A Preliminary Investigation of the Effectiveness of CaseQuests in Preparing Family-Guided and Technologically-Competent Early Childhood Interventionists

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Abstract

Selecting and using effective instructional strategies is a challenge facing those involved with preservice teacher education. Two instructional strategies with emerging empirical support include WebQuests and Case Method Instruction; however, both have limitations. This study examined the effects of using a CaseQuest—a hybrid of WebQuests and Case Method Instruction—on early childhood intervention students' competence related to working with families of young children with disabilities and utilizing technology to deliver intervention services. Twenty-eight graduate students participated in the CaseQuest project. Findings indicate students' reported family-guided skills and work practices increased following the CaseQuest experience. Students also reported increases in their technology skills and knowledge following the CaseQuest experience. Implications for preservice programs are discussed.

Selecting and using effective instructional strategies is a challenge facing those involved in preservice teacher education regardless of discipline. Although various instructional strategies exist (e.g., Dick, Carey, & Carey, 2000), some are difficult to adapt to particular situations (e.g., Weigel, 2002), others lack empirical support (e.g., Winton, McCollum, Catlett, 1997), and still others require competencies that existing faculty do not have (e.g., Hains, Belland, Conceicao-Runlee, Santos, & Rothenberg, 2000). The relationship between teacher competence and faculty is transgenerational in nature (Meisels, 1992); gaps in teachers' knowledge reflect gaps in their college or university programming. Thus, faculty members need strategies that help them address these gaps and ensure teacher competence.

Teacher competencies and standards underlying preservice preparation programs for early childhood intervention (ECI) specifically are driven by community values, societal movements, and a growing evidentiary base regarding effective practices. For example, with the passage of P.L. 99–457 in 1986, and evidence to support the role of the family in a child's growth and development (e.g., Bronfenbrenner, 1992; Dunst, 2000; Thompson et al., 1997), family-guided practices became a key element of the ECI preservice curriculum. Likewise, during the mid-1990s, as dot.coms, home computers, e-mail, and the World Wide Web became part of everyday life in the United States, many ECI faculty began using technology and incorporating technology-based instructional strategies into the preservice curriculum. Today, recommended practices for ECI personnel are composed of competencies in such areas as assessment, child-focused intervention, family-based practices, and interdisciplinary models (Sandall, McLean, & Smith, 2000). The focus of this study is on two areas of recommended practice—family-guided practices and technology application practices—and an instructional strategy that can be adapted to a variety of situations, is grounded in two other strategies with emerging empirical support, and can be used by faculty with a wide range of abilities.

Family-Guided Practice

The emergence of family-guided competencies within the ECI preservice curriculum has largely been in response to legal mandates and growing evidence supporting families as active and critical team members in the delivery of services to young children with disabilities (e.g., Individuals with Disabilities Education Act Amendments of 1997; Marcenko, & Smith, 1992; Romer, & Umbreit, 1998; Trivette, Dunst, Boyd, & Hamby, 1995–1996). Further, personnel standards for teacher licensure outlined by professional organizations such as the Council for Exceptional Children and the National Association for the Education of Young Children require competence in family-guided practices to promote quality services for young children with disabilities Examples of such competencies include the ability to encourage and assist families to become active participants in the educational team, demonstrate sensitivity to differences in family structures and social and cultural backgrounds, and assist families in identifying their resources, priorities, and concerns in relation to their child's development (National Council for Accreditation of Teacher Education, n. d.).

Family-guided practitioners are those who involve families in all aspects of the decision- making process (e.g., Dinnebeil & Rule, 1994), create partnerships with families (e.g., Whitehead, Jesien, & Ulanski, 1998), provide families with all information and support needed to enable them to address the developmental and educational needs of their children (e.g., Trivette, Dunst, & Hamby, 1996), and acknowledge and support the cultures, values, and traditions of families (e.g., McWilliam & Bailey, 1993). The provision of family-guided services is designed to "strengthen families' sense of parenting competence and confidence, and other aspects of positive parent and family functioning" (Trivette & Dunst, 2000, p. 42), and lead to improved outcomes for children (e.g., Davies, 1993; Innocenti, Hollinger, Escobar, & White, 1993). Thus, preservice programs should incorporate such competencies as (a) involving families in assessing and planning for individual children, and (b) implementing a range of family-oriented services based on the family's identified resources, priorities, and concerns (Trivette & Dunst, 2000).

Technology Application Practices

The emergence of technology within the ECI preservice curriculum has largely been in response to demands for courses offered at a distance, the need for communicating with personnel around the world, and the need to remain current and abreast of new research (e.g., Rowland, Rule, & Decker, 1996; Schnorr, 1999; Stremel, 2000). Personnel standards for teacher licensure (e.g., International Society for Technology in Education, 2002) also require competence in using technology to promote student learning. Examples of such competencies include the ability to use technology to support learner-centered strategies that address the diverse needs of students, and the ability to apply technology to develop

students' higher-order skills and creativity. Standards also require competencies in using technology to enhance independence, communication, and collaboration. Examples of such competencies include the ability to access technology for obtaining current research, reviewing effective practices, and networking with peers.

Technology-competent personnel have been identified as those with skills across three different technology applications: (a) assistive, (b) instructional/educational, and (c) informational (Stremel, 2000). The provision of services using technology is designed to lead to better communication, more individualized services, and to allow practitioners to stay current and in touch with others in the field through such means as e-mail, listservs, chat rooms, and video conferencing (e. g., Hains et al., 2000; Rowland et al., 1996; Stremel, 2000). Consequently, as with family-guided practices, ECI perservice programs are likely to be composed of technology-related competencies such as the ability to (a) design lesson plans that incorporate the use of technology (adaptive and assistive), and (b) provide a stimulus-rich indoor and outdoor environment that employs materials, media, and adaptive and assistive technology.

Instructional Strategies

Preparing family-guided, technology-competent practitioners, although important, is not without challenges. Many faculty who are responsible for preparing practitioners may not have the training, skills, or knowledge in how to provide family-guided services (McWilliam, 1993; Winton & DiVenere, 1995) or to utilize technology effectively (e.g., Moursund & Bielefeldt, 1999). Further, a limited amount of research exists regarding effective instructional strategies to promote either family-guided practice (e.g., Snyder & McWilliam, 1999; Whitehead & Sontag, 1993) or competence with technology. Although recommended practice, legislative mandates, and societal values continue to guide preservice curriculum, additional research is needed to support how students are prepared (i.e., the instructional strategies used by faculty). Two instructional strategies exist for use within preservice programs of any discipline and for a variety of purposes: Case Method Instruction (CMI) and WebQuests.

Case Method Instruction. Pretti-Frontczak and colleagues (2002) present a continuum of strategies for involving families in ECI preservice preparation programs. The intent of family involvement is to promote the preparation of family-guided practitioners. One strategy for preparing family-guided practitioners that involves families at a low level is the use of Case Method Instruction (Snyder & McWilliam, 1999). CMI is a means of teaching where the instructor presents students with an unresolved dilemma similar to one they may encounter in their work or practicum environment (McWilliam, 2002). The dilemma is typically presented in the form of a narrative description. The instructor then leads the students through a discussion of the case and through a problem-solving sequence similar to the one outlined by Snyder and McWilliam (1999). The problem-solving sequence can involve (a) identifying the major problems and issues of the situation, (b) analyzing the problem's contributing factors, (c) developing multiple alternative solutions, (d) comparing the positive and negative aspects of possible solutions, and (e) choosing a course of action.

CMI can offer preservice students the opportunity to experience "real life" dilemmas and difficult situations in a protected and supportive environment (Shulman, 1992). In addition, CMI allows students to apply many of their beliefs about working with families and reflect on or analyze the implications of their personal beliefs (e.g., Cranston-Gingras, 1996). Self-reflection opportunities that stem from CMI are crucial to learning because students' beliefs and prior knowledge often form the basis for the meaning as they begin to construct understanding from new experiences (e.g., Harrington, 1995). CMI allows students to analyze real situations and then apply theory in practice (Elksnin, 1998), as well as the opportunity to test their beliefs prior to entering the workforce (Hutchinson & Martin 1999). Examples of cases for use in ECI can be found online and in textbooks (McWilliam, 2000; McWilliam, n.d.; McWilliam, Synder, & Gregg, n.d.).

WebQuests. An increasingly popular means of integrating technology into coursework is through the use of WebQuests (Whittaker, Salend, & Duhaney, 2001). A WebQuest is "designed to provide students with an independent or small group activity that incorporates research, problem-solving, and application of basic skills" (Kelly, 2000, p. 5). WebQuests provide opportunities for students to utilize technology for gathering information, communicating with others, and disseminating findings, all which are critical skills they will need when providing services to young children with disabilities and their families. WebQuests are seen as a possible technology-based instructional strategy that teachers and faculty, even those with limited technology skills, can incorporate into the curriculum.

Bernie Dodge of San Diego State University originated the WebQuest lesson design that includes six components. These are the introduction, task, process, resources, evaluation, and conclusion (Dodge, 1995). The introduction describes the project and provides background information for the student regarding the different roles they can assume. The task component outlines what each student is to accomplish individually through the WebQuest. The process component includes the necessary steps students complete to accomplish the prescribed tasks. The resource component offers guidance or assistance from the instructor to aid the students in locating, organizing, and synthesizing the acquired information. The evaluation component describes how students will be evaluated or graded either individually or as a group and criteria are provided at the beginning of the WebQuest, often in the form of a rubric. And finally, the conclusion component is a culminating event that brings closure to the WebQuest. For example, participants may be required to create a PowerPoint presentation or a Web site, or lead a group discussion (Whittaker et al., 2001). The WebQuest project can be short-term and occur over a few days or long-term and occur over several months (Dodge, 2001). WebQuests can be completed individually or in a small group. They can also be developed within a single discipline or interdisciplinary (Dodge, 1995). Several examples of WebQuests for different ages and topics can be found online at http://edweb.sdsu.edu/webquest/taskonomy.html or http://wneo.org/WebQuests/WebquestResources.htm.

CaseQuest—Grand Challenge and Roles

For the purposes of this preliminary investigation, a "CaseQuest" was created. We use the term CaseQuest to represent a strategy that combines elements of CMI (the presentation of a real life problem or dilemma and opportunities to compare and contrast solutions) along with key features of WebQuests (participating in team processes, assigning of roles, and reliance on technology to gather evidence). Students were introduced to the CaseQuest through a grand challenge and were assigned to teams of three or four other members.

The grand challenge for the CaseQuest was for the team to reach consensus on whether an adult-directed or child-centered approach to intervention was more effective in meeting the needs of a young child with a disability. Each team member represented a different view or perspective on how services should be delivered. In most instances, two team members were asked to take the perspective that a child-centered approach to intervention was most effective, while two other members took the adult-directed approach perspective. The individual team member roles included classroom teacher/interventionist, parent/caregiver, therapist, and administrator. Each role consisted of a set of personal beliefs and individual challenges the students had to address and meet before reaching consensus with other team members. For example, an individual belief for the classroom interventionists was that young children with disabilities do not initiate often enough and

cannot learn without direct instruction. Further, an individual challenge for the classroom interventionist was to find examples of structured curriculum and evidence to support its use with young children with disabilities. Students used human, written, and electronic resources to help them on their personal journey (i.e., to gain an understanding of their assigned beliefs and individual challenges).After understanding their individual beliefs and challenges, the team members were asked to reach consensus on an action plan to best meet the needs of a child and family. The team had to judge the merits and evidence associated with an adult-directed against a child-centered approach. The team also had to create a data collection system or evaluation plan to provide ongoing information regarding the effectiveness of the action plan. The first author of this manuscript created a rubric for evaluating the students' individual journey and CaseQuest participation (see http://fpsrv.dl.kent.edu/ecis/Web/Research/DEC%202002/casequest.pdf for a copy of the CaseQuest rubric). This rubric was also used to evaluate the final project, a PowerPoint presentation that included the teams' action and evaluation plans.

Methods

The study was conducted over three consecutive fall semesters in 2001, 2002, and 2003. Participants in the study were enrolled in a graduate course titled Curriculum and Intervention in Early Childhood Services. The course is one of nine core classes required for licensure in the area of early childhood intervention at a large University in a Midwestern town. Convenience sampling was used to recruit participants.

Participants

The study was composed of 28 participants, all of whom were female and enrolled in a master's degree program. The participants ranged in age from 21 to 50 years (M = 30, SD = 7.1). Twenty-four of the participants reported their race as White, one as multi-racial, one as Asian/Pacific Islander, and two as other. Twenty of the participants held a bachelor's degree and seven a master's degree. Eight participants were certified to teach children with disabilities and children without disabilities, six were certified to teach children but not those with disabilities, one was certified to teach only children with disabilities, and 12 were not certified as a teacher for any population or age group. Data regarding licensure were not provided for one participant. The participants' years of teaching experience ranged from 0 to 15 (M = 2.7, SD = 3.9). The number of years they had been teaching children with disabilities ranged from 0 to 9 (M = 1.8, SD = 2.5).

Procedures

Participants were asked to sign a consent form and complete three pre-measures, each of which are described in a later section. The CaseQuest assignment was explained to participants during the first 2 weeks of the semester. Participants were asked to pick one of four roles: classroom teacher/interventionist, parent/caregiver, administrator, or therapist (e.g., communication specialist, physical therapist, occupational therapist). CaseQuest teams were then formed. Three teams were formed in the fall of 2001, two teams in fall of 2002, and three teams in the fall of 2003. CaseQuest participants were instructed to use electronic documents, written documents (journals, textbook chapters, reports), and community personnel to gain an understanding of their role and gather evidence to support their position. CaseQuest participants were also required to locate a minimum of seven Web sites, use three different search engines (e.g., Lycos, Google, Dogpile), interview a community expert (preferably using a chat room, video-desktop conferencing, or a digital video camera), review two to three empirical articles in support of their position (including at least one e-journal article), and review one case from an online law source. Each CaseQuest role came with an associated set of "hints" to get participants started. The hints consisted of the names of professional organizations, Web sites, and empirical articles associated with their individual role or position. Lastly, participants were encouraged to use technology to facilitate communication and discussion between team members. To assist with this, a WebCT course Web site with e-mail, chat room, and discussion board was used.

Once CaseQuest teams had learned about their individual roles, beliefs, and challenges, the teams were required to reach consensus on an action plan that addressed the grand challenge of the CaseQuest. Once teams reached consensus, they created a data collection system or evaluation plan that would provide formative and summative data regarding their consensus or action plan. Finally, the team created a PowerPoint presentation and shared it with other CaseQuest teams on the last night of class, demonstrating their action and evaluation plans. The CaseQuests lasted for approximately 13 weeks.

Measures

All participants were asked to complete three pre/post measures, two of which were used as indicators of family-guided competence (i.e., Alexander Family Case Study and The Partnership Scale). The third was a technology rubric designed by the first author as an indicator of technology competence (knowledge and skill). Participants from the first two years were also instructed to maintain a weekly electronic log/journal documenting their challenges and successes in using technology in completing the CaseQuest.

Alexander Family Case Study. This case study, as described in detail in Snyder and McWilliam (1999), has been used to measure the effects of using CMI to promote family-centered application skills. The Alexander Family Case Study presents a story about a family of a child with a disability and the challenges they face during interactions with various professionals (McWilliam). The case study has a set of 42 questions. Participants were instructed to read the case study and answer questions regarding what they would do in various situations. A five-point Likert scale was used with responses ranging from "definitely would not" to "definitely would." Possible scores ranged from 0 to 210. Higher total scores were associated with having superior family-centered application skills (McWilliam).

The Partnership Scale. This scale is designed to measure family-centeredness of preservice students across ten themes (e.g., assessment, decision making). The scale is composed of 40 items divided into four sub-scales: Beliefs, Skills, Systems, and Work Practices. Participants were instructed to rate each item using a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Scores were aggregated for each sub-scale across the ten themes. Higher scores represent higher family-centered beliefs, skills, systems, or work practices. See Giallourakis (2002) for a full description of the scale. An online copy of The Partnership Scale can be found at http://fpsrv.dl.kent.edu/ecis/Web/Research/DEC%202002/partner.pdf

Technology Rubric. A technology rubric was created to measure participants' perceived technology knowledge and skills over time. The rubric is composed of three gradients: novice = 1, intermediate = 2, and proficient = 3. Knowledge indicators range from assessing availability and location of technology resources (novice), to evaluating the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information resources (proficient). Skill indicators range from turning the computer on and off properly (novice) to using technology tools and informational resources to increase productivity, promote creativity, and facilitate higher order thinking (proficient). An online copy of the technology rubric can be found at http://fpsrv.dl.kent.edu/ecis/Web/Research/DEC%202002/tech.pdf.

E-journals. The participants' e-journal responses were examined using a six-step content analysis procedure described by Johnson and La Montagne

(1993). The first step is to prepare the data for analysis. To do this, the e-journal responses were compiled. The second step is to become familiar with the data. For this, the e-journals were read several times so that the coder could become familiar with the responses and take notes on potential themes. The third step in the process is to identify units of analysis. In this step, the coder went through the data and bracketed all responses related to the topic of technology. All responses that were not related to technology were crossed out and considered non-answers. The fourth step is to define tentative categories for coding the responses. The coder read through the bracketed responses and sorted them into tentative categories. These categories included technology challenges (e.g., attaching files to e-mails), technology successes (e.g., searching the Internet for resources) and skills acquired, both in terms of technology and course-related content. The fifth step in the process is to refine the categories. For example, a coder can take a sample of the responses and attempt to place them into existing categories. If necessary, adjustments can then be made to the categories, though none were needed in this study. The sixth step includes establishing category integrity. To do this, two coders who were not involved in the creation of the categories coded 10-15% of the data for reliability. If an acceptable level of inter-rater agreement is reached, it can be assumed that the categories were accurately defined. Reliability was set and maintained at 80%.

Results

Alexander Family Case Study

Participants' (n = 25) pre-scores (i.e., ratings on the Alexander Family Case Study before the CaseQuest) were aggregated, as were post-scores for this measure. Responses were rated on five-point scale ranging from 1 ("Definitely would not do") to 5 ("Definitely would do"). Participants' responses across the 42 items were summed to create a total pre-score and a total post-score. The highest score possible was 210, with higher scores representing higher family-centered application skills. Pre-scores ranged from 108 to 140 with a mean of 124. Post-scores ranged from 115 to 151 with a mean of 132. A repeated measures ANOVA indicated a significant difference $F_{(1,24)} = 23.15$, $p<.01$ between pre- and post-scores, with a medium effect $\eta^2 = .50$.

The Partnership Scale

Pre- and post-aggregated scores were created for each of the four sub-scales (Beliefs, Skills, System, and Work Practices) on The Partnership Scale. Ratings were on a five-point Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). Mean scores for each sub-scale were as follows:

- Pre-scores for Beliefs, 4.73 (SD = .25), post-scores for Beliefs, 4.73 (SD = .19)
- Pre-scores for Skills, 3.65 (SD = .60), post-scores for Skills, 4.04 (SD = .48)
- Pre-scores for System, 3.44 (SD = .76), post-scores for System, 3.62 (SD = .74)
- Pre-scores for Work Practices, 3.58 (SD = .96), post-scores for Work Practices, 3.98 (SD = .65).

A repeated measures ANOVA indicated a significant difference $F_{(1,25)} = 19.13$, $p<.001$ between pre- and post-scores on the Skills sub-scale, with a small to medium effect $\eta^2 = .43$. A repeated measures ANOVA indicated a significant difference $F_{(1,21)} = 6.27$, $p<.05$ between pre- and post-scores on the Work sub-scale, with a small effect $\eta^2 = .23$.

Technology Rubric

Participants' (n = 26) pre- and post-knowledge and skill scores on the technology rubric were aggregated (scores ranged from 1 to 3 for knowledge and 1 to 3 for skill). The aggregated mean score for participants' technology knowledge prior to the CaseQuest was 1.62 (SD = .64) as compared to their aggregated mean post-score of 2.1 (SD = .63). A repeated measures ANOVA indicated a significant difference $F_{(1,25)} = 11.11$, $p<.01$ between pre- and post-scores for technology knowledge, with a small to medium effect $\eta^2 = .31$. Participants' aggregated mean score for technology skills was 1.6 (SD = .58) as compared to their aggregated mean post-score of 2.0 (SD = .49). A repeated measures ANOVA indicated a significant difference $F_{(1,25)} = 11.25$, $p<.01$ between pre- and post-scores for technology skills, with a small to medium effect $\eta^2 = .31$.

E-Journal

Seventeen of 18 participants from years one and two completed weekly journal entries regarding their use of technology as well as the successes and challenges they experienced with technology while completing the CaseQuest across approximately 13 weeks. As stated previously, a content analysis resulted in three categories of responses: technology challenges, technology successes, and other skills/knowledge gained by participating in the CaseQuest. This third category emerged from the results, but participants were not instructed to necessarily discuss other issues in their e-journals.

Technology Challenges. Regarding the challenges they faced, participants listed 18 different items. Those listed most frequently were using the e-mail in WebCT (f = 8), locating online journals (f = 6), searching for empirical articles (f = 5), posting a file in WebCT (f = 5), and using ERIC (f = 5).

Technology Successes. In the category regarding the technology successes they experienced, participants listed 17 different items. Among those listed most often were using different Internet search engines (i.e., Google, Altavista, Dogpile) (f = 10), using PowerPoint (f = 8), conducting Internet searches in general (f = 8), using the chat room in WebCT (f = 6), and sharing files in WebCT (f = 6).

Other Skills/Knowledge Gained. The participants also noted a number of other skills gained as a result of their participation in the CaseQuest. Participants were only asked to complete their e-journals regarding technology-related challenges and successes. Thus, only a small number (one or two participants) noted other skills they gained, yet those are worth comment. In other words, the fact that participants listed other skills without prompting seemed to warrant their inclusion. The other skills gained included learning about the effectiveness of different intervention strategies (e.g., incidental teaching), procedures for collecting child performance data in the classroom, knowledge of different team members' perspectives and roles, locating existing resources, and learning how to participate as a member of a team.

Discussion

Findings from this study, although preliminary, suggest that CaseQuests offer a potentially effective and straightforward instructional strategy to promote family-guided and technology competent early childhood interventionists. Overall, students in the study reported some increase in their family-centered application skills as measured by the Alexander Family Case Study, their family-centered skills and application to work settings as measured by The Partnership Scale, and their technology knowledge and skills as measured by a technology rubric. Despite these encouraging results, a number of issues are worth consideration.

First, average ratings on the Alexander Family Case Study items were lower than expected. Higher scores imply higher family-centered application skills (the highest score possible was 210). Even at post-test, ratings for students in this sample ranged from 115 to 151 with a mean of 132. Several explanations exist for this lower-than-expected average rating by students. One, a CaseQuest is not a "powerful" enough instructional strategy to change such a complex set of behaviors as being family-guided. Further, the CaseQuest assignment did not ask each team member to consider issues directly related to families or being family-guided. Rather, one team member represented a family perspective, and an emphasis was placed on reaching consensus and understanding all team member perspectives against solely that of the family's. Two, family-guided practices

are composed of a set of complex beliefs and behaviors that tend to vary given the context in which a practitioner is working with an individual family. Only broad agreement exists in the field of ECI in terms of what constitutes a family-guided professional. Thus, the Alexander Family Case Study may not fully measure all aspects of what it means to be family-guided. Three, the ratings by students may reflect their preservice training program as a whole. Following the CaseQuest project, the authors asked the three instructors responsible for teaching ECI coursework to complete the Alexander Family Case Study. Average instructor ratings paralleled those of the students. Thus, despite the use of the CaseQuest, ECI program activities and instruction at large may be more influential.

A second finding worth consideration is that only Family-Centered Skills and Family-Centered Work sub-scales increased from pre- to post-test (i.e., out of the total four sub-scales on The Partnership Scale). Specifically, ratings on the Beliefs sub-scale were relatively high at both pre- and post-test, suggesting a ceiling effect was already in place. Further, it is unlikely that an ECI system would change within a short period of time following a student's participation in the CaseQuest project, particularly if the student reflected on the family-centered nature of a practicum placement where they would have no influence over policies or practices.

Third, although findings reveal a significant gain in the participants' perceived increase in their skills and knowledge relevant to technology, it is important to remember that the rubric used was not based on performance, but instead on the self-rated perceptions of the participants. From this basis, it is not clear if technology skills and knowledge actually improved. Although the increase from pre- to post-test perceptions may not verify increased technology aptitude, it seems reasonable to assume that it is indicative of an increase in participant confidence in technology use. The CaseQuest used in this study forced participants to incorporate and even rely on technology to successfully complete required activities. In doing so, the participants appear to have gained confidence in their ability to utilize technology, thus rating themselves higher on the post-technology rubric. The increase from pre- to post-scores also suggests that the students felt successful in their technology use, consequently increasing the likelihood that they will continue to utilize technology to accomplish similar tasks.

Regarding the technology challenges identified in participants' e-journals, it is interesting to note that almost all of those most frequently mentioned pertain to locating appropriate sources of information. Increasingly, students are expected to locate resources utilizing technology. It seems that even as the CaseQuest provided students with challenges, it also helped them to develop strategies for successfully locating electronic resources. It may be important for faculty to consider the amount of training and support students will need to become critical consumers of research and resources increasingly available in online formats. Students' comments also suggest that Web-based course software such as WebCT present both challenges and success for collaborating in face-to-face and online environments. Additional research is needed to better understand the merits of such online packages as related to student learning.

Lastly, both the ratings on the technology rubric and the content analysis of students' e-journals suggest a clear increase in students' confidence in using technology—even without a control group. A remaining question is whether other important skills were also acquired by students (e.g., content knowledge and skills related to curriculum and intervention) and whether technology proficiency may be increased more efficiently. In other words, are other instructional strategies able to produce similar results in terms of gains in students' technology proficiency without the commitment to such an extensive project as the CaseQuest?

Limitations

As alluded to in the previous discussion regarding findings, several limitations of the study should be noted. First, conclusions regarding the direct relationship between CaseQuests and changes in student ratings cannot be drawn, given the lack of a control group. Second, the size of the sample and the procedures used to gather the sample do not allow for generalization of findings to other ECI preservice students or other graduate students. Student responses may represent a biased or in some manner skewed representation of preservice students and their family-guided and technology knowledge and skills. Third, data were collected using self-report measures. Therefore, we cannot be certain that the information presented represents students' actual practices. Fourth, the measures used in the study lack documented reliability and validity data. For example, although the Alexander Family Case Study has been used in other research (Snyder & McWilliam, 1999), descriptions of how the measure was created and how it was determined which responses were reflective of family-centered application skills given the lack of agreement on the term in the field could not be found. The Partnership Scale has some documented reliability and validity findings, but they are limited (Giallourakis, 2002). The technology rubric was created by the first author using licensure standards and other rubrics as a guide, but has not been systematically investigated.

Implications and Future Directions

Given the positive findings from this preliminary investigation and the experiences of the authors, a number of future directions for both research and practice are offered. First, replication of the findings, with the addition of a control group, is warranted. In order to better understand or document the merits of CaseQuests, particularly in ECI preservice preparation, additional studies with more students are needed. A treatment and control group study would also add support to these initial findings. Second, when creating future CaseQuests it may be necessary to continue providing considerable technology support, guidance, and hints to ensure students focus on key features of the CaseQuest and do not get bogged down with accessing information through technology. For example, students may need specific directions on how to conduct a literature search on the Internet, how to use presentation software, and assistance in using such software applications as WebCT. Third, faculty interested in ensuring family-guided practitioners may need to use a wide variety of instructional strategies to ensure that not only family-guided beliefs are strong, but also that these beliefs are then translated into practice. Changing actual practice is a challenge and empirically based instructional strategies that will ensure changes in practice as a result of the preservice experience are needed. In general, additional research is needed to determine if students utilize or apply either family-guided or technology applications skills when working with young children and their families. Lastly, administrators should consider the support and training faculty may need to implement effective instructional strategies such as CaseQuests. Although the actual skills needed by individual faculty members are seemingly minimal (i.e., content knowledge related to the grand challenge, and basic technology skills such as e-mail attachments, PowerPoint, and conducting Internet searches), trying to support students and serve as a resource for not only the content, but technology as well, can be time consuming and a challenge.

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