

THE IMPACT OF A WELL-DEVELOPED SOCIAL MEDIA COMMUNICATION
STRATEGY ON K12 SCHOOLS IN A SOCIAL MEDIA AGE

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THE IMPACT OF A WELL-DEVELOPED SOCIAL MEDIA COMMUNICATION
STRATEGY ON K12 SCHOOLS IN A SOCIAL MEDIA AGE

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THE IMPACT OF A WELL-DEVELOPED SOCIAL MEDIA COMMUNICATION
STRATEGY ON K12 SCHOOLS IN A SOCIAL MEDIA AGE

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By

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES	x
ABSTRACT.....	xiii
INTRODUCTION	1
Problem Statement	3
Rationale for the Study and/or Purpose for the Study	4
Theory for Study.....	7
Research Questions.....	8
Limitations/Delimitations	9
Definition of Terms.....	9
Conclusion	10
REVIEW OF RELATED LITERATURE	12
Communication Process.....	12
Development Communications.....	12
Diffusion of Innovations	15
The Communication Process	17

Social Media as a Communication Tool.....	20
Use of Social Media by Public Entities	22
Use and Impact of Social Media on Students	23
Technology and Social Medial Usage Among Digital Natives	24
Concerns Associated with Student Social Media Use	26
Social Media Viability for Schools.....	27
Rise of Digital Media.....	30
Online Marketing Strategies	32
Key Social Media Metrics	33
Ethics and Effective K12 Communication	36
Principals and Communication.....	36
Ethics of Social Media.....	38
Effective School Communications	39
Conclusion	44
RESEARCH DESIGN AND METHODOLOGY	45
Methodology.....	47
Participants.....	50
Selection/Sampling.....	50
Instrumentation	51
Reliability and Validity.....	51

Data Analysis	53
Conclusion	55
ANALYSIS OF THE DATA.....	57
Type of Post	59
Examination of Type of Post by Weighted Interactions.....	59
Examination of Type of Post by Weighted Reach.....	61
Examination of Type of Post by Weighted Impressions	62
Category of Post.....	63
Examination of Category of Post by Weighted Interactions	63
Examination of Category of Post by Weighted Reach	65
Examination of Category of Post by Weighted Impressions	66
Time of Post.....	67
Examination of Time of Post by Weighted Interactions.....	67
Examination of Time of Post by Weighted Reach.....	68
Examination of Time of Post by Weighted Impressions	69
MOSPRA Region.....	70
Examination of MOSPRA Region by Weighted Interactions	70
Examination of MOSPRA Region by Weighted Reach	72
Examination of MOSPRA Region by Weighted Impressions	73
Urban and Rural	74

Examination of Urban and Rural by Weighted Interactions.....	74
Examination of Urban and Rural by Weighted Reach.....	75
Examination of Urban and Rural by Weighted Impressions	76
Total Number of Posts during Recorded Time Period.....	77
Examination of Number of Posts by Weighted Interactions	77
Examination of Number of Posts by Weighted Reach	78
Examination of Number of Posts by Weighted Impressions	79
Total Number Fans	80
Examination of Number of Fans by Weighted Interactions	80
Examination of Number of Fans by Weighted Reach	82
Examination of Number of Fans by Weighted Impressions.....	83
Total Enrollment of District.....	84
Examination of Total Enrollment by Weighted Interactions	84
Examination of Total Enrollment by Weighted Reach.....	86
Examination of Total Enrollment by Weighted Impressions	87
Evaluation of the Highest Post by District.....	88
Summary of Results	91
CONCLUSIONS AND RECOMMENDATIONS	95
Conclusions.....	95
Total Number of Posts	96

Type of Post	97
Category of Post.....	99
Time of Post.....	101
MOSPRA Region.....	102
Urban or Rural District	103
Number of Facebook Fans	103
Total Enrollment	104
Recommendations.....	105
Conclusion	106
REFERENCES	108

LIST OF TABLES

Table 1-District Demographics.....	59
Table 2-ANOVA of Weighted Interactions by Type.....	60
Table 3- Descriptives of Weighted Interactions by Type	61
Table 4-ANOVAs of Weighted Reach by Type	62
Table 5-Descriptives of Weighted Reach by Type	62
Table 6-ANOVA of Weighted Impressions by Type	63
Table 7-Descriptives of Weighted Impressions by Type.....	63
Table 8-ANOVA of Weighted Interactions by Category	64
Table 9-Descriptives of Weighted Interactions by Category.....	65
Table 10-ANOVA of Weighted Reach by Category	65
Table 11-Descriptives of Weighted Reach by Category.....	66
Table 12-ANOVA of Weighted Impressions by Category.....	66
Table 13-Descriptives of Weighted Impressions by Category	67
Table 14-ANOVA of Time by Weighted Interactions	68
Table 15-Descriptives of Time by Weighted Interactions	68
Table 16-ANOVA of Time by Weighted Reach	69
Table 17-Descriptives of Time by Weighted Reach.....	69
Table 18-ANOVA of Time by Weighted Impressions	70
Table 19-Descriptives of Time by Weighted Impressions	70
Table 20-ANOVA of MOSPRA Region by Weighted Interactions.....	71
Table 21-Descriptives of MOSPRA Region by Weighted Interactions	71

Table 22-ANOVA of MOSPRA Region by Weighted Reach.....	72
Table 23-Descriptives of MOSPRA Region by Weighted Reach	73
Table 24-ANOVA of Region by Impressions	73
Table 25-Descriptives of MOSPRA Region by Weighted Impressions.....	74
Table 26-ANOVA of Rural or Urban by Interactions	75
Table 27-Descriptives of Rural or Urban by Interactions.....	75
Table 28-ANOVA of Rural or Urban by Weighted Reach.....	75
Table 29-Descriptives of Rural or Urban by Weighted Reach	76
Table 30-ANOVA of Rural or Urban by weighted Impressions	76
Table 31-Descriptives of Rural or Urban by Weighted Impressions.....	77
Table 32-ANOVA of Number of Posts by Weighted Interactions	78
Table 33-Descriptives of Number of Posts by Weighted Interactions	78
Table 34-ANOVA of Number of Posts by Weighted Reach	79
Table 35-Descriptives of Number of Posts by Weighted Reach	79
Table 36-ANOVA of Number of Posts by Weighted Impressions.....	80
Table 37-Descriptives of Number of Posts by Weighted Impressions	80
Table 38-ANOVA of Number of Fans by Interactions	81
Table 39-Descriptives of Number of Fans by Weighted Interactions	82
Table 40-ANOVA of Number of Fans by Weighted Reach.....	82
Table 41-Descriptives of Number of Fans by weighted Reach	83
Table 42-ANOVA of Number of Fans by Weighted Impressions	83
Table 43-Descriptives of Number of Fans by Weighted Impressions	84
Table 44-ANOVA of Total Enrollment by Weighted Interactions	85

Table 45-Descriptives of Total Enrollment by Weighted Interactions	85
Table 46-ANOVA of Total Enrollment by Weighted Reach	86
Table 47-Descriptives of Total Enrollment by Weighted Reach.....	87
Table 48-ANOVA of Total Enrollment by Weighted Impressions	87
Table 49-Descriptives of Total Enrollment by Weighted Impressions	88
Table 50-Frequency of Highest Weighted Posts by Category.....	89
Table 51-Frequency of Highest Weighted Posts by Category.....	89
Table 52-Frequency of Highest Weighted Posts by Time	90
Table 53-Highest Weighted Scores by District	91

ABSTRACT

The digital revolution has created a new ways for society to interact. As technology continues to evolve so does the way culture begins to use it as a channel for communication. Social media has developed as a two way communication tool used by both corporate America as well as individuals. This research begins to look at how Missouri school districts have incorporated this tool into their communication tool box. This research was conducted to answer the question, what are the key metrics to increasing the reach, impressions and interactions of a K12 district's Facebook page?

The adoption of social media by K12 schools has been slow. Attempts by state legislatures to regulate the use of social media by schools have added to the slow adoption by school districts. The lack of regulatory control and anonymity create special concerns about student safety. Districts need to be aware of these concerns when developing a social media communication plan.

This research specifically looks at the data from 22 Missouri school districts who have adopted Facebook as a communication channel. More than 3,900 individual posts were examined to identify statistically advantageous ways to reach the largest number of followers. Posting frequency, type of post, category along with time was examined to determine best practices. Other metrics, such as region, urban or rural district, number of fans, and total enrollment were also reviewed to determine trends in increasing reach, interactions and impressions. By understanding how to manage the districts social media presence schools can increase their social media presence and communication efficiency.

CHAPTER ONE

The Impact of a Well-Developed Social Media Communication Strategy on K12

Schools in a Social Media Age

INTRODUCTION

This study was designed to determine the use of social media strategies of K12 schools and their effect on the district's stakeholders. Parents and community stakeholders increasingly rely on social media for instantaneous news and updates. While usage of social media continues to rise, K12 schools continue to struggle with proper usage of social media tools and the increased legislation regulating or eliminating their use. Teachers may have a learning curve on appropriate usage and best practices of social media, similar to that of email when it first arrived as a digital communication tool. Many school districts have experienced an inappropriate email sent to incorrect recipients with little or no ability to recall it. Social media also has a limited ability to retract a posted message. Once a comment is posted or tweeted, the damage to the sender and his/her organization has been done. In the case of social media, however, the ability to retract a message post is not limited to the original recipients. The message can continue to have a digital presence long after the post has been deleted. In many cases, the greater the desire to recall a posted message, the greater the interest increases.

In this study, the researcher focused on the use of Facebook Fan Pages by K12 schools. Facebook was chosen for this study for multiple reasons. The widespread use of Facebook by community stakeholders and the real-time, anywhere connection using

smartphone applications makes Facebook the ideal social media tool for schools to utilize when communicating with parents and other stakeholders. By creating desired messages that increase interactions, a school district can increase their reach in daily or crisis communications.

If social media is a reliable communication tool capable of reaching stakeholders, then school districts should identify and integrate the use of social media into district communication plans. If tools like Facebook fail to have a large reach for K12 districts, then schools should refocus their resources and efforts on more effective communication tools. By adding social media to a district's communication plan, schools will add another real-time communication tool for parents and community members to utilize during crisis situations, as well as for everyday events. The challenge becomes, gaining confidence and credibility while using social media as a component of their communications plan.

School districts should create a comprehensive communication plan to create transparency and trust with their stakeholders. According to the National School Public Relations Association (NSPRA), there are four primary components of a school communication plan. The plan must include a process of research, planning, communication and evaluation (NSPRA, 2004). Schools must also address five questions when developing a plan for all district communications. Who needs to know? Why do they need to know? When do they need to know? How are they the district going to tell them? What does the district want stakeholders to do with the information they receive?

This research covered the research, planning, communication, and evaluation stage of social media use by K12 schools while answering if social media is a viable way to inform stakeholders.

The use of social media as a communication tool needs to be researched to identify its potential reach, impressions, and interactions as a communication tool. Furthermore, proper usage of social media tools by K12 districts must be addressed. Similar to email and other online resources, social media is not going away anytime soon. Specific social media platforms, like MySpace, may significantly decrease in popularity and use, but social media as a whole is here to stay (Pew Research Center, 2010). Educators must engage parents and community members where they are using social media to transfer important information in a timely manner.

Problem Statement

A well-developed social media communication plan by K12 schools is intended to increase reliable and effective communications among all district stakeholders; however, many schools fail to implement effective social media strategies with fidelity. Current research on K12 social media best practices is limited. By understanding the metrics and algorithms used to disseminate social media posts, school administrators can deliver targeted messages to key stakeholders in a timely manner. A close examination of the structure and content of the message must also be examined. What makes a message attractive to the readers must be considered as part of the study. By understanding the metrics that affect interactions, reach, and impressions K-12 districts will be able to improve school communication programs.

Rationale for the Study and/or Purpose for the Study

There are three purposes to this study. The primary purpose was to identify key metrics to track when determining what yielded the highest impact when posting on social media sites. Secondly, the content and structure of the message was examined to determine how districts can best encode a message utilizing this channel. The final purpose was to identify practices and procedures a district may use to reach the largest number of viewers in the shortest amount of time as it relates to social media, specifically Facebook. Currently, many districts are uncertain of what constitutes appropriate use of social media. This study provided opportunities for districts to identify strengths and weaknesses when it comes to implementing a strategic social media policy.

In 2010, the Second European Summit on Measurement began to address how to accurately measure social media. The summit led to the creation of the Social Media Measurement Standards Coalition (SMMS). SMMS identified six key metrics. These metrics are: sources and methods transparency, reach and impressions, engagement, influence and relevance, opinion and advocacy, and impact and value. To address transparency and sources, the SMMS have created a sources table to be included in any report citing sources. This table includes the timeframe, research leads, channels analyzed, data sources, sources language, search language, sentient coding, filtering, metrics calculations, and proprietary methods. The SMMS Table should be included in every social media report to ensure the reader is clear of the basis of the report. By completing the SMMS Table researchers are ensuring their readers have an understanding of the findings (Draper-Watts, 2013). Reach or impressions, the number

of people who may have seen a particular message, may be difficult to determine.

Different sources calculate reach differently. For instance, one company may look at the total number of unique online visitors per month, where another company will factor in a multiplier or divisor utilizing the same data. This is another reason the transparency table is so important in determining the validity of the data (Draper-Watts, 2013).

Engagement continues to be a source of debate among public relations experts. What constitutes engagement in regards to social media has is hard to specifically define. The basic definition means the reader utilizes some action beyond reading a message. In the case of Facebook, this would include liking, sharing, or commenting on a message post. Additionally, but impossible to quantify, is off-line discussion that occurs from a social media post. According to the SMMS, engagement should be calculated as a percentage of people who are actively engaged during a set period of time. Engagement is important to understand what a provider means by engagement when reading through their data; is it simply a click on a link, or is it more comprehensive (Draper-Watts, 2013).

Influence and relevance describes a change in opinion or behavior. This change can either be online or in person. Moderate or small influences are hard to determine. Individuals who are heavily influenced are markedly easier to find. A much easier level to quantify is an increased level of engagement following a social media campaign (Draper-Watts, 2013).

By definition, opinion and sentiment are almost entirely measured qualitatively. Sentiment or opinion, either positive or negative, is simply how someone feels about a certain brand or idea. Arguably, someone could use a Likert scale in an attempt to

quantify someone's like or dislike of a certain brand or concept. The issue becomes how to quantify an emotion. The same level of like of a product could be marked as extremely like or love this product by one individual and simply like by another. A complete analysis of opinion and sentiment is costly but invaluable in the amount of data it can recover for a company. Close analysis of stakeholders' opinions can lead to increased recommendations and stronger advocacy (Draper-Watts, 2013).

Impact and effect come from the data analysis stage of any good communication plan. Organizations need to continuously examine if they were able to meet their objectives and outcomes. These establishments should also evaluate the communication's impact on the organization. These are all standard questions organization must make following any communication or marketing offensive. Social media goes beyond normal return on investment analysis conducted by businesses. For school districts across the country, the question comes down to how the campaign effected their brand (Draper-Watts, 2013).

School districts need to go beyond counting leads and measuring return on investment when examining social media. They must examine all the ways social media supports their educational goals. They must review available research and determine how their target audiences are using social media. Schools should examine how organizations not associated with education are successfully utilizing social media as a marketing tool. School districts should also look at their existing content disseminated through more traditional channels. By simply tweaking their message and utilizing various social media channels, districts can quickly extend the reach of their messages (Social Media Marketing in Education, 2010).

Theory for Study

A comprehensive communication plan is crucial to the success of any district, school, or administrator. Effective and timely communication is not only an obligation in turbulent times, but a staple in everyday operations and when introducing change. Education research leaders, including Reeves (2009), Bolman and Deal (2008), and Dufour (2006) have included sustained communication as key to the success of any new initiative. A district's ability to skillfully communicate using a variety of platforms and techniques are essential to a school's daily operation.

Digital communication between faculty and administration, as well as among the school and community, happens much more often than a face-to-face meeting in today's schools. The evolution of digital media requires school districts to prepare a way to harness this tool to meet the needs of their stakeholders. Research has shown increased and meaningful communication between parents and the school increases parent involvement (Illinois Century Network, 2004). The Illinois Century Network research also indicates there is a clear connection between increased parent involvement and greater student achievement. This research indicated strategies which garner the greatest return on focused digital communication techniques.

Charles Osgood's Mediation Theory of Meaning is the primary communication theory behind this study (Griffin, 2005). Osgood believes there are three levels to every communication. The initial response is completely reactionary. The best example of this is the response someone first has when they hear the crack of thunder. Next, they apply their past experience with thunder to the situation. This stage is not based on what is, but what one would perceive to expect. Finally, an individual begins to create a mediated

representation of what they believe the sound represents. Osgood's model indicates the way one responds is based on the application of your previous experiences in every situation. In the case of the perceived reliability of news sources, one will apply the same filter. It is important to be aware of the individual's previous experience with this source of information. In the case of social media, several factors must be considered including age, digital literacy, previous social media incidents, and location.

Bryon Reeves and Clifford Nass provide additional insight into the issue of perceived reliability (Reeves & Nass, 2006). In their book *The Media Equation: How People Treat Computers, Television and New Media Like People and Places*, Reeves and Nass propose people treat these communication tools as if they were alive. Reeves and Nass believe the digital components of these tools are inanimate objects where people apply previous experiences. Reeves and Nass go on to state media that praises someone has a much higher rate of acceptance than one that offers negative or no feedback. Nass' and Reeves' theory also had a great impact on this study. As one reads, hears, or visualizes information through all the various forms of media, they will apply a trust value to the message, much like they rate the messenger of interpersonal communication.

Research Questions

1. What are the key metrics to increasing the reach of a K12 district's Facebook page?
2. What are the key metrics to increasing the impression of a K12 district's Facebook page?

3. What are the key metrics to increasing the interactions of a K12 district's Facebook page?

Limitations/Delimitations

District demographic and Facebook Insight data was only collected from Missouri School Public Relations Association (MOSPRA) schools. MOSPRA member schools are the most likely schools in Missouri to have formalized communications plans. The data is limited to the use of Facebook. Many districts may choose to use alternate forms of social media like Twitter or blogging.

Facebook limits Insights data exports to 500 posts or 180 days. The researcher elected to use a single export of 180 days in an effort to elicit the largest number of responses. The researcher also believed that the more complicated the export instructions and steps for collecting data, the lower number of contributing members to this study. By selecting the first 180 days of the school year, the data does not cover the second half of the year. Exports from two districts provided sample data of 160 and 278 posts. One school exceeded the maximum 500 posts during the time period.

Definition of Terms

Communication Planning: “Step by step process to ensure that the intended message is received, understood, and acted upon by the recipient. It involves: determining the objectives, choosing the audience, and selecting appropriate channel(s) to reach them” (Communication planning, 2012).

Stakeholders: “A person, group or organization that has interest or concern in an organization” (Stakeholder, 2014). For the purposes of this research project, stakeholders

would include parents, students, faculty, staff, community business leaders, and community members.

Facebook Insights: Insights is the measurement of a page's performance. It provides anonymized demographic data and how people see and respond to posts. Insights data is compiled and downloaded as a CSV file utilizing integrated tools (Insights, n.d.).

Total Reach: The number of people who could have seen a story about your page. This is counted for each person who loads the story about your page while browsing Facebook (40 Key Social Media Metrics Defined).

The scope of this research is designed to determine the reach of social media by school districts. By examining the specific metrics from schools that are currently utilizing Facebook, this research identified the viability of continuing the use of social media as a communication tool by districts across Missouri.

Total Interactions: The total number of likes, shares, comments, link clicks, photo views and other clicks as reported using Facebook Insights.

Total Impressions: The number of people who could have seen a story about on a Facebook fan page plus the number of times the post was shown (40 Key Social Media Metrics Defined).

Conclusion

The use of social media as a communication tool was needed to be researched to identify its efficiency as a communication channel. This research was designed to examine key metrics associated with impacting a school district's reach, impressions and interactions. As the popularity of digital communication channels continue to rise, school

districts need to examine the feasibility of utilizing social media as a possible communication tool.

CHAPTER II

REVIEW OF RELATED LITERATURE

Communication Process

This study requires a close look at communication theories and practices to determine what good communication looks like. Social media is only one aspect of a school's communication plan. Administrators, board members and teachers must understand the entire communication process, best practices, and when to use them. In and of itself social media is not a "magic bullet" that will solve a district's communication problems. Social media should be more successful as a public school communication tool when used in conjunction with a much broader plan encompassing communication theories should succeed.

Development Communications

During the 1950's and 1960's, Lerner, Schramm and Rogers began developing the theory of Development Communications. Although Development Communications has a larger focus on improving conditions in developing countries, it also has implications for American business and public education communication strategies. Some examples of its relevance for schools and businesses can be seen in disaster preparedness and mitigation, risk management, and instituting change initiatives (Khan, 2013). Development Communications is the process of communicating information and knowledge to everyone in a particular social chain in such a manner as to create a transformation (Rajbir, 2005).

After World War I, researchers began to look at the use of one-way communication and the effects of propaganda on large communities. Researchers started to understand the need for effective two-way communications (Bernays, 1942). This became overwhelmingly evident in developing countries. As the United Nations (U.N.) began to enter into third world countries with plans to improve the lives of citizens in these underdeveloped countries, the U.N. would first saturate the environment with information regarding these perceived improvements. This information was generally directed at community members and the U.N. seldom solicited feedback. An important factor in the adoption of any idea is the compatibility with the local values, beliefs and past experience (Rogers, 2003). One example can be seen in the addition of a well in one Asian country. Researchers determined the women of a local community were walking many miles a day to get to the local river. Authors of the study determined the ladies would greatly benefit from a well in their village. A couple years after the addition of the well, researchers returned to find it was seldom used and the women continued to walk miles a day to reach the river. After communicating with the local villagers, it was determined the ladies chose to walk because it was the only time in their day they could relax and socialize with each other. If researchers had utilized effective two-way communications to begin with, they would have become aware of local customs and mores (Rogers, 2011). The issue is not the new development or mechanism of change, but how does it meet the need and local customs of the developing nation or organization (Schramm, 1964).

Development communication focuses on creating dynamic two-way communications. Effective messages must be significant and meaningful with genuine

two-way communication. According to this theory, stakeholders must be engaged in the problem analysis and resolution through consultation and dialogue. Mass communication does not generally serve as the agent of change. It is generally an intermediating factor that serves as the connection between the contributory agent and the local supporter (Schramm, 1962). Communication must move from persuasion to participation (Rogers, 2011). The move not only inform people of an impending change, but includes all stakeholders in the development of the plan. All stakeholders must be involved early on, not just to be informed of the scope of change, but to be active members in the research and planning processes. Mass media should not be excluded, but only serves as the channel to spread knowledge. The function of persuading a group to adopt a particular idea falls to interpersonal channels (Rajbir, 2005).

Development communication focuses on the participation of the stakeholders. It moves those being impacted from a passive role, or being simply informed of the impending action, to one of empowerment. Schramm (1964) states, “Increasing the number of radios, newspapers, and cinemas will not necessarily bring about a corresponding increase in the rate of social change. Merely multiplying the messages and channels is not enough” (p.114). Empowerment of the stakeholders illustrates they have been part of the analysis of the entire situation, involved in the decision making process and active in the execution of the plan (Rogers, 2011). In this model, the change agent must have an understanding of the stakeholders’ needs, perceptions and potential pitfalls.

As educational institutions continue to evolve, two-way communications associated with concepts such as development communications will continue to take on a larger role in districts across America. The top down push of the Common Core State

Standards has led to an outcry from both sides of the political spectrum because of the perceived loss of control. Early inclusion of all stakeholders in the development could have reduced the anxiety related to implementation. A smaller example can be seen in the Missouri Department of Elementary and Secondary Education's (DESE) implementation of their Missouri School Improvement Plan 5. DESE developed their goals and standards in relative secrecy, only making it visible to stakeholders after approval by the Missouri State School Board. Finally, after stakeholders vocalized negative reactions, based largely on their lack of opportunity to participate in the development of the new plan, did DESE allow stakeholder feedback. The state then developed five regions across Missouri to gather input from stakeholders (Missouri Association of School Administrators, 2011).

Diffusion of Innovations

Diffusion of innovations discusses four elements and how a specific innovation is communicated across a community. The four elements are innovation, communication channels, time and social system. In this belief, Rogers quickly points out the misbelief that most innovations spread rapidly. Roger's work has been used since 1962 to examine the communication frameworks under which new ideas have spread and been accepted (Srivastava, Moreland, 2012).

According to Rogers, innovation is not necessarily related to the time of a particular discovery. Innovation refers to the time a discovery is introduced to a particular area or culture. In addition, certain cultures may have been exposed to the innovation but have failed to adopt it based on unfavorable opinions of local mores (Rogers 2003). Similar results can be observed in Pakistan during the 1960's. Villagers in Pakistan did

not replace the use of cow dung with talcum powder until Pakistani leaders were able to frame the benefits for them. The Diffusion of Innovation Theory dictates trusted leaders are often the only individuals who have the clout to address new ideas so they can gain support and are not rejected outright (Barker, 2004).

Communication channels are the means by which participants share information in order to reach a mutually beneficial understanding. Diffusion of Innovations involves a specific innovation where at least one individual or population has become familiar as well as an individual or a population who is unaware of the specific innovation. There has to be a communication channel connecting the two populations. Even though mass media channels, such as television, radio and webpages have the greatest reach, they do not have the impact interpersonal channels have. Interpersonal, face-to-face communications are more effective in persuading individuals to accepting an innovation (Rogers, 2003). Recent diffusion of innovations studies examining workplace communication channels, concluded that modern workplace communication is moving from e-mail to a hybrid of text messaging, social media and email (Kiddie, 2014). The practicality of email with mass storage and a filing hierarchy is still the preferred channel of communication. The real-time interactions of SMS text messaging and instant messaging have slowly been integrated into workplace communication. Smartphones have been able to combine all three channels effectively creating one unified communication channel (Kiddie, 2014). Srivastava and Moreland (2012) concluded “social media itself, used at a prolific rate to communicate new ideas and ways of life, reinforces the utility of diffusion of innovation approaches” (p.309). Srivastava and

Moreland also suggested the study of social media as a communication channel needed to be taken up.

Time is often overlooked in behavioral science research. The inclusion of the time variable in the Diffusion of Innovations makes it a strength measured from the first introduction of the idea by an individual and the rate over time it is adopted. This is usually reported out as number of adopters during a given time. This information allows for specific analysis of the communication process. When graphed, the results generally look like an S-shaped curve. At the start, there are only a few innovators. After time, the curve begins to climb as more adopters come on board. Eventually, there are fewer members of the community who have not adopted than who have and the trajectory begins to go downhill (Rogers, 2003).

Finally, Rogers looks to the social system involved. A social system can be small, such as all the doctors of a particular hospital, or vast, such as all the consumers in the United States. However small or large, a social system can be broken down and analyzed by its individual units. The individual units are not identical in their beliefs and behavior, but continue to work together sharing in a common objective (Rogers, 2003). With the development of social media social systems has taken on a new look. Social networking websites are becoming pervasive, and represent popular communication interactions of hundreds of millions of users (Katona, Zubcsek, & Sarvary, 2011).

The Communication Process

As in any communication or community relations program, great detail needs to be placed on the communication process. According to Moore, Gallagher, and Bagin (2010) the word communication itself is derived from the Latin “communicare”, which

means to share. Communication is not a simple tell or hear relationship. Communication can be defined as a, “cooperative enterprise requiring the mutual interchange of ideas and information, and out of which understanding develops and action is taken” (p. 70).

Communication theorists break the communication process into five separate elements. Those elements are source, encoder, channel, decoder, and receiver. The source is the sender. The encoder is the form of communication used. The channel is the mode in which the message moves from the source to the receiver. The decoder interprets the message into common language. The receiver is anyone who reacts to the message after processing it (Dominick, 2013).

The source of information is an idea, feeling, or need expressed by an individual or a group designed to engage someone else. The source is the origination of the message. The root of any message is the human brain (Moore, Gallagher, Bagin, 2012). The source is key in forming a comprehensible message that is accurate and can be interpreted by the receiver (Gutenberg, Richamn, 1969). Theorists categorize the source into three categories. These categories are essential, important and as needed. Essential communications are where most individuals and organizations spend their time communicating. There is not a finish line, but rather a daily task (DeSieghardt, 2013).

Before a message can be sent, the source must encode the message. Encoding is the process of translating an idea or thought into a form that can be perceived by the senses (Dominick, 2013). Many factors must be considered before encoding a message. Often, language is required during the encoding processes, but sometimes non-verbal cues like body language, facial gestures, or even an unusual noise will suffice. A sender must also be able to fully comprehend their message before they can communicate it

effectively to someone else. Encoding must be simple enough that it can be easily decoded accurately (Moore, Gallagher, & Bagin, 2012).

The channel from which a message is sent can come in many forms and a combination of ways. The medium can be audible, written, or visual. The sender must be aware of which channels are available to the environment in which they are working. They must also know which ones are effective in reaching their intended audiences. Choosing an appropriate channel is important in ensuring the receiver is not distracted (Moore, Gallagher, Bagin, 2012). The channel can dictate to what level an individual recalls information. Schramm pointed to comparative studies examining the recall rate from lectures given over several channels. Video presentations delivered the highest recall rate, and print offered the lowest recall rate (Schramm, 1962).

If the message is encoded properly and transmitted down an appropriate channel free from interference, it must still be decoded. In the case of a written message, decoding happens when someone reads the message. The message must still be comprehensible. If the message is poorly composed or uses language that is too difficult for the reader, decoding does not take place. The receiver completes the communication process when they effectively receive the message and decode it. Decoding is the reverse of the encoding process. Decoding is the process of translating physical messages into a form that can be comprehended by the receiver (Dominick, 2013). Errors in decoding can also happen in words with multiple meanings. The decoder also applies their personal interpretations of the word. In the case of school communications, the term “High School” can have two very distinct meanings to two individuals. To the captain of the football team who graduated in the top five percent of his class, it may remind him

of days of former glory. To the young man who was constantly bullied and barely graduated, it conjures up emotions of hatred and aversion (Moore, Gallagher, Bagin, 2012).

In most cases, the receiver is the individual who is actively decoding the message. How the receiver responds to the message dictates its meaning and impact. The response may be the intended reaction of the sender, the opposite, or anywhere in between. It is important to examine every step of the communication process to ensure the message has its designated impact on the receiver (Moore, Gallagher, Bagin, 2012).

Wilbur Schramm was the first individual to fully examine this process in the light of the multimedia age. The study of mass communication in the United States came into being because of Schramm's work with the United States government during World War II and the years following as he created the first Communication Studies Programs in the country (Glander, 1996). Schramm understood the complexity of forming and encoding a message, transmitting down multiple channels and decoding of the message by thousands of receivers. Schramm knew the processes would continue to evolve believing, the communication field and tools have quickly evolved over the past ten years. Schramm also believed what individuals are communicating has become vastly different. The communication process only becomes more difficult over time with the continued development of mass communications (Tankard, 1988).

Social Media as a Communication Tool

The innovation of social media has changed the model of communications. Bloggers and other social media outlets are becoming influential and opinion leaders. The

24/7 nature of social media is bypassing more traditional media outlets (Wright & Hinson, 2008). With these changes, effective public relation professionals and organizations must adapt and implement the new tools. As stakeholders continue to become digital communication specialists, they must also turn to the internet as a primary communication tool. Public relations specialists are advised to become fluent with many internet technologies including web-forums, social networking, and weblogs (Christ, 2005).

Organizations can either embrace or repel social media as a communication option. No matter which social media tool an organization chooses, they can be quickly sucked into a social media debate. Organizations can become instantaneously embattled in an online skirmish and not have a presence or mode to counteract misinformation and damaging partial truths. Previous tools such as print and even broadcast media are too slow in today's digital society. The timeliness of social media can damage a reputation before traditional communication methods can be put into place (Paine, 2009). Former Navy Chief of Information, Rear Admiral Moynihan, argues social media must be utilized. If not, the conversation has ceded to the others (Tisdale, 2013).

The key element of social media is the social component. The social concepts found in social media, such as sharing, connecting and opinions are not unique to these channels of communications. These concepts have in-fact been around as long as people have been communicating. There are several key factors that set social media tools apart from other channels. Social media has an extended reach which has been limited by more traditional forms of communication. The reduced cost of new technologies has allowed greater accessibility for users, increasing access to everybody. The increased

usability has made social media available even to the most technology illiterate. Social media strips away many levels of secrecy and makes communication more transparent. Finally, the instantaneity of communication dominates the world today (Păun, 2009).

A social media presence is not enough. An organization must have a strategic plan to positively impact the company's image. To effectively use social media as a communication tool, an organization must listen, understand, participate, and harness the emotional impact of social media. A laser focus on specifically quantitative data will not allow the full consumption of available data. The emotional side of the conversation must also be connected to effectively communicate (Gunning, 2008). Social media and technology communication tools in general are apparatuses to spread district news and build relationships, but they are not a replacement for one-on-one, face-to-face communications (Carr, 2006).

Use of Social Media by Public Entities

The desired use of social media by public entities, including local school districts, has created a debate over proper use and how government agencies can effectively engage their publics. Agencies must decide what policies they need to enact and social media tools in which they wish to engage. The first step in determining the correct tools to use is identifying the audiences they wish to engage. Next, they must make the target audience aware of their digital presence and what channel they are utilizing. To complete the process, agencies have to encourage true interaction by stakeholders (Inherent Barriers, 2011).

Studies conducted by West and the International Communication Association have indicated most government agencies studied in 198 countries utilize an internet

presence. Of these agencies, only about 16-18% utilize interactive web technology (West, 2003). Agencies or countries which did have interactive web technologies utilized them in a very limited way. Countries like Brazil and Honduras only allowed the sharing of information. Citizens in these countries were not allowed to comment or post on government sites (From e-government to social government, 2012).

Government agencies and parties must meet stakeholders where they are spend their time. In the 2011 Canadian National Elections, voters between the ages of 18-24 years of age began to form national debate around topics they felt were important by utilizing forms of social media. By utilizing flashy videos set with background music from popular music stars, the forgotten voters began to form national debate over lower tuition, healthcare, workers' rights, and gay rights. By utilizing two-way communication using social media, voters between the ages of 18-24 were able to impact the national elections (Reilly, 2011).

Use and Impact of Social Media on Students

Use of social media by teens has proven to enhance adolescent communication skills, social concepts, and technology skills, as well as provide additional learning opportunities (O'Keefe & Clarke-Pearson, 2011). There are, however, several pitfalls of using social media as a teen. Teens can face cyber bullying, sexting, as well as expose themselves to privacy concerns as they leave a permanent digital footprint (O'Keefe & Clarke-Pearson, 2011).

OnGuardOnline.Gov is the United States federal government's website focused on ensuring safety, security and responsible internet use. OnGuardOnline.gov reports social media is how tweens and teens socialize today (OnGuard Online, 2014). Schools

must understand this and develop parameters to protect their students. These parameters must include clear policies, education programs, monitoring solutions, consequences, and the education of families in age appropriate use (Williamson, 2010).

Recent studies by the Pew Internet & American Life Project have documented a steady rise in technology ownership and use by teens. In 2010, about 75% of teens owned a cell phone. Cell phone ownership by 12 year olds grew by 40% from 2004-2009 (Pew Research, 2010). This research identifies an increase in social media usage in certain metrics such as commenting on a friend's wall or picture and instant messaging. Social media use in other areas, such as group messaging, posting on blogs, and private messaging has steadily decreased (Pew Research, 2010). Use of Twitter by teens was one of the lowest ranked social media tools in 2009 with only 8% of 12-17 year olds using it (Pew Research, 2010). Since then, Twitter use by teens has increased by 16% (Bayless, 2013). As social media use among teens continues to rise, educators must ensure safeguards are in place to protect students while in school, at home, or in the community.

Focus groups and surveys, conducted by Pew Research Group, have indicated students between the ages of 12 and 19 use negative terms to describe others' behavior online when utilizing social media. Thirteen percent of student respondents said they had an experience online that made them feel nervous about going to school the next day. Conversely, only 65% of students said they felt good about themselves from an interaction through social media (Lenhart, 2011).

Technology and Social Media Usage Among Digital Natives

Young adults are increasingly purchasing laptops over desktops and 75% of teenagers now own a mobile phone (Pew Research Center, 2010). Young adults are using them for real-time communications. Sixty percent of 18-29 year olds and forty-nine percent of 30-49 year olds used their cell phone to gather instantaneous information in the time period between March 15, 2012 and April 3, 2012 (Pew Research Center, 2012).

Digital natives have been exposed to technology their entire life. This has created a blended reality encompassing the physical world around them and the digital world in which they spend the bulk of their time. Older generations may see two separate worlds, the physical and the digital, but to this generation they are one in the same. Previous generations have used technology to simply research products or information, but digital natives go beyond the research and engage companies and other consumers who have knowledge of the products for which they are researching. Garretson (2008) states, “the rise of social networking and other interactive digital media has transformed how consumers interact with companies” (p.14). This engagement also applies to how digital natives interact with public K12 schools (Garretson, 2008).

The fact digital natives are creating interactive content may not be enjoyed by individuals who prefer the flat, one-way marketing approach provided by older forms of media such as print, radio, television, and even early forms of the internet. Regardless, social media has provided a consumer generated marketing platform for individuals to create content and feedback on areas or items that interest them. This silent revolution has turned parents and students from passive bystanders into active members of a digital

society. Traditional media was about reach; social media has turned consumers into hunters (Hanna, Rohm, & Crittenden, 2011).

Concerns Associated with Student Social Media Use

Facebook has made a profitable business out of utilizing their users' profiles and activity (Hongwei, 2013). In 2011 Facebook received over one billion dollars from advertisers (eMarketer, 2010). Pew Research surveys have illustrated more than 70% of adolescents utilize social networking sites like Facebook. Hongwie (2013) concludes "young Internet users are very concerned about data collection, unauthorized secondary use, improper access to collected online data, and inaccuracy of online personal databases (p.22)."

Possible dangers and pitfalls range from simply misconstrued statements to on-line stocking that manifests into child abduction. Many students are not familiar with the side effects of how their poorly constructed comments can be taken out of context and the long term impact they can have (Waters, 2011). In *From Fear to Facebook* Matt Levinson outlines how his district successfully implemented a one-to-one program and some of the issues they faced. Levinson acknowledges there is not a magic solution to illuminate some or all of the concerns associated with students and their use of technology (Levinson, 2010). Preparing students and educators for working in a social media environment is one way to mitigate potential dangers. Uniformed students and teachers can place themselves in danger by sharing the most innocent piece of information. This information used by the wrong people with the wrong motives can become devastating (Huffman, 2013).

Sharples research has identified several key areas of concern related to student internet safety. Student safety is the paramount concern for districts across the country. This concern includes the exposure to inappropriate material. Sharples, Graber, Harrison and Logan (2009) suggest there is a wide range of material that may be considered inappropriate. For some advertising the wrong product or how it is marketed can be considered inappropriate. On the other end of the spectrum is the exposure to violence and pornography (p.3). With social media there is a potential exposure to all of these and everything in between (Sharples, 2009).

Adults may assume fake on-line identities through social media. The internet and social media sites create an environment that facilitates anonymity. Just like in the real world one of the virtual world's greatest risks comes from the unidentified stranger (Byron, 2007). Although the threat is real a research conducted in 2008 concluded predators using trickery to draw out children is rare (Wolak, 2008). Regardless of how rare or what the probability, if there is any risks districts must create policy and procedure to safe guard children (Sharples, 2009).

Cyberbullying is an additional concern for districts across the country. Cyberbullying can occur through email, text messages and chat rooms as well as social media sites. Cyberbullying can be as simple as someone posting an unflattering and wanted photo to a sustained intentional campaign to bully an individual (Sharples, 2009).

Social Media Viability for Schools

Research results have demonstrated post-secondary students, faculty members, and administrators need to engage in social media strategies to create relationships and effective communication (Ratliff, 2011). Qualitative data collected from personnel

interviews of secondary principals has indicated social media, when used properly, can allow for greater interactions between the school and stakeholders, as well as create connections between stakeholders. Once social media is used, it becomes the expectation and not the exception (Cox, 2012).

There are both benefits and pitfalls associated with the use of social media by students. Research focusing on the amount of time students spend on social media may be misleading. Students in the classroom generally do not spend large amounts of time on social media. Students who choose to socialize online in the classroom generally use unstructured time. Jacobsen and Forste's research has shown 62% of university students use at least one form of electronic media while in class to study or complete homework (2011).

Further research indicates that this use of electronic media, specifically instant messaging, adds to the time to complete tasks but does not have an effect on the learner's comprehension (Bowman, Levine, and Waite, et al., 2010). Bowman, Levine, and Waite et al contend there are three ways that instant messaging interferes with reading comprehension. The first is the obvious use of time; if a student is instant messaging, then she/he are not reading their assigned task. Immediately responding to instant messages directly interferes with studying. Finally, the continued use of instant messaging and electronic media creates a "cognitive style of short and shifting attention". The inclusion of electronic media conditions the brain to work in short cycles interrupted by technological distractions (Levine, Bowman, & Waite, 2007).

The addition of a projector and an interactive whiteboard in itself is not a transformation into the digital age. In many cases, the use of an interactive whiteboard is

simply another way to facilitate the age-old art of teacher led instruction. Technology integration has not become the transforming tool it should (Kennewell, Tanner, Jones, Beauchamp, 2008). Integration of social media tools like wikis, blogs, Twitter and Facebook are some of the transformative tools needed to shift to student interactive learning (Rice, 2014).

The advantages of social media for a school district include constant bidirectional communication with an immediate response for very little or no cost. Social media allows a district to maintain or improve their reputation among their stakeholders. School districts use or lack of use of social media will also play a role in the public's perception of them. Social media sites enjoy global distribution. Worldwide viewership is generally not the focus of a local school district. A local district's goal is not to transform the world, but to actively engage district stakeholders in valuable two-way communication (Păun, 2009).

According to Porterfield and Carnes (2012), school district stakeholders are engaging in social media to enrich their lives. Social media allows them to ask relevant questions, discuss what-ifs, and imagine possibilities. The most frequented tools by district patrons include Facebook, Twitter, blogs and message boards. Other patrons may use it for more negative purposes including naming names or making public announcements about their recent dissatisfaction with the district. A third group of individuals exists in the shadows by simply observing all the discussions taking place. School decision makers need to understand they already have a social media presence. The question is are people a part of it, unaware of it, or just lurking around to see what others are saying (Porterfield and Carnes, 2012).

Rise of Digital Media

Recent research has indicated a steady increase in digital media consumption for children eight to eighteen. During the ten years from 1999 to 2009, digital media usage for children rose 44% to a total of ten hours and forty-five minutes per day. Likewise, students in that age range increased the amount of time they spent multitasking with more than one electronic media by 13% (Rideout et al., 2010). Research has shown there is a negative relationship between students who multi-task with digital media and face-to-face communication (Pea et al., 2012). Researchers have shown a correlation between higher levels of face-to-face communications and increased sleep, greater feeling of normalcy, and greater social success (Pea et al., 2012). During the past twelve years, there has been a dramatic increase in student use of digital media. This increase has come at the cost of interpersonal skills.

According to Pew Research's January 2014 study on mobile technology usage, 58% of American adults have a smartphone and 42% own a tablet computer. Two-thirds of the smartphone owners check their phone for alerts, calls or messages even when they were unaware of a ring or vibration. To ensure they do not miss a message or call, 44% of the cell phone owners sleep with the phone next to their bed. According to the same study, socio-economic status is not an indicator of cell phone ownership. Individuals with a household income of less than \$30,000 had a cell phone ownership rate of 47% in comparison to 53% for those making \$30-\$49,000. There is not a significant jump in ownership rates until the household income jumps beyond \$75,000 (Mobile Technology, Fact Sheet, 2014).

Adults continue to increase their usage and expand their circles in social media. As of September 16th 2013, seventy-one percent of online adults used Facebook. Facebook usage continues to rise rapidly in recent years. From 2012 to 2013, Facebook usage by internet users over the age of 65 grew by ten percent (Duggan, Smith, 2014). The average adult user has 338 friends on Facebook. More than half of internet users who do not have a Facebook account live with someone who does. Twenty-four percent of non-Facebook subscribers who live with a Facebook user say they check posts and photos using someone else's account (Six new facts about Facebook, 2014). More than forty-two percent of internet users use two or more forms of social media. In comparison, only twenty-two percent of internet users claim to use no forms of social media (Duggan, Smith, 2014). Social media use and mobile technology use among adults continues to rise. As these rates increase, schools must find a way to utilize the communication channels available to the majority of adults.

With the increase in usage of multiple social media tools and different stakeholders preferring different channels, tying multiple sources together becomes important. The ability to make a single post which appears in multiple feeds increases the reach of an organization. The ability to quantify the total impact of a multi-channel strategy is difficult. There are new tools being developed by online marketing companies to measure this impact. Once an organization understands what impacts their effectiveness when using social media, they can begin to improve their image, impact and the conversation surrounding them (Postman, 2009).

Online Marketing Strategies

When attempting to market to teens using online strategies, many traditional marketing techniques apply. Online marketers must know their audience, have a good base of contacts, and choose the message and method wisely (Horn, 2011). One of the best methods to reach teens is to utilize Facebook. In January 2010, InsideFacebook.com reported forty percent of Facebook users were between the ages of thirteen and twenty-five. This represented 38,675,650 individuals.

The basic fundamental purpose of marketing is to develop personal relationships. Formerly, the internet was used to mine information only. In today's social media driven world, people are engaged in building online relationships to promote their product or beliefs (Papasolomou, 2012). Organizations have made social media marketing, in some cases specifically directed at teens, a major component of their marketing plan. Social media marketing is not about a website, but about creating experiences where consumers can intimately engage individuals (Hanna, Rohm, & Crittenden, 2011).

What is true for students is also true for adults. With the rapid increase in social media use by adults, many companies are seeking ways to embrace adults in the media rich social media spaces. By finding creative ways to get their product in front of advertising weary adults, companies can portray their product in new and unique ways (Klaassen, Creamer, Hamp, & Tan, 2007). Companies realize the highest degree of trust comes from personal recommendations. Companies like Paper.li have turned to data mining social media to locate links and posts shared on Facebook and Twitter. Paper.li in turn reposts these items in their own newspaper style format for others to read (McClelland, 2011). This trend can also be seen in the hiring of marketing executives.

Both Pepsi and the Coca-Cola Company replaced top marketing executives with tremendous amounts of soft drink experience with inexperienced digital media strategists. Both companies are replacing large television marketing campaigns with online digital media campaigns focusing on the use of social media (Madden, 2007).

Many businesses have begun to develop complex social media strategies to maximize their impact on popular culture. Researchers have identified eight key benefits associated with corporations tying into a social media strategy. By utilizing social media, companies have unparalleled access to information. These companies also experienced an increase in brand awareness and perception. Social media created better engagement with customers, employees and business partners. Companies were able to increase collaboration with their online communities. Businesses with an organized social media program also report a richer experience for users. These organizations were able to improve their web metrics as well as revenue. By having a structured plan, business are able to improve the control of their company's web message. Finally, these companies were able to help change the conversation on the web. By participating in a strategic social media environment, they were able to change the way people used social media (Postman, 2009).

Key Social Media Metrics

In 2010, the Second European Summit on Measurement began to address how to accurately measure social media. The summit led to the creation of the Social Media Measurement Standards Coalition (SMM Standards). SMMS identified six key metrics. These metrics are: sources and methods transparency, reach and impressions, engagement, influence and relevance, opinion and advocacy, and impact and value. To

address transparency and sources, the SMM Standards have created a sources table to be included in any report citing sources. This table includes the timeframe, research leads, channels analyzed, data sources, sources language, search language, sentient coding, filtering, metrics calculations, and proprietary methods. The SMMS Table should be included in every social media report to ensure the reader is clear of the basis of the report. By completing the SMMS Table researchers are ensuring their readers have an understanding of the findings (Draper-Watts, 2013). Reach or impressions, the number of people who may have seen a particular message, may be difficult to determine. Different sources calculate reach differently. For instance, one company may look at the total number of unique online visitors per month, where another company will factor in a multiplier or divisor utilizing the same data. This is another reason the transparency table is so important in determining the validity of the data (Draper-Watts, 2013).

Engagement continues to be a source of debate among public relations experts. What constitutes engagement in regards to social media has is hard to specifically define. The basic definition means the reader utilizes some action beyond reading a message. In the case of Facebook, this would include liking, sharing, or commenting on a message post. Additionally, but impossible to quantify, is off-line discussion that occurs from a social media post. According to the SMMS, engagement should be calculated as a percentage of people who are actively engaged during a set period of time. Engagement is important to understand what a provider means by engagement when reading through their data; is it simply a click on a link, or is it more comprehensive (Draper-Watts, 2013).

Influence and relevance describes a change in opinion or behavior. This change can either be online or in person. Moderate or small influences are hard to determine. Individuals who are heavily influenced are markedly easier to find. A much easier level to quantify is an increased level of engagement following a social media campaign (Draper-Watts, 2013).

By definition, opinion and sentiment are almost entirely measured qualitatively. Sentiment or opinion, either positive or negative, is simply how someone feels about a certain brand or idea. Arguably, someone could use a Likert scale in an attempt to quantify someone's like or dislike of a certain brand or concept. The issue becomes how to quantify an emotion. The same level of like of a product could be marked as extremely like or love this product by one individual and simply like by another. A complete analysis of opinion and sentiment is costly but invaluable in the amount of data it can recover for a company. Close analysis of stakeholders' opinions can lead to increased recommendations and stronger advocacy (Draper-Watts, 2013).

Impact and effect come from the data analysis stage of any good communication plan. Organizations need to continuously examine if they were able to meet their objectives and outcomes. These establishments should also evaluate the communication's impact on the organization. These are all standard questions organization must make following any communication or marketing offensive. Social media goes beyond normal return on investment analysis conducted by businesses. For school districts across the country, the question comes down to how the campaign effected their brand (Draper-Watts, 2013).

School districts need to go beyond counting leads and measuring return on investment when examining social media. They must examine all the ways social media supports their educational goals. They must review available research and determine how their target audiences are using social media. Schools should examine how organizations not associated with education are successfully utilizing social media as a marketing tool. School districts should also look at their existing content disseminated through more traditional channels. By simply tweaking their message and utilizing various social media channels, districts can quickly extend the reach of their messages (Social media marketing in education, 2010).

Ethics and Effective K12 Communication

Principals and Communication

Research conducted in 2011 indicates elementary and secondary principals prefer personal interactions such as face-to-face communications (Grap, 2011). Social media in itself was not part of the research. Utilizing traditional mass media (television, newspapers, and radio) was included. Mass media ranked tenth out of fourteen preferred modes of communication for both elementary and secondary principals. Secondary principals reported more favorable usage than elementary teachers with a mean score of 1.23 on a scale of 0-3 (Grap, 2011). Principals did report many limiting factors to utilizing personal interactions as their primary mode of communication. These factors include time, opportunities for face-to-face, and technology.

Patrons live in a transparent world in most other arenas of their life, and they expect the same from their children's or community's schools. Today's principals must

begin to develop public engagement to foster positive parent and community relations (*Principals in the Public*, 2000).

Regardless of the tool used by principals to reach out to stakeholders, the focus must be on building relationships and not so much on the channel of communications itself (Carr, 2006). The controversy surrounding the nationwide implementation of the Common Core State Standards is a perfect example of the role principals must take in working to foster two-way communication with their patrons. Principals need to offer substantial communications utilizing as many communication tools as possible.

Principals can either set the climate or react to it (Carr, 2007).

When considering the inverted communication pyramid set forth by DeSieghardt, a principal must understand there are items that are essential to communications, important to know, and elements to pass on as needed. This inverted pyramid places the broad base at the top, focusing on the essential components of school communications. The narrower middle section covers the important items that require substantial time but are less desired. The third section is much smaller, working itself to a point, covering those items that are only covered as needed. The essential items to communicate include how tax dollars are being spent, quality of facilities, quality of teachers, quality of education, student preparedness, and on-going communication between the school and patrons. Some of the key elements of important communications contain student safety, class size, spending balances, and the principal's performance. Extracurricular activities, staff responsiveness, or the superintendent's performance are items contained in the bottom tier, or as needed communications (DeSieghardt, 2013). Principals must train themselves not to focus on the loudest 10-20 percent who continually sounds off in their

ear, but rather the key points of information that are beneficial to the overwhelming majority of their patrons.

Ethics of Social Media

Social networks created through digital media create unique relationships. The members and hosts may or may not have a preexisting relationship in the physical world. In most cases, the individual networks develop their own social norms. These norms are governed by the individual user's norms and the communal norms (D'Arcy, Taylor, 2012). The development of these norms is the key to success of individual social media platforms. Social norms must be covered in great detail by the host and users to prevent participants from facing ethical concerns.

The use of technology and social media in schools across America has grown exponentially over the past ten years. Technology use continues to push the legal guidelines and ethical practices of schools (Pfohl, 2010). This has expanded the role of districts to provide reasonable protections from seen and unforeseen digital risks. One of the most obvious risks comes from the simplistic ways student personal information can be shared nearly instantaneously. School districts must ensure safeguards are in place to regulate not only directory information but information that is legal and may lead to personally identifiable information.

Districts must also examine ethical and legal questions as it relates to discussing work place conditions. The National Labor Relations Board claims workers can freely discuss working conditions not only in interpersonal, face-to-face communications but online utilizing social media as well (Greenhouse 2013). These rulings give schools little, if any, protection from a student and a teacher disclosing what transpires during a

routine school day or in a crisis situation. Conversations that took place around the dinner table 30 years ago now take place online for everyone to see. Schools are often left with little or no recourse.

Social media has blurred the boundary lines and relationships of students, teachers, and parents. Even relationships between coworkers become blurred when they receive the wanted or unwanted friend request from their coworker, supervisor, or subordinate. Whether openly stated or not, there is implied pressure to accept and let them into your personal life (Cain, 2011). For good or bad, the use of social media is now part of e-professionalism. E-professionalism links a person's digital presence to their reputation at work. Students, teachers, and parents must be cognizant of their online persona and how it relates back to the school (Cain, 2011). Keeping reputation in mind, there are a few rules professionals should follow as they navigate social media. These rules are: beware of the terms and conditions of use, anything posted is considered public, nothing is ever anonymous, continually monitor your online persona, ensure you comply with all regulatory laws associated with your profession, always keep personal content separate from professional, and maintain professional boundaries in accordance with professional ethical guidelines (Leiker, 2011). The question becomes how to balance the ethical dilemma of supporting the rulings by the National Labor Relations Board and the professional relationship of the student and teacher (Davis, 2012).

Effective School Communications

Effective school communication enhances the opportunities for districts to garner public support, increase understanding, and minimize criticism. According to NSPRA, there is nothing more important in communications than getting parents involved (Carr,

2007). When exploring school communications tools, districts must examine all opportunities. The National School Public Relations Association research shows parents look to their kids, internet sources, e-mail, other kids, school officials, media and newsletters as the primary source of information (Bagin, 2008). The sources of information listed above are in the order parents seek information. If parents are looking to the internet as a primary source of school information, then districts must work to increase their effective use. There is a common belief among communication specialists that to effectively transfer information, an organization must communicate it seven times and in seven different ways. Parents are no different, and schools need to reach them where they are at utilizing the tools parents seek to use. Schools must place a priority on community relationships and interaction with all stakeholders (Carr, 2006A).

Teachers and administrators have created traditional forms of communications and have engrained them into their pedagogy. These forms of communication are often single point-in-time and one-way. Examples can be seen in back to school nights, weekly newsletters, parent teacher organization meetings, and parent teacher conferences. As districts move to 21st century schools, they must also move to 21st century communicators (Cox, 2012). The school communication process must be two-way and not rely on traditional newsletters and news releases (Moore, Gallaher, Bagin, 2012). Technology can aid in the communication process but should not ultimately replace face-to-face interactions (Carr, 2006A).

Proper communication has a greater impact on schools as developing learning communities (Schussler, 2010). Very few undergraduate teacher programs and graduate administration programs have formal courses in school communications. Because there

is a general lack of formal training, public school employees are left to develop their own plans. These plans often take the form of least resistance, or what fits into the teacher's day, and do not consider what is best for the student and family (Cox, 2012).

Transparency is critical in public education. Communication plans should drive schools in their efforts to ensure all stakeholders they have the best interest of students in mind when making decisions (Carr, 2007A).

As districts across the country continue to spend more tax dollars on communications and public relations, they must know what research says about what works and what does not (Carr, 2007). Carr identifies five key areas research has identified as effective communication musts. Transparency leads the list and is based on research from Brad Rawlins, Brigham Young University professor. Rawlins' research demonstrates communities trust organizations that demonstrate transparency in their actions. Public relations must also be measurable. Schools need to continually track perceptions through a variety of qualitative and quantitative data. Increased engagement leads to increased involvement. Increased involvement leads to increased student performance. Districts must seek to build relationships. Communications should be focused on creating a two-way, mutually beneficial relationship. Finally, schools must invest in communications. Effective communication can improve parent involvement and student performance, but also can affect the bottom line. Increased relationships can increase student attendance and enrollment which translates to an increase in state funding.

DeSiegardt illuminates the 80/20 rule as a guiding force in most school communication plans. This means many schools focus on the most vocal ten percent of

patrons supporting the district and the ten percent who adamantly oppose the district.

This process generally will alienate the middle eighty percent. DeSieghardt argues there is little, if anything, a district can do to win the bottom ten percent over and they already won the top ten percent, so a district must focus on improving communications with the eighty percent (DeSieghardt, 2013).

To reach eighty percent, a district must focus on the inverted pyramid developed and refined in sales and marketing. This pyramid creates three specific areas for districts to focus their time. These areas are essential information, important facts, and as needed communications. The eighty percent, regardless of what the district thinks, are not that enamored with seeking information about their school systems. If overwhelmed with data, the intended audience will often tune out. So, districts must spend their efforts focusing the bulk of their time on the essential information and much less on the as-needed areas. DeSieghardt lists teacher quality, school facilities, quality of education, work or college readiness, and taxes as essential areas of communication. DeSieghardt defines the middle tier to include items such as student safety, class size, technology, fund balances, and fulfillment of promises to patrons. DeSieghardt argues some of the things districts feel are most important, and are currently receiving an excessive focus, are less important to patrons and fall in the as needed or smallest area of the pyramid. These items can include information concerning the superintendent, board of education, extracurricular activities, and staff courtesy. By focusing in the wrong areas and overwhelming individuals with information, districts can breakdown effective channels of (DeSieghardt, 2013).

Districts must also focus on using the proper tools. In today's digital world, it takes a combination of traditional communication tools and developing technologies to reach all stakeholders in a timely manner. Parents seek to find information from their schools by the most credible sources including teachers, secretaries, and other staff members. Parents desire communication to be a meaningful, two-way, transparent process. Although newsletters are still the most viable form of communication for parents, it is only a starting point in the necessary reciprocal dialogue. Though digital newsletters are quickly replacing traditional print copies, schools must continue to engage parents in multiple ways (Bagin, 2008). Schools must also be aware of variances in preferred modes of communication among the different populations of their district. For example, in the Charlotte-Mecklenburg school district, African-American and Hispanic parents were more likely to receive information from school officials where as parents of Caucasian students preferred newsletters, websites and e-mails (Carr, 2007). Good communication leads to greater student achievement due to parent involvement (Carr, 2008).

Effective school communication must not only focus on the parent-school interaction, but must engage the larger community. On average, more than seventy percent of a community does not have children in the community school (Carr, 2011). The majority of this group has no regular contact with school employees and traditional district communication protocols; therefore, they seldom have an opportunity for face-to-face communication. Social media becomes a valuable tool in bridging this gap between districts and their unconnected patrons. Districts must utilize multiple forms of social

media tools to allow access to district information in an anytime, anywhere environment (Cox, 2012).

Conclusion

Development communication and Roger's Diffusion of Innovation Theory demonstrate two-way communication is essential to the development of an organization. Through two-way communication organizations, such as school districts, can spread their innovations and successes. Social media has evolved as a leader in digital two-way communications. Businesses have looked to social media tools to reach clients in a timely and targeted manner. School districts need to examine the feasibility and ethical issues related with utilizing social media as a two-way communication tool.

Chapter Three

RESEARCH DESIGN AND METHODOLOGY

This research was designed to identify how school districts can effectively utilize the power of social media as a twenty-first century communication tool. By working with data collected from Missouri school districts that are currently using Facebook, the researcher was able to identify components of posts that garner the most interaction, impressions, and reach. This data can assist districts in maximizing their efforts to reach all stakeholders when developing social media communication strategies.

In 2010, the Second European Summit on Measurement began to address how to accurately measure social media. The summit led to the creation of the Social Media Measurement Standards Coalition (SMMS). SMMS identified six key metrics. These metrics are: sources and methods transparency, reach and impressions, engagement, influence and relevance, opinion and advocacy, and impact and value. To address transparency and sources, the SMMS have created a sources table to be included in any report citing sources. This table includes the timeframe, research leads, channels analyzed, data sources, sources language, search language, sentient coding, filtering, metrics calculations, and proprietary methods. The SMMS Table should be included in every social media report to ensure the reader is clear of the basis of the report. By completing the SMMS Table researchers are ensuring their readers have an understanding of the findings (Draper-Watts, 2013). Reach or impressions, the number of people who may have seen a particular message, may be difficult to determine. Different sources calculate reach differently. For instance, one company may look at the

total number of unique online visitors per month, where another company will factor in a multiplier or divisor utilizing the same data. This is another reason the transparency table is so important in determining the validity of the data (Draper-Watts, 2013).

Impact and effect come from the data analysis stage of any good communication plan. Organizations need to continuously examine if they were able to meet their objectives and outcomes. These establishments should also evaluate the communication's impact on the organization. These are all standard questions organization must make following any communication or marketing offensive. Social media goes beyond normal return on investment analysis conducted by businesses. For school districts across the country, the question comes down to how the campaign effected their brand (Draper-Watts, 2013).

School districts need to go beyond counting leads and measuring return on investment when examining social media. They must examine all the ways social media supports their educational goals. They must review available research and determine how their target audiences are using social media. Schools should examine how organizations not associated with education are successfully utilizing social media as a marketing tool. School districts should also look at their existing content disseminated through more traditional channels. By simply tweaking their message and utilizing various social media channels, districts can quickly extend the reach of their messages (Social media marketing in education, 2010).

Methodology

The researcher requested Facebook Insights data from the 154 member districts which make up the Missouri School Public Relations Association (MOSPRA).

MOSPRA is the Missouri chapter of the National School Public Relations Association (NSPRA). Membership in MOSPRA is comprised mostly of school communication practitioners. Superintendents, principals and school board members also hold membership in the organization. MOSPRA members were chosen because they already have a formalized communication strategy based on similar best practices. MOSPRA schools utilize a wide variety of communications tools including paper newsletters, e-mail news blasts, automated calling systems, district websites, as well as social media tools.

Facebook Insights Data contains highly disaggregated data down to the post level. This data is easily exported to the desktop using Facebook's Insights tool. The data contains 14 individual worksheets with up to 45 columns of data per sheet. The high availability of Facebook and the granular data collection makes it the perfect tool to use when identifying the viewing trends and post interaction habits of stakeholders. This data can be analyzed to determine best practices on formulating a post that will reach the most recipients and have the greatest number of interactions. Facebook utilizes an algorithm called Edgerank to disseminate messages to the most active followers to a page. Once followers begin to interact with the message by liking, sharing or commenting, then the Edgerank algorithm shares it with more followers.

The request of information was disseminated to districts utilizing the MOSPRA and NSPRA e-mail contact lists. Follow up was made through phone and personal

requests. The participating district's data was compared by frequency, type of post, total reach, number of comments, shares, likes, and impressions. Facebook Insight data was analyzed to determine best practices as it relates to maximizing the reach of Facebook. The researcher collected the total number of fans following each district's page at the time of the individual submission by the participating districts. The number was collected by visiting the district's Facebook page. The collection period was open for two weeks. The follow up emails were sent one week prior to the closing of the collection window.

The researcher emailed step-by-step instructions on how to export Facebook Insights post level data to all MOSPRA members. Screen shots utilizing screen capture software was also provided for additional support for those districts that chose to use it. Six months of data, August 1, 2013 through December 2013, was collected. This time period was chosen based on Facebook's 180 day export limitation. The August 1, 2013 start date was chosen to include the first month of school for most districts. The researcher made the decision to end the time period to coincide with the end of the first semester for most districts. The researcher chose not to ask for two data exports, or an entire school year, due to the belief it may have led to a decline of respondents in the study. Respondents emailed their data directly to the researcher.

The posted column in the export from Facebook combines the date and time into one field. The researcher separated the data into two separate columns utilizing Excel's text to column tool. This allowed for proper sorting based on time. The researcher also added a column to include the category that a post would fall. The posts were examined to determine if the category was Emergency, Extracurricular, General, or Notification.

These categories were developed by the researcher to identify the three most common categories of posts presented by a district. There were four posts that fell outside of the predetermined categories. The researcher added the category of Advertisement during the evaluation process to cover these four posts.

To ensure that the participating districts remained anonymous, each district was assigned a number based on the order of their submission. The first district to submit their data to the researcher was district one. The final district to submit data was district 22. Participating districts were referenced by their number throughout this report where necessary.

Columns with no data, such as country and language, were deleted which increased the usability of the data. The Insights data also underwent formatting modifications including, but not limited to, reordering columns, sorting and resizing.

The individual district data was sorted and ranked based on time, type of post, category, and number of comments, shares, likes, impression, and reach. The results were categorized and compared among the participating districts. The individual district data was then combined into one composite summary for ranking. To allow for the size of the district or the discrepancy in followers, additional columns titled “weighted interactions”, “weighted reach”, and “weighted impressions” were added. These factors were calculated by dividing the Lifetime Post Total Impressions, Lifetime Post Total Reach, and the total number of interactions by the district’s total number of likes at the time of submission of their Insights data.

Participants

Participants were MOSPRA members currently employed with K12 districts who are currently utilizing at least one social media communication tool and are stakeholders in a district that holds membership with MOSPRA. Participation in this research was completely voluntary. Requests to participate in the study went out via email with step-by-step instructions on how to export the data.

Once the data was received the researcher went through each record categorizing the post as Emergency, Extracurricular, General, or Advertising. Once the categorization was complete the columns in the Excel data file containing the link to the post as well as the actual post were deleted. Each school was assigned a number based on the order they were received. A column was inserted into the Excel sheet and the number of the school was added to allow the researcher to identify the difference between schools. The master list of schools was stored in a separate file and location from the individual and composite data files.

The researcher completed Southwest Baptist University's IRB review form and submitted to the IRB Committee. The IRB Committee reviewed the proposed research and declared this research project exempt. No changes were made to the project after review and required no additional consideration by the IRB Committee.

Selection/Sampling

Invitations to participate in this research study were sent to all 154 members of MOSPRA. MOSPRA districts maintain large electronic databases of parents, students, and community stakeholders. Utilization of a district Facebook page is a common and

encouraged part of a comprehensive communication plan employed by most of the MOSPRA member districts.

Districts that were willing to participate replied via email. The researcher maintained a list of participating districts. Follow up contact via email, phone, or personal contact was made to ensure the researcher collected an adequate sample.

Instrumentation

Reliability and Validity

The Facebook Insights data was collected through professional partnering schools and required the participating district to send the data to the researcher. To ensure the Insights data met the needs of the research, two districts were selected in advance. These districts provided sample data that was evaluated through correlation tests to ensure the data met the needs of the researcher.

The data exported from Facebook Insights contains the raw data of every post made during the selected period. The export contains a multiple points of data. For this research the categories of reach and impressions were evaluated. A third category of interactions was observed by combining the total number of likes, clicks, comments and shares. The data is exported directly from Facebook utilizing Facebook's web dashboard. No third party software was used in collection of the data. Contributing districts submitted the data directly to the research without modification.

School districts one and two submitted test data for analysis before general testing. This data along with the researcher's home district's data went through the data analysis testing as listed in the following section. The data submitted met all the needs of

the researcher and fit the development model. It was determined through the testing process a master detail record was needed in order to maintain standardization for ease of import into PSPP. The data from Facebook Insights is exported into 14 different worksheets contained inside one comma separated data file. Each of the individual worksheets contained up to 45 columns of data. To import the data into PSPP the data must all be located in the same worksheet. All the participating schools also had to be incorporated into one worksheet. The master detail record included all relevant data for all participants.

The pilot email contained direction on how to export the data utilizing the Facebook web dashboard. School district two reported a little confusion when selecting the time period. The researcher determined the addition of an additional step informing contributors to click on the date and then select the range addressed this concern. The modification was sent back to the pilot district's for clarification. Both districts agreed this change met all of their concerns.

One oversight that appeared during the testing process was the inclusion of testing on multiple operating systems. The researcher tested export directions and process using Microsoft Internet Explorer, Mozilla Firefox, and Google Chrome. However, this testing was completed only using Microsoft Windows platforms. Pilot school one utilized Safari running on MAC OS. Export from Safari running MAC OS did not function the same as tested on Microsoft Windows XP and 7. Additional steps to locate the data export had to be added to the email requesting participation to address this need.

Finally during the validity testing, the researcher began the categorization process with only three categories. Those categories were Emergency, Extracurricular, and

General. The categories were developed by the researcher during the development of the research design process. During the development time the researcher examined three school district Facebook fan pages from Southwest Missouri. The researcher was able to determine all posts fell within the three categories listed above. During the validity testing it was determined the categorization of District two's data there was a post that failed to fit in any of the three categories. The researcher had to develop a fourth category for Advertisements.

After categorizing the posts and creating the master detail record the data was imported into PSPP. The data was successfully imported with headers. The weighted reach, weighted impressions, and weighted interactions data was compared against type of post, category of post, time of post, MOSPRA region, urban or rural district, total number of fans, total enrollment, and total number of posts using comparative ANOVA tests. The results of the ANOVA test provided accurate and reliable data indicating there were significant differences in almost all areas. To determine where the differences existed and to further validate the data the researcher utilized Tukey's HSD post hoc tests. These tests were also successful and highlighted where the specific variances were. After this test process was completed, the researcher was confident in the procedures and results.

Data Analysis

Facebook Insight's data was collected as a Microsoft Excel comma delimited file. The data was then adjusted to allow proper importing into PSPP statistical software. The individual data files from each school went through the same process of preparation. First a column was added to categorize the post. The data exported from Facebook

Insights contained the actual verbiage of the post in one cell and a hyperlink to the actual post on the district's Facebook Fan Page. Each individual post was reviewed to determine as to which category it best fit. If enough information was not available in the Facebook Insight's data export, then the researcher clicked on the hyperlink in the adjacent cell. Once each post was properly categorized the hyperlink and post columns were deleted from the individual data files. A column was added and the school identifying number was inserted for every individual post.

The data from Facebook Insights is exported into 14 different worksheets contained inside one comma separated data file. Each of the individual worksheets contained up to 45 columns of data. Columns I, J and K from the Lifetime Post Stories by action worksheet were copied and inserted into the Key metrics worksheet. Columns I, J, and K were copied from the Lifetime Post consumers by type worksheet and inserted into the Key metrics worksheet. A column was added to the Key metrics worksheet to total all six of the copied cells. This column was titled Total Interactions. Three additional columns were added to calculate the weighted reach, weighted interactions, and weighted impressions for each school. The weighted reach, weighted interactions and weighted impressions was calculated by taking the total interactions, total reach and total impressions columns and dividing them by the total number of fans at the time of data export. Each individual school's data from the Key metrics worksheet was then copied and pasted into one complete master data file. As the information was copied the researcher examined the layout to ensure each column matched. The data file was saved as a CSV for import into PSPP.

Preliminary tests were run to ensure the data was entered correctly and functioned as desired. The data was analyzed with one way ANOVA tests and Tukey's post hoc test to determine significance between type, time, category, number of posts, number of fans, and location. The ANOVA test was selected because each of the subject areas, with the exception of rural or urban, contained at least four groups. The ANOVA test would either prove the null hypothesis, the means for all groups are equal, or it would demonstrate there was variability among and within groups. The Tukey's HSD was applied to ascertain where and to what degree the variances identified in the ANOVA existed. District factors such as size, urban or rural, and location were also examined through the same tests as listed previously.

This research was designed to identify if there are any variance in the variables related to posting on a K12 district's Facebook page. Variance was determined utilizing ANOVA tests and applying the subsequent Tukey's Highly Significant Difference post hoc test. The data was collected from various districts across Missouri. The data was arranged in a systematic manner to allow comparison by district and as an aggregate. Standard statistical analysis was applied to identify any variances between and within groups. Chapter four identifies these variances broken down by weighted reach, weighted impressions, and weighted interactions compared against type of post, category of post, time of post, MOSPRA region, urban or rural district, total number of fans, total enrollment, and total number of posts.

Conclusion

School district's that utilize professional communication staff, and belong to professional communication organizations such as MOSPRA and NSPRA are valuable

resources when determining best practices in school communications. By looking at the 3,973 individual posts submitted by the participating schools the researcher was able to identify specific trends in the key metrics. The use of raw data exported directly from Facebook and subsequent testing yielded reliable and valid results as tested. The following chapter identifies the statically significant areas to consider when posting using social media. An analysis of the overall top post for each participating district by reach, interaction and impression was also conducted. These results are recorded in the following chapter.

Chapter Four

ANALYSIS OF THE DATA

The goal of this research is to identify key factors in impacting the reach, impacting the impressions, and impacting interactions of individual Facebook posts by K12 school districts. The following results are comparative studies of the individual variables and their impact on reach, impressions and interactions. This chapter will further examine the highest ranking posts and determine the frequency in appearance of key metrics. To ensure the results of each school carried the same impact, the number of reach, impressions and interactions was divided by the number of fans at the time the data was exported. These numbers are referred to as the weighted reach, weighted impressions and weighted interactions. Each of the variables is reported by name. Each variable is then compared by the inferential analysis followed by the descriptive reports for weighted impact, weighted reach and weighted impressions.

The data collection window was open for two weeks. An initial email was sent to MOSPRA members requesting data within two weeks. The researcher made a personal request during MOSPRA's Southwest Region's October 2014 meeting held at Ozark School District. Additional requests for submissions were sent through follow-up e-mails and personal phone calls to MORSPRA members who had yet to submit results. The initial email was sent out on October 2, 2014. The researcher collected 14 individual records within the first week. An additional email request was sent out on October 7, 2014. The last record to be received within the two week window arrived on October 13, 2014. Two additional records were received after the collection period had expired.

The two districts submitting late are not part of this research but may be included in subsequent analysis. Two personal phone calls were made to clarify questions participants had.

A total of 22 schools submitted data on 3,793 individual posts. Districts varied in enrollment, number of fans, posting frequency, and geographic region. All four MOSPRA regions had at least one participating district in the study. Enrollment within the districts varied from three respondents with an approximate enrollment of 2,500 to one district with an enrollment of greater than 25,000. The mean enrollment was 8,704. The number of fans following the individual pages also ranged widely from 654 fans to 14,522 fans. Examining the number of fans compared to the individual school's enrollment illustrated a range from 11.91% to 161.04% fans per enrolled student.

The number of posts observed during the time period also varied widely. School 11 was the only school to reach the maximum export level of 500 posts during the observed time period. Employees from School 16 only made 15 posts during the observed time period. There was not an apparent connection between the percent of fans compared to enrollment or to the total number of posts. The lowest number of posts did not have the lowest percentage of fans, nor did the highest number of posts reside with the highest percentage of fans. In fact, the highest percentage of fans compared to enrollment belonged to School 3 with 221 posts.

Table 1-District Demographics

School	Total Fans	Enrollment	Percent of Fans compared to Enrollment	# of Posts	Urban/Rural	MOSPRA Region
1	5,191	5,624	92.30%	278	Urban	SW
2	2,854	4,538	62.89%	235	Urban	SW
3	4,047	2,513	161.04%	221	Rural	SW
4	1,379	2,516	54.81%	42	Urban	Eastern
5	7,526	18,674	40.30%	105	Urban	Western
6	6,660	22,628	29.43%	95	Urban	Eastern
7	3,332	3,245	102.68%	60	Urban	SW
8	1,107	4,849	22.83%	183	Urban	Western
9	7,379	13,103	56.32%	148	Urban	Eastern
10	3,830	8,690	44.07%	301	Urban	Mid-State
11	2,996	2,545	117.72%	500	Urban	Western
12	6,976	17,558	39.73%	207	Urban	Western
13	3,595	3,666	98.06%	294	Urban	Western
14	3,598	5,435	66.20%	161	Urban	SW
15	1,645	4,207	39.10%	78	Urban	SW
16	654	3,922	16.68%	15	Urban	Eastern
17	5,722	10,294	55.59%	227	Urban	Western
18	1,649	13,843	11.91%	59	Urban	Western
19	8,227	7,880	104.40%	128	Urban	SW
20	3,049	6,059	50.32%	33	Urban	Western
21	3,453	4,110	84.01%	163	Urban	SW
22	14,522	25,587	56.76%	266	Urban	SW
Mean	4,518	8,704	51.91%*	172.68		

*Represents the percent of the mean enrollment and mean number of fans, not the mean percentage

Type of Post

Examination of Type of Post by Weighted Interactions

The 3,793 individual posts were compared by type of post and weighted interactions through a one way ANOVA. The test indicated a significance of $F(4, 3,788)$

= 43.9546, $p < .001$ in at least one area. The Tukey's Post Hoc HSD test was administered to determine where the significant difference in types of posts rested.

Photos were the most popular type of post, with more than twice the total number of posts compared to the next closest type of post. Despite the frequent use of Photos, Photos did not score the highest mean with weighted interactions. The use of videos held the highest mean with .06026. The next closest type of post was Photo with a mean of .04811. There was no significant difference noted between the two highest rated means ($p < .713$). During the observed period, the Note Category was only used two times by the 22 schools. The lack of results for Note as a type of post provided no significant differences between the other types of post ($p < .935$ to $p < 1$). Providing a Link was determined to be significantly less effective than sharing a Photo, Video, or Status update ($p < .001$). The usage of a Video post held a statistical advantage to the use of a Status update ($p < .035$). Videos reach the highest number of individuals following a school districts Facebook page. Simply sharing a link had the least measurable interactions.

Table 2-ANOVA of Weighted Interactions by Type

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.57355	4	0.14339	43.95463	0*
Within Groups	12.35711	3,788	0.00326		
Total	12.93066	3,792			

Note.* $p < .001$

Table 3 is a breakdown of the results from Tukey's HSD performed on the master file detail comparison of weighted interactions by type of post. The mean indicates the average weighted interactions based on the specific type of post. Weighted interactions were calculated using the total interactions of every post divided by the total number of

fans at the time of data collection. In the case of examining the weighted interaction of Video posts, the results show a mean of .06026. This represents, on average, six out of every one hundred fans interacted with a Video post. Link was the least interacted with.

Table 3- Descriptives of Weighted Interactions by Type

	N	Mean	Std. Deviation
Link	809	0.01813	0.03233
Note	2	0.04994	0.00157
Photo	2,046	0.04811	0.0654
Status	900	0.03254	0.05293
Video	36	0.06026	0.08409
Total	3,793	0.03814	0.0584

Examination of Type of Post by Weighted Reach

The results of the ANOVA test comparing weighted reach to type of post indicated $F(4, 3,788) = 131.85, p < .001$. The Tukey’s HSD identified a significant lower mean between using a Link and posting a Video, Photo or Status update ($p < .001$). The weighted reach of a post based on type was significantly different in all the areas and in the same direction as the weighted interactions compared above. An additional significant difference emerged between the use of Video over a Photo ($p < .001$). The significant difference between Video and Status increased ($p < .035$ to $p < .001$) when compared to the results from the weighted interactions by type test. A Video post has the greatest impact in comparison to all other types of post, on average reaching more than two-thirds of the intended audience. The use of sharing a link remained the statistically weakest type of post.

Table 4-ANOVAs of Weighted Reach by Type

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	54.28	4	13.56876	131.84995	0*
Within Groups	389.8	3,788	0.10291		
Total	444.1	3,792			

Note. * $p < .001$

Table 4 illustrates the data comparison of weighted reach by type of post. The data states the use of a Link as a type of post resulted in an average of .17849, or roughly 17 of every 100 fans viewed links when they were shared on a district's Facebook Fan Page. Similarly, the Video mean demonstrates, on average, 70 out of every 100 fans viewed each Video post.

Table 5-Descriptives of Weighted Reach by Type

	N	Mean	Std. Deviation
Link	810	0.17849	0.1828
Note	2	0.76046	0.60798
Photo	2,045	0.26348	0.27493
Status	900	0.49238	0.45757
Video	36	0.70542	0.75023
Total	3,793	0.3041	0.34222

Examination of Type of Post by Weighted Impressions

The data from the comparison of weighted impressions by type of post was significantly different in all the same areas and direction as weighted reach by type of post. The use of Video posts had a weighted impressions mean of greater than 1.0. This indicates, on average, a Video will have a weighted impression of greater than 100% of the total number of followers for a particular Facebook fan page. An evaluation of

weighted impressions illustrates the use of Videos and Status updates will have the greatest overall impact compared to Links and Photos.

Table 6-ANOVA of Weighted Impressions by Type

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	165.2	4	41.29977	125.8473	0*
Within Groups	1,243	3,788	0.32817		
Total	1,408	3,792			

Note.* $p < 001$

The descriptives of weighted impressions by type show an average of 131 individuals out of every 100 fans of a district’s Facebook Fan Page viewed Video posts. Video posts had the highest mean weighted impressions of all other posts. Link as a type of post, had the smallest mean weighted impressions with only 37 out every 100 Facebook Fan Page followers.

Table 7-Descriptives of Weighted Impressions by Type

	N	Mean	Std. Deviation
Link	810	0.37072	0.36592
Note	2	1.30725	0.8946
Photo	2,045	0.50106	0.50392
Status	900	0.90743	0.78833
Video	36	1.31501	1.26781
Total	3,793	0.5778	0.60942

Category of Post

Examination of Category of Post by Weighted Interactions

Each individual post was examined by the researcher to determine which category it would fall. The categories were Emergency, Extracurricular, General, and Advertising. Only nine of the 3,793 posts were categorized as an Advertisement. The majority of posts

fell into the General category, with 2,973. The use of Extracurricular posts varied from district to district. Some districts chose not to post any Extracurricular activities on their district’s Facebook fan page and others posted prolifically. School cancellations, because of inclement weather, during the month of December 2013, created the largest number of Emergency notifications.

Emergency notifications had the highest mean of weighted interactions, with more than double the next closest, General announcements. The ANOVA test resulted in a significance of $F(3, 3,789) = 21.887, p < .001$. The researcher applied the Tukey’s HSD and determined there was a significant difference in posting an Emergency response compared to Extracurricular, General, and Advertisement posts ($p < .001$). There was not a statistical significance between any of the other three categories. In fact, the mean difference between Extracurricular and General posts was only .00091. Emergency notifications have the highest mean interaction. Whereas, Facebook fan page followers interacted with Extracurricular and General posts at the same level.

Table 8-ANOVA of Weighted Interactions by Category

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.22	3	0.0734	21.8817	0*
Within Groups	12.71	3,789	0.00335		
Total	12.93	3,792			

Note.* $p < .001$

Weighted interactions by category ranked advertisements as having the lowest mean at .006. Emergency posts were determined to have the highest interaction rate with a mean of .08497. General posts consisted of two-thirds of the total posts and was significantly less impactful than Emergency posts.

Table 9-Descriptives of Weighted Interactions by Category

	N	Mean	Std. Deviation
Emergency	94	0.08497	0.08662
Extracurricular	717	0.03629	0.06295
General	2,973	0.0372	0.05556
Advertisements	9	0.00663	0.00558
Total	3,793	0.03814	0.0584

Examination of Category of Post by Weighted Reach

Similar to the analysis by weighted interactions, the comparative study of weighted reach by category resulted in a significant difference $F(3, 3792) = 39.357$, $p < .001$. The Tukey's HSD reported Emergency post's mean score was significantly greater than Extracurricular ($p < .001$), General ($p < .001$), and Advertisement ($p < .002$) mean scores. There was an increase in the variance between the means of Extracurricular and General posts ($p < .002$) compared to the mean scores from the weighted interactions test ($p < .982$). Emergency notifications held the greatest reach. Extracurricular posts had a greater reach than general posts.

Table 10-ANOVA of Weighted Reach by Category

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.42	3	4.47361	39.3576	0*
Within Groups	430.7	3,789	0.11367		
Total	444.1	3,792			

Note. * $p < .001$

Weighted reach by category demonstrated similar results to weighted interactions by category. Advertisements held the lowest mean reaching only 22 out of every 100 Facebook Fan Page followers. Emergency posts reached nearly three times the level of Advertisements posts and two times as many General and Extracurricular posts.

Table 11-Descriptives of Weighted Reach by Category

	N	Mean	Std. Deviation
Emergency	94	0.65528	0.5922
Extracurricular	717	0.33631	0.40481
General	2,973	0.28545	0.30728
Advertisements	9	0.22981	0.1206
Total	3,793	0.3041	0.34222

Examination of Category of Post by Weighted Impressions

The data supports a significant variance in means in all the same categories of weighted reach by category. The data analysis of weighted interactions, weighted impressions and weighted reach by category demonstrate a clear significant difference between Emergency posts and all other categories of posts ($p < .001$). The lack of a significant number of Advertising posts makes it difficult to determine the importance of their use in school communications. The gap in mean scores between Extracurricular and General posts continued to increase.

Table 12-ANOVA of Weighted Impressions by Category

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	44.65	3	14.8844	41.3569	0*
Within Groups	1,364	3,789	0.3599		
Total	1,408	3,792			

Note.* $p < .001$

The descriptive analysis of weighted impression by category demonstrated a mean of 1.224 for the Emergency category. This suggests the average Emergency post is viewed by over 120% of the district's total fans. This is accomplished by shares and interactions by the fans of the Facebook fan page. Emergency posts by weighted

impressions held the same rate of separation between all other categories as Emergency posts by weighted reach.

Table 13-Descriptives of Weighted Impressions by Category

	N	Mean	Std. Deviation
Emergency	94	1.22407	1.05747
Extracurricular	717	0.631	0.69539
General	2,973	0.54493	0.55426
Advertisements	9	0.44794	0.23268
Total	3,793	0.5778	0.60942

Time of Post

Examination of Time of Post by Weighted Interactions

For the purpose of evaluating the time of day a post was made, the data was broken down into four equal six hour categories. The data was then analyzed through comparative ANOVA tests based on weighted interactions, weighted reach and weighted impressions. The ANOVA tests for time of post compared to weighted interactions resulted in a significance level of $F(3, 3,792) = 10.4539, p < .001$, therefore the data was run through Tukey's HSD for further analysis.

The mean scores of before school, 12:00 am-5:59 am, and after school, 6:00 pm-11:59 pm, were similar and showed no significant variance ($p < .729$). Likewise, the variance between the morning, 6:01 am-11:59 am, and afternoon hours, 12:00 pm- 5:59 pm, of school indicated no significant difference ($p < .192$) based on the weighted interaction means. There was significance noted between the before school hours and 6:01 am – 11:59 am ($p < .001$). When comparing the before school hours to the second half of the school day significance was found at a lower level ($p < .023$). There was also a significant difference noted between the afterschool period and the school day. The

variance ranged from ($p < .001$) in the morning to ($p < .002$) in the afternoon. A post had significantly greater interactions before and after school compared to the school hours.

Table 14-ANOVA of Time by Weighted Interactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.106	3	0.03538	10.4539	0*
Within Groups	12.82	3,789	0.00338		
Total	12.93	3,792			

Note. * $p < .001$

The descriptives of time by weighted interactions demonstrate very similar interaction rates for the before school and after school hours. Likewise, the morning and afternoon hours of the school day nearly mirror each other. The overwhelming majority, 92%, of all posts were made between 6:00 am and 5:59 pm.

Table 15-Descriptives of Time by Weighted Interactions

	N	Mean	Std. Deviation
12:00-5:59 am	186	0.05185	0.0703
6:00-11:59 am	1,989	0.03501	0.05529
12:00-5:59 pm	1,501	0.03896	0.05896
6:00-11:59 pm	117	0.05895	0.07296
Total	3,793	0.03814	0.0584

Examination of Time of Post by Weighted Reach

When comparing time of post to the weighted reach, the before school period was noticeably higher with a difference in mean of .2093 to the next closest time period. The ANOVA test reported significant differences $F(3, 3,789) = 65.03246, p < .001$. The post hoc test indicated the difference was significant difference between the before and after school time periods ($p < .001$). The after school period's mean was also significantly

higher than the school day's mean ($p < .001$). A post made between 6:00 pm and 5:59 am has a greater average reach than one made during the school day.

Table 16-ANOVA of Time by Weighted Reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21.7479	3	7.24928	65.0346	0*
Within Groups	422.353	3,789	0.11147		
Total	444.101	3,792			

Note. * $p < .001$

The early morning hours, 12:00 am to 5:59 am, had the highest reach. During the early morning hours an average 62 views out of every 100 Facebook Fan Page followers viewed each post. A district's reach dropped dramatically during the school day, 6:00 am to 6:00 pm., to 27 out of every 100 Facebook followers. The weighted reach increased during the evening hours to 41 views for every 100 Facebook Fan Page followers.

Table 17-Descriptives of Time by Weighted Reach

	N	Mean	Std. Deviation
12:00-5:59 am	186	0.62199	0.63922
6:00-11:59 am	1,989	0.288	0.31987
12:00-5:59 pm	1,501	0.27758	0.28864
6:00-11:59 pm	117	0.41269	0.39812
Total	3,793	0.3041	0.34222

Examination of Time of Post by Weighted Impressions

ANOVA results reported a significant difference between times compared to weighted impressions $F(3, 3789) = 51.6084, p < .001$. Tukey's HSD once again demonstrated a significant difference between the out of school hours and the two school day periods ($p < .001$). All three ANOVAs and post hoc tests comparing the time of day indicated a higher weighted reach, weighted interaction, and weighted impression rating

by posting before or after school. On average a post made outside the school day had the greatest impression on Facebook users.

Table 18-ANOVA of Time by Weighted Impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	55.2874	3	18.4291	51.6084	0*
Within Groups	1353.03	3789	0.3571		
Total	1408.32	3792			

Note.* $p < .001$

The mean of weighted impressions compared to time of day for the before school time period exceeded 1.07 views. This indicated a post made between 12:00 am and 5:59 am would be seen by more than the total number of fans following a page. The majority of all posts were made between 6:00 am and 5:59 pm. Post made during the school hours, 6:00am to 5:59 pm, had a mean of half the views of the early morning hours.

Table 19-Descriptives of Time by Weighted Impressions

	N	Mean	Std. Deviation
12:00-5:59 am	186	1.07854	1.08352
6:00-11:59 am	1,989	0.55019	0.57231
12:00-5:59 pm	1,501	0.53685	0.53004
6:00-11:59 pm	117	0.77645	0.73852
Total	3,793	0.5778	0.60942

MOSPRA Region

Examination of MOSPRA Region by Weighted Interactions

MOSPRA consists of four regions. Each region was compared by weighted interactions, weighted impressions and weighted reach to determine any significant differences in location across Missouri. ANOVA results indicated a significant variance $F(3, 3792) = 14.136, p < .001$. Only one school from the Mid-State region submitted data.

The Mid-State region school posted 301 times creating a significant number of posts. However, data from a single school could skew the results. When examining the results based in weighted interactions, the Mid-State region had the highest mean of .057. This score is significantly higher ($p<.001$) than any other region. There was significance noted between the Eastern region and the Western region ($p<.023$). The Mid-State region held the greatest weighted interactions of all other regions.

Table 20-ANOVA of MOSPRA Region by Weighted Interactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.143	3	0.048	14.136	0*
Within Groups	12.788	3,789	0.003		
Total	12.931	3,792			

Note. * $p<.001$

Table 20 illustrates the breakdown by number of posts by MOSPRA Region and their average weighted interactions. The Southwest and Western region contained the highest number of posts. The means of the Eastern, Southwest, and Western regions were all very similar. These three regions had an average of three out of every 100 Facebook Fan Page followers interact with their posts. The Mid-State region had a significantly higher average interaction rate of five out of every 100 Facebook Fan Page followers.

Table 21-Descriptives of MOSPRA Region by Weighted Interactions

	N	Mean	Std. Deviation
Eastern	356	0.030	0.038
Mid-State	301	0.057	0.063
SW	1,535	0.035	0.050
Western	1,601	0.039	0.067
Total	3,793	0.038	0.058

Examination of MOSPRA Region by Weighted Reach

ANOVA test results for MOSPRA region by weighted reach illustrated a significance of $F(3, 3792) = 8.862, p < .001$. When examining the weighted reach by region, the Mid-State region's significant difference disappears ($p < .469$ - $p < .564$). Additional significant differences did arise. The variance in mean weighted reach becomes much closer compared to the mean weighted interaction by region. Despite the closing of the gap of mean scores, the Western region had a significantly greater mean compared to the Eastern ($p < .01$), and Southwest ($p < .001$) regions. MOSPRA schools in the Western region held the greatest reach of all other regions.

Table 22-ANOVA of MOSPRA Region by Weighted Reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.094	3	1.031	8.862	0*
Within Groups	441.006	3,789	0.116		
Total	444.101	3,792			

Note.* $p < .001$

Examination of the descriptives of MOSPRA region by weighted reach indicates the Eastern region and the Southwest region have nearly identical results; an average of 27 out of every 100 Facebook Fan Page followers viewed each post. The Mid-State region had the second highest average reach with an average of 30 out of every 100 Facebook Fan Page followers viewing each post. The Western region had the highest average weighted reach by reaching an average of 33 out of every 100 Facebook Fan Page followers.

Table 23-Descriptives of MOSPRA Region by Weighted Reach

	N	Mean	Std. Deviation
Eastern	355	0.273	0.174
Mid-State	301	0.308	0.220
SW	1,536	0.277	0.257
Western	1,601	0.336	0.443
Total	3,793	0.304	0.342

Examination of MOSPRA Region by Weighted Impressions

Once again the initial ANOVA test recorded a significance, $F(3, 3789) = 6.246$, $p < .001$). A comparison of region by weighted impressions resulted in only one significant area of difference. The Western region had a significantly greater mean score compared to the Southwest region ($p < .001$). The Southwest region had 1,536 posts, the second highest number by region, but was continually less impactful when comparing weighted reach, weighted impression and weighted interactions to all other MOSPRA regions. The Southwest region continued to have the least impactful mean score compared to all other regions.

Table 24-ANOVA of Region by Impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.930	3	2.310	6.246	0*
Within Groups	1,401.390	3,789	0.370		
Total	1,408.321	3,792			

Note. * $p < .001$

The comparison of MOSPRA region by weighted impressions illustrates the largest separation from the highest mean to the lowest mean of all tests performed by region. On average, nearly 10 more Facebook users viewed MOSPRA Western region

pages than MOSPRA Southwest region pages. This difference was determined to be significant when applying Tukey’s HSD. The Western region made the most overall posts and had the highest average weighted impression in comparison to all other MOSPRA regions.

Table 25-Descriptives of MOSPRA Region by Weighted Impressions

	N	Mean	Std. Deviation
Eastern	355	0.579	0.400
Mid-State	301	0.601	0.445
SW	1,536	0.528	0.478
Western	1,601	0.621	0.764
Total	3,793	0.578	0.609

Urban and Rural

Examination of Urban and Rural by Weighted Interactions

Each participating district was broken into rural or urban using the Universal Services E-Rate classifications for rural and urban schools. The individual posts were then evaluated by weighted reach, weighted impression, and weighted interactions compared to their urban or rural classification.

The original ANOVA test for urban or rural compared to weighted interactions resulted in a significant difference of $F(1, 3,791) = 9.660, p < .002$. Because there are only two categories, no additional tests were necessary to determine where the significance lay. Based on the data provided, urban schools have a significantly higher interaction rate ($p < .002$) compared to rural schools.

Table 26-ANOVA of Rural or Urban by Interactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.033	1	0.033	9.660	0.002*
Within Groups	12.898	3,791	0.003		
Total	12.931	3,792			

Note.* $p < .002$

Only one rural school supplied data. Table 26 indicates there was a slightly higher, one interaction out of every 100 Facebook Fan Page followers, rate for Urban schools when compared to Rural schools. Urban districts comprised almost all of the total posts, $n=3,572$.

Table 27-Descriptives of Rural or Urban by Interactions

	N	Mean	Std. Deviation
Rural	221	0.03	0.04
Urban	3,572	0.04	0.06
Total	3,793	0.04	0.06

Examination of Urban and Rural by Weighted Reach

The comparison by weighted reach to urban or rural yielded similar results as by weighted interactions. The significant difference was recorded as $F(1, 3,791) = 9.566$, $p < .002$.

Table 28-ANOVA of Rural or Urban by Weighted Reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.118	1	1.118	9.566	0.002*
Within Groups	442.983	3,791	0.117		
Total	444.101	3,792			

Note.* $p < .002$

The variance in mean scores for comparison of rural versus urban by weighted reach demonstrated an average of seven more urban Facebook Fan Page followers viewed each post than the rural Facebook Fan Page followers. This variance was determined to be significant after testing with Tukey’s HSD post hoc test.

Table 29-Descriptives of Rural or Urban by Weighted Reach

	N	Mean	Std. Deviation
Rural	221	0.235	0.139
Urban	3,572	0.308	0.351
Total	3,793	0.304	0.342

Examination of Urban and Rural by Weighted Impressions

The statistical significance between the urban and rural increased to $F(1, 3791) = 11.770$, $p < .001$, when comparing the weighted impressions by rural or urban. Urban schools had significantly higher weighted reach ($p < .002$), weighted impressions ($p < .002$), and weighted interactions ($p < .001$) than rural. The research suggests urban school’s Facebook pages have a greater overall impact than rural schools.

Table 30-ANOVA of Rural or Urban by weighted Impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.359	1	4.359	11.770	0.001*
Within Groups	1,403.962	3,791	0.370		
Total	1,408.321	3,792			

Note. * $p < .001$

The mean for urban districts weighted impressions was .144 higher than the mean of rural districts by weighted impression. An average of 14 more Urban Facebook Fan followers viewed each post than rural Facebook fan page followers. This variance was determined to be significant during testing.

Table 31-Descriptives of Rural or Urban by Weighted Impressions

	N	Mean	Std. Deviation
Rural	221	0.442	0.257
Urban	3,572	0.586	0.624
Total	3,793	0.578	0.609

Total Number of Posts during Recorded Time Period

Examination of Number of Posts by Weighted Interactions

A comparison based on the number of posts during the observed period of time to weighted reach, weighted interactions and weighted impressions was performed. Once again a statistical significance was noted after performing the ANOVA test $F(3, 3,789) = 23.321, p < .001$. Tukey's post hoc test was performed to identify between which areas the difference resided. The number of posts varied between 15 and 500 during the observed period. The four groups for comparison were 1-100 posts, 101-200 posts, 201-300 posts, and more than 301 posts.

The range of 201-300 contained the single largest collection of school districts observed. The total number of posts for the 201-300 range was 1,725 from seven different districts. Only two districts exceeded 300 posts. Schools posting between 0 and 100 times had a significantly lower mean than all other post ranges ($p > .026$ to $p < .001$). Schools who posted between 101 and 200 times had the highest mean weighted interactions score. The 101 to 200 range was significantly higher than the 0 to 100 range ($p < .001$), 201 to 300 range ($p < .001$), and to the 301+ range ($p < .044$). School posting between 101 and 200 times during the observed period had the highest mean interaction rate.

Table 32-ANOVA of Number of Posts by Weighted Interactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.234	3	0.078	23.321	0*
Within Groups	12.696	3,789	0.003		
Total	12.931	3,792			

Note. * $p < .001$

The interaction rates for the number of posts comparison ranged from .024 for the 0 to 100 posts to .049 for the 101-200 posts. The difference between the 0-100 posts range and the 101 to 200 post range was .025. On average 2.5 more individuals interacted with a Facebook page for schools posting between 101 and 200 times during the observed period than for districts posting between 0 and 100 times during the observed period.

Table 33-Descriptives of Number of Posts by Weighted Interactions

	N	Mean	Std. Deviation
0-100	378	0.024	0.037
101-200	889	0.049	0.076
201-300	1,725	0.034	0.051
301+	801	0.042	0.057
Total	3,793	0.038	0.058

Examination of Number of Posts by Weighted Reach

Evaluation of the number of posts by weighted reach yielded different results than the comparison of number of posts by weighted interactions $F(3, 3,789) = 86.011$, $p < .001$. The 101-200 range continued to have the highest mean score. The 101-200 range improved significance ($p < .001$) in comparison to all groups. The 301+ range demonstrated a statistical advantage over the 201-300 range ($p < .001$). Posting 101-200

times in a six month range continued to demonstrate a higher mean score than posting more or less frequently.

Table 34-ANOVA of Number of Posts by Weighted Reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.315	3	9.438	86.011	0*
Within Groups	415.785	3,789	0.110		
Total	444.101	3,792			

Note. * $p < .001$

Similar to the comparison of number of posts by weighted interactions, the single greatest variance in ranges was between the 0 to 100 post range and the 101 to 200 post range. The difference between these two ranges represented nearly an average of 18 more individuals were reached by schools posting between 101 and 200 times during the observed period than by schools posting 0 to 100 times during the observed period.

Table 35-Descriptives of Number of Posts by Weighted Reach

	N	Mean	Std. Deviation
0-100	377	0.272	0.203
101-200	889	0.456	0.550
201-300	1,726	0.239	0.242
301+	801	0.291	0.195
Total	3,793	0.304	0.342

Examination of Number of Posts by Weighted Impressions

The ANOVA test for number of post by weighted impressions reported a significant difference of $F(3, 3789) = 74.729, p < .001$. The 101-200 post range maintained the highest mean score and was significantly higher ($p < .001$) than all other ranges when compared by weighted impressions. The 201-300 post range was significantly lower ($p < .014 - p < .001$) than all other ranges. The results across weighted

impressions, weighted reach and weighted interactions demonstrate the 101-200 post range has statistically higher results when compared to all other ranges.

Table 36-ANOVA of Number of Posts by Weighted Impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	78.672	3	26.224	74.729	0*
Within Groups	1329.648	3,789	0.351		
Total	1408.321	3,792			

Note.* $p < .001$

Districts that posted between 101 and 200 times during the observed period had the greatest average weighted impressions. On average, nearly 83 out of every 100 Facebook followers viewed each post for schools posting between 101 and 200 times during the observed period.

Table 37-Descriptives of Number of Posts by Weighted Impressions

	N	Mean	Std. Deviation
0-100	377	0.565	0.447
101-200	889	0.828	0.941
201-300	1,726	0.464	0.452
301+	801	0.551	0.381
Total	3,793	0.578	0.609

Total Number Fans

Examination of Number of Fans by Weighted Interactions

School districts were broken down into four groups based on the number of fans following their Facebook fan page. Several of the districts had similar fan bases making the cut-off points difficult while trying to create an equal number of districts in each group. Based on the data, the points were 0 to 2,000, 2,001 to 3,750, 3,751 to 5,750, and 5,751+. The number of fans were compared to the weighted interaction, weighted

impressions and weighted reach. A significant difference was noted. The researcher ran the results through Tukey’s HSD to determine where the significance was noted and to what degree.

A definite trend was noted between the number of fans and mean weighted interactions $F(3, 3,789) = 58.372, p < .001$. The more fans a district had the lower the total mean of weighted interactions. There was a statistical difference between the ranges with the exception of 2,001-3,750 and 3,751-5,750 ($p < .996$). Significance was found in all other areas ($p < .001$). The fewer the number of fans the more interactions a page had.

Table 38-ANOVA of Number of Fans by Interactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.571	3	0.190	58.372	0*
Within Groups	12.359	3,789	0.003		
Total	12.931	3,792			

Note. * $p < .001$

Examination of the mean scores for Number of fans compared by weighted interactions illustrates an inverse relationship. As the number of fans increases, the average number of interactions decreases. The range of 0 to 2,000 fans has an average of more than six out of every 100 Facebook Fan Page followers interacting with each post. In comparison, districts with more than 5,751 Facebook Fan Page followers had an average interaction rate of less than two interactions per post for every 100 Facebook Fan Page followers.

Table 39-Descriptives of Number of Fans by Weighted Interactions

	N	Mean	Std. Deviation
0-2,000	370	0.061	0.101
2001-3750	1,450	0.042	0.056
3751-5750	1,027	0.042	0.054
5751+	946	0.019	0.032
Total	3,793	0.038	0.058

Examination of Number of Fans by Weighted Reach

A similar trend was found when comparing the number of fans by weighted reach, $F(3, 3789) = 278.813, p < .001$. The lower the number of fans the higher the noted mean of weighted reach. The separation increased across all ranges and was determined to significantly decrease with an increase in the number of fans. The same significant difference was recorded in all areas ($p < .001$), except between the 2,001-3,750 and 3,751-5,750 range ($p < .004$). The more fans a page has the lower the reach it maintains.

Table 40-ANOVA of Number of Fans by Weighted Reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	80.3087	3	26.770	278.813	0*
Within Groups	363.792	3,789	0.096		
Total	444.101	3,792			

Note. * $p < .001$

As with the previous comparison by total number of fans, an inverse relationship is visible when comparing the total number of fans by weighted reach. The more Facebook Fan Page followers a district maintains, the lower their average reach. Districts with between 0 and 2,000 Facebook Fan Page followers reached an average of 72 people

out of every 100 Facebook Fan Page followers. In comparison, an average of only 19 out of every 100 Facebook Fan Page followers were reached for districts with more than 5,751 followers.

Table 41-Descriptives of Number of Fans by weighted Reach

	N	Mean	Std. Deviation
0-2,000	369	0.727	0.734
2001-3750	1450	0.302	0.231
3751-5750	1,027	0.259	0.231
5751+	947	0.191	0.187
Total	3,793	0.304	0.342

Examination of Number of Fans by Weighted Impressions

The ANOVA test for number of fans by weighted impressions generated a significant difference of $F(3, 3,789) = 243.228, p < .001$. The results of comparing the number of fans by weighted impressions mirror the results by weighted reach ($p < .001$). The mean score for the 0-2,000 range scored 1.287 impressions per post. The data supports a clear inverse relationship between the number of fans and mean weighted impressions per post.

Table 42-ANOVA of Number of Fans by Weighted Impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	227.418	3	75.806	243.228	0*
Within Groups	1180.9	3789	0.31167		
Total	1408.32	3792			

Note. * $p < .001$

The inverse relationship between the number of Facebook Fan Page followers and overall impact continued to be evident when comparing the number of weighted impressions. Districts with 0 to 2,000 Facebook Fan Page followers had a mean score of

1.287 in comparison to districts with more than 5,751 Facebook Fan Pages followers which had a mean score of .384. On average, more than three times the number of people viewed a post for districts with less than 2,000 Facebook Fan Page followers than districts with more than 5,751 Facebook Fan Page followers. On average, more than 128 out of every 100 Facebook Fan Page followers viewed each post for districts with less than 2,000 fans. The number of views is greater than the number of Facebook Fan Page followers because impressions measures the total number of views, not just the number of Facebook Fan Page followers who viewed each post.

Table 43-Descriptives of Number of Fans by Weighted Impressions

	N	Mean	Std. Deviation
0-2,000	369	1.287	1.251
2001-3750	1450	0.579	0.441
3751-5750	1027	0.500	0.437
5751+	947	0.384	0.368
Total	3793	0.578	0.609

Total Enrollment of District

Examination of Total Enrollment by Weighted Interactions

Districts were broken down by Total enrollment to determine any variance based on the overall size of the district. In an effort to maintain similar sample sizes districts were split into four subgroups. The cut of points for each of the subgroups was as follows; subgroup one 0 to 3,000 students, subgroup two 3,001 to 5,000 students, subgroup three 5,001 to 10,000 students, and subgroup four 10,000+ students. Districts ranged in total enrollment from 2,513 s to 25, 587 students.

Enrollment data was compared by weighted impressions resulting in a statistical variance of $F(3, 3788) = 44.312, p < .001$. The post hoc Tukey’s HSD was applied to

illustrate between which subgroups there was a statistical difference. Subgroup four had statistically less interactions than all other subgroups ($p < .001$). The only other statistical difference demonstrated a statically significant lower mean score in subgroup three compared to subgroup one ($p < .006$). There is a clear inverse relationship between total enrollment and weighted interactions. The higher the enrolment the less interaction on Facebook.

Table 44-ANOVA of Total Enrollment by Weighted Interactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.4384	3	0.14613	44.312	0*
Within Groups	12.4922	3,788	0.0033		
Total	12.9306	3,791			

Note. * $p < .001$

An inverse relationship was displayed when comparing the total enrollment by weighted interactions. Districts with an enrollment of 3,000 or less had three times, .04524, the average number of interactions than districts with an enrollment greater than 10,000. Districts with an enrollment less than 3,000 had an average of more than four out of every 100 Facebook Fan Page followers interact with each post. Whereas, districts with an enrollment of greater than 10,000 had only an average of 1.5 out of every 100 Facebook Fan Page followers interacted with each post.

Table 45-Descriptives of Total Enrollment by Weighted Interactions

	N	Mean	Std. Deviation
0-3,000	1,789	0.04524	0.0684
3,001-5,000	899	0.04199	0.05468
5,001-10,000	435	0.03519	0.04266
10,000+	669	0.01589	0.03124

Total	3,792	0.03814	0.0584
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Examination of Total Enrollment by Weighted Reach

Similar tests were ran based on weighted reach compared to total enrollment resulting in $F(3, 3788) = 97.8872, p < .001$. Tukey's HSD was completed to highlight statistical differences. Statistical significance was found between all group comparisons ($p < .001$), with the exception of between subgroup three and subgroup four. As in the total enrollment comparison by weighted interactions an inverse relationship emerged. As enrollment went up the mean weighted reach went down.

Table 46-ANOVA of Total Enrollment by Weighted Reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.0375	3	10.3458	94.8872	.000
Within Groups	413.017	3,788	0.10903		
Total	444.055	3,791			

Note. * $p < .001$

As with comparison by weighted interactions, an inverse relationship between the total enrollment and weighted reach is visible when examining the descriptives in Table 47. The results illustrate districts have an enrollment of less than 3,000 have, on average, 38 out of every 100 Facebook Fan Page followers view each post. In comparison, districts with an enrollment greater than 10,000 only have an average of 16 out of every 100 Facebook Fan Page Followers view each post.

Table 47-Descriptives of Total Enrollment by Weighted Reach

	N	Mean	Std. Deviation
0-3,000	1,788	0.38501	0.42066
3,001-5,000	899	0.30537	0.26736
5,001-10,000	435	0.17841	0.13673
10,000+	670	0.16774	0.19132
Total	3,792	0.30404	0.34225

Examination of Total Enrollment by Weighted Impressions

ANOVA test results for the comparison of total enrollment by weighted impressions resulted in $F(3, 3788) = 84.6191, p < .001$. Post hoc tests once again indicated a statistical difference ($p < .001$) between all subgroups with the exception of the comparison of subgroup three to subgroup four. As enrollment increased the weighted impressions decreased steadily.

Table 48-ANOVA of Total Enrollment by Weighted Impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	88.4269	3	29.4756	84.6191	0
Within Groups	1,319.49	3,788	0.34833		
Total	1,407.91	3,791			

Note. * $p < .001$

The inverse relationship continued to present itself in the examination of total enrollment by weighted impressions. Although there was a decrease in the number of impressions between the districts with an enrollment of 5,001 to 10,000 and districts with an enrollment of more than 10,000, the variance, less than one out of every 100 Facebook Fan Page followers, was determined not to be significant. Districts with an enrollment of

3,000 or less had an average of 71 out of every 100 Facebook followers view each post. In comparison, districts with an enrollment of greater than 5,000 had an average impression rate of less than half that with 34 and 35 out of every 100 Facebook followers viewing each post.

Table 49-Descriptives of Total Enrollment by Weighted Impressions

	N	Mean	Std. Deviation
0-3,000	1,788	0.7108	0.73264
3,001-5,000	899	0.59081	0.50272
5,001-10,000	435	0.35770	0.28552
10,000+	670	0.34737	0.38268
Total	3,792	0.57763	0.60941

Evaluation of the Highest Post by District

The master data file from each district’s Facebook Insight export was sorted from highest to lowest to determine the highest post based on each of the three metrics examined. These metrics were weighted interactions, weighted impressions, and weighted reach. The data from these three categories was then evaluated based on time, type, and category to determine frequencies and similarities among districts.

There were eight districts that had one post top the list in all three weighted variables. No school had more than two different posts ranking in the top position for any of the three weighted variables. The data indicated there were only four districts that had a different post ranking number one for weighted reach compared to weighted impressions. Whereas, weighted interactions had 12 posts that were not the same as the highest rated weighted impressions. There were two schools that had the same post scoring the highest for weighted reach and weighted interactions that were not the same as weighted impressions.

The frequency of the category, type and time of each district’s highest weighted score were also evaluated. The data indicates the most frequently used category of post, scoring the highest in all three weighted, variables fell under the category General. The next highest category was Emergency posts. Weighted interactions held 17 of the highest ranking posts falling in the General category, with only two in Emergency and three in Extracurricular.

Table 50-Frequency of Highest Weighted Posts by Category

	Category Impressions	Category Reach	Category Interactions
General	15	13	17
Emergency	5	6	2
Extracurricular	2	3	3

The frequency of type of post compared to the individual district’s highest posts based on weighted variables, illustrates that Photos reached the largest audiences in all three categories for a majority of districts. Status updates ranked the second highest in all three weighted variables. Links and Videos appeared at the top of the list for at least one district but no more than two when examining highest weighted posts.

Table 51-Frequency of Highest Weighted Posts by Category

	Weighted Impressions	Weighted Reach	Weighted Interactions
Photo	12	12	15
Status	7	8	4
Link	1	1	2
Video	2	1	1

An analysis of highest rated posts by time indicated posts made during the school day ranked higher in all weighted variables than those made before or after school for most districts. There was very little difference in the frequency of top post between the

morning and afternoon portion of the school day. There were no posts that fell between 12:00 am and 5:59 am in the highest weighted interactions post by time. The individual school's highest most frequently feel with in the school day.

Table 52-Frequency of Highest Weighted Posts by Time

	Weighted Impressions	Weighted Reach	Weighted Interactions
12:00-5:59 am	1	2	0
6:00-11:59 am	9	9	7
12:00-5:59 pm	10	9	13
6:00-11:59 pm	2	2	2

Comparing the range of highest weighted variables in each of the three areas does not illustrate any clear patterns. The range of highest ranking weighted impressions by district ranged from .898 to 5.630. Weighted reach's highest posts by district ranged between .358 and 3.276. Weighted interactions had the smallest range with scores between .083 and .855.

Table 53-Highest Weighted Scores by District

School	Weighted Interactions	Weighted Reach	Weighted Impressions
1	0.508	3.276	5.630
2	0.479	2.712	4.685
3	0.284	0.752	1.344
4	0.202	1.034	2.793
5	0.210	0.519	1.123
6	0.251	1.082	2.468
7	0.158	0.968	1.779
8	0.855	4.215	6.989
9	0.174	0.822	1.665
10	0.457	1.601	3.048
11	0.399	1.584	2.823
12	0.123	0.634	1.387
13	0.550	2.558	4.739
14	0.280	2.833	5.293
15	0.171	1.018	2.029
16	0.070	0.358	0.898
17	0.460	0.909	2.080
18	0.083	0.480	0.976
19	0.182	1.238	2.047
20	0.111	0.970	1.882
21	0.351	0.958	1.749
22	0.331	2.633	4.276

Summary of Results

Evaluation of the data from Facebook Insights has demonstrated significant variances in the key metrics. In an assessment of time, location, urban vs rural, number of posts, enrollment size, type and category of post, at least one variable held a significant advantage or disadvantage over the others when compared to weighted reach, weighted impressions, and weighted interactions. The ANOVA test and descriptives have been displayed for comparison.

Specific results indicate there is a correlation between the type of post and overall interaction. Video or Photo posts scored a higher mean score than sharing a Link or Status. The practice of sharing links was noted to be significantly less impactful ($p < .001$), than utilizing Status updates and the posting of Photos or Videos compared to weighted interactions. Similar results were found when examining type by weighted reach. Additionally, Photos were determined to score significantly lower than Videos and Status updates. The weighted impressions by type replicated the findings as from the weighted reach comparison.

The analysis of the category of post by weighted interactions demonstrated a variance between Emergency notifications and all other categories ($p < .001$). Comparing weighted reach and weighted impression by category supported the data from the weighted interactions comparison. Emergency notifications generate a larger number of weighted interactions, weighted reach and weighted impressions than all other categories.

A significant difference between the weighted interactions and time of day was noted ($p < .001$). Posts made before 6:00 am and after 6:00 pm had greater interaction rates than those made throughout the school day. Tests comparing weighted impressions and weighted reach supported the findings with a larger variance in means.

Comparing the weighted variables by MOSPRA region gives varying data based on weighted variable. Weighted interactions places the Mid-State region significantly higher ($p < .001$) than any other region. The weighted reach results place the Western region significantly higher ($p < .001$) than the Eastern and Southwest region. In comparison, the weighted impressions only illustrated a significant advantage to the Western region over the Southwest region at ($p < .001$).

The number of posts a district made had an impact on the weighted reach, weighted interactions and weighted impressions per post. District's making between 101 and 200 posts during the 180 day observed period held statistically larger weighted reach, weighted impressions and weighted interactions than those making more or less posts during the same period. In comparison, the range of 201 to 300 was significantly less effective than all other ranges when evaluating number of posts by weighted impressions.

A clear, inverse relationship appeared between the number of fans and weighted impressions, weighted reach and weighted interactions. The more fans a district had, the lower the mean for all three weighted variables. ANOVA and Tukey's HSD test reported a significantly higher reach for the 0-2,000 fan range than all other ranges. The mean score for the 0-2,000 fan range was over 1.2 impressions per post.

An assessment of the highest ranking posts per district by weighted reach, weighted impressions and weighted interactions was also conducted. Although no one particular type, category or time of posting garnered the entire highest rated post for all districts, there were some patterns noted. These patterns include General postings consistently appearing more frequently as the top post when compared to weighted impressions, weighted reach, and weighted interactions. Extracurricular posts appeared less than one eighth of the time as a highest rated post. Posts made between the hours of 6:00 am and 5:59 pm garnished the highest single posting weighted reach, weighted impressions and weighted interactions in comparison to the early morning and evening hours. The results of the time analysis based on highest post contrast the results of the comparative study of all posts based on time of day.

Results highlighted a district's number of fans, time of day, the total number of posts, category and type of post have impact on the overall reach, impressions and interactions of a district's Facebook page. This analysis has added a new level of understanding for districts when it comes to managing time, resources and information utilizing social media.

Conclusion

Both the analysis of the descriptive data and an examination of the highest post by districts indicate there are trends in how posts are interacted with. Chapter Five will examine what these trends mean to K12 schools. It will also highlight best practices to increase a districts reach, interactions and impressions.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Limited research and benchmarking has been completed in regard to the use of social media by K12 districts. This research sought to answer the questions: “What are the key metrics to increasing the reach of a K12 district’s Facebook page? What are the key metrics to increasing the impression of a K12 district’s Facebook page? What are the key metrics to increasing the interactions of a K12 district’s Facebook page?” A comprehensive analysis of Facebook Insights data from 22 participating schools identified patterns in reaching and impacting the greatest number of followers. This chapter presents the researchers conclusions, recommendations and possible items for further study.

Conclusions

1. The purpose of this study was to determine key metrics in impacting the reach, impression and interaction of Missouri K12 school district’s Facebook pages. From the data presented in this research, districts across Missouri have a better understanding of the validity of ensuring their communication plans contain social media guidelines for use in district communications. The research questions, “What are the key metrics to increasing the reach of a K12 district’s Facebook page? What are the key metrics to increasing the impression of a K12 district’s Facebook page? What are the key metrics to increasing the interactions of a K12 district’s Facebook page?” guided every step of the process. The research has supported a statistical variance in the

delivery of information utilizing a Facebook fan page. The following information identifies variances in key metrics and how they should be included into best practices by K12 districts. This research needs to be considered in its totality. Simply examining one area and implementing a best practice based on one criterion might not impact a district's social media communication plan. This research does suggest that if districts follow the best practices highlighted in this chapter they should see an overall increase in reach, impressions and interactions.

Total Number of Posts

The evaluation of the total number of posts made during the observed time period indicated there was a statistically beneficial range. Schools who posted between 101 and 200 times held the statistically greatest yield when examining weighted reach, weighted interactions and weighted impressions. This research demonstrated it is statistically beneficial to stay within this range, making it vital to evaluate this relationship first. If there is a minimum number of posts to make and a maximum not to exceed, then it becomes exceedingly important to review each post to maintain the statistically significant range. Districts need to examine how they can maintain the preferred number of posts and improve their overall interactions, reach and impressions.

Evaluation of the weighted reach, weighted interactions and weighted impressions demonstrated a correlation between the number of posts and the reach, interactions and impressions of a post. The highest scoring range for all three evaluations was the 101 and 200 posts range. Dividing this out over the 180 day or 15 week period equals a range of 6.73 to 13.33 posts per week. Based on this research nine of the districts exceeded the preferred range. This study indicated that these nine districts can improve

their overall reach, interactions, and impressions by limiting their number of posts so they can fall within the ideal range. This can be done by carefully examining future posts based on the following results listed throughout this chapter. Likewise, this research demonstrates the seven districts falling below the preferred rate can increase their number of posts based on the best practices highlighted below. Based on the findings of this research districts should set the goal to have an average of seven to 13 posts per week.

Type of Post

Facebook utilizes five specific types of post, they are Link, Note, Photo, Status and Video. There were only two Note posts utilized during the observed period. The very limited use of Notes offered no statistical significance in this evaluation. Of the remaining types of posts Video held the highest mean score, and held significantly higher weighted reach, weighted impressions, and weighted interactions than all other types of posts. A comparison of all three weighted areas demonstrated posting a Video had the highest overall impact, reach and impressions. Although Video was the second least used type of post across all districts (n=36), it was the most effective in reaching the largest audience, and was interacted with more than any other type of post. The complexity of recording video, editing the video and then uploading a Video posts can take more time to prepare and upload in comparison to writing Status updates, sharing Links, and the posting of Photos. Video posts held the highest mean weighted interactions, weighted reach, and weighted impressions in comparison to all other types of posts. Video as a type of post had a mean weighted impression of 1.31, demonstrating it was seen by more than 130% of a district's total followers. Based on this research there is an increased

value in taking the time to prepare a Video when trying to interact with the largest number of viewers.

The research has demonstrated a correlation between over posting and the impact it has on total and the weighted interactions, weighted reach and weighted impressions. Keeping in mind the range of posts yielding the maximum weighted reach, weighted impressions and weighted interactions range was 101-200 posts over 180 days, a district must evaluate each post to ensure they are staying within the statically advantageous range. Sharing Links was used 810 times out of 3,793 total posts. The use of a Link as a type post had the least weighted interactions, weighted impressions, and weighted reach mean of any other type of post. The use of a link had a weighted reach mean score of .178 compared to the use of a Video of .705. Similarly the large variance can be seen in weighted impressions with Link's mean score of .370 compared to Video's mean of 1.315. In all examinations the use of sharing a Link was determined to be statically less useful than all other types of posts. The ease of simply copying and pasting a Link into a post makes it a quick and easy way to share information, but the results demonstrate a lack of interaction, reach and impressions.

Photos were the most used type of post (n=2,045). Photos had a statistically lower weighted interaction, weighted reach, and weighted impressions than Video and Status updates. Keeping in mind the negative effect of over-posting districts must evaluate the excessive use of the posting of Photos and Links to communicate with stakeholders. A closer evaluation of the type of preferred post can lead to greater overall reach, interaction and impressions.

Edgerank, Facebook's algorithm used to meter posts, gives a greater weight to the use of Videos and Photos over the sharing of Links. Edgerank controls how quickly and to what extent posts are disseminated to Facebook users. Facebook's Edgerank is a step-by-step calculation of how posts are viewed by fans of all Facebook pages. Therefore, districts need to understand the Edgerank algorithm to maximize their reach, interactions, and impressions. As fans begin to view and interact with a post Edgerank begins to spread the post to more followers.

When the top individual posts of each district in all three weighted categories were evaluated, the use of Photo posts topped the list of weighted impressions 12 times, weighted reach 12 times and weighted interactions 15 times. Conversely the use of Video as a type of post came in at a tie for last place in frequency of appearing as the highest post in any of the three weighted categories. Based on these findings, districts should not eliminate the use of photos as a type of post. These results illustrate the need for a qualitative study to recognize tangible components of a post that assist in stretching its reach, increasing its interaction, and growing its impressions.

Category of Post

Each post was categorized as an Emergency, Extracurricular, General or Advertising post. Emergency posts garnered the highest overall weighted interactions, weighted reach and weighted impressions. Emergency posts had a weighted impressions mean of 1.224, just shy of two times the next closest category, Extracurricular with a mean of .631. Similar results were demonstrated when evaluating weighted interactions and weighted reach mean scores. Emergency posts holding the highest interaction rate among all test results for all the criteria evaluated should not be a surprise, based on the

value parents, staff, and community members place on student safety. These results support the inclusion of utilizing social media in crisis communications.

Some of the districts submitting data did not use their district page to communicate extracurricular activities. Some districts had separate athletic and activity pages to communicate news regarding extracurricular events. Other schools used district Facebook pages to communicate sparingly about extracurricular events. The research shows Extracurricular posts had a significantly higher reach than General posts when looking at weighted reach and weighted interactions. This research does not demonstrate the use of separate Facebook pages to communicate extracurricular activities is counterproductive. It does in fact illustrate that the inclusion of Extracurricular posts does have a greater reach and impression rate than General status updates. Schools can use Extracurricular posts to increase their overall impact on their social media community.

The evaluation of the individual districts highest overall post illustrates slightly different findings than the composite weighted means. General posts rank first, when looking at the single highest scoring post in all three weighted areas. The 22 highest scoring posts were examined in all three weighted areas. General notifications held the top spot with 15 weighted impressions, 13 weighted reach, and 17 weighted interactions out of a possible 22. General posts were the most interacted with, left the greatest impressions and had the greatest reach. General posts followed by Emergency then Extracurricular posts had the highest overall individual reach of posts evaluated.

The results from both the comparative analysis and the observance of the overall individual highest rated post by district illustrate the benefit of utilizing General,

Extracurricular and Emergency posts. Based on a lack of statistical advantage in any category, its lack of use, and not appearing in the evaluation of the single highest post in any of the three weighted areas advertising should not be used as a type of post.

Time of Post

The overwhelming number of posts fell between 6:00 am and 5:59 pm (n=3,490). Considering this period of time falls within both the school and work day, it should be of little surprise these time periods contain the largest number of posts. However, this time period was determined to be statistically less impactful in all three areas of analysis. The early morning period, 12:00 am to 5:59 am, was determined to have the greatest weighted interactions, weighted impressions and weighted reach. At first one might think the use of Emergency posts to cancel school due to weather excessively impacts these numbers. However, the data fails to support this hypothesis. Of the 94 total Emergency posts only 14 of them were made during the 12:00 am to 5:59 am time period. The largest distribution occurred during the school day (n=68).

The lack of ability for many parents and stakeholders to interact with social media during the work day needs to be considered as a possible reason for the lack of interactions, reach and impressions during the school day. Many schools also have policies against the use of social media on school owned technology, as well as the use of cell phones by students during the school day. Once a post is made on Facebook it begins to decay. The less interaction with it the quicker it begins to fade into the background. Districts must be aware of these limitations and work to improve the timing of posts if they desire to improve efficiency. Schools need to research and invest in applications that can schedule posts to be delivered at the maximally effective time.

MOSPRA Region

Of the 22 districts participating in this research there were nine from the Southwest Region, eight from the Western Region, four from the Eastern Region, and only one from Mid-State Region. The member from the Mid-State region had over 300 posts during the observed time frame making a statistically significant contribution to the research. Having only one district from this region however may be considered a limitation and will be discussed as such later.

The Western Region was determined to maintain a higher mean score which was statistically more significant than the Southwest Region in both weighted reach and weighted interactions. There was one more district from the Southwest Region submitting data than from the Western Region. The Western region had 1,601 individual posts from the participating eight districts. The Southwest region submitted 1,536 individual posts from nine districts. The Southwest Region had an average of 171 submitted posts per district compared to 200 posts per district from the Western Region. The variance in posting prolificacy is not statistically different and should have no effect.

Other regional consideration must be reflected. Anecdotal information collected during the November 7, 2014 MOSPRA Fall Conference could provide a starting point. School districts surrounding the Kansas City metro area, part of the Western Region, commented heavily on the negative comments and feedback provided on their district Facebook pages as well as other unofficial school sites. Members from the Southwest Region explained how Facebook page followers often self-policed and rallied behind the district if anyone made a negative comment directed at the district. The pure number of

interactions, impressions and reach is important, but the quality and motive must also be examined as well.

Urban or Rural District

An evaluation of Urban or Rural district illustrated that urban districts scored statistically higher in weighted reach, weighted impressions, and weighted interactions. Similar to MOSRPA region analysis there was however only one district comprising one variable. There was only one rural district and they submitted 221 posts made during the observed period. Testing did however result in a statistical significant variance.

Number of Facebook Fans

The test results illustrated an inverse correlation between the number of fans following a Facebook page and the overall weighted reach, weighed interactions, and weighted impressions. As the number of fans increased, the mean scores in all three categories significantly decreased. This difference was most obvious in the weighted impressions results. The 0 to 2,000 fan range had a mean weighted impressions score of 1.287. The mean weighted impression was reduced by more than fifty percent in the next subgroup. The 2,001 to 3,750 range had a weighted impressions mean of .579. The 3,751 to 5,750 also declined to a weighted mean score of .500. The final subgroup 5,751+ had a mean weighted impressions score of .384.

An observation could be made that because impressions measures the impact beyond the fans following a specific page, there is a statistical advantage to gaining a higher score for schools with smaller fan bases. Although this is a correct statement, the analysis of the other two weighted variables supports the inverse relationship. When evaluating the weighted reach for example subgroup one had a mean of .727, subgroup

two had a mean of .302, subgroup three had a mean of .259, and subgroup four had a mean of .191. As the fan base grew the reach statistically decreased.

Companies, organizations and schools spend time and efforts to grow their fan base. In the case of the researcher's home district, a goal of ten percent growth in the number of fans is expected each year. The results highlighted the fact that the more fans a district gains the less intimate the dialogue and interaction. Districts can spend more time cultivating the existing relationships instead of gaining artificial, less engaged followers.

Total Enrollment

As with number of fans following a district's Facebook page there was an inverse relationship between the total enrollment of a district and their weighted impressions, weighted interactions, and weighted reach. In all three evaluations as enrollment increased the mean scores decreased. The connection between enrollment and the number of fans following a page strongly indicates the larger the district the less effective reach, interaction and impression a page will have.

The school with the highest enrollment had more than ten times the number of students enrolled than the school with the least students enrolled. School 3 had an enrollment of 2,513 and contained only one high school and junior high. School 22 maintained an enrollment in excesses of 25,500 and housed five high schools and numerous middle schools. An observation can be made that the larger enrollment and more complex district configuration the less intimate relations with the district as a whole.

Recommendations

The research that was conducted illustrates there are patterns in the data. These patterns suggest there are ways to improve a district's reach, interaction, and impression by modifying what, how, when, how often and to whom they post. Districts must develop social media guidelines and best practices based upon this research. Based on the findings in Chapter 4 and the conclusions listed above the researcher has developed a list of recommendations.

The following recommendations highlight the key areas a district must consider when developing a social media policy. Districts need to consider the structure and size of their district to determine how to best establish social media to impact the greatest number of individuals. For example should a district with multiple high schools use one Facebook page to reach everyone, or does the research indicate multiple pages would have the greater impact? Procedures identifying what types of posts and the content of the posts need to be established prior to launching into social media. The district needs to determine if they are using it as an emergency notification system, extracurricular website, general announcement, or combination of the three. Districts must identify if interactions are important to them. By allowing fans to comment districts could be inviting feedback they do not desire to have aired publicly. Limiting interactions can protect a district's image but does limit the two way communication process which is important the diffusion of information.

The research has demonstrated posting between one to two times a day has the greatest effect on reach, impressions and impact. Keeping this in mind, districts must evaluate each post and determine how to best present the information to maximize each

posts reach, impression and interaction rate. Below are some best practices a district can follow to assist them in expanding these key metrics. These best practices were developed from an evaluation of the data reported in Chapter 4. The Following paragraphs specifically out-line these best practices.

This research has spotlighted trends in the use of social media as it relates to K12 schools. As noted previously, several best practices have been identified. However, several questions have not been answered, and new questions have arisen. These areas are identified as areas of continued or future research. Only one rural district participated in the study. Additional rural schools utilizing Facebook as a social media channel should be incorporated into future studies, or research as to why they are not utilizing social media currently. MOSPRA's Mid-State Region had only one participant in the study. Future research should emphasize a need to garner increased participation from the Mid-State Region to identify any possible regional concerns or benefits when using social media. With the exception of analysis of the post to categorize as an Emergency, Extracurricular, General or Advertisement the actual contents of the individual posts were not examined. A qualitative study of the information presented should be made to identify how to best encode a social media message to maximize efficiency. This study should be replicated over time, and through different National School Public Relations Association state chapters.

Conclusion

As schools continue to become more accountable to patrons and add research based practices to improve student performance, they must also communicate the reasoning behind these changes to their stakeholders. The Development Communication

theory dictates any process of change includes authentic two-way communication between the stakeholders and the agents of change. Social media, an emerging communication channel used in many areas of American society, can assist schools in meeting this need. Specific social media platforms may come and go, but the concept of a real-time, two-way, digital communication billboard will continue to be around for a long time. This research has identified key metrics to follow when maximizing the impact of social media by K12 schools. As school districts continue to venture into the use of social media it is the hope of the researcher that this body of knowledge will continue to expand.

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