Questions as a Generative Strategy for Knowledge Transfer and Problem Solving

Brett Howard Cook-Snell

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QUESTIONS AS A GENERATIVE STRATEGY FOR KNOWLEDGE TRANSFER
AND PROBLEM SOLVING
by
Brett Howard Cook-Snell
B. A. May 2007, Regent University
M. Ed. May 2009, Regent University
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Consistent with generative learning theory, Grabowski (1996) suggests the use of questions may serve as an effective generative strategy for learning. However, the learning effects of questions have produced conflicting results (Bulu & Pedersen, 2010; Chen & Bradshaw, 2007; Choi, Land, & Turgeon, 2005; Chou & Liang, 2009; Davis & Linn, 2000; Dornisch & Sperling, 2008; Ge & Land, 2003). Similarly, there are five basic challenges inherent in question research (Andre, 1979). These include lack of intentional and consistent question design, lack of detail making it difficult to replicate studies, lack of control groups against which to measure differences, aggregation of results only while omitting a question-by-question analysis, and results based upon the learners’ ability to recall information versus near and far transfer (Andre, 1979). Of importance for this study is the latter. Knowledge transfer is a major contributor to problem-solving (Jonassen, 2011b; Mayer & Wittrock, 1996). This study assessed the use of domain-specific, domain-general, and combined-domain-general specific question types when compared to a control group of no questions as a generative strategy promoting knowledge acquisition, retention, and transfer in support of solving well-structured and ill-structured problems while controlling for the methodological concerns of Andre (1979). The domain of the instruction was interpersonal communications and
was delivered as a web-based course in two instructional units along with pretest and posttest assessment, unit assessments, and a role-play simulation using an automated agent to measure far transfer problem solving. Results from the study suggested no significant differences between treatment groups for knowledge acquisition, retention, or near problem-solving transfer. The data did suggest significant differences in far problem-solving transfer for the treatment group receiving domain-specific questions only. Further, measures of central tendency suggest domain-specific questions may produce slightly greater gains in performance over domain-general only and combined domain-specific/domain-general questions.
This dissertation is dedicated to God in Christ through whom all things are possible, to my parents, Howard Eugene and Bonnie Faye Cook, who have been my constant encouragers at all times and in all things great and small, and to my husband, Mark Cook-Snell, who married me in the middle of this process even though he had no idea what he was getting into marrying a doctoral student.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>ix</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>11</td>
</tr>
<tr>
<td>II. LITERATURE REVIEW</td>
<td>14</td>
</tr>
<tr>
<td>PROBLEM-SOLVING TRANSFER</td>
<td>14</td>
</tr>
<tr>
<td>PROBLEM TYPES</td>
<td>15</td>
</tr>
<tr>
<td>KNOWLEDGE TYPES</td>
<td>16</td>
</tr>
<tr>
<td>QUESTION DEVELOPMENT</td>
<td>17</td>
</tr>
<tr>
<td>RELEVANT RESEARCH</td>
<td>18</td>
</tr>
<tr>
<td>INSTRUCTIONAL SIMULATIONS FOR INTERPERSONAL COMMUNICATIONS</td>
<td>23</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>24</td>
</tr>
<tr>
<td>STATEMENT OF THE PROBLEM AND RESEARCH QUESTIONS</td>
<td>24</td>
</tr>
<tr>
<td>III. METHODS</td>
<td>26</td>
</tr>
<tr>
<td>PARTICIPANTS</td>
<td>27</td>
</tr>
<tr>
<td>RESEARCH DESIGN</td>
<td>30</td>
</tr>
<tr>
<td>MATERIALS</td>
<td>30</td>
</tr>
<tr>
<td>DATA SOURCES</td>
<td>32</td>
</tr>
<tr>
<td>PROCEDURE</td>
<td>36</td>
</tr>
<tr>
<td>DATA ANALYSIS</td>
<td>39</td>
</tr>
<tr>
<td>IV. FINDINGS</td>
<td>42</td>
</tr>
<tr>
<td>RESEARCH QUESTION 1</td>
<td>42</td>
</tr>
<tr>
<td>RESEARCH QUESTION 2</td>
<td>52</td>
</tr>
<tr>
<td>RESEARCH QUESTION 3</td>
<td>58</td>
</tr>
<tr>
<td>RESEARCH QUESTION 4</td>
<td>64</td>
</tr>
<tr>
<td>V. DISCUSSION AND CONCLUSION</td>
<td>66</td>
</tr>
<tr>
<td>ENGAGEMENT THROUGH QUESTIONS</td>
<td>68</td>
</tr>
<tr>
<td>PRIOR KNOWLEDGE AND LEARNER ABILITY</td>
<td>68</td>
</tr>
<tr>
<td>NEAR VERSUS FAR TRANSFER IN COMPARISON STUDIES</td>
<td>69</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>69</td>
</tr>
<tr>
<td>APPLICATION TO INSTRUCTIONAL DESIGN</td>
<td>70</td>
</tr>
<tr>
<td>LIMITATIONS</td>
<td>71</td>
</tr>
<tr>
<td>FUTURE RESEARCH</td>
<td>72</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Table 1</td>
<td>Treatment Group Participants by Area of Study and Class Rank</td>
</tr>
<tr>
<td>Table 2</td>
<td>Research Questions with Data Sources and Analysis Method</td>
</tr>
<tr>
<td>Table 3</td>
<td>Unit 1 Assessment Scores</td>
</tr>
<tr>
<td>Table 4</td>
<td>Unit 2 Assessment Scores</td>
</tr>
<tr>
<td>Table 5</td>
<td>Skewness and Kurtosis of Units 1 and 2 Assessment Scores</td>
</tr>
<tr>
<td>Table 6</td>
<td>Knowledge Questions Pretest and Posttest Assessment Scores</td>
</tr>
<tr>
<td>Table 7</td>
<td>Skewness and Kurtosis for Pretest and Posttest Knowledge Questions</td>
</tr>
<tr>
<td>Table 8</td>
<td>Descriptive Statistics for Near Transfer Ranking Questions</td>
</tr>
<tr>
<td>Table 9</td>
<td>Skewness and Kurtosis in Pretest and Posttest Near Transfer Questions</td>
</tr>
<tr>
<td>Table 10</td>
<td>Summary of Findings by Research Question</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1. Participant population demographics.</td>
<td>28</td>
</tr>
<tr>
<td>Figure 2. Screen shot of CATHIE role-play simulation.</td>
<td>35</td>
</tr>
<tr>
<td>Figure 3. Research schedule of events.</td>
<td>38</td>
</tr>
<tr>
<td>Figure 4. Box plot of unit 1 assessment scores.</td>
<td>48</td>
</tr>
<tr>
<td>Figure 5. Box plot of unit 2 assessment scores.</td>
<td>49</td>
</tr>
<tr>
<td>Figure 6. Measures of central tendency by treatment group for unit 1 assessment.</td>
<td>50</td>
</tr>
<tr>
<td>Figure 7. Measures of central tendency by treatment group for unit 2 assessments.</td>
<td>51</td>
</tr>
<tr>
<td>Figure 8. Box-plot of changes in knowledge retention scores by control group.</td>
<td>56</td>
</tr>
<tr>
<td>Figure 9. Measures of central tendency for changes in knowledge retention scores.</td>
<td>57</td>
</tr>
<tr>
<td>Figure 10. Differences in pretest and posttest total scores for near transfer problems.</td>
<td>62</td>
</tr>
<tr>
<td>Figure 11. Box-plot of changes in near transfer scores by control group.</td>
<td>63</td>
</tr>
<tr>
<td>Figure 12. Percentage of times the best path node was selected by treatment group.</td>
<td>65</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

Consistent with generative learning theory, the use of questions may serve as an effective generative strategy (Grabowski, 1996). However, the learning effects of questions have produced conflicting results (Bulu & Pedersen, 2010; Chen & Bradshaw, 2007; Choi, Land, & Turgeon, 2005; Chou & Liang, 2009; Davis & Linn, 2000; Dornisch & Sperling, 2008; Ge & Land, 2003). Similarly, there are five basic challenges inherent in question research (Andre, 1979). These include lack of intentional and consistent question design, lack of detail making it difficult to replicate studies, lack of control groups against which to measure differences, aggregation of results only while omitting a question-by-question analysis, and results based upon the learners' ability to recall information versus near and far transfer (Andre, 1979). Of importance for this study is the latter. Knowledge transfer is a major contributor to problem-solving (Jonassen, 2011b; Mayer & Wittrock, 1996). Transfer is necessary for learners to solve simple and complex problems in everyday life (Jonassen, 2011b; Mayer & Wittrock, 1996).

Generative learning theory suggests deeper, more meaningful learning and transfer of learning occurs when learners are actively engaged in generating their own connections between instructional components and relevant prior knowledge (Kourilsky & Wittrock, 1992; Wittrock, 1991, 2010). Generative learning theory places the learner primary in their engagement for learning and the instructor, materials, and environment secondary through activities that facilitate organization and integration of knowledge by the learner (Grabowski, 1996). The use of questions may facilitate organizing and integrating knowledge consistent with generative learning theory (Grabowski, 1996; Sharp, Knowlton, & Weiss, 2005). By using questioning strategies, the learner may self-
generate connections between prior knowledge, new knowledge, and real-world experiences, all of which may contribute directly to knowledge transfer and problem-solving (Jonassen, 2011a, 2011b). The use of expert systems illustrates this potentiality; however, further research into the types of questions that facilitate knowledge encoding and transfer for the purposes of problem-solving is needed (Jonassen, 2011a).

This study assessed the use of different question types as a generative strategy promoting knowledge acquisition, retention, and transfer in support of solving well-structured and ill-structured problems. The study mediated the five methodological concerns associated with question research (Andre, 1979). Incremental instruction was delivered over time and included multiple assessments versus single point instructional interventions and measurements. This methodology more closely recreated the classroom instructional environment for knowledge acquisition, retention, and near problem-solving transfer of well-structured problems. The domain of the instruction was social sciences and the topic was interpersonal communications specific to diagnosis-solution problem types (Jonassen, 2011b). Diagnosis-solution problem types may be well-structured or ill-structured problems and are well-suited to the study. Far transfer problem-solving for ill-structured problems was assessed through an instructional simulation role-play using automated agents. The change of context from traditional instruction to an application scenario utilizing an instructional simulation met the requirements specified for far transfer (Simmons, 1999). Further, there is support in the literature for these types of simulations relevant to interpersonal communications (Adcock, Duggan & Perry, 2010; Adcock, Duggan, Watson, et al., 2010; Adcock, Watson, & Cook, November, 2011; Adcock, Watson, Cook, & Sovay, October 2010;
Hummel, Lichtenberg, & Shaffer, 1975). Findings may be used as a basis for developing instruction that leverages question prompts to promote knowledge acquisition, retention, and transfer in support of complex problem-solving.
II. LITERATURE REVIEW

This section presents key concepts relevant to the research in order to introduce the current literature. This includes a brief introduction to problem-solving transfer, problem types, knowledge types, and question development frameworks. The current literature is then discussed to provide a rationale for the study. Lastly, because one aspect of the research investigated the effects of questions on far transfer problem-solving using an instructional role-play simulation as the transfer context, supporting literature on simulation usage for interpersonal communications is presented.

Problem-Solving Transfer

Problem solving transfer involves the ability to apply previous problem-solving experience to new problems and differs from knowledge transfer in that knowledge transfer is applying previous knowledge to new contexts (Mayer & Wittrock, 1996). For example, a learner may have the knowledge that 2+2 is a math problem, but may not have the ability to solve the problem. Further, both knowledge transfer and problem solving transfer may be near or far.

Near transfer refers to the ability of the learner to apply knowledge to similar contexts (Simons, 1999). From a problem-solving context, this is equivalent to low-road problem-solving transfer (Mayer & Wittrock, 1996) because of the task automaticity that occurs as learners become more proficient in solving these types of problems. The ability to transfer learned knowledge to novel problem contexts and structurally different types of problems, or far transfer problem-solving (Simons, 1999), is high road problem-solving transfer (Mayer & Wittrock, 1996) because it requires greater cognitive resources and learner engagement. Each of these transfer types emphasize different general and
specific skill sets and knowledge across four paradigms of problem-solving transfer (Mayer & Wittrock, 1996).

The first paradigm is general transfer of general cognitive skills such as memory, attention, and judgment that applies to all transfer contexts; i.e. near or far knowledge transfer and problem-solving transfer (Mayer & Wittrock, 1996). The second is specific transfer of specific behaviors found in rules based instruction such as that in mathematics and grammar and relates to near transfer problem solving because rules are applied within the same context of instruction (Mayer & Wittrock, 1996). The third is specific transfer of general skills such as those using contexts in which the same knowledge and skill set may be applied in the same manner to the same type of problem (Mayer & Wittrock, 1996). Lastly is metacognitive control of general and specific skills applicable to all problem-solving transfer contexts, such as the execution, management, and monitoring of the problem-solving process (Mayer & Wittrock, 1996). What the paradigms do not fully account for is problem-solving transfer based upon problem types; i.e., simple or complex, well-structured or ill-structured.

Problem Types

Problems may present themselves as well-structured, having one distinct solution, or ill-structured with no single correct solution and with many independent and interdependent variables (Jonassen, 2011b). Well-structured and ill-structured problem types are anchor points on the problem typology (Jonassen, 2011b). Within the typology, the degree to which transfer plays a role in solving more complex problems is dependent upon problem type. At the well-structured end of the continuum emphasis is on knowledge acquisition and skills development (algorithms, story problems, and rules-
based problem-types). The middle third of the spectrum emphasizes retention, near and far transfer of knowledge and problem-solving through higher order well-structured problems and lower order ill-structured problems (decision making, troubleshooting, and diagnosis-solution problem types). At the ill-structured end of the continuum, emphasis shifts to far transfer problem-solving (strategic performance, policy analysis, design and ethical dilemma problem types). Both paradigms for transfer (Mayer & Wittrock, 1996) problem typology (Jonassen, 2011b) make use of content related and metacognitive related knowledge. These knowledge types vary based upon skill set and transfer type.

Knowledge Types

Knowledge types required for problem-solving may be domain-general or domain-specific. Domain-specific knowledge is also referred to as subject-matter knowledge and context-specific knowledge (Alexander, 1992). Domain-general knowledge relates to the metacognitive components of learning (Flavell, 1979) and is more difficult to operationalize. Domain-general knowledge may be equated to strategic knowledge; i.e., knowing when to apply what learning strategies based upon content-knowledge that is both known and un-known (Alexander, 1992).

While it may be successfully argued that separating knowledge types into domain-specific and domain-general is arbitrary because the two are integrally interrelated (Sternberg, 2008), the distinction is a necessary one. Learners may have a propensity for acquiring content knowledge without possessing the ability to select the appropriate internal strategies and vice versa (Glaser, 1984). Similarly, learners may acquire problem solving skills that are domain-general related or domain-specific related but not be able to integrate these two knowledge types for more complex problem-
solving (Mayer & Wittrock, 1996). Generative strategies such as the use of questions may facilitate this integration. Domain-specific questions directly target subject content knowledge and domain-general questions target the metacognitive awareness and ability of the learner to select and apply learning strategies (Alexander, 1992). In order to implement questions that target specific knowledge types and to address the challenges of intentional question design and repeatability (Andre, 1979), a framework for questions to guide question development is necessary.

**Question Development**

One challenge in comparing question research studies is the use of conflicting terms for question types; i.e., elaborative interrogation (Dornisch & Sperling, 2006, 2008; Martin & Pressley, 1991; McDaniel & Donnelly, 1996; Ozgungor & Guthrie, 2004; Seifert, 1993; Symons & Greene, 1993; Woloshyn, Paivio, & Pressley, 1994; Woloshyn, Pressley, & Schneider, 1992), adjunct questions (Callender & McDaniel, 2007; Dornisch & Sperling, 2008; Hamaker, 1986; Hamilton, 1984; Hsu & Dwyer, 2004; Hudgins, Peverly & Wood, 2001), embedded questions (Callender & McDaniel, 2007; Hathorn & Rawson, 2012; Hicks & Doolittle, 2008), or as in comparison studies in the relevant research section, domain-general and domain-specific questions. To remedy this, a framework for domain-specific questions grounded in communications theory and empirical research consisting of 16 question types exists (Graesser & Person, 1994). These question types in the framework range from fact-based knowledge questions (verification, disjunctive, quantification, definition, and enablement question types), concept related questions (concept completion, example, comparison, and feature specification question types), process-related questions (causal antecedent, causal
consequence, and instrumental/procedural question types), and higher order comprehension questions (interpretation, goal orientation, expectation, and judgmental question types) (Graesser & Person, 1994). Similarly, questions related to domain-general content may be formulated from question stems in an existing metacognitive model (Zimmerman, 1998). These question stems include why questions related to motive, how questions related to method, when question related to time and what questions related to behavior. The framework (Graesser & Person, 1994) and the model (Zimmerman, 1998) may be used to develop domain-general and domain-specific questions targeted at both knowledge types and that fit the organization and integration aspects of generative learning theory to actively engage the learner. They also address the issue of consistent and intentional question design in question research (Andre, 1979).

Relevant Research

While the literature on question research is vast, studies explicitly comparing domain-general and domain-specific knowledge focused questions with regards to near and far transfer problem-solving are less so. What is covered in the literature and consistent with generative learning theory are aspects of active versus passive engagement along with the role of questions in facilitating connections between prior knowledge and new knowledge. These aspects are presented first followed by a review of the research more specifically related the use of domain-general and domain-specific questions.

Engagement through questions.

Generative learning theory emphasizes active engagement by the learner. Research on domain-general and domain-specific questions supports and challenges this
assertion. Active engagement through the use of priming domain-general questions injected prior to instruction may promote deeper, more critical thinking when used as part of a think aloud protocol (Wilson & Smetana, 2011). Conversely, passive exposure to the questions alone may be sufficient to introduce learning gains (Craig, Gholson, Brittingham, Williams, & Shubeck, 2012; Craig, Graesser, Sullins, & Gholson, 2004; Craig, Sullins, Witherspoon, & Gholson, 2006; Gholson et al., 2009; Morgan, Coles, Brittingham, & Gholson, 2007). Equivalent studies on equivalent participant populations receiving the same instructional materials have also produced conflicting results with regards to engagement (Papadopoulos, Demetriadis, Stamelos, & Tsoukalas, 2008, 2011).

In two separate studies assessing the effects of active written responses and passive thinking responses to a no prompt control group, one study found no significant differences while the second found significant differences when written responses were required (Papadopoulos, Demetriadis, Stamelos, & Tsoukalas, 2008, 2011). In the 2008 study, instruction and treatment interventions were completed in a single time block. In the 2011 study, instruction and interventions were completed over several weeks. These methodological differences may account for differences in findings. While the earlier study was a single intervention treatment, the later study was more indicative of real-time instruction where learning is a function over time. The extended study suggests that active metacognitive self-reflection on the learning content continued to occur as a result of required written responses, thereby possible qualifying as active engagement.

**Prior knowledge and learner ability.**

In addition to active engagement, generative learning theory suggests this engagement needs to facilitate self-generation of connections of prior knowledge to
current knowledge (Grabowski, 1996). The use of question prompts to facilitate these connections is supported in the literature (Martin & Pressley, 1991; Willoughby, Wood, & Khan, 1994; Woloshyn, Paivio, & Pressley, 1994; Woloshyn, Pressley, & Schneider, 1992). For example, researchers controlled for prior knowledge in two experimental research trials to assess reading comprehension using elaborative interrogation, fact-based recall and comprehension questions (Woloshyn, Paivio, & Pressley, 1994). Participants included 160 sixth and seventh graders in the first experiment and 80 sixth and seventh graders in the second. Once prior knowledge was determined, researchers then developed and administered additional statements that were true, but in conflict with learner prior knowledge. Learners were instructed to answer “why” questions to explain differences. Overall findings suggested elaborative questions supported knowledge acquisition but greater gains were observed in learners who were given questions consistent with their prior knowledge.

Along with prior knowledge, learner ability plays a complimentary role (Ozugungor & Guthrie, 2004). Controlling for prior knowledge and assessing for differences between high and low ability learners through elaborative interrogation prompts, significant differences were found between elaborative interrogation and control groups (Ozugungor & Guthrie, 2004). While high ability learners outperformed low ability learners, effect sizes showed high ability learners had greater recall whereas lower ability learners had greater coherence and conceptual gains. However, the studies on both prior knowledge and learner ability presented here focused more upon knowledge acquisition and retention and not on knowledge transfer or problem-solving.

**Domain-general versus domain-specific related studies.**
Turning to studies that more directly address the role of domain-general and domain-specific questions and prompts in knowledge acquisition, retention, and near and far transfer problem-solving, studies are limited. Presented are four major comparison studies.

Comparing note taking, summarizing and questioning strategies assessing both short-term and long-term learning gains, findings supported both summarizing and self-questioning as viable strategies (King, 1992). Findings indicated summarizers outperformed those in the self-questioning group on immediate knowledge posttests, but the self-questioning group showed an overall improved performance over time suggesting the metacognitive advantages of self-questioning. Not addressed in the study were differences in knowledge gains as a result of domain-general or domain-specific question types.

Comparing cognitive knowledge prompts, metacognitive process prompts, and combined prompts for solving mathematics problems in 115 ninth graders across four classes, both cognitive and metacognitive prompts increased learning gains (Kramarski & Zoldan, 2008). While the combined intervention produced significant differences, post hoc analysis indicated the metacognitive prompting group outperformed the diagnostic discussion group in domain-general and domain-specific skills. Other comparative studies support this combined interaction between domain-general and domain-specific prompts (Bulu & Pederson, 2010; Chen, 2010).

More closely related to problem-solving transfer, the use of domain-specific and domain-general questions, prompts and example scaffolds embedded within teacher-led, hypermedia instructional sequences may produce differing but complimentary gains in
problem-solving skills (Bulu & Pederson, 2010). Using an existing problem-solving framework (Ge & Land, 2004), research assessed problem-solving skills amongst 208 participants and found domain-specific prompts produced significantly greater gains in content learning and problem-representation but domain-general scaffolds had significant effects above domain-specific prompts during monitoring and evaluation phase (Bulu & Pederson, 2010). Not addressed in the study were differences between scaffold types; i.e., questions versus examples and sentence starters. Problem types were also more closely associated with near transfer and not the far transfer required for solving more complex, ill-structured problems.

Similarly, the effects between domain-specific integration prompts, domain-general procedural prompts and combined integration and procedural prompts for web-based instruction within the domain of educational psychology suggested that both contribute to knowledge acquisition and problem-solving (Chen, 2010). In the study, domain-specific integration prompts contributed more directly to knowledge acquisition and retention while procedural prompts contributed more directly to problem solving (Chen, 2010).

In addition to these studies, question research studies have suggested that domain-general questions produced greater gains than domain-specific questions (Ge & Land, 2003; Ge, Planas, & Er, 2010; Winkelmann & Hacker, 2009) and no significant differences or mixed results (Chen & Bradshaw, 2007; Choi, Land, & Turgeon, 2005; Chou & Liang, 2009; Davis & Linn, 2000; Dornisch & Sperling, 2008). While studies overall support question prompts as a possible generative strategy, what is unclear is the
degree to which knowledge may be transferred in support of complex and far transfer problem-solving.

**Instructional Simulations for Interpersonal Communications**

One way to assess far transfer problem-solving is by changing the context of assessment from the context of instruction to an applied context (Simmons, 1994). For the current study, this was accomplished through the use of an instructional simulation. The domain of instruction within which treatment materials were embedded for this research was interpersonal communications. Listening, question-asking, and question-answering skills are key attributes associated with interpersonal communications (Beebe, Beebe, & Redmond, 2011). Instructionally, question-asking and question-answering skills undergird the basic processes for problem solving, decision-making and information gathering (Graesser, Langston, & Baggett, 1993). Further, knowledge transfer becomes crucial when evaluating the outcomes of instruction in the soft skills of interpersonal communications because it involves applying new knowledge to structurally different problems in new problem-contexts (Simmons, 1994). Contextual change may be introduced through the use of instructional simulations.

Instructional simulations are immersive learning environments consistent with generative learning theory. Situational simulations place the learner central to the materials, environment and instruction and provide an environment where learners are able to make mistakes without their actions causing harm (Alessi & Trollip, 2001). The use of instructional simulations for interpersonal communications has support in the literature in the medical (Chaikoolvatana & Goodyer, 2003), psychiatric (Das, 2002; Lowman & Norkus, 1987; Sussman & Lowman, 1989) and health and human service
fields (Adcock, Duggan & Perry, 2010; Adcock, Duggan, Watson, et. al, Adcock, Watson, & Cook, November, 2011; Adcock, Watson, Cook, & Sovay, October 2010; Hummel, Lichtenberg, & Shaffer, 1975) and are therefore applicable to this study.

Summary

Four of the five basic challenges associated with question research: question design, ability to replicate, lack of a control group and aggregation of results only (Andre, 1979), are evidenced throughout the literature at varying degrees making cross-comparison between studies difficult to assess the impact of the fifth challenge; i.e., the ability to recall information versus near and far transfer problem-solving (Andre, 1979). Of the studies that have assessed transfer in problem-solving (Bulu & Pederson, 2010), it has been near transfer only. Further research is needed to assess the effectiveness of questions as a generative strategy for knowledge transfer and problem-solving and the types of questions that do so.

Statement of the Problem and Research Questions

This research addressed the issue of question prompts as a generative strategy for near and far transfer for problem-solving while controlling for the challenges of question research (Andre, 1979). Questions targeting domain-general and domain-specific knowledge types were considered. Four research questions were posed, findings from which may contribute to the literature of the field and be used in developing instructional sequences making effective use of questions as a generative strategy. These were:

1. Are there significant differences between domain-specific, domain-general, or combined domain-specific/domain-general question prompts on knowledge acquisition when compared to instruction without question prompts?
2. Are there significant differences between domain-specific, domain-general, or combined domain-specific/domain-general question prompts on knowledge retention when compared to instruction without question prompts?

3. Are there significant differences between domain-specific, domain-general, and combined domain-specific/domain-general question prompts on near problem-solving transfer when compared to instruction without question prompts?

4. Are there significant differences between domain-specific, domain-general, and combined domain-specific/domain-general question prompts on far problem-solving transfer when compared to instruction without question prompts?
III. METHODS

The domain of instruction for the study was interpersonal communications. The instruction sought to develop the skill of responding empathically. Empathy is a construct focusing on the ability of one individual to situationally relate to another’s emotions (Carkhuff, 2000a). Empathy is a complex construct involving many dependent and interdependent variables (Greenberg, Watson, Elliott, & Bohart, 2001; Rogers, 1980). Empathy is a key concept associated with conflict management to identify and resolve conflict (Beebe, Beebe & Redmond, 2011) as well as a key component in the fields such as educational guidance counseling and human service counseling (Carkhuff, 2000a; Greenberg, Watson, Elliott, & Bohart, 2001). The domain was intentionally chosen because the skill set associated with empathic communications is similar to the diagnosis-solution problem type (Jonassen, 2011b). In both examples, the empathic listener, as practitioner, responds to a client in order for the client to resolve interpersonal or intrapersonal conflict. As a diagnosis-solution problem, these problems are uniquely positioned mid-way along the problem typology previous discussed (Jonassen, 2011b) and encompass both higher-order, well-structured problems and lower-order, ill-structured problems.
Participants

Approximately 300 unpaid undergraduate students enrolled in eight different human services, teacher preparation, and general education social science courses attending a major mid-Atlantic university were invited to participate in this study. One hundred twenty participants volunteered and 77 completed all phases of the study. Demographic information for the 77 participants is summarized in Figure 1 and Table 1. A power analysis estimated that a minimum 76 participants were needed to achieve a .25 effect size for this four treatment group, two repeated measures true research design using analysis of variance (ANOVA) within and between group statistical measures. Effect size was determined from validated software (Erdfelder, Faul, & Buchner, 1996).
Figure 1. Participant population demographics.
Table 1. *Treatment Group Participants by Area of Study and Class Rank*

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>Class Rank</th>
<th>Treatment Group Participant Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Control</td>
</tr>
<tr>
<td>General</td>
<td>Freshman</td>
<td>4</td>
</tr>
<tr>
<td>Social</td>
<td>Sophomore</td>
<td>3</td>
</tr>
<tr>
<td>Sciences</td>
<td>Junior</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Masters</td>
<td>0</td>
</tr>
<tr>
<td>Teacher</td>
<td>Freshman</td>
<td>1</td>
</tr>
<tr>
<td>Preparation</td>
<td>Sophomore</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Masters</td>
<td>0</td>
</tr>
<tr>
<td>Human</td>
<td>Freshman</td>
<td>0</td>
</tr>
<tr>
<td>Services</td>
<td>Sophomore</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Masters</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>
Research Design

The research used a repeated measures true design and spanned five phases. Participants were randomly assigned to one of four groups: a control group that received no treatment intervention and three treatment groups. The three treatment groups either received domain-specific questions only, domain-general questions only, or both domain-specific and domain-general questions. Five assessments were administered throughout the research effort: one pre-instruction assessment to control for prior knowledge, two unit assessments to assess incremental learning and knowledge acquisition, one post-instruction assessment to measure knowledge retention and near transfer problem-solving, and one far transfer problem-solving assessment administered through an instructional simulation. Repeated measures were the pre-instruction and post-instruction assessments.

Materials

Instructional materials.

The instruction focused on three lower level concepts within the top-level concept of responding empathically. The three concepts were responding to content of statements made by another person, responding to the feeling of that statement and responding to the meaning of that statement to reflect back an empathic response to the individual. All instructional materials used in the research were excerpted from educational texts developed by a nationally recognized subject matter expert (SME) in the field and included a basic text (Carkhuff, 2000a), a trainers guide (Carkhuff, 2000b) and a student workbook (Carkhuff, 2009). All materials were used by permission by direct correspond with the author and publisher of the materials.
Learning objectives were distilled from the instructional materials to ensure equivalence of instruction across treatment groups. Objectives required learners to identify the critical attributes associated with each concept demonstrated by the ability to discriminate between good and bad responses as measured by the unit assessments. These objectives were used to develop the content directly from the source materials. The content was then translated to audio-visual format for electronic delivery.

The audio-visual instruction consisted of two units of instruction. Unit 1, contained an introduction and instruction in the first concept. The instruction was 4 minutes 27 seconds long and contained 9 slides. Three of these slides were example slides illustrating the four critical attributes in responses to content. Attribute identification through examples and non-examples are a valid strategy for teaching concepts (Tennyson and Cocchiarella, 1986). Unit 2 of the instruction consisted of two subunits addressing the remaining two concepts: responding to feeling and responding to meaning. As with unit 1, both subunits contained example slides illustrating the critical attributes of each concept. Unit 2a was 5 minutes 59 seconds and contained 10 slides. Unit 2b was 4 minutes 31 seconds and contained 9 slides of instruction and examples. Appendix A contains a print version of the instruction and narration script.

**Treatment materials.**

The learning objectives were also used to develop equivalent content oriented domain-general and domain-specific questions for use in the treatment groups. Domain-specific questions used an example question type (Graesser and Person, 1994). Domain-specific questions asked participants to give examples and non-examples of statements representative of each critical attribute of the concept being taught. Domain-general
questions were based upon a priming metacognitive questions from the source material (Carkhuff, 2009) making use of “what” and “how” question stems (Zimmerman, 1998). “What” questions asked participants to consider self-evaluation and self-consequences (Zimmerman, 1998). “How” questions used imagining (Zimmerman, 1998) prompted participants to begin to consider how they named feelings and the intensity of these feelings associated with the concepts being taught. Both “what” and “how” questions provided the metacognitive aspects of domain-general question types. Appendix B presents each treatment question by instructional unit, concept taught and question type. Domain-general questions were administered prior to instruction for those groups receiving the domain-general questions; similarly, domain specific questions were administered post instruction.

Data Sources

Instructional assessment scores.

An instructional assessment (Appendix C) was administered three weeks prior to the beginning of instruction to establish a knowledge baseline and again after completion of instruction to measure knowledge retention. The assessment contained 4 multiple choice questions of both single correct and multiple correct answers, 2 open ended attribution questions requiring participants to list the critical attributes of the concepts presented in the instruction, and 3 near-transfer problem-solving application questions requiring participants to rank possible responses from most acceptable to least acceptable when presented with a scenario. The open-ended questions were scored by two SME raters in human services. Interrater reliability had a Cronbach’s alpha of .776. The three ranking questions were used for near transfer problem-solving assessment because of the
similar instruction and testing context (Siegler, 1982). They were also indicative of higher-order well-structured diagnosis-solution problems because they have identified correct responses (Jonassen & Hung, 2008). All assessment items were developed from the source materials which contained answer keys used to score the results (Carkhuff, 2000b, 2009). The multiple choice and open-ended questions were used to assess knowledge retention in research question 2. The ranking questions were used to assess near transfer for use in research question 3. Construct validity of the instructional assessment was .602, and while low, this may be attributable to a selection of only a subset of the source material questions (Carkhuff, 2000b, 2009) versus utilization of the complete assessment which covered more content.

**Unit assessment scores.**

Instructional materials contained embedded learner assessments for both units of instruction directly excerpted from the source materials (Carkhuff, 2009) (Appendix C). The unit 1 assessment consisted of 3 sets of questions, 20 items total, which required participant discrimination between examples and non-examples on the first concept of instruction. The unit 2 assessment consisted of 3 sets of questions, 13 items total, which required participants to identify examples and non-examples of the second and third concepts of instruction. Results were scored against an answer key from the source material (Carkhuff, 2009) and used to assess knowledge acquisition as a function of incremental instruction for research question 1.

**Role-play simulation ill-structured problem response scores.**

An ill-structured complex problem was administered via an instructional role-play simulation to assess far transfer. The simulation, Computer Agents Teaching Helping
Interactions Effectively (CATHIE) (Adcock, Duggan, & Perry, 2010; Adcock, Duggan, Watson, & Belfore, 2010) is an interactive role-play in which the participant, as practitioner, responds to statements made by an animated instructional agent, the client, by selecting the most appropriate response to the client from a list of three potential responses. The scenario for the CATHIE simulation was developed by experts in both instructional design and human services and uses a fixed scoring criteria contained in the same source materials used for this research (Carkhuff, 2009). The scenario involved a student who was considering withdrawing from a university based upon personal circumstances and was applicable to all areas of study represented by the participant population. The script for CATHIE (Appendix E) has empirical support for its validity (Adcock, Duggan, & Perry, 2010). Figure 2 shows a screen shot of the CATHIE simulation.
Figure 2. Screen shot of CATHIE role-play simulation.
The role-play simulation used a multipath branching structure in which a response by an animated agent serving as the client response is dependent upon the practitioner’s reply to the previous statement. Thirty potential interactions, or statement/response sets, were possible in the role-play with multiple possible termination points. While there was no single correct solution to traverse from beginning to end of the role-play, there did exist a best path solution if participants selected the most appropriate response for every interaction starting at the beginning. The possible best path consisted of 15 statement/response sets and could be used for far transfer problem-solving assessment. In keeping with the complexity of ill-structured diagnosis-solution problems (Jonassen, 2011b; Jonassen & Hung, 2008), the interactivity of the simulation, multipath response flow and a context that differed from instructional delivery met the requirements for far transfer problem-solving assessment (Siegler, 1982).

**Procedure**

The research was divided into five phases: I- demographic data collection and knowledge pre-instruction assessment, II-instructional unit 1, III-instructional unit 2, IV-knowledge post-instruction assessment and V-far transfer. Phase I was completed at the time of recruitment and administered three weeks prior to formal instruction to control for any cueing effects of the pretest. All recruits received an electronic informed consent notice as per the Institutional Review Board (IRB) human subjects approval. Participants self-selected and consented to participate by providing their university identification number (UIN) and e-mail address. Participant UINs were used only to access the secure, online research system. UIN numbers were coded so as to ensure participant anonymity.
and all identifying data deleted at the completion of the research effort. Those who completed all research phases were entered into a pool to receive one of ten 50 dollar gift cards from a major online retailer. Instructors were allowed to offer incentives as per the IRB.

After all participants completed phase I they were randomly assigned to the four groups: a control group receiving no questions, a domain-specific only group, domain-general only group, or a treatment group receiving both the domain-general and domain-specific question prompts. For treatment groups receiving domain-general prompts, the questions were inserted prior to direct instruction. For participants receiving the domain-specific prompts these prompts were inserted post-instruction and prior to any unit assessments.

After a three week break, phase II, unit 1 of the instruction, was opened. Phase III, unit 2 of the instruction, and phase IV, post-instruction assessment followed at three-day intervals. Participants had ten days to complete these three phases before all open phases were closed and phase V, the far-transfer assessment, was opened. Participants were given one week to complete the far-transfer role-play before it was closed. The staggered phase completion and delivery of instruction more closely recreated both the face-to-face and distance learning environments where content is delivered incrementally over time containing short embedded assessment prior to a full examination in keeping with the literature (Bangert-Downs, Kulik, & Kulik, 1991). Figure 3 depicts the schedule of events.
Figure 3. Research schedule of events.
Data Analysis

ANOVA and analysis of covariance (ANCOVA) were used to assess for within group and between group differences based upon treatment group membership.

ANCOVA statistics were used in assessing for differences between the pre-instruction assessment and post-instruction assessment. Pretest scores were used as the covariate to statistically control for any learning effects due to administration of the pretest. The dependent variables (DV) and statistic type are listed in Table 2 by research question. The independent variable for all research questions was the question type (domain-specific, domain-general, or both domain-specific/domain-general questions).
Table 2. *Research Questions with Data Sources and Analysis Method*

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Sources and Statistical Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are there significant differences between domain-specific, domain-general, or</td>
<td>DV: Unit 1 and Unit 2 assessment scores;</td>
</tr>
<tr>
<td>combined domain-specific/domain-general question prompts on knowledge acquisition</td>
<td>Statistic: ANOVA.</td>
</tr>
<tr>
<td>when compared to instruction without question prompts?</td>
<td></td>
</tr>
<tr>
<td>2. Are there significant differences between domain-specific, domain-general, or</td>
<td>DV: Score differences between knowledge</td>
</tr>
<tr>
<td>combined domain-specific/domain-general question prompts on knowledge retention</td>
<td>questions contained in the instructional</td>
</tr>
<tr>
<td>when compared to instruction without question prompts?</td>
<td>assessments administered pre- and post-</td>
</tr>
<tr>
<td></td>
<td>instruction.</td>
</tr>
<tr>
<td>3. Are there significant differences gains between domain-specific, domain-general,</td>
<td>DV: Score differences between near transfer</td>
</tr>
<tr>
<td>and combined domain-specific/domain-general question prompts on near problem-</td>
<td>exercises contained in the instructional</td>
</tr>
<tr>
<td>solving transfer when compared to instruction without question prompts?</td>
<td>assessment administered pre- and post-</td>
</tr>
<tr>
<td></td>
<td>instruction.</td>
</tr>
</tbody>
</table>
4. Are there significant differences between domain-specific, domain-general, and combined domain-specific/domain-general question prompts on far problem-solving transfer when compared to instruction without question prompts?

Statistic: ANCOVA with pretest scores as the covariate.

DV: Percentage of successful best path interactions in the simulation role-play for instruction related interactions.

Statistic: ANOVA
IV. FINDINGS

This section presents the findings by research question along with a discussion of the results. Implications of these findings are discussed in the next section.

**Research Question 1**

*Are there significant differences between domain-specific, domain-general, or combined domain-specific/domain-general question prompts on knowledge acquisition when compared to instruction without question prompts?*

Participants who completed phase I of the research were given a unit of instruction of approximately 20 minutes delivered through web-based instruction. The topic of instruction was the concept of responding to content. Participants in the control group received the instruction only. Those in the specific group received content-related questions after the instruction, those in the general group received metacognitive priming questions prior to the unit and those in the combined group received both the domain-general and domain-specific questions in the same sequence as the specific and general groups. The unit assessment included five multi-part questions that required participants to discriminate between potential responses to a client's statement in a representative counseling session. Total number of questions within all 5 parts was 21. ANOVA calculations indicated no significant differences in question types over the control group, $F (3, 73) = .269, p > .05$. Descriptive statistics are listed in Table 3.
<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Minimum</th>
<th>Maximum</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>18.43</td>
<td>20</td>
<td>20</td>
<td>12</td>
<td>21</td>
<td>2.64</td>
<td>21</td>
</tr>
<tr>
<td>Specific</td>
<td>18.80</td>
<td>19</td>
<td>19</td>
<td>15</td>
<td>21</td>
<td>1.88</td>
<td>20</td>
</tr>
<tr>
<td>General</td>
<td>18.32</td>
<td>19</td>
<td>19</td>
<td>12</td>
<td>21</td>
<td>2.38</td>
<td>22</td>
</tr>
<tr>
<td>Both</td>
<td>18.21</td>
<td>19</td>
<td>21</td>
<td>13</td>
<td>21</td>
<td>2.81</td>
<td>14</td>
</tr>
</tbody>
</table>
Participants who completed phase II of the research were given a second unit of instruction also approximately 20 minutes delivered electronically. Treatment materials were administered as in the first unit. Further, the second unit was a more complex unit containing instruction on two concepts (responding to feeling and responding to meaning). All participants completed an assessment on the two concepts after instruction and completion of any treatment questions. The assessment contained three multi-part questions. Questions required participants to identify the attributes contained in a statement representative of a typical counseling session or to identify the non-attributes when a statement was incorrect. Total number of questions within all three parts was 13 and a maximum score of 17 was possible. ANOVA calculations indicated no significant differences in treatment groups over the control group, $F (3, 73) = .311, p > .05$. Descriptive statistics are listed displayed in Table 4.
<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Minimum</th>
<th>Maximum</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>7.62</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>10</td>
<td>2.36</td>
<td>21</td>
</tr>
<tr>
<td>Specific</td>
<td>6.90</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>12</td>
<td>2.76</td>
<td>20</td>
</tr>
<tr>
<td>General</td>
<td>6.95</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>11</td>
<td>2.52</td>
<td>22</td>
</tr>
<tr>
<td>Both</td>
<td>7.14</td>
<td>7.5</td>
<td>9</td>
<td>2</td>
<td>10</td>
<td>2.40</td>
<td>14</td>
</tr>
</tbody>
</table>
For the first research question, ANOVA statistics indicated no significant differences between treatment groups for each of the post-unit assessments in regards to knowledge acquisition. Examining the skewness and kurtosis of the data for each assessment (Table 5), all groups were negatively skewed indicating high scores for the first unit. The second unit 2 results indicated a negative skew for the control group and the treatment group receiving both domain general and domain specific questions while the specific only and general only groups exhibited positive skews; i.e., lower scores. Box-plots of both units (Figures 4 and 5) similarly indicated higher median scores in the control group over the treatment groups. Measures of central tendency (Figures 6 and 7) support this assumption with order of best performance being the control group, the both domain-general and domain-specific group, the domain-general group only and then by the domain-specific question only group. The findings suggest passive engagement to the content may be sufficient for knowledge acquisition. However, immediacy and proximity of the unit assessments to the instruction may be a factor in these findings. While knowledge may be acquired and placed in short-term memory for recall, results from research question two suggest for knowledge to be encoded into long-term memory, some form of active engagement with the content is required.
<table>
<thead>
<tr>
<th>Instructional Unit</th>
<th>Treatment Group</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>Control</td>
<td>-1.185</td>
<td>.649</td>
</tr>
<tr>
<td></td>
<td>Responding to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specific</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>-.957</td>
<td>.529</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>-.646</td>
<td>-.961</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Control</td>
<td>-.661</td>
<td>-.154</td>
</tr>
<tr>
<td>Responding to</td>
<td>Specific</td>
<td>.238</td>
<td>-.844</td>
</tr>
<tr>
<td>Feeling and</td>
<td>General</td>
<td>.041</td>
<td>-1.000</td>
</tr>
<tr>
<td>Meaning</td>
<td>Both</td>
<td>-.398</td>
<td>-.662</td>
</tr>
</tbody>
</table>

Table 5. Skewness and Kurtosis of Units 1 and 2 Assessment Scores
Figure 4. Box plot of unit 1 assessment scores.
Figure 5. Box plot of unit 2 assessment scores.
Figure 6. Measures of central tendency by treatment group for unit 1 assessment.
Figure 7. Measures of central tendency by treatment group for unit 2 assessments.
Research Question 2

Are there significant differences between domain-specific, domain-general, or combined domain-specific/domain-general question prompts on knowledge retention when compared to instruction without question prompts?

Research question 2 used scores from the instructional assessment administered pretest and posttest after all instruction was completed. Only those questions classified as knowledge retention were used in the analysis, the remaining 3 ranking questions were used in the evaluation of research question 3. To control for any variations in scores due to the knowledge pretest, an ANCOVA analysis was run with the pretest scores as the covariate. ANCOVA results indicated no significant difference, $F(3, 72) = .951, p > .05$, in the control groups over the treatment groups in knowledge retention. Descriptive statistics between pretest and posttest results are listed in Table 6.
Table 6. *Knowledge Questions Pretest and Posttest Assessment Scores*

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Assessment</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Minimum</th>
<th>Maximum</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Pretest</td>
<td>3.52</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>1.47</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>5.00</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>11</td>
<td>2.35</td>
<td>21</td>
</tr>
<tr>
<td>Specific</td>
<td>Pretest</td>
<td>3.15</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1.35</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>5.75</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>1.65</td>
<td>20</td>
</tr>
<tr>
<td>General</td>
<td>Pretest</td>
<td>2.77</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>1.41</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>5.05</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>10</td>
<td>2.34</td>
<td>22</td>
</tr>
<tr>
<td>Both</td>
<td>Pretest</td>
<td>3.07</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>1.21</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>5.36</td>
<td>4.5</td>
<td>4</td>
<td>2</td>
<td>11</td>
<td>2.53</td>
<td>14</td>
</tr>
</tbody>
</table>
Skewness and kurtosis of the results from research question 2 related to knowledge retention suggest the domain-specific only and domain-general only treatment groups outperformed the control group or the combined group (Table 7). However, measures of central tendency and distribution of scores (Figures 8 and 9) suggest due to the low mode of the domain-general group, the domain-specific and the both treatment groups were the outperformers. Consistent between these measures is the inclusion of the domain-specific only treatment group. The results suggest that knowledge retention requires a degree of active engagement for movement of knowledge from short term memory to long-term memory for encoding. Further, while all question types may aid in this encoding, more consistent results may be found with the use of domain-specific only questions. These results are also supported in the near transfer problem-solving outcomes.
Table 7. *Skewness and Kurtosis for Pretest and Posttest Knowledge Questions*

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>.396</td>
<td>.436</td>
</tr>
<tr>
<td>Specific</td>
<td>-.120</td>
<td>-.798</td>
</tr>
<tr>
<td>General</td>
<td>.487</td>
<td>-.263</td>
</tr>
<tr>
<td>Both</td>
<td>2.052</td>
<td>5.027</td>
</tr>
</tbody>
</table>
Figure 8. Box-plot of changes in knowledge retention scores by control group.
Figure 9. Measures of central tendency for changes in knowledge retention scores.
Research Question 3

Are there significant differences gains between domain-specific, domain-general, and combined domain-specific/domain-general question prompts on near problem-solving transfer when compared to instruction without question prompts?

Research question 3 used scores from the ranking questions contained in the instructional pretest and posttest assessments to assess for near transfer problem-solving. To control for any variations in scores due to the pretest, an ANCOVA analysis was run with the pretest scores as the covariate. ANCOVA results indicated no significant difference in the control groups over the treatment groups in near transfer, $F(3, 72) = .348, p > .05$. Descriptive statistics between pretest and posttest results are presented in Table 8.
Table 8. *Descriptive Statistics for Near Transfer Ranking Questions.*

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Assessment</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Minimum</th>
<th>Maximum</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Pretest</td>
<td>3.29</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>2.3</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>4.29</td>
<td>4</td>
<td>9</td>
<td>0</td>
<td>9</td>
<td>2.9</td>
<td>21</td>
</tr>
<tr>
<td>Specific</td>
<td>Pretest</td>
<td>2.9</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>7</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>3.8</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>2.6</td>
<td>20</td>
</tr>
<tr>
<td>General</td>
<td>Pretest</td>
<td>2.73</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>1.8</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>4.5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>9</td>
<td>3.1</td>
<td>22</td>
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<td>Both</td>
<td>Pretest</td>
<td>1.86</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>1.2</td>
<td>14</td>
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<tr>
<td></td>
<td>Posttest</td>
<td>4.5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>9</td>
<td>2.5</td>
<td>14</td>
</tr>
</tbody>
</table>
Skewness and kurtosis of differences between pretest and posttest results (Table 9) suggest the domain-general treatment group and domain-general/domain-specific group outperformed the control only and domain-specific in near transfer. This is supported by measures of central tendency and distribution of scores (Figures 10 and 11). However, of note is the negative mode of the domain-general group. Factoring this into the results, the gains in the domain general/domain-specific treatment group may be more a result of the domain-specific questions within the treatment versus the domain-general questions in the treatment. Regardless, the results suggest that as in knowledge retention, application of knowledge in the context of which it was initially delivered provides sufficient engagement for long-term knowledge to be recalled and applied to relatively well structured problems.
Table 9. Skewness and Kurtosis in Pretest and Posttest Near Transfer Questions

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>.373</td>
<td>.501</td>
</tr>
<tr>
<td>Specific</td>
<td>.080</td>
<td>.023</td>
</tr>
<tr>
<td>General</td>
<td>-.110</td>
<td>-.952</td>
</tr>
<tr>
<td>Both</td>
<td>-.261</td>
<td>-.333</td>
</tr>
</tbody>
</table>
Changes in Near Transfer Question Scores

Figure 10. Differences in pretest and posttest total scores for near transfer problems.
Figure 11. Box-plot of changes in near transfer scores by control group.
Research Question 4

Are there significant differences between domain-specific, domain-general, and combined domain-specific/domain-general question prompts on far problem-solving transfer when compared to instruction without question prompts?

Research question 4 used scores from the simulation role-play. Scoring criteria was excerpted directly from the source material (Carkhuff, 2000a, 2000b, 2009). Because the number of participants within each treatment group could vary, response scores had to be standardized for use in statistical calculations. The percentage of participants in each treatment group who traversed a statement interaction was multiplied by the percentage of participants who traversed the same statement and selected the best response. (For example, for statement/response interaction 3 in the control group (N = 21), 12 participants traversed the path, and 11 correctly selected the best response. Therefore, (11/21) * (11/12), or 52% of the participants correctly responded). These percentages were used to calculate ANOVA statistics. Statistically significant results were noted indicating those in the domain-specific only treatment group outperformed other groups on far transfer problem-solving, $F (3, 8) = 4.515, p < .05$. When examined on a node-by-node basis (Figure 12), results verified overall better performance by the specific only treatment group in all statement/response nodes types within the best path simulation.
Figure 12. Percentage of times the best path node was selected by treatment group.
V. DISCUSSION AND CONCLUSION

The data suggests no significant differences between treatment groups for knowledge acquisition, retention, or near transfer. The data also suggests significant differences in far transfer for the treatment group receiving domain-specific questions only. Trends in the data, with the exception of the first research question on knowledge acquisition, suggest the use of domain-specific questions may be the preferred instructional strategy over domain-general and combined domain-specific/domain-general questions. Table 10 presents an overview of the findings and performance of each of the four groups by research question. Results are then discussed in terms of the literature. Application of results to instructional design are also presented along with the conclusion, limitations and future research sections.
Table 10. Summary of Findings by Research Question

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Focus</th>
<th>Significance</th>
<th>Performance Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(1 = Highest, 4 = Lowest)</td>
</tr>
<tr>
<td>1 Knowledge</td>
<td>Acquisition</td>
<td>NSD</td>
<td>C G B S</td>
</tr>
<tr>
<td>2 Knowledge</td>
<td>Retention</td>
<td>NSD</td>
<td>S B G C</td>
</tr>
<tr>
<td>3 Near Transfer</td>
<td>NSD</td>
<td>B S G C</td>
<td></td>
</tr>
<tr>
<td>4 Far Transfer</td>
<td>Significance</td>
<td>S G C B</td>
<td></td>
</tr>
</tbody>
</table>

at $p < .05$

Note: NSD = No significant difference, C = Control group receiving no questions, S = Domain-specific only treatment group, G = Domain-general only treatment group, and B = domain-specific and domain-general treatment group.
Engagement through questions

Both passive engagement (Craig, Gholson, Brittingham, Williams, & Shubeck, 2012; Craig, Graesser, Sullins, & Gholson, 2004; Craig, Sullins, Witherspoon, & Gholson, 2006) and active engagement (Papadopoulos, Demetriadis, Stamelos, and Tsoukalas, 2011; Wilson & Smetana, 2011) through questions has support in the literature. Results from the current study suggest that while passive engagement may be sufficient for knowledge acquisition, it is less effective in support of knowledge encoding from short-term memory to long-term memory for latter application in near and far transfer problem solving.

Prior knowledge and learner ability

The literature suggests prior knowledge and learner ability factor into knowledge recall and comprehension (Martin & Pressley, 1991; Ozgungor and Guthrie, 2004), Willoughby, Wood, & Khan, 1994; Woloshyn, Paivio, & Pressley, 1994; Woloshyn, Pressley, & Schneider, 1992). It also suggests that questions are more effective when questions are related to the prior knowledge of the learner (Ozgungor & Guthrie, 2004). A post-hoc analysis of data from the current research examined pretest instruction assessment scores for all participants who completed the knowledge pretest (N = 120) as well as posttest instruction scores for participants who completed the posttest (N = 86) using participant major as the covariate. The three majors were general social sciences, teacher preparation and human services. Because the topic of instruction was directly related to interpersonal communications, it is not unrealistic to suggest that participants within human services may have more prior knowledge and ability. While ANCOVA
analysis of pretest scores when major was used as the covariate suggested prior knowledge influenced performance with human services majors outperforming general social science majors and teacher preparation majors, $F(1, 119) = 10.632, p < .05$), posttest scores found no significant differences in performance, $F(1, 85) = .064, p > .05$).

What may be concluded from the post-hoc analysis was prior knowledge differences may provide an initial learner advantage, but well-designed instruction through the use of domain-specific questions may mediate this advantage producing equivalent performance across learners of differing abilities.

**Near versus Far Transfer in Comparison Studies**

Comparison studies suggested more domain-general questions produced longer learning gains over time associated with near knowledge transfer (King, 1992); however, not addressed in the study were differences in knowledge gains based upon question type. Other studies suggested a combined interaction between domain-general and domain-specific questions dependent upon application associated with knowledge retention and problem-solving near transfer (Kramarski & Zoldan, 2008; Bulu & Pederson, 2010; Chen, 2010). What was not specifically addressed in these studies was the impact of question types on far transfer. The current study added to the literature by investigating the latter. While support may be derived from the data suggesting that both question types influence retention and near transfer (See Table 10), domain-specific questions may more greatly influence long-term gain in transfer for solving moderately ill-structured problems.

**Conclusion**
This study investigated the use of different types of question prompts and their impact on knowledge acquisition, retention, near problem-solving transfer and far problem-solving transfer. Question types included domain-specific (or content-related) questions, domain-general (or metacognitive) questions and combined domain-specific/domain-general question prompts when compared against a control group receiving no questions. Question development was based upon empirically supported models (Graesser and Person, 1994; Zimmerman, 1998). The study used widely recognized content applicable to the instruction (Carkhuff, 2000a, 2000b, 2009) and presented instructional materials and assessments in a context representative of how such materials would be delivered in a classroom context or distance environment (Bangert-Downs, Kulik & Kulik, 1992) while controlling for challenges associated with question research (Andre, 1979). Overall findings suggested no significant differences on knowledge acquisition, retention and near transfer, but did suggest significance on far transfer when domain-specific questions types were included as part of the instructional sequence. Results may be used to develop more robust instructional strategies in knowledge encoding, retrieval and application in support of problem-solving through the use of question prompts.

**Application to Instructional Design**

The current study has utility in that it yields several heuristics for application to instructional design when designing from a generative learning theory perspective:

1. Incorporating domain-specific, content related questions into instructional sequences may promote overall gains in knowledge retention and near and far problem-solving transfer when included at the end of instructional sequences.
2. Intentional question design using question frameworks that have empirical support may produce stronger encoding of results of content into long-term memory and retrieval of that knowledge for near and far problem-solving transfer.

3. To assess the effectiveness of the instruction when using questioning strategies, instructional design assessments that go beyond knowledge retention and near transfer problem-solving by developing assessments that are administered in a differing context of instruction and using new problem-contexts.

However, there were several limitations in the current study that should be considered when implementing these heuristics and that future research should address.

**Limitations**

While the results supported the use of questions as a generative strategy for knowledge retention and problem-solving with domain-specific questions producing greater gains, several threats to external and internal validity existed.

**External validity.**

Challenges to external validity were deemed minimal because the instructional materials were widely used and appropriate to the target population. Further, the research design replicated as closely as possible a realistic instructional setting, making results more generalizable outside of the research context. One limitation associated with external validity is the inclusion of only one domain-specific question type within the domain-specific question framework (Graesser & Person, 1994); i.e., example questions. Results may be different when other questions are examined.
**Internal validity.**

Several factors may have influenced the internal validity of the study. First are participant attrition and diffusion of treatment. Because of attrition, data analysis only compared data for participants who completed all phases in order to mediate this variable. Diffusion of treatment was also a possibility due to the extended research period. However, because the research was designed to replicate the classroom instructional environment in which learners may interact with each other over time, diffusion of treatment could also be deemed the natural consequences of learning. Also, different results might be obtained if the sequencing of domain-general and domain-specific questions is reversed. Finally, the extended instructional delivery and data collection time may be confounding variables that impact the degree to which each question type impacts cognitive learning as a factor of post-metacognitive processing.

**Future Research**

For generalizability, research using differing question types within the frameworks used in this study need to be considered as well as different domains of instruction and learner populations. Future research may need to compare these results to the more traditional single intervention studies to assess any concerns with post-metacognitive processing. Time on task studies may add clarifying data to the results. Lastly, a longitudinal study may enhance the findings through implementation and assessment of different problems and contexts at a point farther distanced from the final simulation assessment to see if these gains are maintained over time.
References


Andre, T. (1979). Does answering higher-level questions while reading facilitate


do 10.1037//0022-0663.88.3.508


0663.85.4.642


A. Instructional Materials

Unit 1 Instruction

Welcome to unit 1 on the skill of responding. Responsive communication, or responding, facilitates the helpees' exploration of where they are in relation to their worlds. We attend, observe and listen to the helpees so that we can respond to them.
RESPONSIVE COMMUNICATION

We Respond to

Content – Ingredients of the experiences
Feeling – Affect attached to these experiences
Meaning – Reason for these experiences

Responding facilitates helpee exploring. When the helper responds accurately to the helpees, then the helpees explore where they are in relation to their worlds. Responding both stimulates and reinforces helpee exploring. It lays the base for personalizing to facilitate helpee understanding.

Responding involves responding to content, feeling and meaning. We respond to content in order to clarify the ingredients of the helpees' experiences. We respond to feeling in order to clarify the affect attached to the experience. We respond to meaning in order to clarify the reason for the feeling.
We respond first to the most obvious part of the helpees' expressions – the content. Having an accurate content data base enables us to establish meaning. In turn, this responsive base will enable us to personalize understanding and initiate acting.
FORMULATING RESPONSES TO CONTENT

Four characteristics of a good response to content:

Paraphrases not parrots
Specific and not vague
Brief and not long
Non-judgmental and not judgmental

There are four characteristics of a good response which you should know:

Responses to content should paraphrase the original expression and not “parrot.” By using different words to express the same content, paraphrasing adds a fresh perspective and facilitates exploration.

Responses to content should be specific, not vague. Vague responses do not facilitate exploration. Specific responses help clarify the experience which does facilitate this exploration.

Responses to content should be brief without losing specificity.

Responses to content should be nonjudgmental. A judgmental response adds a new conclusion, interprets the other person’s behavior as good or bad, or distorts what the person actual said.
A good format for responding to content is: "You’re saying_______." Or "In other words, __________."  

Let’s look at some examples.
SPECIFIC VERSUS VAGUE RESPONSES

Example
Student: "I'm so tired, I don't know what to do. I try to keep up with everything: work, home, classes. But each day seems so long, by noon I'm already too tired to cope.

a. You're saying you're tired.
   ___ Specific ___ X ___ Vague

b. You're saying there's so much to do that you don't have the energy to do it all.
   ___ X ___ Specific ___ Vague

Take a few seconds to read the example.

In this example, response a) represents a vague response and b) is the more specific and appropriate response.
PARAPHRASED VERSUS PARROTED RESPONSES

Example
Boyfriend: "Well, she's finally talking to me again. It's not the same but at least we're talking. I still feel awful about the things she thinks I said about her. I would never say or do anything to hurt her. I think too much of her."

a. You're saying she's finally talking to you even though it's not the same. You feel awful about what she thinks you said because you would never do anything to hurt her.

___ X___ Parrot __ Paraphrase

b. You're saying that you are slowlystraightening out the misunderstanding and you're talking to each other again.

___ Parrot ___ X___ Paraphrase

In this example, a) parrots the response and b) paraphrases the response.
BRIEF VERSUS LONG RESPONSES

Example

Employee: “Damn, I blew it again! I just don’t seem to be able to think before I open my big mouth. This job was going so smoothly until I got mad and told off my supervisor.”

a. You’re saying you messed up by exploding at your supervisor.
   ____ Too Long ____ Brief and Specific

b. You’re saying that everything was going well but you went and messed it up by mouthing off just like you always do and now, since you went and yelled at the supervisor, it isn’t so good at work and you sound like you could have lost your job.
   ____ Too Long ____ Brief and Specific

The first response represents a brief and specific response when compared to the second response that would be considered too long and loses specificity.
NON-JUDGMENTAL VERSUS JUDGMENTAL RESPONSES

Example

Grandparent: "Oh leave me alone. I know what I'm supposed to do but I'll be damned if I'll sit around and let someone else tell me what do to."

a. You're saying you know better than they do and that gives you the right to ignore them.

X__ Judgmental ______ Nonjudgmental 

b. You're saying you don't want to be pushed around.

____ Judgmental ______ Nonjudgmental __X__ 

The first response is a judgmental response whereas the second is more appropriate without judging the helpee.

This ends unit 1 of instruction. Now that you are finished with this section, please take quiz 1.
Just as we showed our empathy for the helpee's by responding to the content of their expressions, we may show our understanding of their experiences by responding to the feelings that they express.

Responding to feelings is the most critical single skill in helping because it reflects the helpee's affective experience of themselves in relation to their worlds.
DEVELOPING INTERCHANGEABLE RESPONSES

Understanding what the helpee has expressed — at the level it was expressed to us — constitutes the basis of communication and makes helping possible.

A response is interchangeable with feelings if both the helper and the helpee express the same feeling.

Reflect the feelings back: "You feel _____".

It certainly is not too much to expect that we be able to communicate to the helpee what the helpee has communicated to us. Understanding what the helpee has expressed — at the level it was expressed to us — constitutes the basis of communication and makes helping possible. A response is interchangeable with feelings if both the helper and the helpee express the same feeling.

The first response to feeling that we formulate should involve very simple feeling words to reflect the feelings expressed by the helpee. We may do this by using a simple “You feel _____” formulation. Before we move to more complex communication, we must learn to formulate simple responses.
RESPONDING TO FEELING

Expressions of feelings are both verbal and non-verbal
  Tone of Voice
  Posture
  Facial Expressions
Explicitly show our level of understanding
Allows the Helpee to evaluate as helpers
Allows us to check our own accuracy of understanding

Helpees may express verbally and directly those feelings that dominate them, or the helpees may express their feelings indirectly, through their tone of voice or by describing the situation in which they find themselves. To respond to the helpee's feelings, we must first observe personal behaviors. In particular, we must pay attention to tone of voice and postural and facial expressions. These self-expressions will tell us a great deal about how helpees experience themselves and will be valuable clues to their inner feelings. Next we must listen carefully to the helpee's words.

Whether the helpee's expressions are direct or indirect, our goal, as helpers, will be to explicitly show the helpees our level of understanding of their feelings by formulating a response to their feelings. This will give the helpees a chance to check out our effectiveness as helpers. It will also give us a chance to check our own level of accuracy.
THE EMPATHY QUESTION

If I were the helpee and I were doing and saying these things, how would I feel?

We summarize what we see and hear based on our observations and helpee’s expressions, by:
- Identifying the general feeling category (happy, angry, sad, confused, scared, strong or weak)
- Intensity of the feeling (high, medium, low)

Then:
Select a feeling word appropriate to the general category and intensity

Responding to feelings involves asking and answering the empathy question and then developing interchangeable responses to feelings.

We do this by asking ourselves the question, “If I were the helpee and I were doing and saying these things, how would I feel?”

Now that we have observed and listened, we must summarize what we have seen and heard with a response that indicates the helpee’s feelings.

In answering this question, we first identify the general feeling category (happy, angry, sad, confused, scared, strong or weak) and the 4-intensity of the feeling (high, medium or low). Then we select a feeling word or phrase that fits the feeling category and level of intensity and check the feeling expression with our observations to determine if it is appropriate for the helpee involved.

Let’s look at an example.
DEVELOPING INTERCHANGEABLE RESPONSES

Tom: “Things are not going so good for me. Not in school. Not with my girl. I just seem to be floundering. I fake it every day, but inside I’m really down because I’m not sure of what I want to do or where I want to go. Sometimes I just think I’m not going to make it”

If I were the helpee and I were doing and saying these things, how would I feel?

Take a few seconds to read Tom’s statement and ask yourself the empathy question.

The main cue to Tom’s feelings is that he says he feels down. He’s down about school and down about his relationship with his girl. He’s also floundering. If we were in his position, we might very well feel sad. Also, his energy level appears low. Things seem pretty hopeless. He feels helpless in the face of everything. He just does not know where he is going. Tom verbalizes this feeling when he says, “Sometimes I just think that I’m not going to make it.”

We ask ourselves, “How would I feel if I were Tom?” For example, we might feel sad, so we formulate the response in a way that communicates directly how he feels: “You feel sad.”
DISCRIMINATING FEELING RESPONSES

Some reasons that a response to feeling may not be accurate are:

- The category is wrong
- The intensity is off
- The response comes from the helper's frame of reference, not the frame of reference of the helpee
- It does not use a feeling word

Recapping, knowing if a feeling word is accurate or inaccurate prepares you to make better responses to feelings.

Some reasons that a response to feeling may not be accurate are:

- The category is wrong
- The intensity is off
- The response comes from the helper's frame of reference, not the frame of reference of the other person
- It does not use a feeling word

On the next three screens we will take a look at examples of both accurate and inaccurate responses along with the reason for the rating.
DISCRIMINATING FEELING RESPONSES

Example
Roommate: "I just don’t understand it! I walked into my room this afternoon and my roommate totally ignored me! I asked [sic] her what was wrong; she looked at me and said, 'You should know,' then left. I felt about an inch tall. And, no one else will tell me anything, either. What am I supposed to do if no one will let me in on it?"

Response: You feel that they're keeping something from you.
Rating: ___ (+) __X__ (-)
Reason: No feeling word

Take a moment to read this scenario. In this exercise, our response to the roommate is inaccurate, indicated by the minus sign because it contains no feeling word.
DISCRIMINATING FEELING RESPONSES

Example
Roommate: "I just don't understand it! I walked into my room this afternoon and my roommate totally ignored me! I asked [sic] her what was wrong; she looked at me and said, 'You should know,' then left. I felt about an inch tall. And, no one else will tell me anything, either. What am I supposed to do if no one will let me in on it?"

Response: You feel furious!
Rating: _X_ (+) (-)
Reason: Accurate category and intensity

Using the same scenario, a more accurate response that reflects the feeling and category and intensity expressed by the roommate is shown here.
DISCRIMINATING FEELING RESPONSES

Example
Roommate: "I just don't understand it! I walked into my room this afternoon and my roommate totally ignored me! I asked [sic] her what was wrong; she looked at me and said, 'You should know,' then left. I felt about an inch tall. And, no one else will tell me anything, either. What am I supposed to do if no one will let me in on it?"

Response: You feel petrified.
Rating: _____ (+) ___X__(-)
Reason: Inaccurate category and intensity

And again using the same scenario, both the category and intensity are inaccurately reflected back to the roommate.
Remember, feelings are about content. The feeling gives emotional meaning to the helpee’s’ expressions of their experiences. Content is used to make the feeling meaningful.

However, responding to the feeling or the content of the helpee’s expressions is not enough. Our response must be enriched by combining the feeling together with the content for the helpee’s to develop a response to meaning that communicates both feeling and content.
DEVELOPING INTERCHANGEABLE RESPONSES

A response to meaning is not complete until it communicates both feeling and content.

For example:

"You're saying that _____" expresses the content of the helpee's expression
"You feel that _____" expresses the helpee's feelings,
"You feel _____ because ______" captures both the feeling and the content.

Responding to the meaning emphasizes making interchangeable response that capture both the feeling and content of the expressions.

For example, whereas:

"You're saying that _______________" expressed the content of the helpee's expression and "You feel that_______" expressed the helpee's feelings
"You feel _____ because___________" captures both the feeling and the content.

Whereas "You feel sad" expresses the helpee’s feelings with the passing of a loved one, "You feel sad because she was the most important person in the world to you and now she’s gone" captures the meaning of the feeling and content.

This is an effective format for a complete interchangeable response to the helpee.
DEVELOPING INTERCHANGEABLE RESPONSES

Typical Errors in developing responses to meaning;

- Content too long
- Content parroted
- Content too vague
- Content is judgmental

- Feeling category inaccurate
- Feeling intensity inaccurate
- Feeling word inappropriate for the person being responded to
- Feeling experience is described ("feel that", "feel like") no feeling word is included

If you have the ability to recognize good and bad responses, you will be able to give yourself feedback on your own future responses and improve your responding skills. By avoiding the typical errors in responding to both content and meaning, we develop good interchangeable responses. Remember, these common errors, again, are:

Content too long (keep responses brief)
Content parroted (paraphrase your response)
Content too vague (be specific)
Content is judgmental (add or subtracts content)

Feeling category inaccurate
Feeling intensity inaccurate
Feeling word inappropriate for the person being responded to

Feeling experience is described ("feel that", "feel like") no feeling word included

Let’s look at some examples:
DISCRIMINATING INTERCHANGEABLE RESPONSES

Example

Job Hunter: "Most employees want managers to be tough. You're supposed to jump on people all the time. I'm just not that way."

Response: You feel frustrated because employers look for a quality in their managers that you don't have.

Error(s): None, interchangeable.

Take a moment to read this scenario and response.

In this exercise, our response to the job hunter represents a good interchangeable response to both feeling and content.
DISCRIMINATING INTERCHANGEABLE RESPONSES

Example

Job Hunter: "Most employees want managers to be tough. You're supposed to jump on people all the time. I'm just not that way."

Response: You feel good because you are different.

Error(s): Wrong category feeling, content too vague.

In this exercise, the response contains the wrong category feeling and the content is too vague.
DISCRIMINATING INTERCHANGEABLE RESPONSES

Example

Job Hunter: "Most employees want managers to be tough. You're supposed to jump on people all the time. I'm just not that way."

Response: You feel scared because no one will hire you as a manager.

Error(s): Wrong intensity feeling; not interchangeable – adds content.

In this example, the response the wrong intensity for the feeling and adds content that may be heard as being judgmental by the helpee.
DISCRIMINATING INTERCHANGEABLE RESPONSES

Example

Job Hunter: "Most employees want managers to be tough. You're supposed to jump on people all the time. I'm just not that way."

Response: You feel like you're being blocked because employers ask for managers to be tougher than you are.

Error(s): No feeling word – experience only.

In this example, the response contains no feeling word and reflects the experience associated with the feeling only.
DISCRIMINATING INTERCHANGEABLE RESPONSES

Example

Job Hunter: "Most employees want managers to be tough. You’re supposed to jump on people all the time. I’m just not that way."

Response: You feel discouraged because the business world is such a dog-eat-dog place.

Error(s): Content not interchangeable.

In this example, the response is not interchangeable with the experience because it adds or subtracts information.
Congratulations, you have completed this unit 2 of the skill of responding. Now that you have completed unit 2, please take quiz 2.
B. Treatment Questions and Administration

The treatment questions used for each unit of instruction are detailed below and categorized according to the concept of the instructional unit, the question type (domain-general or domain-specific). Citations within the questions were not included in the materials presented to the participants but are included below to indicate the direct source from which they were excerpted when applicable. Questions excepted directly from source materials were used by permission.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Concept</th>
<th>Question Type</th>
<th>Question</th>
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<tbody>
<tr>
<td>Unit 1</td>
<td>Responding to Feeling</td>
<td>Domain General</td>
<td>Responding to content involves helping to clarify the other person’s experiences. Think of the last time you had an argument with a friend (or your mother/ father/ employer). Think about what the argument was about, what you did or said, and what the other person did or said (Carkhuff, 2009, Exercise 17) Answer the following questions: 1 - What was your understanding of what the conflict was about from the other person’s perspective? 2 - How did you communicate this understanding?</td>
</tr>
<tr>
<td>Unit</td>
<td>Concept</td>
<td>Question</td>
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<tr>
<td>Type</td>
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<tr>
<td>Domain-Specific</td>
<td>Write a statement a helpee might make describing a situation or problem they are experiencing. Then, give a good example and bad example for each of the four attributes that make up a good response to content.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Responses should include the following response types: Paraphrase not parrot, specific not vague, brief not long, non-judgmental not judgmental.
<table>
<thead>
<tr>
<th>Unit</th>
<th>Concept</th>
<th>Type</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 2a</td>
<td>Responding</td>
<td>Domain- feeling</td>
<td>Responding to feeling involves being able to identify the affect of the helpee’s experiences.</td>
</tr>
<tr>
<td></td>
<td>to Feeling</td>
<td>General</td>
<td>Recall the experience you described in response to the conflict you experienced.</td>
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<td></td>
<td>1 - What was the dominant emotion you were expressing?</td>
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<td>2 - How strong was that emotion?</td>
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<td>3 - How could you have stated your emotion directly to the other person using different words?</td>
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<td>4 - What was the dominant emotion was the other person expressing?</td>
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<td>5 - How strong was that emotion?</td>
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<td>6 - How could you have stated that emotion directly to the other person using different words?</td>
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<tr>
<td>Unit</td>
<td>Concept</td>
<td>Question</td>
<td>Question Type</td>
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<td></td>
<td>Write a statement a helpee might make describing a situation or problem they are experiencing. Then, write a good response to feeling for that statement and a bad response to feeling, making certain to address the factors a good response should consider</td>
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</tbody>
</table>

(Answer should contain a feeling category and feeling intensity indicator, contain a feeling word, and come from the helpee’s frame of reference)
Unit 2b Responding to Meaning

Domain-Responding to Meaning

General

Responding to meaning involves helping to clarify the reason behind the other person’s experiences. Recall the experience you described in response to the conflict you experienced (based on Carkhuff, 2009, Exercise 17).

1 - What was the reason for your response?

2 - What the reason for the other person’s response?

Domain-Specific

Write a statement a helpee might make describing a situation or problem they are experiencing. Then, write an interchangeable response that includes feeling, content, and meaning.

Answer should be in the format: You feel _______ because _________, and meet the criteria for both good responses to content and good responses to feeling.
C. Knowledge Pretest and Posttest Assessment

The instructional assessment will be used to assess knowledge retention and near transfer. It also serves as a baseline to establish prior knowledge. Test items are based upon the learning objectives developed from Carkhuff (2000b, 2009). Sections I and II are the knowledge items; section III will be used to measure near transfer. Shown with the assessment are the correct answers used to score the results. Answers will not be included at the time of delivery of the assessment.

Section I - Fill in the blanks:

What are the four attributes of a good response to content?

1. Paraphrases the helpee’s statement
2. Is brief
3. Is specific
4. Is nonjudgmental

What are the four attributes of a good response to feeling?

1. Contains a feeling word
2. The feeling word is accurate to the feeling category expressed by the helpee
3. The feeling word is accurate to the intensity associated with that feeling
4. It comes from the helpee’s frame of reference

Section II - Mark all that apply to each question

Responding to meaning:

a) Capture the content
b) Is a verbatim recall of what the helpee said
c) Asks a meaning question
d) **Includes the helpee’s feelings**

Identify the format for responding to meaning:

a) “Why do you feel that way?”

b) “Tell me more about it.”

c) “You’re saying that __________.”

d) “Don’t worry about it. It will be better tomorrow.”

e) “You feel __________ because __________.”

The “empathy question” that we might ask ourselves before making a response is:

a) “What happened to the helpee during childhood?”

b) “How would I feel if I looked and sounded like the helpee?”

c) “Why does the helpee do those things?”

Section III – Ranking

Directions

Rate each helper response using the following scale:

1 – Very Ineffective

2 – Ineffective

3 – Minimally Effective

4 – Very Effective

5 – Extremely Effective

1. “My car broke down again and it’s going to cost 200 bucks to fix it. Damn! I can’t afford that. I don’t know what I’m going to do, but I’ll have to figure something out – fast!”
1. “Your car broke down again and you don’t know how you’ll pay to get it fixed.

2. “Cars can be such a problem. I know a really good mechanic who could give you a break on parts.

3. “You’re really frustrated because your car needs more costly repairs.”

2. “You’ll never believe what just happened! I was walking back to the office after lunch and saw this guy grab at his chest and fall to the sidewalk. I knew right away he’d had a heart attack. I didn’t have time to get scared. I just started doing CPR. I’m glad I took a CPR class last year! This other guy helped me do it until an ambulance came. I sure hope the man makes it!”

1. “My day hasn’t been nearly as exciting as yours.”

2. “You used your CPR skills and possible saved a man’s life.”

3. “You feel relieved because the CPR seemed to work.”

3. “I won’t be shut away in any damn nursing home. Those kids think they know what’s right for me. Well, they don’t! I can take care of myself. Maybe I forget things once in awhile but that doesn’t make me a senile old coot. I’d like to see how they get along when they’re 76. I’m not ready to be shut away and forgotten. Never!”

3. “You’re really angry at your kids for presuming they know what’s best for you.”

1. “It sounds like you kids love you and want to do what’s best for you. Maybe you’re misunderstanding them.”
c. "Your kids are talking about sending you to a nursing home and you don't think you need to go."
D. Unit Assessments

Unit 1 Assessment

Following the audiovisual presentation, participants in all treatment groups will complete exercises from Carkhuff (2009, Exercises 18-21) to assess their comprehension of the concept. These items are presented below. Items follow the same format as the worked examples in the instructional sequence.

Instructions: Presented below are a set of scenarios and potential responses. Read the scenario and determine the appropriateness of the response based upon the attribute described. Mark the correct response.

Scenario:

Mother: “My children are starting to get out of hand. They’ve gotten so they don’t listen to me or my husband unless we threaten them. And who wants to always have to threaten their kids?”

a) You’re saying your kids are too wild.

_____ Specific ______ X__ Vague

b) You’re saying your children don’t behave unless you or your husband threaten them.

____ X__ Specific ______ Vague

c) You’re saying you don’t want to have to threaten your kids to get them to be obedient.

____ X__ Specific ______ Vague

d) In other words, your children don’t obey until you threaten them in some way.
e) In other words, you don’t want to have to do this.

f) You’re saying you don’t like this behavior.

Scenario:

Employee: “I’m stuck. My boss refused to let me do the new project my way. I didn’t check until I’d done 40 hours of work and now I’ve got to redo the whole thing by Monday morning.”

a. You’re saying that you’re stuck because your boss refused to let you do the project your way and now you’ve got to redo the whole thing by Monday morning.

b. You’re saying that you have to invest all that effort again.

c. You’re saying that you didn’t check in time and now you’re in a tight spot.

Scenario:

Student: Thanks for all the help you’ve given me this semester. I was pretty mixed up when I got here, but now I really feel I’ve got it together. I’m passing all my courses for the first time.”

a. You’re saying you’re succeeding academically and I made a difference.
b. You're saying that you appreciate my help this semester. You've gotten it
together and you are passing all your courses.

\[ \text{\underline{\text{Parrot}}} \quad \text{\underline{\text{Paraphrase}}} \]

c. You're saying you feel pleased with the effect my assistance has made on
your schoolwork.

\[ \text{\underline{\text{Parrot}}} \quad \text{\underline{\text{Paraphrase}}} \]

Scenario:

Alcoholic: “I just can’t give up my drinking. I’ve tried and tried and I can’t. I get
some money in my pocket and I have good intentions but I just buy more beer and
wine.”

a. You’re saying you can’t quit drinking even though you’ve tried. You always
spend your money on booze.

\[ \text{\underline{\text{Too Long}}} \quad \text{\underline{\text{Brief and Specific}}} \]

b. In other words, you always buy booze even when you’re trying to quit.

\[ \text{\underline{\text{Too Long}}} \quad \text{\underline{\text{Brief and Specific}}} \]

c. You’re saying you can’t give up the beer and wine. Even though you try not
to buy any, it seems like it you get money you go to the store and that’s what
you spend your money on. Even having good intentions doesn’t make a
difference with you.

\[ \text{\underline{\text{Too Long}}} \quad \text{\underline{\text{Brief and Specific}}} \]

d. In other words, you can’t quit drinking. You try and try and yet it seems that
when you get money that’s how you spend it. Even when you have good
intentions and you’re trying to quit, you buy booze with your money.
e. You’re saying giving up drinking isn’t easy for you no matter how good your intentions.

Too Long ____ Brief and Specific

Scenario:

Student: “That damn teacher! She doesn’t even look at my work. Her comments are so ridiculous. And she’s picky about such little things: misspelled words and poor handwriting. Those have nothing to do with what I know about a subject.”

a. You’re saying the teacher judges your work on the wrong qualities and it’s unjust.

Judgmental  X  Nonjudgmental

b. You’re saying you’re too dumb to do high quality written work.

Judgmental  X  Nonjudgmental

c. In other words, you think the teacher is pretty unfair to you. You think she should take the broad view instead of being so picky.

Judgmental  X  Nonjudgmental

d. You’re saying it’s easier to blame the teacher than to take responsibility yourself for details.

Judgmental  X  Nonjudgmental

Unit 2 Assessment

Following the audiovisual presentation, participants in all treatment groups will complete exercises from Carkhuff (2009, Exercise 31) to assess their comprehension of the concept. These items are presented below. Shown with exercises are the correct
answers as supplied by Carkhuff that will be used to score the results by independent raters using the rubric in the methodology. Answers will not be included at the time of delivery of the assessment.

Introduction
If you have the ability to recognize good and bad responses, you will be able to give yourself feedback on your own future responses and improve your responding skills.

Instructions
Select the response(s) that are interchangeable for each statement. When a response is not interchangeable, identify the errors in the response.

Example
Job Hunter: “Most employees want managers to be tough. You’re supposed to jump on people all the time. I’m just not that way.”

a. You feel frustrated because employers look for a quality in their managers that you don’t have.

   Error(s): None, interchangeable.

b. You feel good because you are different.

   Error(s): Wrong category feeling, content too vague.

c. You feel scared because no one will hire you as a manager.

   Error(s): Wrong intensity feeling; not interchangeable – adds content.

Exercises
Scenario:
Boss: “I’m fed up! No one around here takes me seriously. The next person who comes in late is fired and I mean it.”

a. You feel appalled because people don’t believe you’ll act on what you threaten.

   Error(s): Wrong feeling word intensity

b. You feel mad because employees are no good these days.

   Errors(s): Content not interchangeable; judgmental

c. You feel irritated because people don’t pay any attention to what you say.

   Error(s): Good response

d. You feel confused because the people here don’t listen to you.

   Error(s): Wrong feeling word category

e. You feel angry because of this.

   Error(s): Content is vague

Scenario:

Seamstress: “Hey, this is really excellent. The quality of this material is exactly what I’ve been looking for. Now, I can finish my suit.”

a. You feel pleased that the material is good.

   Error(s): Content is vague

b. You feel that the material is perfect for your suit.

   Error(s): No feeling word

c. You feel thrilled because the quality of the material is exactly what you’ve been looking for. Now, you can finish your suit.
d. You feel hopeful because this material is of such high quality. It’s quite excellent material and because the material is so good, you can complete the suit you’ve been working on. You’ve been looking for material like this so it’s really great to find it.

>Error(s): Response it too long.

e. You feel happy because the material is excellent for completing your suit.

>Error(s): Good response

Reason:
E. Far Transfer Simulation Role-Play Script

Far transfer is measured through participant responses to an online role-play simulation (Adcock, Duggan, & Perry, 2010) in which the participant acts as the helper in a helper-helpee relationships. The helper interacts with an animated agent serving as the helpee. The helper selects from a set of three responses an initiating dialogue to being the interaction. The helpee response is based upon the selected initiating dialogue. The helper is then presented with a list of three possible responses to the helpee’s statement and the interaction sequence continues until a termination point is reached. Below are the possible interactions. Interactions start with Node 0 and then helper initiating the dialogue. Interactions have been developed by subject matter experts in the health and human services fields using the Carkhuff (2000a) rating system. The next node is determined from the helpee response and corresponds to the columns labelled Next A, Next B, and Next C. A node value of ‘99’ signals a terminating point of the interaction.
<table>
<thead>
<tr>
<th>Node</th>
<th>Agent</th>
<th>Choice A</th>
<th>Next</th>
<th>Choice B</th>
<th>Next</th>
<th>Choice C</th>
<th>Next</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Are you next?</td>
<td>1 Come on in.</td>
<td>1</td>
<td>Hello, Georgia.</td>
<td>1</td>
<td>Have a seat.</td>
<td>1</td>
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<tr>
<td>1</td>
<td>Thanks.</td>
<td>Sure, Glad to</td>
<td>52</td>
<td>It sounds like</td>
<td>2</td>
<td>Why do you want to do</td>
<td>42</td>
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<td></td>
<td>(Appears</td>
<td>help. Let me find</td>
<td></td>
<td>you're under</td>
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<td>that?</td>
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<td></td>
<td>nervous,</td>
<td>the forms for you</td>
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<td>some stress</td>
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<td></td>
<td>wringing</td>
<td>to sign.</td>
<td></td>
<td>right now.</td>
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<tr>
<td></td>
<td>hands, looks down) I need you to sign my drop form, so I can drop my classes.</td>
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<tr>
<td>2</td>
<td>Well, I really miss my family, and I haven't seen my friends in ages. I can get a job at the local grocery store, see my family and friends.</td>
<td>3</td>
<td>You sound unhappy</td>
<td>3</td>
<td>You sound upset.</td>
<td>3</td>
<td></td>
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<tr>
<td>Node</td>
<td>Agent</td>
<td>Choice A</td>
<td>Next</td>
<td>Choice B</td>
<td>Next</td>
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<td>3</td>
<td>Yeah. I haven't been away from home this long before, and last night I learned my grandma had died. I didn't even get the chance to say goodbye, all because I was here instead. (Starts to cry).</td>
<td>You poor thing. That's terrible.</td>
<td>60</td>
<td>You're upset and feeling guilty about not being with her because you were here you were here attending your classes.</td>
<td>61</td>
<td>You regret not having called her back before she died, and now you are considering dropping all of your classes to go home to be with your family.</td>
<td>63</td>
</tr>
<tr>
<td>6</td>
<td>Yeah. I like my classes, but I really miss my family and friends.</td>
<td>Well, you could use e-mail, I.M., letters, cards, telephone. There are all sorts of ways to keep in touch with folks without you</td>
<td>38</td>
<td>You sound uncertain about what to do next.</td>
<td>9</td>
<td>Georgia, it sounds like you want to work this out. A place to start might be to find a way to spend a brief amount</td>
<td>9</td>
</tr>
<tr>
<td>Node</td>
<td>Agent</td>
<td>Choice A</td>
<td>Next</td>
<td>Choice B</td>
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<td>7</td>
<td>(starts to smile)</td>
<td>You sound uncertain about</td>
<td>Georgia, it</td>
<td>9</td>
<td>Why don't we find a way to</td>
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<td></td>
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<td>want to stay - I'm really do - I'm enjoying classes</td>
<td>sounds like you want to work this out.</td>
<td></td>
<td>get you home for a few days, then when you</td>
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<td></td>
<td>really do - I'm enjoying classes</td>
<td>sounds like you want to work this out.</td>
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<td>get you home for a few days, then when you</td>
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<td></td>
<td>but I also want to see my family.</td>
<td>sounds like you want to work this out.</td>
<td></td>
<td>get you home for a few days, then when you</td>
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</tbody>
</table>

having to quit school to do so. of time with your family without dropping all of your classes. Let's think of some ways to do this. Then we can make a step-by-step plan to help you finish the semester yet allowing you to spend time with your family.

You sound uncertain about working this out. A place to start might be to find a way to spend a day with your family.

Georgia, it sounds like you want to work this out. A place to start might be to find a way to spend a day with your family.

Why don't we find a way to get you home for a few days, then when you return, we'll work on a way to increase your classes.
Node  | Agent | Choice A                  | Next Choice B | Next Choice C | Next
---    | ---   | ---                      | ---           | ---           | ---
8      | (crying starts to decrease) I dunno. I guess I want to stay here. But I also want to go home for a while. | You sound uncertain about what to do next. | Georgia, it sounds like you want to work this out. | Why don't we find a way to get you home for a few days, then when you return, we'll work on a way
<table>
<thead>
<tr>
<th>Node</th>
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<th>Next</th>
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<th>Choice C</th>
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<td></td>
<td></td>
<td>to spend a brief amount</td>
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<td>to increase your contact</td>
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<td>of time with your family</td>
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<td>with folks</td>
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<td>without dropping all of your classes.</td>
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<td>Let's think of some ways to do this. Then we can make a step-by-step plan to help you finish the semester yet allowing you to spend time with your family.</td>
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9 Sure wish you could move my family closer to the college a little closer to home. (starts to say)
14 You're much more optimistic than you were when you first walked in.
11 You're much happier now that you see some options. Do you mean 6 hours one-way, or 6 hours?
<table>
<thead>
<tr>
<th>Node</th>
<th>Agent</th>
<th>Choice A</th>
<th>Next</th>
<th>Choice B</th>
<th>Next</th>
<th>Choice C</th>
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<tr>
<td>smile) This drive</td>
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<td>is 6 hours, and I</td>
<td>trip? Do you</td>
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<td>in contact with</td>
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<td>can lose a lot of</td>
<td>drive or catch</td>
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<td>your family</td>
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<td>study time</td>
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<td>a bus? If you</td>
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<td>driving back and</td>
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<td>catch a bus,</td>
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<td>funeral so you</td>
<td>you could</td>
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<tr>
<td>Its 6 hours one</td>
<td>So, what might</td>
<td>12</td>
<td>That's tough.</td>
<td>12</td>
<td>Why don't we</td>
<td>13</td>
<td></td>
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<tr>
<td>way, 12 hours</td>
<td>be a first step</td>
<td></td>
<td>Since driving</td>
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<td>find a way to</td>
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<tr>
<td>round-trip. I</td>
<td>toward increasing</td>
<td></td>
<td>is out, what</td>
<td></td>
<td>get you home</td>
<td></td>
<td></td>
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<tr>
<td>drive because the</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>closest bus can</td>
<td>your contact with</td>
<td>else could you</td>
<td></td>
<td></td>
<td>for a few days,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>only take me to</td>
<td>family and</td>
<td>do to increase</td>
<td></td>
<td></td>
<td>then when you</td>
<td></td>
<td></td>
</tr>
<tr>
<td>the next town,</td>
<td>friends back</td>
<td>your contact</td>
<td></td>
<td></td>
<td>return, we'll</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and someone</td>
<td>home?</td>
<td>with folks</td>
<td></td>
<td></td>
<td>work on a way</td>
<td></td>
<td></td>
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<tr>
<td>would have to</td>
<td>back home?</td>
<td></td>
<td></td>
<td></td>
<td>to increase</td>
<td></td>
<td></td>
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<tr>
<td>drive 45 miles to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>your contact</td>
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<tr>
<td>meet me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>with folks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(smiling) Ok.</td>
<td>Making a</td>
<td>14</td>
<td>That sounds</td>
<td>15</td>
<td>That's simple</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>That would</td>
<td>decision has</td>
<td></td>
<td>realistic.</td>
<td></td>
<td>to arrange.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>work, as long as</td>
<td>energized you,</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I go home for the</td>
<td>now that you see</td>
<td>a first step</td>
<td></td>
<td></td>
<td>Why don't we</td>
<td></td>
<td></td>
</tr>
<tr>
<td>funeral.</td>
<td>a way out.</td>
<td>toward</td>
<td></td>
<td></td>
<td>find a way to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>get you home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node</td>
<td>Agent</td>
<td>Choice A</td>
<td>Next</td>
<td>Choice B</td>
<td>Next</td>
<td>Choice C</td>
<td>Next</td>
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<tr>
<td></td>
<td></td>
<td>increasing</td>
<td></td>
<td>your contact</td>
<td></td>
<td>then when you</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>your contact</td>
<td></td>
<td>with family</td>
<td></td>
<td>return, we'll</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>with family</td>
<td></td>
<td>and friends</td>
<td></td>
<td>work on a way</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and friends</td>
<td></td>
<td>back home.</td>
<td></td>
<td>to increase</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>back home.</td>
<td></td>
<td>your contact</td>
<td></td>
<td>your contact</td>
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<tr>
<td></td>
<td></td>
<td>your contact</td>
<td></td>
<td>with folks</td>
<td></td>
<td>with folks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>with folks</td>
<td></td>
<td>back home.</td>
<td></td>
<td>back home.</td>
<td></td>
</tr>
</tbody>
</table>

12 I suppose I could make a list of ways to keep in touch, maybe even a schedule of when to do this.

14 Making a decision has energized you, now that you see a way out.

15 That sounds realistic. What might be a first step toward increasing your contact with family and friends to let them know what's going on. See how easy this is?

18 That should work. Just make a list then contact family and friends to let them know what's going on. See how easy this is? You solved your problem all on your own.

13 (sounds confused) Oh.

Ok. Thanks.
<table>
<thead>
<tr>
<th>Node</th>
<th>Agent</th>
<th>Choice A</th>
<th>Next</th>
<th>Choice B</th>
<th>Next</th>
<th>Choice C</th>
<th>Next</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>I guess I feel better. (smiles)</td>
<td>What great ideas!</td>
<td>17</td>
<td>That's a good start. What</td>
<td>17</td>
<td>That should work. Just</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>I'd like to be able to visit more, but</td>
<td>You sound</td>
<td></td>
<td>are some ways</td>
<td></td>
<td>make a list,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>that's just not gonna work.</td>
<td>excited by the prospect of</td>
<td></td>
<td>to keep in</td>
<td></td>
<td>then contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I suppose I could make a list of ways to keep in touch, maybe even a schedule of when to do this.</td>
<td>increasing your contact with the</td>
<td></td>
<td>family and</td>
<td></td>
<td>friends to let</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Well, I'd like to be able to visit more, but that's just not gonna work.</td>
<td>What great ideas!</td>
<td>17</td>
<td>That's a good start. What</td>
<td>17</td>
<td>That should work. Just</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>I could make a list of ways to keep in touch,</td>
<td>You sound</td>
<td></td>
<td>are some of the ways to keep in touch that come to mind?</td>
<td></td>
<td>make a list,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I suppose I could make a list of ways to keep in touch,</td>
<td>excited by the prospect of</td>
<td></td>
<td>the ways to</td>
<td></td>
<td>then contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I could make a list of ways to keep in touch,</td>
<td>increasing your contact with the</td>
<td></td>
<td>family and</td>
<td></td>
<td>friends to let</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I could make a list of ways to keep in touch,</td>
<td>folks back home.</td>
<td></td>
<td>them know</td>
<td></td>
<td>what's going</td>
<td></td>
</tr>
<tr>
<td>Node</td>
<td>Agent</td>
<td>Choice A</td>
<td>Next</td>
<td>Choice B</td>
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<td>Choice C</td>
<td>Next</td>
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<td>137</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>maybe even a</td>
<td>Can you think of</td>
<td></td>
<td></td>
<td>anything else?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>schedule of</td>
<td></td>
<td></td>
<td></td>
<td>when to do this.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>(sounds confused)</td>
<td>Oh.</td>
<td></td>
<td>Ok. Thanks.</td>
<td></td>
<td>Guess I'll see you after the funeral.</td>
<td></td>
</tr>
</tbody>
</table>
| 17   | (thinking) E-mail, IM, Telephone. | Sure. What your sister can't teach | 19 | That's a great start! You just came up with three possible ways to maintaining contact. What could probably your parents, I'm sure you can teach them. And ways to contact your else can you teach my parents maybe you can contact your friends and do? how to do some grandpa. It family without having to about my easier for you if make a long grandfather everyone could drive. So, though. Could be online. what do we do next? | 23 | I'm sure there | 20 | are other good ways of
Node Agent Choice A Next Choice B Next Choice C Next

<p>| | | | | | |</p>
<table>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

send him a card
or letter or call.

18 Uh. OK.
Thanks. Guess
I'll be seeing you
around.

19 (concerned) Then you need to
Well, maybe, but
find a way to
my grandpa
maintain
really doesn't
communication
like computers.
that works well
for both of you.

20 I dunno. That's
all I can think of
right now.

21 Oh, don't
worry about
that - he can
learn.

22 So, what is
your next
step?

23 Good Job!
Guess that's it
for today.

24 Well, you
have identified
several ways
to maintain
contact with
your family.
If you can't
think of
anything else,
then you're
<table>
<thead>
<tr>
<th>Node</th>
<th>Agent</th>
<th>Choice A</th>
<th>Next A</th>
<th>Choice B</th>
<th>Next B</th>
<th>Choice C</th>
<th>Next C</th>
<th>Choice</th>
<th>Next</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Uh, OK.</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>finished here today?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>(sounding relieved) That's certainly your choice.</td>
<td>25</td>
<td>Then writing and calling are fine ways to contact him.</td>
<td>26</td>
<td>So what will you do next?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>(thinking) I suppose I need to talk to my family and friends when I'm home for the funeral. I could even teach my family to how to IM. This would be great - to keep in touch - cheap</td>
<td>26</td>
<td>And then?</td>
<td>28</td>
<td>Good Job!</td>
<td>27</td>
<td>Guess that's it for today.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- I just don't have a lot of money for long distance phone calls.

24 Really? (sounds confused) OK. Guess I'll leave now. Bye. Thanks.

25 Yeah, thanks. Well, uh, thanks for your help.


27 (sounds confused) Oh. Ok. Thanks.
<table>
<thead>
<tr>
<th>Node</th>
<th>Agent</th>
<th>Choice A</th>
<th>Next</th>
<th>Choice B</th>
<th>Next</th>
<th>Choice C</th>
<th>Next</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>(Smiling). Set up</td>
<td>Perfect! That's all</td>
<td>29</td>
<td>Maintaining</td>
<td>31</td>
<td>That should</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a schedule for</td>
<td>you will need to</td>
<td></td>
<td>contact with</td>
<td></td>
<td>work.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IM-ing so folks</td>
<td>do.</td>
<td></td>
<td>family and</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>know when I'm</td>
<td>friends back</td>
<td></td>
<td>your goal.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>available, even</td>
<td>home was</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>teaching my</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>parents how to e-mail or even IM.</td>
<td></td>
<td></td>
<td>Your first step</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Maybe even</td>
<td>making a list</td>
<td></td>
<td>is that of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>grandpa! If not,</td>
<td>of ways to maintain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>then I can plan to send him a card</td>
<td>contact - inexpensive ways.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>once a week.</td>
<td>ways. Your intermediary step is to discuss this with family and friends when you're home for the funeral. Your final step is to make a schedule that</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Node</td>
<td>Agent</td>
<td>Choice A</td>
<td>Next A</td>
<td>Choice B</td>
<td>Next B</td>
<td>Choice C</td>
<td>Next C</td>
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</tr>
<tr>
<td>29</td>
<td>Oh. OK. Thanks</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
</tr>
<tr>
<td>30</td>
<td>Well, OK. I</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>(Smiling). I can do that.</td>
<td>OK, then. We're finished up here.</td>
<td>32</td>
<td>When do you think you could create this list and schedule so we could get together and talk it over?</td>
<td>34</td>
<td>Great. Give me a call if you think of anything else you need.</td>
<td>33</td>
</tr>
<tr>
<td>32</td>
<td>OK. Thanks</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
</tr>
<tr>
<td>33</td>
<td>OK. Thanks</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
<td></td>
<td>99</td>
</tr>
<tr>
<td>34</td>
<td>I can do that</td>
<td>OK. See you tonight and stop</td>
<td>35</td>
<td>OK. If you can do that, I can</td>
<td>36</td>
<td>That's not necessary. I'm</td>
<td>37</td>
</tr>
</tbody>
</table>
by sometime tomorrow morning.

<table>
<thead>
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<tbody>
<tr>
<td>35</td>
<td>Oh. OK. Thanks</td>
<td>meet with you A</td>
<td>99</td>
<td>sure you can  B</td>
<td>99</td>
<td>99</td>
<td>C</td>
</tr>
<tr>
<td>36</td>
<td>Thanks. I really appreciate this. I didn't want to have to drop out, but I just didn't know what to do. You've helped me a lot.</td>
<td>take it on your own from here.</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Oh. OK. Thanks</td>
<td>review what you've done.</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Well, I suppose so, but I really need to go home for the funeral.</td>
<td>That sounds realistic.</td>
<td>14</td>
<td>That's simple to arrange.</td>
<td>15</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Making a decision has energized you, now that you see a way out.</td>
<td>What might be a first step toward increasing for a few days, your return, we'll work on a way back home?</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Node | Agent | Choice A | Next | Choice B | Next | Choice C | Next |
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</thead>
<tbody>
<tr>
<td>42</td>
<td>I dunno, I just wanna go home awhile. Maybe I'm not really cut out for college. (looks down, sad)</td>
<td>Tell me more about what happened to make you feel so depressed. (looks down, sad)</td>
<td>43</td>
<td>Oh, I'm sure it's not all that bad. I bet you have lots of friends and are doing well in your classes.</td>
<td>44</td>
<td>That can't be true. We can find you tutoring, all forms of additional help.</td>
<td>44</td>
</tr>
<tr>
<td>43</td>
<td>(Looks down, sadly) I just don't belong here. I want to go home to my family and friends. (voice trails off)</td>
<td>OK, then. Here's your form.</td>
<td>45</td>
<td>Sounds like you don't really want to leave.</td>
<td>47</td>
<td>Sounds like you're sad because you don't really want to leave here.</td>
<td>47</td>
</tr>
<tr>
<td>44</td>
<td>That's not it (student looks down, sighs) I just want to go home now.</td>
<td>Sounds like you don't really want to leave.</td>
<td>47</td>
<td>Sounds like you're sad because you don't really want to leave here.</td>
<td>47</td>
<td>OK, then. Here's your form.</td>
<td>46</td>
</tr>
<tr>
<td>45</td>
<td>Ok. Thanks.</td>
<td></td>
<td>99</td>
<td></td>
<td></td>
<td></td>
<td>99</td>
</tr>
<tr>
<td>46</td>
<td>Ok. Thanks.</td>
<td></td>
<td>99</td>
<td></td>
<td></td>
<td></td>
<td>99</td>
</tr>
</tbody>
</table>
You're right. I don't want to really bad right leave, but I miss now. my family, and last night I learned my grandma had died. I didn't even get the chance to say goodbye all because I was here instead. (Bursts into tears).

Thanks. Anything else you need? Before I give these to you, I'd really like to know why you want to drop your courses. You must be pretty upset to want to drop all of your classes. Tell me why you want to drop your courses.

That's it. Thanks!
(Wipes tears from eyes). Sounds as though you're having a tough time. You're upset about your grandmother's death because you miss her. I was having fun really tough time. You miss your grandmother before she died, and now you are considering dropping all of your classes to go home to be with your family.

Yeah. Well, thanks.
<table>
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<th>Choice C</th>
<th>Next</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td></td>
<td>(Crying starts to slow down).</td>
<td>6</td>
<td>You're frustrated</td>
<td>7</td>
<td>So, what do you want to do?</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Going home time is tough.</td>
<td></td>
<td>because you</td>
<td></td>
<td></td>
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<td>won't bring her back, but I miss school yet be</td>
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<td>want to stay at home with your family at the same time.</td>
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<td>my family and friends, and my grandpa, too.</td>
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<td>really like my classes, though, but I don't know what to do. My family's cool - we ate dinner together at least once each week, rented movies - we are really close, but since I started college (sigh) I guess I'm kinda homesick.</td>
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Curtin Vitae

Brett Howard Cook-Snell

FORMAL EDUCATION

• PhD Candidate, Instructional Design and Technology, Old Dominion University
• Master of Education, Regent University, 2009
• Bachelor of Arts, Regent University, 2007
• Associate of Arts, The Ohio State University, 1981

EXPERIENCE PORTFOLIO

July 2012 – Present. Adjunct Instructor
Old Dominion University, Norfolk, VA

• Responsible for the design and delivery of course content for 90 students for an introductory course in communications, energy and power, transportation, manufacturing and production, and bio-medical technologies.
• Compile course content for instruction in 7 other sections of the course offered concurrently to ensure consistency of materials for 2 graduate teaching assistants and 1 adjunct instructor.

September 2009 – July 2012. Graduate Teaching and Research Assistant
Old Dominion University, Norfolk, VA

• Research Assistant evaluating the use of automated computer agents in teaching helping skills to counseling students, resulting in 2 conference presentations
• Graduate Teaching Assistant responsible for the design and delivery of course content for 12 sessions of an undergraduate course with up to 30 students per course over the past 2 ½ years

September 2009 – Present. PhD Student
Old Dominion University, Norfolk, VA

May 2005 – May 2009. Undergraduate and Graduate Student
Regent University, Virginia Beach, VA

June 2002 – May 2005. Hiatus to provide care to elderly parents

- Technical Project Manager of an 8 person transition team responsible for transfer of a multi-million dollar inventory system servicing the Virginia Department of Transportation across the state of Virginia
- Supervised and trained subcontractor personnel consisting of 3-person teams in 5 geographical dispersed sites in computer operations, procedures, roles, and responsibilities.
- Technical Writer responsible for documenting systems operation and developing network and maintenance reports

November 2000 - June 2002. Computer and Intelligence Specialist
U. S. Army DOD Civilian, Fort Huachuca, AZ

- Lead programmer responsible for developing a computer-based evaluation system designed to collect operational data for ballistic missile defense systems
- Participated in NATO exercises as lead data collection manager testing joint missile defense systems

Northrop Grumman, Fort Huachuca, AZ

- Program Manager and Liaison between U. S. Army and Air Force agencies responsible for the development, testing, and integration of battlefield surveillance systems
- Designer, developer, and programmer of database systems to collect and analyze data for 15 development and operational tests
- Developed and implemented data collection training and evaluation plans and procedures for 5 emerging battlefield systems
- Presented weekly reports to senior executive staff
- Trained support teams of 4 persons each in computer operations, data entry, and reporting, for 5 operational tests spanning 3-5 years each
CONFERENCES AND PRESENTATIONS


SERVICE

• Darden College of Education Dean Search Committee member graduate student representative (2013)
• Faculty Advisor for Project Purple, Old Dominion University Chapter (2013-present). Project Purple is a national organization whose purpose is to raise awareness and provide resources to those struggling with substance abuse and their allies.
• Old Dominion Southeastern Virginia Education Association (SVEA) Instructor Volunteer, STEM Day (2013). Developed and delivered an instructional sequence and activity for elementary students to encourage interests in the Science, Technology, Engineering, and Mathematics (STEM) fields.
• AECT Student Volunteer (2010). Volunteer worker in the AECT 2010 registration booth.
• President, Instructional Design & Technology, Graduate Student Organization, Old Dominion University, 2010 - 2011
• Safe Space Ally (2010-present), Old Dominion University. Safe Space provides support, services, and resources to gay, lesbian, bisexual, transgender, and questioning students.
• Senator, Council of Graduate Students (2008-2009), School of Education, Regent University.
AWARDS

- Darden College of Education Dissertation Fellowship (2013), Old Dominion University
- Alan Mandell Endowed Award in Instructional Design (2013), Old Dominion University
- School of Education Barnabas Award (2009) for Inspiration and service to others, Regent University
- Outstanding Bachelor of Arts Undergraduate Student (2007), Regent University
- Multiple Career Related Performance Awards (1984-2002)

ADDITIONAL CREDENTIALING

- Literacy Tutor Certification, Tidewater Literacy Council, 2005

RESEARCH INTERESTS

- Instructional strategies for attitude formation and change
- Instructional strategies for adults with learning disabilities