

## **INFUSING EVIDENCE-BASED PRACTICES IN TEACHER EDUCATION COURSEWORK**

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### **ABSTRACT**

This article discusses an approach for revision of a Master's program for teacher candidates seeking endorsement in special education. This project, a cooperative-agreement through the U.S. Department of Education's Office of Special Education Programs (OSEP) focused on infusing the special education teacher preparation program with high quality evidence-based practices. This article outlines the procedures undertaken by one university to revamp a teacher preparation program with emphasis on infusion of evidence-based practices in coursework. Qualitative and quantitative measures were used including a review of existing syllabi; revision of syllabi, and The Stages of Concern Questionnaire was used to measure candidates' responses to program changes and implementations. Results suggest that while more opportunities for improvements to the program structure and program evaluation data collection are necessary, candidates are showing some evidence of improving skills related to evidence-based practices. The candidates continued to require an increased understanding of evidence-based practices, which suggests further program updates and evaluation are needed. Although preliminary, methods of program revision provide generalizable methods for other programs of program revision and provide insight on the evaluation of program updates and interventions.

**Keywords:** Evidence based practices, teacher preparation, pre-service teacher preparation.

### **INTRODUCTION**

The No Child Left Behind Act of 2001 (NCLB) emphasized the usage of Evidence Based Practices (EBP) to improve the outcomes of students with disabilities. In addition to the accountability measures within the NCLB Act, there is an emphasis on teaching methods that have been proven to work (National Center on Educational Outcomes, 2003). In order to assure teacher candidates have "a repertoire of strategies...teacher educators must provide preservice candidate with explicit instruction and practice in these strategies and practices (Paulsen, 2005, p. 21).

Over the past 20 years, the special education research community has focused on aligning educational initiatives with EBPs that inform best practice in teaching (Hudson, Lewis, Stichter, & Johnson, 2011; U.S. Department of Education, 2007). The NCLB and the Individuals with

Disabilities Education Act of 2004 (IDEA, 2004) emphasized the urgency and need to use EBPs that produce effective outcomes for students with disabilities (Hudson, Lewis, Stichter, & Johnson, 2010). This significance of using EBP has been well documented (Cook, Landrum, Tankersley, & Kaufmann, 2003; Gersten, Schiller, & Vaughn, 2000; Odom, Brantinger, Gersten, Horner, Thompson, & Harris, 2005; Simpson, 2004). Unfortunately, research continues to indicate that teachers continue to use non-evidence based, and ineffective practices for students with disabilities due to a deficit in their understanding of EBPs (Cook & Schirmer, 2003). As a result, postsecondary institutes are positioning themselves to restructure and evaluate their existing teacher preparation programs to better prepare pre-service teachers in the use of EBP and address the research to practice gap. This article outlines how one teacher preparations program sought to improve and expand the program of study leading to licensure in special education through inclusion of EBP instruction and training embedded throughout multiple courses.

Presented here as a case study, this project focused on program changes incorporating instruction and application of EBPs in pre-service teacher training for those who serve students with high incidence disabilities. Methodologies used to evaluate program changes, measures for evaluation of program goals, and evaluation of infusion of program of EBPs are reviewed. This information should provide a replicable method of approaching program improvement to increase the academic and content knowledge of pre-service teachers for understanding and implementing EBPs.

## LITERATURE REVIEW

Professional literature related to teacher preparation has persistently identified the gap between research on EBPs and special education teachers practice in the classroom (Cook & Schirmer, 2006; Forman, Smallwood, & Nagle, 2005; Odom et al., 2005). In response, the Council for Exceptional Children Division on Research outlined the research-to-practice gaps in special education, spearheaded efforts to define EBPs, and created quality indicators for research in special education (Hudson, Lewis, Stichter, & Johnson, 2010).

Another impetus for bridging the research-to-practice gap is the poor outcomes of students with disabilities (Cook, Tankersley, & Landrum, 2009). The U.S. Department of Education (2006) report on the *26th annual report to Congress on the implementation of IDEA* indicated that approximately 60% of students with disabilities that exit high school graduated with an alternative type of diploma (e.g. Individualized Education Program, Certificate of Completion). These types of outcomes often lead to reduced postsecondary opportunities for students with disabilities. Factors associated with poor outcomes have been linked to the quality of education received and ineffective instructional practices provided by the classroom teachers (Cook, Landrum, Tankersley, & Kauffman, 2003; Futernick, 2007).

As the demand for teachers who know and can apply EBP in classrooms increases, so does the need for teacher preparation programs to improve training (Scheeler, Bruno, Grubb, & Seavey, 2009). The need for teacher preparation programs to provide a program with a solid structure for educating pre-service teachers which addresses instruction in generalizing that education in classroom performance situations was studied by Scheeler et al. (2009). The authors found that

there was a less than 30% chance that teachers would implement newly acquired teaching skills if universities did not have an effective system to address pre-service teacher research-to-practice gaps. The problem for teacher preparation programs is that while having the responsibility to train and graduate teachers who are highly qualified in implementing these evidence-based practices is documented (Paulsen, 2005), programs have not always had the resources to successfully focus on this endeavor. In response, with support from Office of Special Education Programs (OSEP), this teacher education program set out to revamp the initial licensure program of studies by infusing the knowledge and skills needed to implement EBPs in the classroom.

## **PURPOSE**

The project was designed to help improve the skills of pre-service teachers and assure that they become competent and ready to provide instruction-utilizing EBPs when working with students with high incidence disabilities in K-12 classrooms. This project used a mixed methods research design in evaluating efforts to meet the project goal of candidates to use EBPs. The first step was an assessment of the current curriculum/courses for evidence of instruction in or use of EBPs. These findings were later used to determine where and to what extent EBPs were infused into redesigned courses. Instrumentation for collecting data to determine the impact of changes to the program of study was identified and progress toward EBP related improvements were evaluated to determine further program improvement areas.

## **METHODOLOGY**

A mixed-methods study was developed that would allow examination of current program status for collecting data, evaluating program progress, and providing others with a transparent replicable method that could be used for assessing similar program goals. The purpose of using a mixed-method approach with open-ended questions is so researchers can gain a greater understanding of a complex issue that may remain unobserved with use of a qualitative or quantitative method alone. This study will highlight the use of mixed-methods through research instruments and data collection methods that others may find valuable in similar circumstances.

### ***Changes to the Program***

The project began with a review of course syllabi to determine the what extent each course included EBP knowledge and application. A rubric was created to examine course syllabi to assure alignment with CEC and state standards as well as infusion of EBPs listed as topics for discussion and in assignments. This rubric was used to examine all course syllabi within the program for evidence of EBPs and the degree to which they were included in the syllabi. Key components examined included alignment with state and CEC standards and the inclusion of EBP in the syllabi. One point was awarded for inclusion of EBPs in the syllabi in topics and/or assignments, readings related to EBPs, and applications of knowledge using EBP. Additionally, syllabi were examined for mention of supervised practice including EBPs. Independent reviewers were asked to examine each course syllabi and note their findings.

### ***Infusing EBP Instruction and Application into the Curriculum***

Information gathered from rubrics was used to redesign/update the syllabi within the program of studies. The same rubric was used again to examine the updated courses for the degree to which they now reflected EBP instruction and application throughout the curriculum.

### ***Measures for Showing Progress on Program Goals (Instrumentation)***

The Stages of Concern Questionnaire (SoCQ) was chosen because it was designed to assess levels of concern at various times during adoption processes and has been used extensively to assess teacher concern about new strategy implementation (George, Hall, & Stiegelbauer, 2008). The 35-question research based instrument assesses teachers concerns about new programs and practices over time.

This instrument identifies an individual's progress through a developmental continuum of stages of concern about an innovation they have been instructed to implement. The stages progress from little or no concern with the innovation to self or personal concerns about its use. According to the authors, individuals progress toward higher-level, impact concerns with "time, successful experience, and the acquisition of new knowledge and skills" (George et al., 2008, p. 9). There are seven stages of concern numbered from (0-6) identified under the categories of self, task, and impact:

- Stage 0 (Unconcerned) is interpreted as having little concern or involvement with the innovation.
- Stage 1 (informational), individuals are interested in learning more about the specifics of the innovation, but they have few personal concerns about how implementing the innovation will affect them.
- Stage 2 (personal), indicates that the individual is unsure about the demands of the innovation and his or her ability to meet those demands. Additionally, potential conflicts with existing structures and programs and personal commitment to the innovation occur at Stage 2.
- Task concerns relate to the management (Stage 3) of implementing the innovation. Issues surrounding the use of information and resources focus on scheduling; managing, organizing, and efficiency take precedence in this stage.

Impact concerns consist of the last three stages of the Stages of Concern.

- Stage 4 (Consequence) includes interest in the impact of the innovation on students, improving student outcomes, and the changes needed to improve student outcomes.
- In Stage 5 (Collaboration), the individual is interested in working with others to determine how to better use the innovation.
- Stage 6 (Refocusing) indicates that the individual is reflective of their implementation and practice of the innovation and wants to think of alternatives to strengthen its use.

Responses to the SoCQ are on a six-point Likert scale (0 = irrelevant; 1 and 2 "not true of me now"; 3, 4, and 5 "somewhat true of me now" and 6 and 7 "very true of me now). The Stages of Concern Questionnaire includes a scoring device which translates raw scores into percentile scores to determine the peak stage or stages of concern of the individual respondents.

### ***The Stages of Concern Questionnaire***

The SoCQ was used to determine candidates' concerns with implementing EBP in teaching students with high incidence disabilities in K-12 classrooms. The SoCQ was initially administered to all candidates within the first month of starting classes in the Masters program. Each student enrolled in the project's pre-service teacher program received an email request to complete the SoCQ with a link to the online survey and instructions on how to complete the survey. Completion of this SoCQ survey identified the students' initial stage of concern regarding use of EBP.

Initially, additional SoCQs were sought from each student following the completion of each semester of coursework. Monitoring candidate progress through the stages of concern was used to evaluate individual needs for additional instruction, inform program design, and inform possible curriculum revisions. Frequency of administration of the SoCQ became problematic and subsequent SoCQs were sought at the mid-point and end of the students' program. The exit SoCQ indicated the students' final stage of concern about EBP.

### ***End Of Course Evaluation***

The End Of Course Evaluation (EOC) (Appendix A) was designed to measure the effectiveness of course restructuring/redesign to improve/implement instruction in EBPs. Student responses were sought using a five point Likert scale of agree, somewhat agree, neutral, somewhat disagree, and disagree. The EOC focused on the degree to which EBPs were infused into course content. Consisting of nine statements that asked about students' knowledge, understanding, and competency/confidence about using evidence-based practices in their teaching and four open ended questions to gather perceptions of what was working and areas for improvement in each course.

### **Participants**

In May, 2013 this project had 69 participants.. The majority of the participants were female at 81% (n=56), with the remaining 19% male (n=13). Additional demographic data was not gathered.

### **Procedures and Data Analysis**

Completion of the SoCQ was sought from candidates at the beginning, middle, and end of their program. Responses were tracked so results could be examined over time. Up to two follow-up/reminder emails were sent to students who had not completed the SOCQ. Candidates also had the opportunity to complete the questionnaire by hand. Despite these efforts, the SoCA had a low response rate.

The SoCQ data was analyzed to determine candidates' current stages of concern; however, the categories are not exclusive and candidates can be in more than one stage at any given time. A high score in Stage 0 indicates that the innovation is not the only thing on the respondent's mind; conversely, a low score indicates that the innovation is a high priority. A high score in Stage 1

indicates that the person wants to know more about the innovation. A high score in Stage 2 indicates personal concerns, the candidate is concerned about status and rewards, as well as the effect that teaching has on them. A high score in Stage 3 shows that the respondent is concerned with the management and time the innovation requires. A high score in Stage 4 shows that the individual is focusing on the impact on students that he or she could influence. A high score in Stage 5 shows that the candidate has a focus on coordinating and cooperating with others in working on the innovation. A high score in Stage 6 means that the respondent wants to look at more ways that others can benefit from the innovation.

Individual raw scores for the SoCQ were calculated for each student in SPSS, and then converted to percentile scores using the conversion chart provided by the developers. Because of the low number of responses, particularly for the final administration of the SoCQ, the evaluator calculated the group mean scores for each stage for the pre, mid, and final administrations of the SoCQ.

End of Course evaluations were administered at the end of each semester. Each candidate received an EOC evaluation for each course in which he or she was enrolled. The evaluations were sent via email during the last week of class using Research Electronic Data Capture (REDCap), the university online survey system. The evaluator also sent a follow-up/reminder email approximately one week later to students who had not yet completed the evaluation. The number of respondents varied for all courses, with a low response rate.

Descriptive statistics (means and standard deviations) were calculated for each item on the EOC evaluation in SPSS. Open ended responses were reviewed and data was broken down into meaningful units and reorganized into themes. Data was organized for each question allowing constant comparison during analysis. While the quantitative data provides useful feedback on evidence-based practices, the qualitative data also yielded some pertinent information.

## RESULTS

Since the inception of the project in Fall, 2011, 60 surveys have been collected– 37 initial; 16 mid; and 7 final. Table 1 shows the number of candidates in each stage of concern during each administration. In addition, the last three rows show the group average raw scores with the percentile score in parentheses. Note that the highest percentile score is in Stage 0 and the lowest percentile score is in Stage 4, which aligns with the individual data analysis.

Table 1 – SOCQ: *Stages of Concern Questionnaire – Numbers in Stages, Group Raw Scores and Percentiles*

	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Initial administration (n=36*)	18	5	4	4	1	4	0
Mid administration (n=16*)	6	1	0	4	1	2	2
Final administration (n=7)	5	0	0	0	0	2	0
Average Raw Score (percentile) – Initial	18 (96)	27 (93)	27 (89)	23 (85)	31 (82)	31 (91)	25 (84)
Average Raw Score	18	25	25	24	35	30	25

(percentile) – Mid	(96)	(90)	(85)	(88)	(96)	(88)	(84)
Average Raw Score	24	24	25	23	27	32	24
(percentile) – Final	(99)	(88)	(90)	(85)	(63)	(93)	(81)

\*Numbers do not add up to total n because one candidate in each of these administrations did not answer enough items to generate a score for a particular stage.

The developers of the SoCQ indicate that respondents should progress through the Stages in order. However, they also state that some people can move through the Stages differently. (High scores at a particular Stage indicate more concern at that Stage.) When analyzing individual data, the developers suggest that the second highest Stage of Concern is typically adjacent to the highest Stage of Concern. For the 37 initial administrations, this was accurate for 14 respondents (38%). This was not the case for the average scores and corresponding percentiles; however, individual data may show a more accurate picture.

The data in Table 2 shows that 50% of the candidates indicated that they were concerned about other innovations during the first administration of the SoCQ (n=18). Again, the candidates were at the beginning of their program and perhaps feeling overwhelmed in the classroom. The data also show that many of the responding candidates remain in Stage 0 throughout the course of this study as indicated by the number of candidates with scores in Stage 0 during the mid and final administrations of the SoCQ. Although students should be moving somewhat through the stages of concern, results must be interpreted with caution since the same candidates did not complete all three SoCQs and thus project staff did not track their progress individually. The SoCQ data would provide a better picture if the same people were completing all three (or at least the initial and final) questionnaires. The evaluator cautions against using these data because the three SoCQ administrations (initial, mid and final) represent different people.

End-of-Course evaluations were administered at the end of every semester for each course. Data was analyzed from 13 different courses represented (two additional courses had no responses). Evaluations were not analyzed for each individual course because so few responses were collected for each course (n=17 for the course with the highest number of respondents).

The first section of the EOC includes 9 items focused on EBP. Those statements are: (1) This class addressed evidence-based practices; (2) I don't know what evidence-based practices are; (3) I have limited knowledge of evidence-based practices; (4) This class increased my understanding of using evidence-based practices in my teaching; (5) This class increased my ability to locate evidence based practices for my teaching; (6) I feel competent in locating evidence based practices for use in my teaching; (7) I need to improve my knowledge of locating evidence based practices; (8) I feel confident in using evidence based practices in my teaching; and (9) I would like to enhance my use of evidence based practices in the classroom. Candidates were asked to rate their agreement to each statement on a Likert-style 5-point scale (1=Disagree; 2=Somewhat Disagree; 3=Neutral; 4=Somewhat Agree; 5=Agree). See Table 4 for results for this section of the evaluation.

Table 2 – Evidence-based Practice: Means and Standard Deviations for Items on Evidence-Based Practices

Item (n=115)	Mean	Std. Deviation
(1) This class addressed evidence-based practices.	2.32	1.725
(2) I don't know what evidence-based practices are.	3.87	1.778
(3) I have limited knowledge of evidence-based practices.	3.93	1.631
(4) This class increased my understanding of using evidence-based practices in my teaching.	2.39	1.497
(5) This class increased my ability to locate evidence based practices for my teaching.	2.38	1.448
(6) I feel competent in locating evidence based practices for use in my teaching.	2.18	1.512
(7) I need to improve my knowledge of locating evidence based practices.	3.16	1.455
(8) I feel confident in using evidence based practices in my teaching.	2.27	1.495
(9) I would like to enhance my use of evidence based practices in the classroom.	2.31	1.327

Candidates responded that they somewhat disagreed that the classes addressed EBPs despite faculty efforts to infuse EBPs into course syllabi, knowledge, and assignments. Furthermore, candidates indicated that they did not know what EBPs were and agreed that they have limited knowledge of EBPs. They also indicated disagreement in their ability to locate and competence in the use of EBPs. Lastly, they were neutral about the need to improve their knowledge of EBP and somewhat disagreed that they would like to enhance the use of EBP in the classroom.

The results showed that the teacher candidates need more knowledge and skill about EBPs. Responses indicated that many candidates do not know anything about EBPs (Item 2), which agrees with the results about the extent of their knowledge of EBP (Item 3). Teacher candidates also indicated that overall they “somewhat disagree” with enhancing their use of EBPs in the classroom (Item 9) possibly indicating that instructors need to spend more time on the importance of using EBP in classrooms.

Respondents were also asked two open-ended questions at the end of this section. Those questions are: (1) How could this class have better met your needs for understanding and using evidence-based practices in your teaching?; and (2) What has this class addressed well in helping you understand and use evidence-based practices? Comments were provided by 21 of the respondents, or 18%. For the first item, respondents stated that less lecture and more hands-on activities and/or real-life examples would have been beneficial. One person stated that he or she would like “more face time with not only the professor, but with the other student teachers to discuss better teaching strategies...” Some respondents said that particular courses did not address EBP at all. On the other hand, some felt that the instructor addressed those practices “perfectly.” For the second question, several of the candidates stated that the teacher modeled the use of EBPs in his or her daily teaching, they received some very helpful handouts, and they benefited from class discussions. Two of the respondents stated that they learned useful skills in how to research this on their own.

Analysis of EOC means reveals that candidates agree that they do not know what EBPs are (Item 2, mean=3.87); however, they do not necessarily want to enhance their use of EBPs in the classroom (mean=2.31). Perhaps a better understanding of EBPs and how they may help both the teacher and student would be of value. Results reveal that teacher candidates may benefit from having more explicit teaching, hands-on activities, and real-life examples of how to applying EBPs to improve their use and understanding of these practices.

## **DISCUSSION**

Evidence-based practices are instructional techniques with meaningful research support that represent critical tools in bridging the research-to-practice gap (Cook, Smith, & Tankersley, 2012; Slavin, 2002). Because EBPs represent practices found effective by the most reliable research, they have significant potential to effect meaningful, positive change in the education of students with disabilities who require the most effective instruction to reach their potential (Dammann & Vaughn, 2001; Slavin, 2002). This significance has been widely documented (Test, Fowler, Brewer, & Wood, 2005). A significant gap exists, however, between research documenting the effectiveness of practices and the actual instruction that occurs in typical classrooms using practices known to positively impact student performance. Such practices are not commonly implemented in classrooms (Carnine, 1997; Cook & Schirmer, 2006).

The ultimate and crucial determination of whether EBP are utilized with students with disabilities ultimately lies with the teacher (Cook, Tankersley & Harjusol-Webb, 2008). Unfortunately, interventions shown by reliable research to positively impact student performance are not implemented commonly in classrooms. Yet practices shown to have little to no effect, or negative effects on students' outcomes are applied frequently (Cook & Cook, 2004). The failure to implement and sustain effective practices has been repeatedly offered as an explanation for poor outcomes among students with disabilities (Greenwood & Abbott, 2001; Landrum, Tankersley, & Kauffman, 2003).

One goal of this project was to enhance infusion of EBP instruction and application in one teacher preparation program to address the well-documented research-to-practice gap concerning EBPs within the field of special education. The efforts began with an examination of current syllabi followed by embedding EBP instruction and application into the curriculum. Examination of the effects of infusing EBP instruction into the curriculum and determining the results for teacher knowledge of EBP and implementation of these practices was desired. It was learned from the analysis of group data during the initial administration of the SoCQ that the majority of participants (n=18) scored within stage 0 which is indicative of being preoccupied and concerned with other innovations rather than EBP. The test publishers state that nonusers concerns are highest on Stages 0, 1, and 2 and lowest on Stages 4, 5, and 6 and our findings mirrored these scores thus indicating that teacher candidates entered the program with little knowledge of EBPs.

Additionally, the project sought to follow one cohort of teacher candidates as they progressed through a Master's program and to determine if the revamped curriculum/course design was effective in improving instruction and implementation of EBPs. Unfortunately, in each administration of the SoCQ the stage 0 score remained the highest score for the majority of

participants. This is indicative of candidates' being preoccupied with things other than EBP, or other priorities are preventing a focus on EBP, spending little time thinking of this innovation, and being more concerned with other innovations. However, SoCQ developers state that not only should the highest score be examined, but additionally the next highest score should as well. Therefore during the mid-placement administration the second highest score was in stage 3 which is characterized by concern with the organization and management of daily activities, being preoccupied with competing interests and responsibilities, and an inability to manage conflicting initiatives. This stage is, however, indicative of a teacher's implementation of the practice. Furthermore, when examining the last administration of the SoCQ, the second highest score was in stage 5 which indicates that teachers were seeking collaborative partners and relationships to help with and discuss the innovations usage. This indicates that teacher candidates were implementing the practices, but seeking assistance with this process. While our results are preliminary, a slight shift from the lower scores to higher scores may be indicative of the dissonance felt by teachers unsure of competence implementing EBPs in the classroom and the subsequent effects on students. Data gleaned from EOC evaluations supported the above findings.

While a minimal shift in teacher candidate's knowledge and implementation of EBPs was evident there was not a clear indication of changes in the knowledge and practices of teacher candidates. Therefore, like other researchers we found that influencing school practices and teacher behaviors has proven to be a difficult endeavor (Sarason, 1993). We also learned that the evaluation of teacher candidate's understanding of and ability to implement newly introduced practices is difficult. We used a variety of evaluation methods including the SoCQ questionnaire and EOC evaluations which had both Likert scale and open-ended questions in an attempt to evaluate learning outcomes at multiple levels. These attempts to evaluate teacher candidate's abilities to synthesize and apply their knowledge proved difficult.

Most researchers have focused on this phenomenon as a failure of the institute of higher education's part to teach EBPs to teacher candidates, but after revising syllabi, assignments, and placing an emphasis on EBP this may not be the case. We are left to wonder if this is instead a failure to implement best practices issue, with teachers having the knowledge and skills to implement these practices, but choosing to not use them. Teachers have reported barriers to using educational research including lack of time to search for EBPs, lack of access to sources for EBPs (Williams & Coles, 2007), lack of administrative support, and time constraints as the major obstacles for implementing EBPs (Jones, 2009). Additional reasons noted by Ayers, Erevelles, and Park-Lee (1994) included lack of teacher skill, implementation difficulty, time constraints, and lack of administrative support as major obstacles in the implementation of EBPs. These barriers to implementation have been documented previously and appear to remain ongoing concerns over time. This issue warrants further examination.

The need to teach pre-service teachers to generalize techniques across time and settings is not a recent phenomena but one that has been well established in the literature (Boudah, Logan, & Greenwood, 2001; Engelmann 1988; Gersten, Morvant, & Englemann, 1995; Greenwood & Abbot 2001; Han and Weiss 2005; Scruggs & Mastropieri 1994; Vaughn, Klingler, & Hughes, 2000). Models of implementation can also be gleaned from professional development literature which states that teachers benefit from long term support that facilitates their understanding and

implementation of new strategies (Klingner, 2004). Perhaps, as others state, a community of support may assist teachers in shifting to new practices (Gersten, Vaughan, Deschler, & Schiller, 1997; Pressley & El-Dinary, 1997). Researchers involved in this project agree with Gable (2004), who concluded that simply exposing school personnel to various practices is not enough; rather they must be instructed directly and systematically to a mastery level on specific skills and demonstrate their mastery in applied settings.

One direction for future studies would be to examine supervised practice in applied settings to effect change. Kretlow and Barthelomew (2010) found in their meta-analysis of coaching to implement EBPs that highly engaged small group training followed by multiple observations, feedback, and modeling sessions facilitated the use of EBPs in the classroom. Therefore, perhaps long-term intensive involvement is warranted. Finally, Kretlow, Wood, and Cooke (2009) found that while the frequency of the use of EBPs increased after initial training, high and stable implementation did not occur until after teachers received individual coaching sessions. This further indicated that teachers will need support in their classrooms over a substantial period of time to make changes. Further investigation is warranted concerning EBPs and teacher support for implementation.

### **Limitations**

This study's generalizability is limited by its nature as a case study focused on one university's program, an available population of pre-service educators, and the study's experimental design. Scores and comments on EOC evaluations and SoCQ must be interpreted with caution due to low response rates. Additionally, despite efforts, changes in candidate's perceptions over time were not able to be examined.

Little is known about the formative process of teacher candidates acquiring knowledge of EBPs, implementing EBPs, and the specific barriers to implementation they encounter. Future research should focus on these areas. Future research should also continue to focus on effecting change in teacher education programs concerning EBPs. Perhaps future researchers may gather valuable information from focus groups of teacher candidates or qualitative measures to study the phenomena in depth. Additionally, these findings indicate perhaps a coaching model with ongoing support and instruction may be necessary to change teacher candidates' classroom practices.

### **CONCLUSIONS**

This article discusses one program's approach to infusing EBP into a Master's program for initial licensure in special education. The case-based example in this article highlights areas of concern which support the need for further study. Results indicated that while more opportunities for data collection and improvements to the program structure are necessary, candidates are showing some evidence of improving skills related to evidence-based practices.

Many have blamed the research to practice gap on inadequate teacher preparation (Billingsley, Fall, & Williams, 2006; Gable, 2004; Kern, Hilt-Panahon, & Sokol, 2009). Others Scheeler, Bruno, Grubb, and Seavey (2009) have identified the need for teacher preparation programs to

provide structure for their programs in educating pre-service teachers for generalize what they learn to their classroom. Scheeler et al., (2009) found that there was a less than 30% chance that teachers would implement newly acquired teaching skills if universities did not have an effective system to address the pre-service teacher research to practice gap. Institutes of higher education should examine support for implementation of EBPs in P-12 classroom environments in future research. The findings in the current study support findings found in the literature base, that special educators have difficulty-implementing EBP in their classrooms. There is a need to continue to research program enhancements that promote generalization of skills and concepts learned in post-secondary institutions.

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**Appendix A: Project End of Course Evaluation**

**Check the degree to which you agree with each statement and complete the open ended questions in each section. Please respond to all questions.**

**Evidence-Based Practices**

1. This class addressed evidence-based practices.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I don't know what evidence based practices are.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I have limited knowledge of evidence based practices.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. This class increased my understanding of using evidence based practices in my teaching.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. This class increased my ability to locate evidence based practices for my teaching.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. I feel competent in locating evidence based practices for use in my teaching.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. I need to improve my knowledge of locating evidence based practices.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. I feel confident in using evidence based practices in my teaching.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. I would like to enhance my use of evidence based practices in the classroom.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. How could this class have better met your needs for understanding and using evidence based practices in your teaching?

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11. What has this class addressed well in helping you understand and use evidence-based practices?

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