases) participation. Increased collaboration could also narrow the research to practice gap. Through collaboration, researchers could familiarize themselves with educational practices and ensure that their research was not based on faulty assumptions. Further, collaboration would allow researchers and practitioners to share information as equals, reducing educators' apprehension about unfamiliar information, get past their initial discomfort, and appreciate the importance of research in fostering a continuous

learning environment. As indicated by one participant, it is necessary to "create a space for researchers to share with us, talk with us, and reflect with us." While increased collaboration could undoubtedly promote utilization of systematic information, it should be noted that the reward system for researchers may limit this partnership. Researchers are rewarded for research and publications, leaving only limited space for teaching and consulting with educational practitioners.

Finally, the results of this study show that practitioners are more likely to access information that is readily available. As such, they may be more inclined to assimilate research that is delivered directly to their inbox. Taken together, the findings produced by this study are consistent with a large body of research that suggests that the implementation of research in the classroom can be promoted by making it more accessible, readable, and meaningful, or by providing research-training workshops to practitioners. The practicing community could promote the use of research in pedagogical practices by teaching practitioners how to utilize research, by creating a supportive climate, and by establishing collegial relationships with researchers.

References

Bailey, T. R., & Alfonso, M. (2005). Paths to persistence: An analysis of research on program effectiveness at community colleges. *Lumina Foundation for Education New Agenda Series*, *6*(1). Retrieved from Lumina Foundation Web site: http://www.luminafoundation.org/publications/PathstoPersistence.pdf

Britt, R. (2013). *Higher Education R&D Expenditures Remain Flat in FY 2012.* NSF *InfoBrief* (IB 14-303). [Retrievable at http://www.nsf.gov/statistics/infbrief/nsf14303/nsf14303.pdf]

Coburn, C. & Talbert, J. E. (2006). Conceptions of evidence use in school districts: Mapping the terrain. *American Journal of Evaluation, 112*(4), 469-495.

Coburn, C. E., Toure, J., & Yamashita, M. (2009). Evidence, interpretation, and persuasion: Instructional decision-making at the district central office. *Teachers College Record, 111*(4), 1115-1161.

Coburn, C. E. & Stein, M. K. (2010). Key lessons for the relationship between research and practice. In C. E. Coburn & M. K. Stein (Eds.), *Research and practice in education: Building alliances, bridging the divide* (pp. 201-226). NY: Rowman & Littlefield Publishing Group.

Cousins, J. B., & Leithwood, K. A. (1993). Enhancing knowledge utilization as a strategy for school improvement. *Science Communication*, *14*(3), 305-333.

Creswell, J.W. (2008). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.

Hemsley-Brown, J. & Oplatka, I. (2005). Bridging the research-practice gap: Barriers and facilitators to research use among school principals from England and Israel. *International Journal of Public Sector Management, 18*(5), 424-446.

Honig, M.I. & Coburn, C. (2008). Evidence-based decision making in school district central

Levin, B. (2010) Mobilising research knowledge in education. *London Review of Education, 9*(1), 15-26.

MacColl, G. S. & White, K. D. (1998). Communicating educational research data to general, nonresearcher audiences. *Practical Assessment, Research & Evaluation, 6*(7).

McClenney, K. M., McClenney, B. N., & Peterson, G. F. (2007). A culture of evidence: What is it? Do we have one? *Planning for Higher Education, 35(3),* 26-33.

Nelson, S.R, Leffler, J.C., & Hansen, B.A. (2009). *Toward a research agenda for understanding and improving the use of research evidence.* Portland, OR: Northwest Regional

Nutley, S., Walter, I. & Davies, H.T.O (2003). From knowing to doing: A framework for understanding the evidence-into-practice agenda. *Evaluation, 9*(2), 125-148.

Rickinson, M. (2005). *Practioners' use of research: A research review for the National Evidence for Education Portal (NEEP) Development Group.* The National Education Research Forum.

Roderick, M. (2012). Drowning in data but thirsty for analysis. *Teachers College Record, 114,* 1-9.

Saldaña, J. (2014). *The Coding Manual for Qualitative Researchers: Second edition*. Thousand Oaks, CA: Sage Publications Ltd.

Shkedi, A. (1998). Teachers' attitudes towards research: A challenge for qualitative researchers. *International Journal of Qualitative Studies in Education, 11*(4), 559-577.

Yin, R.K. (2011). *Qualitative research from start to finish.* New York, NY: The Guilford Press.