

DIGITALLY TRANSFORMING THE PROFESSIONAL SCHOOL COUNSELOR

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ABSTRACT

In the Internet Age, digital transformation has touched nearly every profession and industry, and K-12 school counseling is no exception. In the modern public school, counselors are expected to meet a variety of demands using evidence-based practices. Many school counselors, however, still struggle to meet the expectation to use data. In our current research, we surveyed 263 school counselors in the State of Utah to explore the challenges surrounding data-driven decision-making. Research revealed the most prominent barriers regarded data and a perceived lack of time. Computerized systems can automate many of the tasks required of counselors saving them time and can also process data in a structured way that facilitates analysis leading to the identification of essential patterns, opportunities, and risks in the student body. By using methods of quantitative analysis, we correlate the counselor's responses to possible technology tools that could assist them in making data-driven decisions.

Keywords: Digital transformation, Barriers to technology adoption, Technology acceptance

INTRODUCTION

In the current era of accountability, school counselors are expected to complete student scheduling and academic advising, improve students' social and emotional well-being, strengthen college and career preparation, and much more. In addition to these roles, there has been a recent emphasis on the importance of using data to monitor student progress, drive program decision making, and create systemic change (Young & Kaffenberger, 2015). This has not only added to school counselors' workloads but has also demanded an increasing set of skills. While there is no shortage of data, there is a challenge in educators being able to interpret and use the data appropriately (Gullo, 2013). For this reason, data-driven decision making "continues to be a stress-inducing, learner-centered pedagogical paradigm shift for which most [educators] are unprepared..." (Dunn, Airola, Lo, & Garrison, 2013, p. 88). While many school counselors have had training in data analysis, most do not have confidence in their ability and struggle to meet the expectation to use data (Young & Kaffenberger, 2015). This research focuses on how to improve this process by understanding what barriers counselors face using data and also by measuring the perceived usefulness of potential computerized systems to further the digital transformation of the profession. We first focus on the literature and discuss the responsibilities and aptitudes of the modern-day school counselor, including boundaries and barriers. We also discuss the digital transformation of the profession and the basic concept of acceptance. Next, we discuss the methodology and analysis. A survey was sent to school counselors in the field and using thematic analysis we were able to identify their barriers to data-driven decision-making and align these patterns and observations to current literature. We were also able to measure their perceived useful of a technology that could assist them in overcoming these barriers We conclude the research with recommendations relevant to the digital transformation of the school counseling profession.

LITERATURE REVIEW

The digital transformation of the school counseling profession mirrors the creation and evolution of school counseling itself. Born of necessity, both school counseling and the technology that supports it have evolved over decades in response to broad student needs and community expectations (Hartman, 1998). As technologies and computerized dependencies and integrations have advanced, school counselors have been required to adopt and use digital tools to complete daily tasks and comply with regulations (Bain & Swan, 2011). Some of these changes represent welcome

relief for school counselors, while others pose challenges ranging from technical competence and availability of training to system access and reliability (Paisley & McMahon, 2001). Whether welcome or grudgingly accepted, the digital transformation of the school counseling profession has certainly begun, and its pace is now hastening (Beidoğlu, Dinçyürek, & Akıntuğ, 2015). Thus, our research is relevant, timely, and essential for the modern school counselor, whether they've been in their role for three years or three decades (Shimoni. & Greenberger, 2015).

The Traditional School Counselor

The traditional school counselor in a secondary (6-12) public school struggles learning and using technology (Mason, Griffith, & Belser, 2018). As the ubiquity of computerized systems proliferated with cheaper and easier access to computers and networks through the 1990s, such technologies naturally made inroads into this profession, among myriad others (Schmidt, Hardinge, & Rokutani, 2012). So in many ways, school counselors have been compelled to adopt technology or perish, professionally speaking, whether they like it or not, and whether they possess the aptitude or not (Van Horn & Myrick, 2001). The responsibilities of school counselors have also evolved. In addition to preparing students for post-secondary schooling, improving student achievement levels, improving students' social and emotional well-being, offering counseling services and academic advising, and helping students make occupational choices, (Mau, Li, & Hoetmer, 2016), school counselors are now expected to demonstrate accountability through data-driven decision-making (Young & Kaffenberger, 2015). Given the nature and disposition of many who have chosen the field, professional school counselors are often well-educated and capable in areas of psychology, interpersonal relations, social organization and communication (Paolini, 2018; Stickel, 1999). These areas of expertise matter and are crucial to successful execution in public schools. Because of their importance, and a predisposition toward such expertise, school counselors will often place greater emphasis on, and devote greater time to these areas of strength (Herr, Heitzmann, Rayman, & Mahwah, 2006; Sabella, Poynton, & Isaacs, 2010). Subsequently, counselors may resist or subconsciously overlook technologies which may actually improve their job performance or may be required of them.

Boundaries and Barriers

Within the profession of school counseling, several boundaries and barriers exist related to the digital transformation of the discipline. Chief among these are time, tools, and skills (Myrick, 2003; Overbay, Mollette, & Vasu, 2011). In this paper we identify a lack of desirable, useful, and acceptable skills as a barrier, while boundaries are defined as administrative constructs which constrain or limit a school counselor's ability to engage with technology within their profession.

Later in this paper, we will address our findings related to time in the context of technology adoption and school counselors. What we report here is not a radical departure from what is currently found in the literature. The job title 'school counselor' came about because the position was created specifically for the purpose written in the name: "counselor" (Kuranz, 2002). Students need a source of guidance, information and often, reassurance as they navigate their school experience. In early formal public education, teachers filled this role, but as student populations and needs expanded, especially in the 'baby boom' years following World War II, demands on teachers' time and expertise necessitated a change (Paisley & Hayes, 2003).

School counselors became permanent, full-time fixtures in public schools, and their roles and responsibilities almost immediately began to increase (White, 2007). Counselors who were used to meeting with and guiding troubled, struggling or otherwise needy students began to share (or even own) responsibility for assembling class schedules, coordinate college readiness programs, arrange vocational training, administer standardized testing, and more (Perera-Diltz & Mason, 2012). Administrative and routine tasks supplanted one-on-one personal interaction (Pierce, 2012). As counselors increasing bore the burden of these types of tasks, the amount of time they could dedicate to actual counseling necessarily diminished (Samide, Patrick, Eliason, & Eliason, 2014). Schools have increasingly become the source of so many academic, social, and professional programs, and as their breadth and complexity has grown, so too has the amount of time administrators have had to dedicate to learning new technology (Cinotti, 2014). Although technology can make many of the attendant required tasks easier and quicker, there is still the barrier of learning to use technologies, and that learning requires time that seems ever in shorter and shorter supply. It thus becomes a great paradox, that technology can help save school counselors time, but only if school counselors have time to learn technology (T. E. Davis, 2006).

Tools are an absolute factor in the digital transformation of school counseling, and they represent both boundaries and barriers. At the most basic level, simply understanding a computerized tool is the most elemental barrier (Dowling, 2006). At a more sophisticated level, the barrier is more about envisioning the capability and capacity of digital tools and recognizing which tool is appropriate to a given task (Hill, Wicklein, & Daugherty, 1996). Technology solutions are not only capable, but necessary, to support data-driven practices as data continues to grow beyond the capacity of humans to handle (Mandinach, 2012). However, for an audience that may not be immediately technologically savvy or motivated, capturing the possibilities of technology adoption is a barrier in and of itself. This is not to say that the audience is incapable of recognizing the value in tools nor to disparage their skills in any way, but rather, it acknowledges a natural deficiency that exists and must be overcome. In addition to tools as barriers, there are also some boundaries which exist, often for very important reasons, that may prevent school counselors from adopting digital tools (Shenker, 2008). Such barriers may include family and student privacy requirements that exist via policy or legislation, or separation of duties that are both wise and prudent in order to guard against misuse or abuse of systems (Jones Sears & Haag Granello, 2002). These are often important but may add to frustration or resistance on the part of school counselors.

Finally, we must address skills as a potential barrier to digital transformation in the school counselor domain. By their own admission, many school counselors will acknowledge that they haven't adopted technology to do their work because they simply don't know how (McGlothlin & Miller, 2008). Some may acknowledge that they don't want to know how; that they really aren't interested in learning new technology or attempting to automate tasks they perform in their jobs (Steele, Jacokes, & Stone, 2015); however this is generally not the norm (Symonds, 2012). Most counselors acknowledge that we live in the Information Age, and that their profession must evolve as others have done (Carlson, Portman, & Bartlett, 2006). Acknowledgment of necessity does not overcome the skills barrier, however. Counselors must be willing to step out of their comfort zone, take some measure of risk, and subject themselves to instruction and assessment in order to acquire the necessary skills to transform themselves into professionals who perform in a digital workplace (Butler & Constantine, 2006).

Digital Transformation in the Counseling Office

In addition to the time, tools and skills issues related to the counselors themselves, there are both real and perceived limitations to digital transformation in the school counseling office itself (Carlisle, Hays, Pribesh, & Wood, 2017). Budgetary and administrative support for computerization of the counseling office is essential, as is the infrastructure and systems development necessary to enable counseling activities.

Early efforts at digitizing some school counselor functions came via the World Wide Web (Carey & Dimmitt, 2004; Trotter, 2003). These activities primarily aimed at information dissemination, such as how to find out about standardized tests or where to look for class schedules. This was an easy place to start and required limited technical know-how. Often, school counselors could simply provide information to whoever administered the school's web site, and that person would put it online. Since this did not threaten most school counselors' comfort zone or procedures (Cinotti, 2014; Dahir, Burnham, & Stone, 2009), nor did it cost more than what the school was already spending to have a website (N. Gysbers & Henderson, 2002), there was little resistance to such technological change. While this approach helped in some ways by reducing the amount of time counselors answered the same, basic informational questions, it did not genuinely represent digital transformation (N. C. Gysbers & Others, 1990; Milsom & Bryant, 2006).

More recently, novel approaches to legitimately shift the office and profession have been undertaken. These include interactive and dynamic websites that provide more than just standard information, but rather leverage expert systems and rich media to engage students and parents in more responsive ways (Kimbel, Jacokes, & Stone, 2015; Susanto & Novitasari, 2014). Such efforts have led to even more technologically advanced ideas that if fully realized, would represent a new state-of-the-art in school counseling (van Rijn, Cooper, & Chryssafidou, 2018). These include real-time, two-way counseling systems that involve a live school counselor, complemented by artificial intelligence and machine learning to empower counselor with up-to-date information, suggested courses of action, and resources for students, parents, and others (Kolog, Sutinen, & Vanhalakka-Ruoho, 2014).

Technology Acceptance Model

Key to all of this digital transformation in a traditionally non-digital profession is the basic concept of acceptance. Without acceptance by the end-users—in this case, school counselors—there can be no digital transformation of the profession. Pioneering work in the area of technology acceptance was first published by Davis (1989), and then refined with research partners to include two key areas: Perceived Usefulness (PU) and Perceived Ease-of-use (PEOU) (F. D. Davis, Bagozzi, & Warshaw, 1989). Note the use of the word “perceived” in these two keys to technology acceptance. Whether a technology is efficient, effective, revolutionary, or anything else, Davis found that people's’ perceptions make a significant difference in the acceptance of that technology.

When speaking specifically of school counselors, perceptions of usefulness and ease-of-use matter both in terms of whether or not technologies can be used, and whether or not the tool should be used. In the literature, we see questions of size and value of a technology's effect on a counselor's work (Cronin, Ohrtman, & Colton, 2018); as well as questions of ethics and propriety (Mudore, 2003). Referring back to the first section of this literature review, we claim that the personality and aptitudes of school counselors are those of interpersonal, caring individuals who like to work with people, and who value connections with them. Technology cannot threaten such valued interactions if one hopes to achieve acceptance in the counseling profession (Coy & Minor, 1997; Evraiff & Evraiff, 1997; Preble, 2016). Systems and tools must be both useful and useable within the confines of counselors’ relationships with other people in order to achieve acceptance (Richard L. Hayes, Paisley, Phelps, Pearson, & Salter, 1997; Kuranz, 2003; Sabella & Booker, 2003). The definition of what is useful and useable is up to school counselors and will be defined by their perceptions (V. Venkatesh, 2000), so purveyors of such systems would be well-advised to involve counselors in the analysis, design, development and deployment phases of all technology-related projects in order to achieve the most favorable results (V. Venkatesh & Bala, 2008; V. Venkatesh, Morris, Davis, & Davis, 2003).

Research Approach & Methodology

The authors choose a single explanatory case study (Yin, 1989) to answer questions of "how" and "why" school counselors continue to struggle making data-driven decision-making. Two hundred and sixty-three participants provided qualitative responses that the researchers coded through the identification of emerging themes and categories using thematic and systematic analysis. Thematic analysis is defined as a process for encoding qualitative information to identify themes for understanding the research (Boyatzis, 1998). Systematic analysis is a type of content analysis coding in which a researcher identifies subjective meaning to determine whether a theme is present (Neuman, 2014).

The primary author conducted the initial coding analysis. The other authors also performed coding analysis to ensure the accuracy of the coding process and to prevent researcher bias (Denzin & Lincoln, 2000). The authors carefully reviewed qualitative data from the open-ended responses and categorized them into themes or related variables that could be analyzed for descriptive statistical purposes (Roberts, 1997; Strauss, 1987). For this study, the researchers identified core categories that account for significant theme variation and similarities using latent coding. Finally, a textual analysis was conducted using RapidMiner to identify keywords in the responses.

INSTRUMENTATION

The investigators developed survey questions based on a review of the literature, the TAM model, and recommendations from educational experts at the Utah State Board of Education. A survey design provides a quantitative description of some fraction of the population, that is, the sample through the data collection process of asking questions (Fraenkel & Wallen, 1995). This method was applied in the collection of data from the field to understand the barriers preventing school counselors from using data in their counseling programs. The descriptive survey was chosen for the study for the fact that it determines the status of a given phenomenon (Osuala, 2001). The study adopted both quantitative and qualitative research paradigms.

The authors relied heavily on factor analysis to examine the interrelationships among the variables. Survey questions are listed in Appendix A.

Demographic filtering:

D1 – School level

D2 – Years of experience in the field

Variables explored:

V1* – Barriers to using data

V2 – Ability to use data

V3 – Level of comfort applying data

V4 – Perceived usefulness of a general tool

V5 – Perceived usefulness of a collaborative tool

V6 – Tool acceptance

*V1 was an open-ended qualitative question that allowed us to categorize the responses.

Study Participants

The target population was professional school counselors in the State of Utah. The sample population consisted of 19 (11%) elementary school counselors, 74 (43%) middle school and junior high school counselors, and 72 (42%) high school counselors (42%). Additionally, 15 (9%) had been a practicing school counselor less than two years, 21 (12%) 2-4 years, 57 (33%) 5-10 years, and 80 (46%) had been in the field for more than 10 years.

Coded Themes

To identify themes and barriers counselors face when using data to make decisions; we asked the question, "What is difficult about using data to drive decisions in your school counseling program?" (V3) This open-ended question allowed the counselor to openly express their thoughts and feelings about data in their school. Using RapidMiner, we identified explicit words found in the survey responses, and then used thematic analysis to identify themes. Thematic analysis was accomplished by extracting core themes that emerged and were distinguished both between and within the survey responses. One of the main elements of the identification of themes was through the coding of each response (Bryman, 2004). Table 1 shows the response text values of words or phrases, and words identified with a count of 10 or more occurrences using RapidMiner. The primary themes identified provide valuable insight into counselors' perceptions of data-driven decisions.

Table 1: Words and phrases using RapidMiner

Word or Phrase	Count		Word or Phrase	Count
Data	190		finding	14
time	82		gather	14
students	31		find	13
school	25		analyze	12
collect	24		takes	12
difficult	21		use data	11
Use	21		collecting	10
Get	19		finding time	10
getting	16		help	10
access	15		student	10
know	15		things	10
parents	15			

Data

The most prominent theme identified was "Data" (57%). Due to the number of counselors who identified this as a barrier, a matrix-based method (Ritchie, Spencer, & O'Connor, 2003, p. 219) was used for ordering and synthesizing "Data" into sub-themes (See Fig 1). These themes were (1) Data Collection (2) Data Quality, (3) Data Analysis, and

(4) Data Access. Themes one through three generally represent barriers for school counselors, while theme four generally represents a boundary.

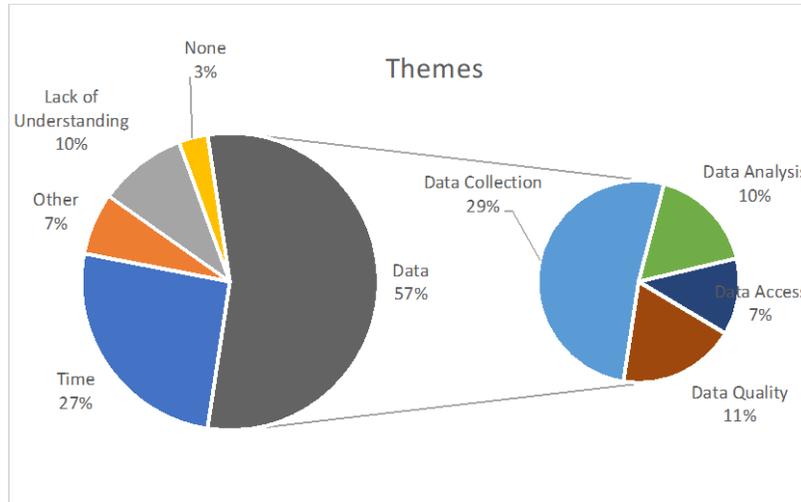


Figure 1: Theme Breakdown

Data Collection. 29% of survey participants said they faced some type of barrier around the collection of data.

Responses: "It is difficult to collect", "How to collect specific data on mental health and social issues other than a needs assessment", "It is difficult to collect data and show effectiveness in [student emotional] areas."

Data Quality. 11% of survey participants stated concerns about the reliability, validity or quality of their data.

Responses: "Poor data and limited data", "Data in school counseling can be very subjective", "'Fake Data' I have seen data manipulated in so many ways. It is ridiculous. I don't trust most data to be valid or reliable", "The data collected may not represent the majority of the student population."

Data Analysis. 10% of survey participants reported not knowing what to do with raw data, or in other words, lacked the ability to effectively analyze data.

Responses: "Disaggregating the right types of data to use", "Many programs, tests, and surveys don't present it with disaggregated data", "I don't know how to disaggregate the data as well as I should".

Data Access. 7% of survey participants provided responses that were focused on their ability to gain access to crucial data pieces to make informed decisions.

Responses: "Access to various sources of data", "not having access to data", "Not having the data readily available and having to hunt for what I need."

Time. Time was the second most prominent theme in the analysis, with 27% of participants stated this as a barrier to making data-driven decisions. As our literature review shows, counselors have the responsibility of filling many roles in the education system. A lack of time was reported in collecting, analyzing, and applying data to make improvements.

Responses: “Finding time to collect and analyze the data”, “Finding time to dig into the data”, “Developing and compiling data it takes a lot of time that we don’t have”, “Gathering, disaggregating, and maintaining in a small amount of time and user-friendly way”.

Lack of Understanding. 10% of survey respondents said they did not have the knowledge of how or what data to use to make changes in their school counseling program (10%),

Responses: “Designing interventions that are specific enough to measure”, “Find solutions to problems can help”, “Probably our greatest challenge with our data project is determining what we will focus on and how to implement interventions”, “Trying to find a relevant data project for my school that fits the dynamics.”

Other. Other identified barriers or themes were a lack of administrator or supervisor support (5%), not finding data important (1%), and a lack of resources (1%).

None. There were 3% of counselors who said they didn’t experience any barrier using data to drive decisions.

RESULTS

To determine the correlation between the variables, we conducted an analysis of variance between the variables. Using a 95% confidence interval, we found no variation between elementary and secondary school counselors (D1) or their years of experience in the field (D2) when comparing them to the remaining variables (V4, V5, and V6). We did, however, find a positive correlation between the perceived usefulness of tool to make decisions (V4), the perceived usefulness of a tool that utilizes collaboration with peers (V5), and the likelihood of using that collaborative tool (V6) as shown in Table 2.

Table 2: Correlation among variables

	V2	V3	V4	V5
V2	1			
V3	0.379378612	1		
V4	-0.079975593	0.017298098	1	
V5	-0.028172519	-0.02617869	0.542327874	1
V6	0.052824853	0.085586431	0.227950484	0.62469432

We measured our school counselors' responses (n=174) to our closed-ended questions quantitatively and then conducted analysis for statistically significant differences between and among D1 and on job tenure (e.g., Less than two years, 2-4 years, 5-10 years, etc.)

We found that 89% (n=155) responded that they did feel that they understood the data needed to conduct their work and improve their performance, and 88% (n=153) indicated that they felt comfortable utilizing data to make decisions or implement changes at their schools. Interestingly, the 11% of respondents who did not indicate that they understood how to use data in their work were not always the sample people in the 12% of respondents who indicated that they did not feel comfortable utilizing data to make changes. Only 143 of the 174 respondents (82%) indicated that they both understood how they could use data in their work and felt comfortable doing so to make changes.

When analyzing the three questions about data tool use, we found the following:

- 1) V4 - Average Response: Very Useful ($\mu = 3.5/4$)
- 2) V5 - Average Response: Somewhat Useful ($\mu = 3.0/4$)
- 3) V6 - Average Response: Somewhat Likely ($\mu = 2.9/4$)

We also investigated whether or not there were statistically significant differences in the responses to each of these three questions based on the respondent’s grouping on the yes/no questions ‘understood how to use data’, and ‘comfortable utilizing data to make decisions/changes’. Using standard t-tests, we find that there is a statistically significant difference ($p < 0.0001$) between groups on both of those questions, across all three of the ‘tool’ question

responses. Those who indicated ‘yes’ on the first question described above consistently, and statistically significantly, responded that they found tools somewhat or very useful and were somewhat or very likely to offer advice about tool use to others. Likewise, those who indicated ‘no’ on that same question indicated low usefulness and likelihood on the tool use questions. The same results ($p < 0.0001$) were found on the t-tests for the groups identified in the second yes/no question described above.

Finally, we tested our response data to see if there were any statistically significant differences in responses to any of the questions (the two yes/no questions and the three ‘tool’ questions described in the preceding paragraphs) based on career longevity or work environment (D1). We conducted ANOVAs on both of these grouping questions against each of the five data-related questions and found there were no statistically significant differences between any of these groups. Thus, we find that neither the kind of school the counselors work in, nor how long they've been in the profession show any statistical evidence of differences in their perceptions of data and tool usage in conducting their work.

CONCLUSION

While school counseling is traditionally a non-technical field, computerized systems can save time and assist in making data-driven decisions. However, it is critical that counselors are involved in the analysis, design, development, and deployment phases of all technology-related projects in order to achieve the most positive results (S. Venkatesh, 2008; V. Venkatesh et al., 2003).

Many counselors recognize the importance of using data, but continue to struggle applying it to create systemic change (Young & Kaffenberger, 2015). Our research focused on identifying these barriers. Because school counselors’ strengths lie in areas of psychology, interpersonal relations, social organization, and communication (Paolini, 2018; Stickel, 1999), we use also sought to measure to perceived usefulness of a potential tool that would allow collaboration in data-driven decision making. The results of this study showed that counselors did perceive a collaborative tool useful.

ESTABLISHED RECOMMENDATIONS

Our current research aligns with the patterns, facts, and observations described in the preceding sections of the literature review. In addition, we observe the following recommendations presently documented in research literature relevant to digital transformation in the school counseling profession:

Technology training and familiarity with tools and systems should begin while prospective school counselors are working on undergraduate and graduate degrees (N. E. Davis & Roblyer, 2005; R.L. Hayes & Paisley, 2002; Morgan, Greenwaldt, & Gosselin, 2014; Swank & Tyson, 2012; Thompson & Moffett, 2010).

Ongoing in-service training should be integrated into the school counselor career path, with time, incentives and assessments constructed to enhance counselors’ technological skill set and comfort level. Administrators must buy into, support and participate in the digital transformation of the school counseling profession by ensuring that time, tools and training (and the relevant budgetary needs to support these) are available to counselors (Schwallie-Giddis, ter Maat, & Pak, 2003; Sherwood, 2010). Technology acceptance is more likely when school counselors are involved in the creation and implementation of systems (Johnson & Johnson, 2003). Additional research should focus on how to effectively design, develop, and deploy computerized tools that will assist in overcoming the barriers identified in this study.

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