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Abstract

The use of data by school counselors has grown increasingly important over the past few years, and has a prominent place in the American School Counselor Association"s National Model for School Counseling Programs. This study examines the effectiveness of four variations of a workshop designed to improve school counselors" data use skills. The workshops were designed to vary along two dimensions; the amount of conceptual knowledge participants were exposed to, and the amount of a technology application (EZAnalyze) participants were exposed to. The quantitative results of the study indicate that being exposed to technology did not have a statistically significant impact on data use. The qualitative results indicate lack of time and knowledge were the most prominent barriers to applying what was learned during the workshop, and technology and access to useful data were the most prominent facilitators of data use. While the design of the study may provide a useful model to evaluate the impact of professional development over time, the results of the current study are best viewed as exploratory in nature.

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The use of data by school counselors today is critical to engage in effective school counseling practice (ASCA, 2005). Generally speaking, student outcome data can be used in two ways; school counselors can use data to guide program development by engaging in data-based decision making, and data can be used to evaluate program effectiveness. Practically speaking, using data to engage in data-based decision making and to evaluate program effectiveness go hand in hand, as the process for using data is similar for both data-driven decision making and program evaluation. The context of education today promotes the use of data for program evaluation purposes, as these data provide accountability information to school counseling program stakeholders.

The ASCA National Model calls on school counselors to be data-driven – to use data to identify student needs and evaluate the effectiveness of programs that intend to affect student outcomes. However, most school counselors lack the data use and evaluation skills necessary to effectively engage in the types of accountability efforts the ASCA National Model proposes (Bauman, 2004; Myrick, 1984; Wilson, 1985). To address this issue, literature describing methods specifically for school counselors to conduct research and engage in evaluation activities on a local level are appearing, such as single-subject research designs (Foster, Watson, Meeks, & Young,

2002), using school-wide data (Hayes, Nelson, Tabin, Pearson, & Worthy, 2002), school counseling program evaluation (Curcio, Mathai, & Roberts, 2003), school counseling-focused models of data-driven decision making (Reynolds & Hines, 2000; Isaacs, 2003; Poynton & Carey, 2006; Stone & Dahir, 2007), and a model of evidence-based practice specific to school counseling (Dimmitt, Carey, & Hatch, 2007).

Noting the need for school counselors to have specific training in program evaluation, Trevisan (2000) conducted a telephone survey of all of the 50 state certification offices plus Washington D. C. to determine what program evaluation knowledge and competencies were required to obtain certification as a school counselor in each state. Using the *Council for Accreditation of Counseling and Related Educational Programs* (CACREP) standards, he found that two of the 50 states met the CACREP standards (Colorado and Washington), and another two came very close to meeting those standards (Missouri and Wisconsin).

The computer technology that is available today can assist school counselors in executing many aspects of their job, but the use of computer technology to assist in program evaluation and data use has not been documented. Areas where computer technology has been formally explored in the field of school counseling are retrieving and disseminating information, distance learning, training and supervision, and as a counseling tool (Van Horn & Myrick, 2001). School counselors are sometimes seen as lagging in their use of computer technology, which may be attributable to a lack of financial resources, training in how to use the technology, or both (Owen & Weikel, 1999).

The importance of technology for counselors has not gone unnoticed by counselor educators, and led to the creation of a set of technology competencies by the Association for Counselor Education and Supervision (ACES) which focus largely on computer technology (ACES, 1999; ACES, 2007). As the technology competencies currently stand, counseling students should "be able to use computerized statistical packages" (ACES, 2007, p. 4). It is interesting to note that while this competency is near the top of the list of technology competencies for counselor education students (number 4 out of 12), there appears to be no literature on the topic regarding how to best engender these skills.

Given the current climate for accountability in the field of school counseling, the importance of using data to demonstrate accountability and guide decision-making, and the interest in the use of technology by counselor educators, methods for teaching school counselors how to use data to engage in program evaluation activities need to be identified and evaluated. The current study evaluated the effectiveness of four variations of a professional development workshop designed to isolate the value-added benefit of technology.

Hypotheses

The study employed a mixed-methods approach to evaluate the professional development workshops. Three specific hypotheses were investigated using quantitative methods:

1. Participants will perform differently over time (from pretest to posttest, one month, and three months) on measures of applied statistics knowledge and research methods, and research confidence and attitudes according to which group they belong.
2. Participants will engage in the actual use of data at one month and three months post-instruction differently according to which group they are assigned.
3. The use of data by participants will lead to more components of the ASCA National Model being implemented in their schools. Therefore, participants will differ in the number of ASCA National Model components added to their school

counseling program according to which group they are assigned

The qualitative portion of the study consisted of a focus group, convened after the quantitative portion of the study was complete, to help the researcher understand what barriers and facilitators to data use existed for the participants.

Method

Technology

Since most available computer programs for data analysis are more powerful than school counselors need, priced prohibitively high, and can themselves be quite confusing, a program called "EZAnalyze" was developed for use in this study. EZAnalyze (Poynton, 2007) is an "Excel Add-In" that contains data analysis functions necessary to follow the ASCA National Model recommendations for the use of data, and adds a "point and click" user interface to Microsoft Excel.

Design

Participants in the study were assigned to one of four groups. Groups differed in terms of their exposure to Conceptual Knowledge (knowledge of a data-driven decision making system, basic statistical analyses, and summary of ASCA National Model data use recommendations) and exposure to Technology (EZAnalyze). As Figure 1 illustrates, the Conceptual group received conceptual knowledge only, and the Technology group received brief instruction in statistical analyses and hands-on practice with EZAnalyze. The Conceptual + Technology Exposure (CTE) and Conceptual + Technology Immersion (CTI) groups differed in their degree of exposure to EZAnalyze. Specifically, "exposure" to EZAnalyze was accomplished by providing participants with a demonstration and copy of EZAnalyze, and "immersion" was accomplished by providing participants with a demonstration and copy of EZAnalyze, with two hours of hands-on practice with EZAnalyze as part of the training.

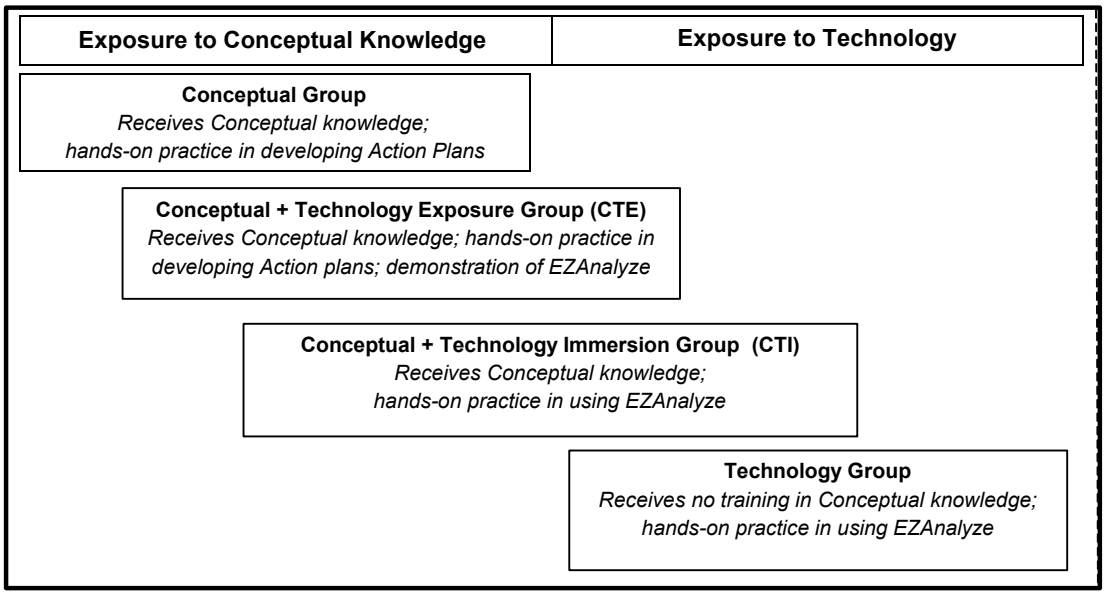

FIGURE 1

Overview of experimental groups

Curriculum

The content of the conceptual knowledge materials utilized in the professional development workshops were developed by the National Center for School Counseling Outcome Research (CSCOR, 2004). These materials have been used across the country to provide training to school counselors on the ASCA National Model and the use of data, and were adapted specifically for use in the state the current study took place in by using examples from the state‟s education department website. This training was provided to the Conceptual, CTE, and CTI groups during approximately 4 hours of direct instruction. The specific components of the conceptual knowledge training, based largely on the ASCA National Model (2003) were:

- Information on the types of data (ASCA 2003, pp. 49-50):
  - Student achievement data (for example, standardized test scores, drop-out rates, and promotion and retention rates)
  - Achievement related data (for example, discipline referrals, attendance rates, and parental involvement)
  - Standards and competency related data (for example, the percentage of students with four-year plans, percentage who participate in job-shadowing opportunities)
  - Perception data (for example, data collected from self-report surveys)
- Methods for using data (ASCA 2003, pp. 50-51):
  - Disaggregating data (sorting data into categories such as ethnicity, gender, grade level, and teacher)
  - Program evaluation data
  - Process data (time analysis accountability methods)
  - Showing improvement over time
- Seven steps of data-based decision making (Adapted from Love, 2002)
  - Develop vision statement for school counseling program
  - Collect and analyze student data
  - Describe the problem
  - Commit to benchmarks
  - Develop and action plan
  - Implement, monitor, and evaluate intervention
  - Share results
- Creating results reports (ASCA 2003, pp. 60-61)
  - Structuring a results report to show changes over time
  - Different methods for displaying and communicating the results of data (for example, pie charts, bar graphs, and tables)

Measures

Demographics

A questionnaire was developed to obtain basic demographic information from participants. Items were included to assess gender, age, years of experience as a school counselor, teacher, and administrator, school and district size and setting, and the number of research courses taken in graduate school.

ASCA National Model program implementation (SCPIS)

The 18-item “School Counseling Program Implementation Survey” was utilized to assess ASCA National Model program component implementation (available from http://www.umass.edu/schoolcounseling/implementation_survey.htm). Each item was measured using a four-point scale: 1 = Not Present, 2 = Development in Progress, 3 = Partly Implemented, and 4 = Fully Implemented. In addition to the items having high face validity, Elsner (2004) obtained a Cronbach‟s Alpha of .79 and .85 in pilot studies using 29 and 35 high schools in

Massachusetts, respectively. The survey was designed to assess the four ASCA National Model components – Foundation, Delivery, Management, and Accountability. Reliability analyses conducted by Elsner (2004) indicated that when the instrument is divided into these four subscales, reliability significantly declined.

Research confidence and attitudes (RESKA)

Bauman‟s (2004) measure, dubbed "RESKA" in this study, was employed to assess counselors‟ perceived confidence in conducting research, relevance of research, and value of research. Each item of the RESKA is measured using a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. While the original survey instrument presented by Bauman contained 26 items, factor analyses revealed that only 14 of those items were found to reliably assess one of the three subscales (Bauman, 2004). Since this measure is new, further analyses were warranted to investigate the reliability and validity of this instrument. Therefore, all 26 items were administered to participants as a pretest and posttest the day of instruction. A factor analysis conducted on the pretest data yielded a similar factor structure to Bauman‟s (2004). Cronbach‟s Alpha coefficients were calculated for the entire 14-item instrument and each subscale using the pretest data. The six-item Confidence subscale, five-item Relevance subscale, and three-item Value subscale had Cronbach‟s Alpha coefficients of .86, .65, and .73 respectively, while the entire instrument had a Cronbach‟s Alpha of .77.

Actual use of data

A six-item measure of participants‟ actual use of data was developed to assess the frequency of data use. This measure contained four items asking participants to indicate how many times they have engaged in various data use activities (e.g., administered a survey, analyzed data, and used data to make decisions) and two open-ended qualitative items. The quantitative items were designed to assess how frequently data was used and what type of data was used, while the qualitative items asked participants to describe how they used data, or if they did not use data, why not.

Applied statistics knowledge and research methods (Knowledge Test)

A 15-item questionnaire was developed to assess knowledge of basic research, evaluation, and statistics terminology, and the ASCA National Model (see Appendix A). The fifteen items of this measure were aligned with the conceptual knowledge part of the training curriculum to assess knowledge of the specific content areas the professional development workshop was designed to address.

To obtain information about the characteristics of the Knowledge Test, individual items were examined by computing Point Biserial correlations between each individual item and the total score on the instrument, and an Item Facility (IF) index for each item at posttest. These analyses were conducted on the posttest data because the highest scores for each individual should be obtained during this administration of the measure. The Point Biserial correlation coefficient is used in test construction to establish the ability of each individual item to discriminate between people who performed well or poorly on the test, while the Item Facility index is used to express the percent of people who correctly answered the question (Brown, 2001). As can be seen in Table 1, items 7, 9, and 11 had low and non-significant Point Biserial correlation coefficients, indicating that these items did not contribute meaningfully to total scores on the instrument at posttest. Items 9 and 11 nearly everyone answered correctly, while very few people answered item 7 correctly. The items contributing most meaningfully to total scores on this scale were items 1, 5, 10, and 12. Future revisions of this instrument should be

modeled after items 1, 5, 10, and 12 to create a better assessment of the learning that occurs during training.

TABLE 1

Point Biserial Correlation Coefficients and Item Facility Index for Posttest Administration of Knowledge Test

Item	*N*	*IF* Index (Posttest)	Point Biserial Correlation
1	120	.64	.53**
2	122	.87	.27**
3	119	.84	.39**
4	123	.94	.32**
5	117	.86	.53**
6	113	.48	.26**
7	120	.09	.01
8	119	.82	.34**
9	122	.95	.14
10	115	.73	.45**
11	121	.99	.15
12	115	.79	.45**
13	119	.69	.33**
14	119	.79	.44**
15	121	.95	.34**

Quantitative Procedures

Participants were recruited for participation in this study from a single state in the southwestern United States. Participants in the Technology group were a convenience sample obtained from a large city school district in the state. Participants in the remaining groups were obtained by mailing a brochure describing the workshop to all school counselors in the state. Participants who elected to attend the conference were then assigned non-randomly to groups, based on the location of the conference they chose to attend.

Before the training began and measures were administered to participants, informed consent for participation in the study was distributed and explained. Participation in the study was separate from participation in the training; while participation was encouraged, it was voluntary and participants were informed verbally and in writing of the voluntary nature of the study. Of the 214 people who participated in the training, 144 informed consent documents were returned indicating a desire to participate in the study, yielding a 67% participation rate.

Evaluation of the training was conducted through analyses of the survey measures. A research design employing repeated measures was used to permit analyses of within-subject differences among the four experimental groups. The first measure participants encountered was a pretest, which established a baseline to evaluate the effect of participation in one of the four groups. The pretest, administered prior to the training, contained several measures – the demographic questionnaire, Knowledge Test, the RESKA, and the SCPIS. The posttest, administered immediately after instruction on the day of the workshop, contained the Knowledge Test and the RESKA. At one-month post instruction, participants received a survey identical to the posttest with the data use items added, and at three-months post instruction participants received a survey similar to the pretest with the data use items added. Based on analyses of the pretest data, the RESKA administered at one and three months post instruction contained only the 14 items related to one of the three factors identified in Bauman‟s (2004) original analysis.

Qualitative Procedures

To develop an understanding of barriers and facilitators to employing the skills and knowledge gained during the workshop, a focus group was convened by the author after the administration of all quantitative measures was complete. The focus group was conducted as a special session of an annual conference for school counselors in the state. To obtain participants, announcements were made in the conference program book, and the morning of the focus group in a brief description of the session to all conference attendees. People were encouraged to participate in

the focus group even if they had not completed any of the follow up measures.

Fifteen people attended the focus group presentation, and five actively contributed to the focus group discussion. The session began with an overview of the research study, how participants were assigned to groups, and how each of the four groups differed in terms of workshop content. This ensured that each participant in the room knew which group they were part of, and how their training experience differed from others in the study. Next, the focus group was initiated. Participants were informed that the conversation was being tape recorded, and that participation in the focus group was completely voluntary. The focus group, which was facilitated by asking people to share their thoughts and experiences on the presentation and the topic of data use, lasted approximately 30 minutes, and the resulting data were transcribed for subsequent analysis.

Participants

Of the 144 participants in the study, 122 were school counselors, five were administrators, and one was a teacher. The remaining 16 participants held dual appointments in their schools or did not answer this question. Of the valid responses to the question regarding the setting of their school district, 39% (n = 54) of the participants indicated they worked in urban districts, 20% (n = 19) worked in suburban districts, and 40% (n = 55) worked in rural districts. The majority of the participants indicated they worked in high schools (56%, n = 75) exclusively, 10% (n = 15) worked exclusively in middle schools, and 12% (n = 17) worked exclusively in elementary schools. The remaining 18% (n = 26) of the participants contributing valid data to this question indicated they worked across multiple grade levels (K-12, 6-12, etc). The average age of the entire sample was 43.38 (SD=11.50), which consisted of 79% women (30 males, 110 females, 4 missing). The average number of years experience among participants who were school counselors or had a counseling background was 8.0 years (n = 137, SD = 7.57), and the average number of years experience among participants who had an administration background was 6.24 (n = 17, SD = 5.93). Fifty-nine percent (n = 85) of the participants had a teaching background, with 9.18 years of teaching experience on average (SD = 5.62).

A total of five participants were actively involved in the focus group discussions. Three of these participants were in the CTI group, while the remaining two participants were in the Conceptual group. Two of the focus group participants from the CTI group were part of a large urban school district, and their supervisor was in the room listening to the discussion. The third CTI group participant was a high school counselor and department chair from a small, rural school district. Of the participants from the Conceptual group, one was from a small Catholic high school located within a large urban school district, while the other was from a small, rural high school.

Results

Quantitative Findings

To assess the research hypotheses of this study, Analysis of Variance (ANOVA) procedures are indicated to assess within-group, between-group, and the interaction effect of within and between group factors on the dependent variables. However, the use of multiple measures in this study and the relatively high attrition rate of survey participants yielded very few data that are usable in this type of repeated measures ANOVA procedure. To be included in these analyses, each participant had to complete all four administrations of the measure. Twenty-seven of the 144 participants (18% completion rate) in this study completed all four administrations of the RESKA, while 29 participants (20% completion rate) completed all four administrations of the Knowledge Test. Since there were more

participants who completed some of the measures than all of the measures and the requirements for inclusion in the ANOVA analyses might obscure differences between groups, the hypotheses were tested formally using ANOVA analyses, and informally through comparison of group means over time. Formal assessments of the hypotheses were conducted, but are not reported here due to the problems noted above. The informal assessment results are reported here for illustrative purposes, and should be viewed as tentative findings.

To assess the hypothesis that participants will perform differently over time on the RESKA and Knowledge Test, the data for each RESKA subscale (Table 2) and the Knowledge Test (Table 3) were summarized. An inspection of Table 2 reveals that any observed differences over time within groups did not exceed one standard deviation for any of the RESKA subscales, and in most cases differences were much smaller. An inspection of Table 2 reveals that changes from pre- to post-test did exceed one standard deviation. At one month and three months post instruction, mean scores were generally lower than post-test levels, but still exceeded a one standard deviation increase over pre-test levels.

Table 2
Means and Standard Deviations of the RESKA subscales.

Measure	Group		Pretest *N*=141		Posttest *N*=110		1 Month *N*=47		3 Month *N*=47
Confidence	Technology	*M* =	3.51	*M* =	3.50	*M* =	3.62	*M* =	3.51
5 point scale		*SD* =	.69	*SD* =	.68	*SD* =	.58	*SD* =	.57
		n=	19	*n*=	17	*n*=	7	*n*=	9
	CTI	*M* =	3.41	*M* =	3.61	*M* =	3.46	*M* =	3.50
		SD =	.75	*SD* =	.61	*SD* =	.61	*SD* =	.70
		n=	48	*n*=	39	*n*=	19	*n*=	16
	Conceptual	*M* =	3.29	*M* =	3.58	*M* =	3.38	*M* =	3.47
		SD =	.86	*SD* =	.66	*SD* =	.52	*SD* =	.59
		n=	48	*n*=	30	*n*=	12	*n*=	12
	CTE	*M* =	3.35	*M* =	3.51	*M* =	3.57	*M* =	3.68
		SD =	.64	*SD* =	.60	*SD* =	.51	*SD* =	.42
		n=	26	*n*=	22	*n*=	9	*n*=	10
	Total	*M* =	3.37	*M* =	3.56	*M* =	3.48	*M* =	3.53
		SD =	.76	*SD* =	.63	*SD* =	.55	*SD* =	.58
Relevance	Technology	*M* =	3.82	*M* =	3.84	*M* =	3.77	*M* =	3.91
5 point scale		*SD* =	.55	*SD* =	.71	*SD* =	.34	*SD* =	.49
		n=	19	*n*=	17	*n*=	7	*n*=	9
	CTI	*M* =	3.59	*M* =	3.71	*M* =	3.59	*M* =	3.75
		SD =	.58	*SD* =	.55	*SD* =	.59	*SD* =	.77
		n=	48	*n*=	39	*n*=	19	*n*=	16
	Conceptual	*M* =	3.59	*M* =	3.67	*M* =	3.69	*M* =	3.58
		SD =	.60	*SD* =	.46	*SD* =	.53	*SD* =	.42
		n=	48	*n*=	30	*n*=	12	*n*=	12
	CTE	*M* =	3.78	*M* =	3.72	*M* =	3.56	*M* =	3.74
		SD =	.55	*SD* =	.60	*SD* =	.34	*SD* =	.38
		n=	26	*n*=	22	*n*=	9	*n*=	10
	Total	*M* =	3.65	*M* =	3.72	*M* =	3.64	*M* =	3.74
		SD =	.58	*SD* =	.56	*SD* =	.50	*SD* =	.56
Value	Technology	*M* =	3.37	*M* =	3.59	*M* =	3.71	*M* =	3.81
5 point scale		*SD* =	.74	*SD* =	.61	*SD* =	.56	*SD* =	.78
		n=	19	*n*=	17	*n*=	7	*n*=	9
	CTI	*M* =	3.44	*M* =	3.51	*M* =	3.81	*M* =	4.02
		SD =	.93	*SD* =	.77	*SD* =	.60	*SD* =	.67
		n=	47	*n*=	30	*n*=	12	*n*=	12
	Conceptual	*M* =	3.45	*M* =	3.53	*M* =	3.72	*M* =	3.47
		SD =	.77	*SD* =	.72	*SD* =	.47	*SD* =	.54
		n=	48	*n*=	30	*n*=	12	*n*=	12
	CTE	*M* =	3.21	*M* =	3.26	*M* =	3.37	*M* =	3.37
		SD =	.87	*SD* =	.80	*SD* =	.70	*SD* =	.48
		n=	26	*n*=	22	*n*=	9	*n*=	10
	Total	*M* =	3.39	*M* =	3.48	*M* =	3.69	*M* =	3.70
		SD =	.84	*SD* =	.74	*SD* =	.59	*SD* =	.67

TABLE 3
Means and Standard Deviations of the Knowledge Test

Group	Pretest *N*=143		Posttest *N*=123		1 Month *N*=47		3 Month *N*=48	
Technology	*M* =	5.55	*M* =	8.00	*M* =	8.00	*M* =	8.44
	SD =	2.19	*SD* =	1.68	*SD* =	2.71	*SD* =	1.33
	n=	20	*n*=	18	*n*=	7	*n*=	9
Conceptual + Tech	*M* =	6.49	*M* =	9.18	*M* =	8.32	*M* =	8.18
Immersion	*SD* =	1.71	*SD* =	1.83	*SD* =	2.34	*SD* =	1.98
	n=	45	*n*=	45	*n*=	19	*n*=	17
Conceptual	*M* =	6.18	*M* =	9.72	*M* =	8.58	*M* =	8.42
	SD =	2.26	*SD* =	1.95	*SD* =	1.31	*SD* =	1.24
	n=	49	*n*=	36	*n*=	12	*n*=	12
Conceptual + Tech	*M* =	5.70	*M* =	8.67	*M* =	8.44	*M* =	8.40
Exposure	*SD* =	2.27	*SD* =	2.50	*SD* =	2.60	*SD* =	1.65
	n=	27	*n*=	24	*n*=	9	*n*=	10
Total	*M* =	6.10	*M* =	9.07	*M* =	8.36	*M* =	8.33
	SD =	2.09	*SD* =	2.05	*SD* =	2.17	*SD* =	1.59

To assess actual data use among participants, four questions were administered at one month and three months post instruction. The raw responses to these questions yielded quite disparate results among individual participants, and some responses indicated that the question was misunderstood by the respondents. For example, some respondents indicated that they “analyzed student data to evaluate a program‟s effect” hundreds of times. This indicates that the participant understood the question to mean “analyzed individual student data,” which was not the intent of the question. To address the disparate answers to these questions, participant responses were coded as simple yes/no answers. This permitted the calculation of a total score for each participant that ranges between 0 and 4 to create a total “Data Use” score that encompassed all four questions for participants completing the measure at both administrations.

As can be seen in Table 4, the Technology group evidenced more data use on average than the CTI, Conceptual, and CTE groups at one month post-instruction. A similar pattern emerged from the three month post-instruction data; the Technology group had higher scores on the Data Use measure at three months post instruction than the CTI, Conceptual, and CTE groups. These findings provide limited support to the hypothesis that groups will perform differently over time in actual data use. The group expected to perform the best on this measure, the CTI group, evidenced the lowest scores at one month post instruction, and the second lowest score at three months post instruction. The Technology group achieved higher Data Use scores than each of the other three groups across administrations of this measure.

TABLE 4
Means and Standard Deviations of the Data Use questions.

Group	One Month *N*=47		Three Months *N*=48	
Technology	*M* =	2.43	*M* =	3.56
	SD =	.79	*SD* =	.53
	n=	7	*n*=	9
Conceptual + Tech	*M* =	1.21	*M* =	1.88

Immersion	*SD* =	1.43	*SD* =	1.61
	n=	19	*n*=	17
Conceptual	*M* =	1.50	*M* =	1.75
	SD =	1.62	*SD* =	1.36
	n=	12	*n*=	12
Conceptual + Tech	*M* =	1.67	*M* =	2.30
Exposure	*SD* =	1.58	*SD* =	.95
	n=	9	*n*=	10
Total	*M* =	1.56	*M* =	2.25
	SD =	1.46	*SD* =	1.41

To determine if more ASCA National Model components were added to participants‟ school counseling programs as a result of the workshop, SCPIS means and standard deviations were inspected for changes from pre- to 3 months post-instruction. As can be seen in Table 5, very little change was evidenced within groups or for the sample as a whole. Any observed changes, given the small number of participants in each group that completed both measures, are likely due to random, chance factors.

Table 5
SCPIS means and standard deviations for pretest and three month post instruction

Measure Administration	Group	*M*	*SD*	*N*
Pretest SCPIS	Technology	3.15	.44	9
	CTI	2.99	.47	17
	Conceptual	2.62	.47	10
	CTE	2.46	.54	10
	Grand Mean	2.82	.53	46
3 month SCPIS	Technology	3.18	.42	9
	CTI	3.19	.57	17
	Conceptual	2.67	.55	10
	CTE	2.66	.65	10
	Grand Mean	2.96	.60	46

Qualitative Findings

Analysis of the transcribed focus group data uncovered three overarching themes among the participants‟ responses - Barriers to using data, Facilitators to using data, and examples of the Actual Use of data. Since the focus of the qualitative analyses was to uncover barriers and facilitators to using data, the results of the data analyses focus on those two themes. Eight codes were derived from the data, and these codes were used to characterize the distinct thoughts of the participants, as captured by their statements on the transcript of the focus group. To be included as a code in the analysis, the code had to be mentioned at least twice.

The codes that arose from the data are defined below using exemplary statements from participants to characterize the meaning of the code:

Time

The Time code was used to capture respondents‟ statements regarding how time influenced data use, and was viewed as both a facilitator and barrier to using data. An example of this is “if I have to go gather all of this data myself, am I willing to take the time out of going into classrooms.”

Knowledge

The Knowledge code was used when participants talked about how knowledge influenced data use, and was both a facilitator and barrier. An example of the Knowledge code from the transcribed results is “I was missing that ASCA model

piece and I had this, you know, data, doing all this research stuff, and it didn‟t make a connection for me, I was missing the first piece because I didn‟t know how it fit into the puzzle."

Access

Access to the data itself was listed as both a barrier and facilitator to using data, and involved the more practical ways that school counselors could physically gain access to data. An excellent example of the Access code is "counselors have the data right at their fingertips if they know how to get to it."

Relevance

A statement was said to fall under the Relevance code when the meaning of what the participant said involved seeing the connection between using data and school counseling practice. The following statement captures the meaning of the Relevance code: "I came away from the (Conceptual group) training with the idea that what you did that day didn‟t apply to me at all."

Technology

The Technology code was used to capture responses that referenced specific technologies such as EZAnalyze, Microsoft Excel, or student information systems facilitating the use of data. Technology was not perceived by any focus group participant to be a barrier to using data. "When you showed EZAnalyze the other day…it clicked" is an example of how the Technology code was employed.

Reason to use data

This code was only used twice, but the topic is distinct and important enough to warrant a separate code. For example, one participant noted that "it‟s more of a reactive process than a proactive process," and captures a unique aspect of facilitators to using data. Namely, how data use fits into school counseling program management at the individual school and district level.

Data Focus

Data Focus involves participants‟ references to the ability to make their data collection and analysis efforts realistic and attainable, and was always listed as a barrier. "The big problem that I had with the data is kind of what (name of other participant) talked about is…there is so much of it there, what do you use?" is an example of how a lack of focus in which data elements to use was perceived to be a barrier to actual data use.

Support

Colleague support was always perceived to be a barrier when mentioned, and was used to capture participants‟ responses that centered on how a lack of support from fellow counselors led to failure in data use efforts. "I tried to bring it up (using data) and get people really excited about it, and if your response when you try to do that is negative, it kind of, you know, moves you in the other direction."

Figure 2 is a depiction of the results of the qualitative data analysis. The overarching themes are represented as ovals, while the codes are represented as rectangles. The number next to the path depicting the relationship between the codes and themes represents the number of times the code was mentioned by the focus group participants. The codes are listed in terms of their frequency of occurrence from top to bottom. The Time, Knowledge, Access, and Relevance codes were mentioned as both facilitators and barriers by the participants, Data Focus and Support were mentioned solely as barriers, while Technology and Reason to use data were mentioned only as facilitators to using data.

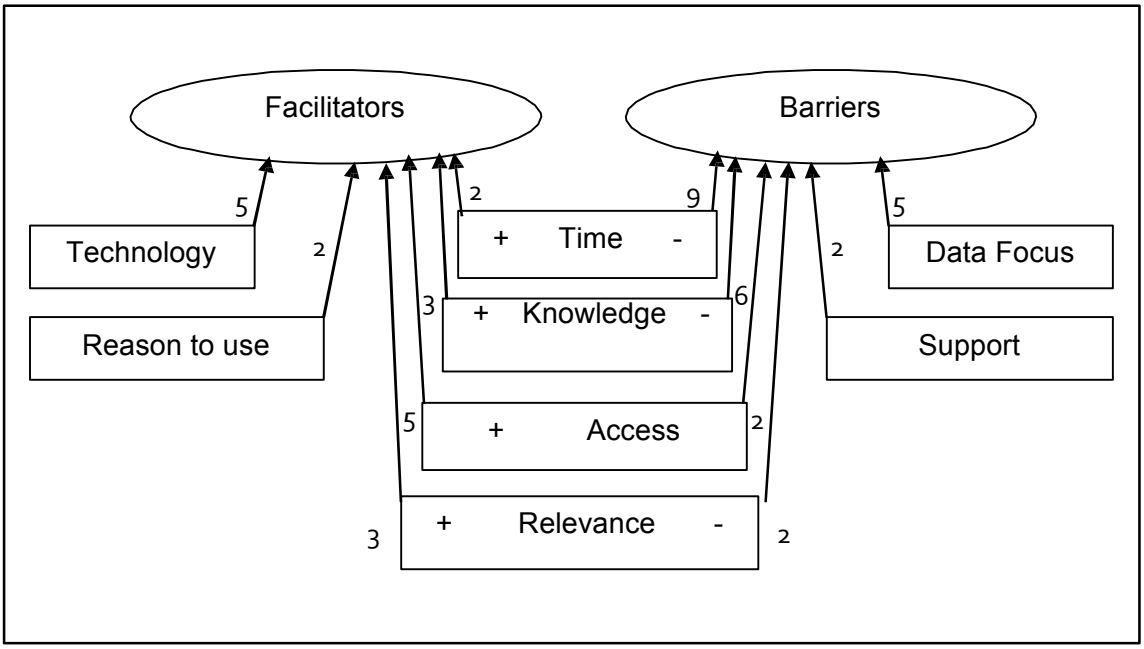

Figure 2

Graphical representation of qualitative data depicting reported barriers and facilitators to data use by school counselors. Number indicates the number of times mentioned.

Discussion

The primary goal of this study was to evaluate the "value added" benefit of EZAnalyze to a more traditional approach to increasing school counselors' data use skills. This was accomplished by designing an experiment that varied the degree of exposure to technology and data use concepts across four distinct groups, and proposing research hypotheses that, if supported, indicated that technology had a positive impact on the acquisition and retention of knowledge, research-related attitudes, ASCA National Model implementation, and actual data use.

The first hypothesis was that groups would perform differently on measures of research knowledge and attitudes according to which group they were assigned over time. This hypothesis was not supported by the data. Across groups, differences observed were largely in the expected directions on these measures from pretest to posttest, but any observed differences between groups at any single point in time (pretest, posttest, one month and three months post instruction) were not statistically significant. While this does not support the research hypothesis, it does permit the aggregation of the data across groups. The data indicate improvement occurred from pretest to posttest and pretest to three months post instruction for the entire sample on each RESKA subscale and the Knowledge Test. At one month post instruction, the entire sample evidenced higher scores on each RESKA subscale and the Knowledge Test except for the Relevance subscale, which was .01 points lower on average than the pretest Relevance score. The finding that improvement occurred from pretest to posttest on these measures indicates that the workshop had a small but positive short-term impact on research-related knowledge and skills. At three months post instruction, scores on these measures were still higher

than the pretest scores, indicating that the workshop had a small but relatively long lasting effect on school counselors‟ research related knowledge and skills.

The second hypothesis was that school counselors would report engaging in data use activities at one month and three months post instruction differently according to which group they were assigned. It was hypothesized that having explicit training in and access to EZAnalyze would increase the frequency of data use when compared to counselors in the Conceptual group who did not have access to EZAnalyze. The results indicate that the Technology group engaged in data use activities more than any other group, a finding statistically significant at one month post-instruction but not at three months post-instruction. While these results are counterintuitive, since the Technology group received the least amount of instructional time, it does indicate that factors outside of the professional development workshop can strongly influence results. In this study, the Technology group was the only group in the study to have all of the counselors from a single school district - a district often viewed as a leader in the United States regarding data use and ASCA National Model implementation. Informal conversations with counselors from this district revealed that their guidance supervisor required all counselors to complete a “data project.” Knowing this, the finding that all of the counselors in this group used data within the three months following the workshop is not surprising.

The third hypothesis was that the skills, knowledge, and changes in attitudes towards data use activities would lead to increased ASCA National Model implementation. This hypothesis was not supported by the data. While all groups did evidence improvement in SCPIS scores from pretest to three months post instruction, the amount of improvement was small within each group, and for the entire sample. Therefore, participation in the workshop, regardless of venue, had a small but measurable impact on ASCA National Model implementation. Given what the SCPIS measures (school counseling program activities and structures), three months may not be enough time to measure improvement on this instrument.

The results of the qualitative analyses conducted with the data obtained from the focus group, which consisted of three participants from the CTI group and two participants from the Conceptual group, indicate 1) the participants agree that technology should facilitate data use, and 2) factors outside of professional development need to be considered to effectively increase school counselors‟ use of data. While the quantitative analyses did not support the notion that technology can increase school counselors‟ use of data, contrary to the hypotheses, the qualitative data assert that technology should be a strong facilitator of data use. The qualitative data suggest the largest barrier to using data is lack of time. Before professional development and technology can be effective in helping school counselors, the issue of time needs to be addressed before the use of data by school counselors can be fully actualized.

No known studies to date have been published that evaluate the effect of professional development to increase school counselors‟ data use, in spite of counselor educators‟ descriptions of the need for these skills to be developed for some time (e.g., Lapan, 2001; Wilson, 1985). This study contributes to the existing research literature by systematically evaluating the impact of a workshop designed to meet the needs identified in the literature. While the quantitative data analyses did not lend support to the notion that EZAnalyze combined with appropriate professional development would increase their actual use of data, the qualitative analyses did lend tentative support.

The design of this study may be a useful model for future professional development evaluation studies in two distinct ways. First, the elaboration of a methodology for empirically investigating the short-term and long-term outcomes of a

professional development workshop using instruments to assess specific knowledge, attitudes, and perceived behavior provides a relatively „whole‟ evaluation picture. Second, and perhaps more interestingly, is the use of a qualitative data collection strategy in conjunction with the quantitative methodology. In this study, the combination of qualitative and quantitative methods proved to be extremely useful, as the qualitative data provided insights into the nature of the quantitative findings. Furthermore, the qualitative results revealed factors that were likely to be significantly affecting the results of this study – namely, the finding that lack of time is a significant inhibitor to data use. It is important to note that either approach (quantitative or qualitative) used in isolation would not have informed the interpretation of the findings to the same degree as their combination did.

Love (2004) asserts that there are four "building blocks" to engaging in a data-driven decision making process in schools: Collaborative Culture, Collaborative Structures, Wide-Spread Data Literacy, and Access to Useful Data. The qualitative findings of this study lend support to her conceptualization of the requisite knowledge, skills, and attributes of the school culture to facilitate actual data use and data-driven decision making. Each of the facilitators and barriers to data use identified from the focus group data can be usefully categorized by one of Love‟s "building blocks." In the context of a one-day professional development workshop, as was done in this study, only data literacy skill could potentially be improved. The remaining three building blocks are school-specific variables that are not amenable to change through professional development, but clearly need to be addressed if professional development in the area of data use is going to impact actual practice. School counseling supervisors seeking to engage in school improvement through data-driven decision making would be wise to pay explicit attention to creating collaborative culture and structures, and ensuring access to meaningful and useful data. Then, and only then as the qualitative results of this study suggest, will knowing how to analyze and interpret data inform practice.

The literature regarding school counselors‟ use of technology did not contain any empirical research evaluating the impact of specific technology tools on school counseling practice. The current study contributes to this area of the school counseling literature by demonstrating that technology tools alone will not impact school counseling practice if systemic barriers to change (e.g., lack of time) and personal barriers to change (e.g. lack of knowledge) are not simultaneously addressed with the introduction of the technology tool. When EZAnalyze was introduced to workshop participants, there was often a round of applause for providing them with a useful, easy-to-use tool. In spite of their initial positive reactions to EZAnalyze, the results of this study suggest that barriers to data use limited their ability to use it.

Overall, the results of this study are consistent with the themes and trends of accountability, comprehensive developmental guidance, and technology as portrayed in the professional school counseling literature. The hypotheses of this study pitched EZAnalyze as a panacea for school counselors‟ data use ailments. As the trends apparent in the literature indicate, a true panacea may not exist. "Comprehensive developmental guidance" and "accountability" have been appearing consistently in the literature since the 1970‟s, yet many school counselors still struggle with the implementation of these activities.

Limitations

The interpretation of the results of this study need to be tempered by several limitations inherent to the design of the study, nature of the participants, and quality of the measures used. The largest limitations of this study have to do with issues surrounding the

sample and sampling. This study took place in a single state in the southwestern United States, a state that has been supporting the implementation of comprehensive developmental school counseling programs for more than 15 years. School counselors in this state are likely to be implementing comprehensive developmental school counseling programs such as the ASCA National Model. In fact, many of the participants in the CTI group, and all of the participants in the Technology group were from a school district where a portion of the conceptual framework for the ASCA National Model was derived.

In addition to school counselors in this state being unique when compared to counselors from other states, it is also important to note that participants were not randomly assigned to groups. Participants were assigned to groups based on the location they chose to attend the workshop, which was likely determined by the proximity of the workshop to where they live. Since participants were not randomly assigned to groups, preexisting group differences based on geographic location are likely to be influencing the observed results.

Another limitation of this study was the use of measures that did not have clearly established reliability and validity. The RESKA was the only measure that was previously used with a relatively large number of participants outside of this study. The lack of observed differences between groups in terms of ASCA National Model implementation and actual data use may be artifacts of the measures themselves. The extensive use of self-report measures in this study is also problematic. Combining the self-report measures with additional observational measures would strengthen the interpretability of the quantitative results.

The relatively high attrition rate observed over time is also perhaps indicative of a larger issue affecting the results of this study – the participants‟ expectations of professional development workshops. Nearly 200 counselors participated in one of the four professional development workshops; of those, 144 counselors agreed to participate in the study. Three months later, only 47 people completed the final quantitative measures, and five people participated in the focus group held nearly 4 months after the original workshop. Of the five people who participated in the focus group, only one person actually applied what they learned during the workshop to their school counseling practice. These observations, when taken together, seem to indicate that there is not an expectation, or perhaps ability, to apply what is learned in professional development to inform practice. School counselors are expected to attend professional development workshops, but there does not seem to be an expectation that what they learn during those workshops will actually be employed. Furthermore, the extended evaluation of the learning that occurred before, during, and after the workshop was foreign to the counselors, indicating that professional development providers themselves do not routinely gather data regarding the effect and effectiveness of the services they provide.

Given the high attrition rate observed in this study, self-selection is likely to be influencing both the qualitative and quantitative findings of the study. It is likely that the participants who completed the one month and three month follow up measures would score higher on measures of research related knowledge and attitudes than participants who chose not to continue participating in the study. Self-selection is also problematic in the focus group, where a representative sample of study participants from each group was not obtained. Furthermore, the high attrition rate led to extremely small sample sizes at one month and three months post instruction. Self-selection and sample size, when considered together, indicate that the data obtained in this study may not be representative of counselors in the state the study took place, let alone the nation.

Future Research

This study sought to contribute to the existing research base by conducting a systematic evaluation of professional development for school counselors focused on data use, and the value added benefit of technology. The results of this study indicate that more questions may have been raised than were answered, as the outcomes of the professional development workshop and the value-added benefit of technology still are unclear.

Given that the results of this study do not decisively answer the research questions, the relatively high attrition rate of the study participants, and the apparent lack of application of knowledge gained during professional development, research investigating new professional development paradigms to improve school counselors‟ data use skills is indicated. The current study was based on a "traditional" professional development paradigm that involved exposing participants to a single-day workshop followed by quantitative measures to assess the effect of the workshop on school counseling practice. This design for the provision of professional development appears to be ill-advised by the results of this study, as the knowledge gained during the workshop appears to be perishable - evidenced by a decline in scores from posttest to one and three months post instruction for the entire sample. Furthermore, incorporating data use into school counseling practice and the skills that go along with using data are challenging for many school counselors. Research elucidating effective professional development paradigms that provide support to counselors over time may provide more consistent and positive outcomes than the current study was able to provide.

There are several possible alternatives to providing professional development regarding data use in a workshop-type format. Web-based technology could be a particularly effective vehicle for providing both the needed professional development and subsequent "coaching" to help counselors translate theory to practice. Another approach could involve the pairing of counselor educators with school counselors to engage in collaborative research projects. Conducting collaborative research projects can benefit both the counselors working in schools and the counselor educators. For the counselors, the benefits are extended support and training over time in the development, execution, and interpretation of a research project. For the counselor educators, research projects conducted in collaboration with school personnel could permit the creation and maintenance of a research agenda while developing meaningful and productive relationships with counselors in the field (e.g., Poynton, Carlson, Hopper, and Carey, 2006).

This study also highlights the need for additional research to be conducted on measures assessing research knowledge and skills. If data use skills are as critical to the field of school counseling as the ASCA National Model and other relevant literature portray them to be, more effort needs to be exerted to develop and validate measures assessing these constructs. Equally important, as the qualitative results of this study indicate, is the need to develop measures that assess barriers and facilitators to data use in schools. The development of a measure that is able to highlight facilitators and barriers to data use can be used to guide professional development and consultation resources, and would be a great benefit to the field.

A key barrier to data use identified in the qualitative data is time, and engaging in tasks such as data analysis and interpretation are often viewed as "add on" responsibilities for counselors. Many school counselors struggle with engaging in data use activities, as it detracts from the time they have available to engage in activities that directly benefit students. It is the author‟s belief that engaging in data use activities directly benefits students. At the present time, however, there is no research available that supports the notion that a counselor engaging in data use activities

does, in fact, benefit students. To address this gap, research needs to be conducted tying positive student outcomes to school counselors‟ data use activities. While there is research that indicates comprehensive developmental guidance programs provide positive benefits to students (e.g., Sink & Stroh, 2003; Lapan, Gysbers, and Petroski, 2003), there is no research available that documents a link between school counselors‟ data use and positive outcomes for students.

More rigorous research also needs to be conducted on the value added benefit of technology to school counseling programs in general, and the value added benefit of technology for improving data use in particular. While there is consensus in the literature that technology should positively impact school counselors‟ ability to effectively execute their roles and responsibilities, no research has been conducted which systematically documents the benefits technology provides. The results of this study indicate that counselors liked the idea of EZAnalyze, but the technology did not seem to have an impact on their actual practice. Future research studies need to be conducted to identify the ways school counselors are using technology to guide the development of specific technology tools to solve practical problems.

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APPENDIX A

These questions will be used to assess how much you knew about today"s topic before you started, and how much you have learned by the end of today"s presentation.

For each question, please circle the BEST response from the choices given. You can only choose one answer!

1. Which part(s) of the ASCA National Model EXPLICITLY call on school counselors to use data?
   a. Foundation
   b. Management System
   c. Accountability System
   d. Management and Accountability Systems

2. Data can be used by a school counseling program to:
   a. Prevent an over-reliance on standardized test scores.
   b. Identify areas to target interventions
   c. Build a culture of inquiry
   d. B and C only
   e. All of the above

3. Achievement-Related data are:
   a. Data that are collected from academic subject areas outside of the discipline of interest
   b. Data that research has shown are directly related to academic achievement
   c. Perception data collected from students asking them to identify the areas they believe are related their academic achievement
   d. Process data

4. The Mean, Median, and the Mode, respectively, are:
   a. Most frequent number, average number, and the middle number
   b. Average number, most frequent number, and the middle number
   c. Average number, middle number, and the most frequent number
   d. Middle number, average number, and the most frequent number

5. When_____data, you sort the_____variable by the _____variable.
   a. Analyzing / random / non-random
   b. Categorizing / category / results
   c. Summarizing / categorical / dependent
   d. Disaggregating / dependent / categorical

6. You can use ANOVA whenever you use a T-Test, but you cannot use a T-Test whenever you use ANOVA.
   a. True
   b. False

7. "Triangulating" means to:
   a. Apply a three-pronged solution to a problem

b. Identify three data independent sources of data to isolate a problem
c. Coming to consensus with at least three members of a data-driven decision making team
d. Coupled with regression and a mother object, means to engage in Freudian therapy

8. Process data are best described as data that:
   a. Documents *what* was provided and *who* it was provided to
   b. Documents *who* was affected and *what* the effect was
   c. Documents the *so what* of an intervention
   d. Documents the *impact* of an intervention

9. A correlation describes:
   a. How two variables are related to each other
   b. How one variable *causes* changes in another variable
   c. How one variable *predicts* changes in another variable
   d. How one variable *manifests* itself in another variable

10. Treatment fidelity describes:
    a. How well an intervention worked
    b. How consistently an intervention works over time
    c. How valid an intervention is
    d. How consistently an intervention was implemented

11. Sharing the results of data analyses with school counseling program stakeholders should be done only if the results are positive.
    a. True
    b. False

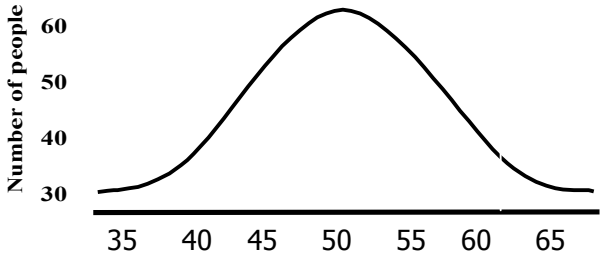
12. Creating an "honest graph" that does not exaggerate findings involves
    a. Making sure the data are valid
    b. Making sure the graph represents an adequate range of possible scores
    c. Making sure the graph is titled accurately
    d. Making sure the graph is properly cited and referenced

13. A correlation of -.90 indicates a very strong relationship between two variables
    a. True
    b. False

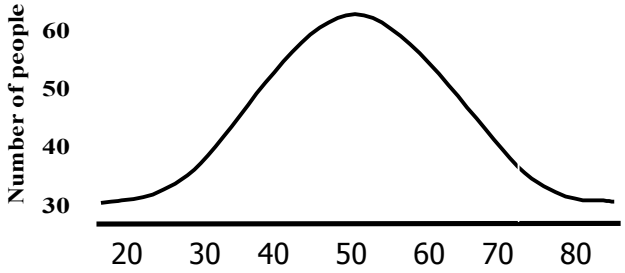
14. The median is the appropriate statistic to use when the distribution is highly
    a. Skewed
    b. Variable
    c. Valid
    d. Reliable

15. Which picture below is a frequency distribution of a set of scores with a mean of 50 and a standard deviation of 5

Answer A



Answer B



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