

Using On-Line Modules for Professional Development in Action Research: Analysis of Beta Testing Results

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Abstract

Although research identifies a plethora of evidence-based instructional practices, classroom teachers find research difficult to access, often not implemented due to perceived lack of relevance to classroom practice. Bridging this gap between research and practice requires continued and mediated support as teachers translate and contextualize research findings through the lenses of prior knowledge, understandings, and impact on student results within their classrooms. This developmental process is both time consuming and individual. To address the need for responsive, individual, and contextualized support during the implementation process of evidenced-based instructional practices by teachers to determine impact of instruction, an on-line module in action research has been developed, implemented, and researched using a beta testing process. This manuscript describes the content of the on-line module and mediated support, outlines the specific research framework of beta testing procedures and instrumentation, analyzes the results from the pilot group of teachers who participated in this on-line module, and describes the limitations and considerations for continued research.

Introduction

Within the current context of standards-based reform and increased accountability for school performance by all students, classroom implementation of evidenced-based instruction by teachers is critical. Recent reauthorization of two important and related pieces of federal legislation [Title 1 of the Elementary and Secondary Education Act, the No Child Left Behind Act (2002), and the Individuals with Disabilities Education Improvement Act (2004)] establishes the framework for much of the current standards-based reform. However, legislation focused on evidenced-based instruction is often not well-articulated (although accountability measures for improved student results are included in the legislation (Little & Houston, 2003)). The cited legislation exacerbates complex issues of implementation of instructional practices in classrooms and schools. Although research identifies a plethora of evidence-based instructional practices, classroom teachers find research difficult to access and often of little relevance to classroom instruction. Therefore, teachers often do not use research-based instruction within their classrooms (Greenwood & Abbot, 2001). Bridging the gap between research and practice requires continued and mediated support as teachers translate and contextualize research findings through their lenses of prior knowledge, understandings, and student results within their classrooms (Little, 2001).

Classroom action research or instructional decision-making enhances the purposes of accountability and subsequent decision-making within the classroom. Within the last few years,

the use of action research has become increasingly implemented among public schools as a means for school improvement and professional development (Calhoun, 2002). Action research is defined as a process, one in which teachers systematically reflect on their practice and make changes to their instruction based on careful analysis of student results (Borgia & Schuler, 1996). Unlike traditional research, in which a researcher studies the teacher, action research is conducted by the teacher to improve instruction to benefit student learning. In action research, the teacher becomes the primary researcher. As the researcher, the teacher has a vital role in developing, implementing, and analyzing problems experienced within the classroom. Through action research, the teacher is able to make effective decisions about what to teach and how to select the best content, methods, or strategies for their students. Researched benefits to action research include: (a) creating a process for addressing instructional concerns; (b) promoting teachers as researchers; (c) adding to the existing body of practical research; and (d) encouraging reflective practice (Borgia & Schuler, 1996; McNicoll, 1999; Sagor, 2003; Salisbury & Wilson, 1997).

In recent years, action research has been used as individual professional development within a school-wide improvement plan. Both methods have been effective in enhancing teacher practice and expanding teachers' knowledge (Calhoun, 2002). When teachers learn to make decisions based on formal scientific approaches, students' prospects for success can also improve (Henson, 1996). Action research is an integral component during implementation of evidenced-based instruction to improve student learning. During this process, teachers consider the students' instructional needs compared with the curriculum goals. Additionally, teachers identify various assessments to measure student learning. Through this action and reflection process, teachers instruct and collect classroom assessment data from their students to measure results (Little & Rawlinson, 2006). Therefore, specific goals identified through the legislation and school reforms become the targeted goals for teacher action research and data collection conducted in teachers' classrooms (Calhoun, 2002). Through this process, teachers become actively engaged in the school reform, professional development, and accountability processes of their schools, districts, and states.

However, this developmental process is time consuming as it must be specifically related to the students' learning needs in the teacher's classroom. Therefore, evidence-based instructional skills from professional development must be contextualized for specific classrooms and students (Sindelar & Brownell, 2001). Specific and immediate feedback from knowledgeable teachers or instructional coaches facilitates the continued and accurate implementation of evidenced-based instruction within individual classes (Showers, Joyce, & Bennett, 1987). Additionally, continuous support from knowledgeable teachers or instructional coaches can be offered through technology both individually and immediately (Rodes, Knapczyk &, Chapman, 2003). Changes with classroom instruction occur more frequently and with increased fidelity with specific discussions and feedback from knowledgeable others (Showers, Joyce, & Bennett, 1987). For example, as a teacher is reviewing the current data from a recent reading assessment, a meeting with the school's reading coach could expand both the current knowledge and instructional solutions given the assessed needs of the students. Whether this discussion and support is provided in person or using technology, support and feedback is important to problem solve and implement new instructional strategies (Showers, Joyce, & Bennett, 1987). These discussions serve as the catalyst for teachers' continued learning during implementation through the use of computer technology (Knapczak & Rodes, 1995).

The state of Florida includes action research as a component of the state's plan for professional development in education (FDOE, 2002). As part of Florida's system of professional development to assure continuous improvement of instruction based upon student results, action research is encouraged within each of the schools in Florida (Little, 2001) needing no additional parental approvals if completed by classroom teachers. To address the need for responsive, individual, and contextualized support for teachers during implementation of evidenced-based instructional practices, an on-line module in action research was developed by one of the co-authors to address this need. This study was developed, implemented, and researched using a beta testing process to determine the results during use of these resources with a convenient sample of teachers. This manuscript describes the content of the on-line module and mediated support, outlines the specific research framework of beta testing procedures and instrumentation, analyzes the results from the pilot group of teachers who participated in this on-line module, and describes the limitations and considerations for continued research. The purposes of the research study are: (1) to determine if professional development in action research improves teachers' understanding of action research; (2) to show the impact of professional development on teachers' perceptions and knowledge about using action research in their classrooms; and (3) to evaluate the quantity and quality of classroom action research completed by teachers through on-line professors.

Method

Participants

Participants in this study were a convenient sample of 23 part time graduate students at a major metropolitan university in the state of Florida who also teach students with disabilities in K-12 settings full time. The participants were enrolled in a graduate course (*Instructional Strategies 6-12*). There were 19 females and 4 males in the group. The students reflected various age groups: 5 students in the age group from 18-30, 14 students in the age group 31-45, and 4 students in the age group 46+ years of age. The level of education ranged from bachelor's degree to post-graduate work. Five of the participants had a bachelor's degree and 18 had completed some graduate work, a master's degree, or post-graduate work. The number of years working in the K-12 public school setting showed 5 respondents had worked for 2 years or less, 11 had worked in education for 3-5 years, 4 had worked in education for 6-10 years, and 3 participants had taught for 11 or more years.

Overview of Course Content

The focus of the master's level course, *Instructional Strategies 6-12*, was to develop an awareness and classroom implementation of evidence-based instructional strategies for secondary students with disabilities. From an initial needs assessment completed by the participants in this course, specific evidenced-based instructional strategies and instructional methods were selected as course content. Strategies included Partner Reading (Delquadri et al., 1986); SLANT Starter Strategy (Ellis, 1996); Vocabulary LINCing Routine (Ellis, 2001) and Collaborative Strategic Reading (Klingner & Vaughn, 1999). Validation research for the selected strategies was described at the outset of the course, including purpose, methodology, and results. In addition, each of these evidenced-based strategies was modeled by the instructor and practiced by the course participants with specific feedback in the university setting. Classroom data collection instruments for progress monitoring of student learning were shared, modeled, and implemented for each strategy during initial sessions of the course.

Each of the participants met mastery for implementation of the strategies as indicated through classroom observations at the university and videotape submissions of classroom implementation from their K-12 settings. Observation feedback rubrics were used to determine quality of strategy implementation. After these awareness activities were completed, the participants selected one evidenced-based instructional strategy to implement for six to eight weeks with a group of students in their K-12 classrooms. During these 6 to 8 weeks of implementation in their K-12 classrooms, the course participants completed an on-line action research module to support this implementation phase after the initial month of awareness activities in the college classroom.

The content of the action research on-line module was organized into discreet sections, mirroring the steps of the action research process developed by one of the co-authors through a grant through the Florida Department of Education for use throughout the state of Florida within the professional development system (FDOE, 2002). This resource, entitled, *Improving Student Learning through Classroom Action Research* (Rawlinson & Little, 2004) was developed from research as an interactive, practical guide for teachers conducting action research within their classrooms and schools with the explicit goal of improving student learning. Prior to publication, the resource was peer reviewed and peer edited by several noted authors in action research. The purpose of the current study was to determine impact of the use of these on-line learning resources related to knowledge, perceptions, implementation, and completion of action research.

The guide and on-line module provide teachers (in this case, the graduate students in the beta testing phase) with sequenced sections to conducting action research. The sections included: (1) understanding the research process; (2) investigating and identifying a classroom problem; (3) developing and implementing an action research plan; (4) collecting and analyzing data; and (5) making instructional decisions. Each section contained not only research and content reviewed by experts, but also descriptions, reflection activities, planning forms to focus the action research, and specific case studies from previous classroom action researchers from the state of Florida.

During the subsequent 6-8 weeks of classroom implementation by the participants within their K-12 classrooms, on-line sections were completed. There were weekly on-line activities, readings, and discussions during these implementation and action research phases of the course. Participants read content presented in each section of the module, as well as participated in individual and group synchronous and asynchronous interactive sessions. Specific and immediate feedback was provided by the university instructor and a graduate student (high school teacher) regarding implementation, data collection, and procedures throughout the sections of the action research process. Often, implementation issues were discussed during the numerous interactive functions (e.g., on-line chats and discussion boards). Participants implementing the same evidenced-based instructional strategy were assigned into chat rooms and blogs to share their actual experiences with implementation and their action research studies.

Data Collection

After permissions were obtained from each to participate in this beta-testing pilot study, data were collected during the subsequent two months of the course during the completion of action research. All 23 of the participants completed the Satisfaction Survey, Action Research Survey, all activities from the on-line module, and Action Research projects. A subset of six graduate students, representing maximum diversity among total group members (i.e., years of teaching, graduate degree preparation, certification, location of employment, and gender),

participated in individual and focus group interviews, completed checklists of implementation, were observed in their classrooms, and submitted their action research projects for Content Analysis Review for Quality. All interviews (e.g., focus group and semi-structured individual) were audio taped and transcribed for analysis.

Measures

Satisfaction and Action Research Surveys. Both of the surveys (Satisfaction and Action Research) contained both quantitative and qualitative items. The qualitative questions assessed changes in the respondents' attitudes and perceptions about action research and the viability of using it in the classroom environment. These Likert items were developed from current constructs in action research. The quantitative questions assessed increase in the respondent's knowledge of action research and its processes. For quantitative variables, the means, standard deviations, etc. were computed assuming a normal distribution. For each question, the frequency of responses was determined. A graphic representation of the results was completed for ease in interpretation of the information obtained from the respondents. Information gleaned from the open-ended questions on the surveys provided the basis for questions during the focus group and semi-structured individual interviews.

Focus group interviews. Two focus group interviews, with the identified six participants, were held at the beginning and ending of the course and action research projects. The group setting for the interview enabled the participants to exchange ideas and elaborate on them through discussions (Stewart & Shamdasni, 1990). Procedures for focus groups as described by Vaughn, Schumm, and Sinagub (1996) were followed. Participants were guided by questions that assisted the moderator in directing the focus group interview. Participants were encouraged to share their opinions and insights using a conversational style. Member checks were completed for each question before asking another question.

Semi-structured interviews. Following the focus groups and the completion of the action research projects, the identified six participants were individually interviewed using a semi-structured interview format (Borg & Gall, 1989). The interview was guided by four questions related to the impact of implementation of the instructional strategy and results of the action research completed in their classroom (e.g., What did you learn about Action Research? What did you learn about yourself as a teacher by completing action research? What did you learn about your students by completing action research in your classroom? Do you believe that other teachers will use this Action Research process? Why or why not?).

Implementation Validity Checklists. Checklists were created and administered to provide an objective assessment of both the extent to which teachers implemented the selected evidenced-based instructional strategy, and as well as to provide feedback regarding the final quality of the action research project submitted on the Content Analysis Review. During instructional strategy implementation, each of the six teachers was observed twice. Observers used the implementation validity checklist, as developed for each of the instructional practices, at both the university and individual classroom settings.

Data Analysis

Surveys. Most of the data collected during the beta-testing was the result of surveys, interviews, and focus groups. The surveys were administered to each of the 23 participants. The satisfaction survey was administered at the end of the course. The Action Research Survey (pre-test) was distributed and collected in January. After the pretest, course participants completed the activities of the course and the on-line action research module in conjunction with the implementation of the selected evidenced-based instructional strategy. The second action

research survey (post-test) was distributed and collected in April following the completion of the on-line action research module.

The software SPSS was used to analyze the data. The data were collected and screened for consistency to allow for accurate interpretation of the data. A dependent t-test was used for analysis. Scores from each section were summed and then paired by pre- and post- test results for comparison. Results were analyzed and reported.

Focus Groups and Interviews. Data collected through each of the focus groups and interviews were analyzed using guidelines suggested by Miles & Huberman (1994) for data analysis and reduction. Using the transcription from each of the focus groups and interviews, categories for analysis were generated and defined by the two researchers who independently examined the data. For each issue/question, they reviewed the responses for common ideas and themes (Strauss & Corbin, 1990), which were used to develop an initial list of categories. The researchers then met to negotiate a mutual set of categories, with examples for each.

The data were coded using coder-determined chunks of discourse from the interviews and focus groups (Evertson & Green, 1986). After coding sub-samples of data sets using the defined categories, the two researchers (co-authors) conferred to compare responses, further revise, and resolve differences in coding. The second stage of analysis included the development of data summaries. Using matrices, the researchers summarized key findings for each of the topics/questions generated by the researchers. Lastly, conclusions from the data analyses were developed and verified. Conclusions were drawn over time and reported as they were found to be explicit and grounded (Glaser and Strauss, 1967). Verification was conducted through the group process, as well as reviewed by the six participants to validate the conclusions.

Content Analysis Review for Quality

Based upon a review of literature of the process of action research (see earlier citations), a rubric of quality indicators for classroom action research was developed. Indicators of observable behaviors and/or characteristics for each of the sections of action research were included. This rubric was applied to the resulting action research projects of the selected subset of six participants. Once the rubric was developed, it was reviewed by two content experts in action research for quality prior to its use to assess the quality of the action research completed. Given the rubrics and copies of the six action research projects, analyses were completed and defined by the same two researchers who independently examined the data. Once the data were independently reviewed, the two researchers met to discuss their findings, negotiate any discrepancies, and report the results.

Results

In this section, first we will report the results of the action research survey and the satisfaction survey as a result of the on-line professional development in action research. There are multiple constructs that were assessed using the two surveys, and each will be reported. Then we relate the results of the teachers' beliefs and perceptions of the impact of the action research professional development through the graduate course, *Instructional Strategies 6-12*, on their teaching and their students' learning. Lastly, we report the quality of the action research completed by a subgroup of the participants.

Perceptions and Knowledge Results from Surveys

Results from the Action Research surveys were analyzed to determine significance in the areas of perceptions and knowledge of the action research process as a result of completing the on-line module as part of this *Instructional Strategies 6-12* course. Upon analyses as described, there was a statistically significant mean difference ($t = -4.367$, $df = 21$, $p < .01$) between pre-test

and post-test scores on the perceptions portion of the survey (see Chart 1). The post-test scores ($M = 49.86$, $s = 9.40$) were higher than the pre-test scores ($M = 37.09$, $s = 11.93$). Upon analysis, the results were significant at the 95% confidence level.

There also was a statistically significant mean difference ($t = -2.85$, $df = 21$, $p < .01$) between pre-test and post-test scores on the knowledge portion of the survey. The post-test scores ($M = 17.27$, $s = .827$) were higher than the pre-test scores ($M = 16.64$, $s = .953$). The 95% confidence interval, with a lower limit equal to -1.10 and an upper limit equal to $-.17$, provides further evidence that there is a significant difference in means.

Chart 1 depicts the results of students' pre-test and post-test scores from each section (perception and knowledge) of the survey instrument. Mean scores of the pre-tests and post-tests are reported as percentages to show the increase in mean score average, not percentage of accuracy for entire pre-test and post-test. On the post test, especially in the knowledge section, many of the participants received a 100% mastery of the content. (See Discussion for further analysis.)

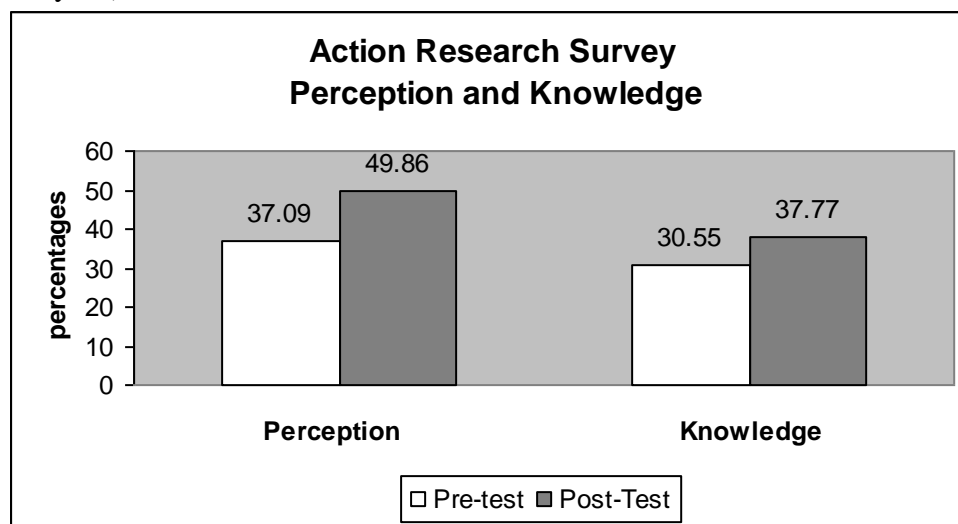


Figure 1. Satisfaction Results from Survey

Of the 23 participants, each of the participants completed an action research project. From the satisfaction survey completed at the end of the course, each described the strong belief that this process was very important to their teaching within the classroom. All of the respondents reported they learned about their own students' learning. In addition, 78 % reported that they strongly believed they were learning to be more effective teachers. All of the respondents reported that they believed they were learning to be more effective, if only slightly. The majority reported that they believed other teachers would use this process, but several stated that time, resources, and clear instructions were needed for all to complete action research. The following table displays the data collected through the satisfaction survey.

Table 1: *Satisfaction Survey (Responses in Percentages. N=23)*

Questions	Very Much	Some	A little	Not at All
Did you learn about Action Research?	88	8	4	0
Did you learn to be more effective?	78	13	9	0
Did you learn about your students' learning?	100	0	0	0
Would you use this process again?	52	48	0	0
Would other teachers use this process?	70	13	0	17

Beliefs and Perceptions of Impact through Interviews and Focus Groups

From the data analyzed from both the focus groups and the interviews, the participants reported learning much about themselves, their teaching, and their students as a result of completing action research projects in their classrooms using the on-line modules. The data are reported by major themes that were evidenced. By completing action research, the participants reported that they learned about the process of teaching and its impact on student learning. A clearly articulated, major theme emerged from the data: teachers could see the connection between teaching and student learning. As one participant responded, "Action research empowers the classroom teacher to improve instructional strategies." Another stated that "I learned that it is important to check and see if what you are doing is actually working." Most reported that they now realized they (the teachers) are important to teaching and learning in their own classrooms and that their decisions were also important to the students and their learning.

Another theme that emerged was the sense of ownership and empowerment regarding decisions (e.g., instruction, programs, reactions to students, etc.) that the teachers reported. Another finding was that a majority of respondents felt that they could be researchers in their classrooms. The action research process organized their classroom decision-making, teaching, and strategies used. When considering the impact on their students in their classrooms, a major theme that emerged was the fact that their students also want to be involved in the learning process and participate at increased levels during this process. Several commented on the fact that results are motivating to both the teachers and the students. Each reported an increased level of participation and learning from their students in their classrooms. As one teacher reported, "I learned that my students can and want to take an active part in their learning. They want to do well and the learn how to be a better student."

When considering the question regarding the use of this action research process by other teachers, most reported that they believed that other teachers would use this process, if it were fully explained, with examples, and related to their teaching. Most also commented that once they showed others what they were doing (i.e., the results and the reactions of their students) the other teachers were much more interested in the process. Action research was seen as an important tool for teachers to use to improve their teaching and positively impact students. As one respondent relied, "Once teachers experience the positive effect it (action research) has on student learning and the information it gives over their ability to make changes, they (the teachers) will use action research." Barriers to the action research process included lack of time, necessary resources, and clearly organized materials. Each of the participants reported that the

on-line modules were effective, well organized, and inclusive of all of the necessary resources and materials to implement action research projects within their classrooms.

The Quality of the Action Research

From the analysis of the subgroup of the completed action research projects, a review of characteristics for quality was completed as described in the methods section. Upon independent review by two researchers (co-authors), the projects evidenced high degrees of quality indicated by the completion as a result of the on-line modules. All of the activities were completed fully by the participants. Each quality standard was applied to specific categories and reported as “very evident,” “some evidence,” “little evidence,” or “no evidence,” upon review of the resulting action research projects. The participants clearly created the learning outcomes, chose an instructional focus, and specified data collection sources. The area of relative weakness was in posing a research question, with a response of 66% -very evident. In addition, although not a quality standard for review, it should be noted that each of the action research projects reviewed contained evidence that the students within their classrooms improved as a result of the instructional approach the teacher implemented. The following table displays the results of this analysis (see Table 2.).

Table 2: *Evaluation of Quality Standards for Action Research*

Quality Standards	Very	Some	Little	Not at All
Identifying a Classroom Problem	83	17	0	0
Posing a Research Question	66	33	0	0
Creating Learning Outcomes	100	0	0	0
Choosing an Instructional Focus	100	0	0	0
Specifying Data Collection sources	100	0	0	0
Identifying Levels of Support	83	17	0	0
Total Averages/Category	89	11	0	0

Discussion

The purposes of this study were: (1) to determine if professional development in action research improves teachers’ understanding of action research; (2) to show the impact of professional development on teachers’ perceptions and knowledge about using action research in their classrooms; and (3) to evaluate the quantity and quality of classroom action research from teachers through the completion of on-line professional development.

Action research through on-line professional development increases teachers’ perceptions, knowledge, and researched results of action research. The perceptions section of the survey showed a statistically significant gain (See Results) after participation in the online professional development modules. Specific survey questions related to the rationale and use of action research were answered more favorably on the post-test. Most of the teachers’ perceptions and understanding of the rationale for action research improved after

implementation. Teachers indicated that they would be more likely to implement action research projects in the classroom and had a better understanding of the cyclical process.

On the knowledge section, the post-test scores ($M = 17.27$, $s = .827$) were also higher than the pre-test scores ($M = 16.64$, $s = .953$). It is important to note that scores on pre-test surveys were already relatively high with the average score being 17/18 correct. This may have been due to the fact that the respondents are all master's level students and have had prior experience through their coursework or previous professional development on action research. Despite the fact that the mean score was already high, the post-test surveys still indicated growth. In replication studies, the level of prior experience or knowledge of action research should be noted. The results may be stronger with respondents who are beginning or pre-service teachers. This also may be true for the results of the analysis of the content quality indicators. Given that the specific instructional strategies, including methodology and explicit informal assessments to monitor student learning, were modeled and observed within the course, implementation of these methods appropriately was clearly evidenced in the analysis of their action research projects. The respondents indicated that they have a greater understanding of how action research is implemented and how to effectively communicate the results to others. Data from both the focus groups and individual interviews supported this finding. Most reported sharing their results, as well as the process of action research, with at least one other colleague at their school site. Several reported that they shared this process at team and department meetings within their schools.

This study adds to the body of research on teachers' implementation of action research as a means of professional development. The results add support to existing studies on the impact of action research on teacher effectiveness and student learning (Calhoun, 2002; Little & Houston, 2003; Llorens, 1994). The results of the survey indicate the respondents' agreement in the value of using action research in the classroom not only to improve professional teaching practices but also to improve and document student learning.

This study also contributes to the body of research regarding the efficacy of using on-line professional development. Data regarding the format of this professional development (initial presentation with on-line follow-up through implementation) supported this professional development delivery model. Specific goals for instruction were determined from a course needs assessment. Subsequent materials were provided, demonstrated, and implemented with corrective feedback prior to classroom implementation in K-12 settings. Materials to complete the action research were also demonstrated and provided for the participants. Each of the participants implemented an evidenced-based instructional strategy in the K-12 classroom, collected student data, reflected and revised implementation, and discussed results and learning gains for themselves and their students. It is clear that the professional development in action research using on-line modules produced a high completion rate (100%) of high-quality classroom action research projects that contained K-12 student learning outcome data. Given the need to bridge the research to practice gap, the results of this beta-testing pilot study support the use of technology-enhanced course delivery during implementation.

The on-line module provided maximum flexibility and support during implementation of the evidence-based instructional practice, a major theme from analysis of interviews and focus groups. Each of the respondents strongly agreed with both the satisfaction with the content of the on-line modules in action research, as well as the flexibility and additional resources and content contained in the on-line modules. A common theme from the interviews was that the flexibility and information available "at any time" through the on-line modules greatly contributed to the

completion of the action research. Many commented that information and examples in the modules were very helpful as they continued through each step and phase of the action research process. Additionally, the results of the content quality review clearly demonstrated the clarity and completeness of the on-line modules as a source for professional development when completing a classroom action research project.

The convenient sample of graduate students enrolled in a university course is a limitation for generalizability of the findings. Graduate students, almost by definition, conduct research and perform increased professional reading. In addition, action research is a component of the Florida professional development system used for accountability. Teachers within the state of Florida currently employed as teachers are expected to know about and complete action research as part of their professional development responsibilities. Therefore, prior knowledge of the action research process and expectations by teachers to conduct action research in Florida are also limitations to this study, as these may not be the same conditions elsewhere. For further studies, it will be important to select a random sample of teachers who do not have action research as a university or employment requirement. Additional time and resources are needed to see further gains in the applications and results sections of the surveys. One way to increase gains in these areas is to structure the professional development to ensure that teachers who are participating in the professional development share action research results and demonstrate awareness of the value of action research to colleagues and school administration.

The promotion of collaboration, through the action research cycle, increases the knowledge and confidence of the teachers to conduct more research studies. Action research continues to grow as a professional development model and is becoming increasingly popular among public schools as a means for school improvement (Calhoun, 2002). The results of this study support this premise and offer insights about on-line learning to encourage professional development in action research. The results of this study clearly indicate that both the knowledge and perceptions of the content of action research, as well as the process of implementing action research, could be effectively completed using an on-line environment. Results and feedback from both qualitative and quantitative measures clearly indicate the effectiveness of the on-line delivery of learning. Given the need to validate effective methods to assure high-quality implementation of evidence-based instructional practices, the results of this research indicate a process of course delivery, using both on-line and face-to-face delivery, as one that addresses these issues. Lastly, the results of the research allay the concerns regarding quality of learning through an on-line environment. The classroom action research completed through an on-line environment evidenced positive and significant results in teacher knowledge and perceptions, completion rates, and quality indicators. In addition, qualitative data produced rationale for these results. Through the on-line learning environment, efficient and individual feedback and support provided the necessary guidance during the critical implementation phase of the research-to-practice process by teachers engaged in school reform.

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