Examining the Influence of Seductive Details in Case-Based Instruction on Pre-Service Teachers' Learning and Learning Perceptions

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EXAMINING THE INFLUENCE OF SEDUCTIVE DETAILS 
IN CASE-BASED INSTRUCTION ON PRE-SERVICE 
TEACHERS’ LEARNING AND LEARNING PERCEPTIONS

BY

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DISSERTATION

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DEDICATION

To my son Dorren,
whose energy and curiosity inspires me daily,
and
to my husband Tony,
for his unfailing faith in me as I follow my dreams.
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ABSTRACT

The case-based instructional method uses fictionalized or actual narratives as instructional tools to support learning, decision-making, and improved transfer to practical settings. Educational theorists and researchers specializing in case-based instruction have suggested that cases can be made more realistic, engaging, and challenging, thus leading to better learning and decision-making by including richly contextualized details, adding distracters or irrelevant details, and increasing ambiguity (Kim, Philips, Pinsky, Brock, Phillips, & Keary, 2006). In contrast, research on human cognitive architecture suggests that including seductive details, details that are interesting but irrelevant to learning objectives, damages learning by reducing attention to relevant information, disrupting organizing within working memory, and by activating
inappropriate schema, thus leading to ineffective integration of learning material into long-term memory (Harp & Mayer, 1998; Lehman, Schraw, McCrudden, & Hartley 2007). However, the effects of seductive details on learning has been tested almost exclusively in expository texts, and little is known about how seductive details affect learning when they are situated in narrative texts (Schraw, 1998). The current study investigates the role of seductive details on recall, transfer, and perceptions of authenticity, interest, and difficulty within the context of case-based narrative instruction for teacher education students.

Teacher education students were assigned to one of three groups; learning from a classroom case containing seductive details (SD), learning from a classroom case with seductive details removed (NSD), or a control (C) group. A repeated measures ANOVA with group as the between subjects factor, and learning recall and learning transfer as the within subjects factors was conducted. In addition, three univariate ANOVAs were conducted to test group differences on each perceptual measure (perceptions of difficulty, authenticity, and interest). While no group differences on any of the perceptual measures were found, a significant group by learning measure interaction was found, with tetrad comparisons indicating that the NSD group differentially performed on the learning tests compared to the other two groups. Additional follow-up analyses indicated that the NSD group outperformed the SD group on learning transfer, suggesting that seductive details have a deleterious effect on learning application when used in case-based instruction.
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CHAPTER 1
INTRODUCTION AND LITERATURE REVIEW

Research on cognitive processes has provided us with the tools to evaluate a variety of instructional materials in terms of their learning benefits, especially for novice students. Guidelines for improving learning materials include such diverse suggestions as promoting dual encoding by presenting information in multiple modes, providing worked examples to scaffold problem solving, and demonstrating mindfulness of learner expertise in terms of type and scope of information presented. We know that novice students perform better on learning and transfer tasks when learning materials provide both explicit and implicit guidance, and that when students are interested in learning materials, their learning improves (Moreno, 2006).

We also know that more learning occurs when students are not overloaded with more information than they can handle, and that by eliminating information extraneous to the learning task from learning materials, we can boost student performance (Moreno, 2006). However, in all learning situations, it is not so clear what is and what is not an extraneous piece of information. For example, when teaching pre-service teachers about principles of formative assessment, an instructor might provide the students with a story, or case, about providing students with feedback on a draft of a paper. What details in the case might be considered extraneous to the learning objectives, and therefore be left out of the story? Should information about student background demographic information be considered extraneous or not? What about information about teacher motivations, or student interests? When interesting details extraneous to the learning objectives are included in a case, do they damage learning, or do they increase authenticity and interest?
These instructional stories, or cases, are usually designed to elucidate a theoretical or practical teaching issue. Instruction that uses case narratives to describe content and promote student learning is called case-based instruction (Merseth, 1996). Case-based instruction is currently widely used in teacher education, and is thought to help students improve their thinking and understanding by providing a rich, challenging, and authentic learning experience. However, the complexity of teaching with cases has yet to be thoroughly researched in terms of its cognitive and motivational implications. In particular, research is needed to link cognitive learning principles to how cases should be designed.

This study will investigate how key structural features of a case affect learning within the context of teacher education. Specifically, drawing on the seductive details literature, this study will explore the effects of including interesting but irrelevant information in a case on learning outcomes and on several perceptual outcome measures, including perceptions of difficulty, perceptions of authenticity, and interest. The ultimate goal of this research is to extend knowledge about how to most effectively use case-based instruction to promote student learning both in terms of knowledge recall and transfer to classroom practice.

This chapter begins with a review of the literature on seductive details, including the empirical roots of research, a description of how seductive details affect learning at different stages of cognitive processing, and an examination of the scope of the empirical literature on seductive details in terms of text type. While the effects of seductive details on learning have been researched extensively in expository text, the evidence in terms of mixed and narrative text types is less clear (Schraw, 1998). Following is a section
describing the theorized learning effects of case-based instruction. Here, the complex goals of case-based instruction are described, and the tension between including rich, authentic examples versus following cognitive-based instruction is examined. Next, three strategies thought to promote learning with cases are described, including making cases realistic, more interesting, and more challenging. Each of these three strategies is then evaluated through the lens of seductive details research. The chapter ends with a summary of the literature, a discussion of the current study, and a list of research questions.

**Seductive Details**

It is common practice for teachers to interject interesting anecdotes, examples, and factoids into lectures and written class materials in attempt to grab students’ interest. For example, a science teacher might add information about how many people are struck by lightning annually on a lesson on how lightning is formed in the atmosphere (Harp & Mayer, 1998), or a physical education teacher might mention how fast cheetahs run when describing short distance versus long distance running. Situational interest, interest specific to the instructional activities and materials, has been shown to be an important factor in improving student learning (Alderman, 2004; Hidi, 1990; Mayer, Griffith, Jurkowitz, & Rothman, 2008). However, when the interesting material is irrelevant to instructional objects, including such details may detract from learning (Mayer et al., 2008). In fact, a whole body of research on the effects of interesting and unrelated details, or *seductive details*, on learning has been documented in the educational research literature. The following describes seductive details in terms of its empirical roots,
research on how seductive details affect cognitive learning processes, and how examining seductive details in terms of text type is a potential area for expanded research.

**Empirical roots.** Garner, Gillingham, and White (1989) coined the term “seductive details” when they found that including interesting but unimportant details in expository text decreases learning for both adolescents and adults. In the first of two experiments, adults (N=20) with extensive reading experience were assigned to read a three paragraph expository text about insects that either included or did not include three interspersed seductive detail sentences. Those in the seductive detail group performed worse than those in the no seductive details group on a macroprocessing task that required them to extrapolate the main ideas of each paragraph, though no difference on microprocessing, performing a recall task, between the groups was found.

Next, the researchers (Garner et al.,1989) examined both the seductive details effect and the effect of signaling (e.g. italicizing key words), on micro and macroprocessing among average 7th grade readers. Students were assigned to one of three conditions, a seductive details minimal signaling group, a no seductive details minimal signaling group, and a no seductive details signaling group. The results indicated that the no seductive details signaling group outperformed the seductive details minimal signaling group on both the macro and the microprocessing tasks. The no seductive details minimal signaling group also outperformed the seductive details minimal signaling group on the microprocessing task. While viewed apart, the results of the second study confound the seductive details effect with the effect of signaling (Goetz & Sadoski, 1995), but taken together with the first study, these results suggest that including seductive details in expository text reduces the ability to engage in
macroprocessing and possibly microprocessing (Wade, Alexander, Schraw, & Kulikowich, 1995). Since that time, the deleterious effect of seductive details on recall (Harp & Maslich, 2005; Lehman et al., 2007), elaboration (Beishuizen, Asscher, Prinsen, & Elsout-Mohr, 2003), and transfer (Mayer et al., 2008) has been repeatedly and consistently documented in educational research literature.

**Theoretical explanations for the seductive details effect.** The study of human cognitive architecture has lead to descriptions of how our cognitive systems are organized and function (Kirschner, Sweller, & Clark, 2006), and serves as the foundation on which we can understand the causes of the seductive details effect. The study of human cognitive architecture is based on information processing models of learning (Atkinson & Schiffrin, 1968), where the mind is compared to a computer as information is input, processed, stored and retrieved. Three distinct memory systems are described in this model; sensory, working, and long-term memory. Sensory memory is the temporary storage unit for incoming stimulus before conscious processing takes place. From sensory memory, information is attended to and colored by perception as it moves into our working memories. Within working memory, information is consciously processed, and learning can take place. Knowledge is stored in the third system, long-term memory.

According to recent research, long-term memory is at the heart of our understanding of human cognitive architecture and the processes of learning (Kirschner et al., 2006). Research has shown that the way that we attend to, perceive, organize, and ultimately integrate information into our memories for a large part depends on our prior knowledge and experiences (Kirschner et al., 2006; Sweller, van Merrienboer, & Paas, 1998). According to schema theory, knowledge is stored in our long-term memory in the
form of schemas, which are essentially organized categorizations of information or rules that guide problem solving strategy selection (Sweller et al, 1998). As we actively construct knowledge, we tap our existing schemas to guide and organize our thinking. Successful learning takes place when new information either alters the structure of our prior knowledge through integration or optimizes the efficiency of future processing through the automation of existing information.

Recent research has described the seductive details effect in terms of how it impacts cognitive processes. In a landmark study, Harp and Mayer (1998) investigated three theoretical explanations for the seductive detail effect in a series of studies. The theoretical hypotheses were based on the information processing model of learning where individuals actively construct meaning during learning through the processes of selective attention, organization, and the integration of new and existing information (Mayer, Steinhoff, Bower, & Mars 1995). According to the distraction hypothesis, if the seductive details effect takes place at the time of selective attention, then learners will divert their attention away from relevant information in favor of the interesting but unimportant seductive details. The disruption hypothesis posits that seductive details interrupt the organization process of learning by breaking the causal chain of information in a text so that pieces of information seem independent from each other. Finally, the diversion hypothesis supposes that the seductive details effect occurs during integration. Rather than drawing on existing schemas relevant to the learning material’s main ideas, the learner draws on schemas relevant to the seductive details. Therefore the main ideas of the lesson fail to be effectively encoded into long-term memory in favor of the seductive details.
To test these hypotheses Harp and Mayer (1998) made the following predictions:

1. If the distraction hypothesis is true, then the effects of seductive details can be mitigated by highlighting the important passages in a text and by telling students what to pay attention to; 2. If the disruption hypothesis is correct, providing greater organizational support, such as including preview sentences and number signals (e.g. labeling the steps of the process of lightning formation) will help minimize the seductive details effects; 3. If the diversion hypothesis is true, then reordering the placement of seductive details will either heighten or reduce the seductive details effect. For example, including seductive details at the beginning of a text passage will exacerbate the seductive details effect, as the student will immediately activate inappropriate schema related to the seductive details in order to integrate the information into existing schema. In contrast, if the seductive details are interspersed through the text, the seductive details effect will be minimized.

Results from their investigation failed to provide support for the distraction hypothesis (Harp & Mayer, 1998). The researchers found no evidence that including typographical cues and highlighting alleviated the seductive details effect on retention or problem-solving transfer, indicating that the seductive details effect does not arise from students misdirecting their attention. Similarly, providing students with learning goals prior to reading the passage on lightning formation did not reduce the seductive details effect on either retention or problem solving. In addition, there was little support for the disruption hypothesis. When students were provided with organizational signaling the effects of seductive details on learning were not overcome, indicating that seductive details do not disrupt the meaningful organization of information. These results also
provide additional evidence against the distraction hypothesis, since organizational signals would help students pay attention to relevant information.

In a final experiment, Harp and Mayer (1998) tested whether the placement of seductive details affects retention and transfer. Participants were assigned to one of four conditions: 1. Seductive details first, 2. Seductive details interspersed, 3. Seductive details at the end, and 4. No seductive details. Results indicated no difference in learning between the number of main ideas that were recalled by the seductive details first and seductive details interspersed groups, but both of these groups performed more poorly than the other two groups on the recall task. There was also no performance difference on the recall task between the no seductive details group and the seductive details at the end group. In addition, students who received seductive details at the beginning of a passage recalled significantly more seductive details than those in the seductive details at the end group. Finally, students in the seductive details at the end group and those in the no seductive details group generated more problem solving solutions than students in either of the other seductive details groups, and there was no significant difference between the seductive details at the end and the no seductive details groups on this transfer task. Taken together, these results lead the researchers to conclude that the most feasible theoretical explanation for the seductive details effect is the diversion hypothesis. These results are theoretically important, because they demonstrate that seductive details are not merely damaging because they divert attention away from main ideas in a lesson or because they make information harder to organize, but that they obfuscate what the passage is actually about. When seductive details are present, students are not able to
activate the prior knowledge relevant to the learning objectives, and instead locate their mental frameworks around the seductive details when encoding the new information.

Arguing that Harp and Mayer’s (1998) distraction, disruption and divergence hypotheses are not mutually exclusive, since perhaps distraction or disruption causes divergence, Lehman and colleagues (Lehman et al., 2007) conducted a study testing three modified hypotheses of the causes of the seductive details effect. The reduced attention hypothesis is similar to the distraction hypothesis in that attention is drawn away from relevant information toward seductive details. The reduced attention hypothesis would be supported if learners both spent less time reading relevant information and have lower recall rates for relevant information. The coherence break hypothesis is similar to the disruption hypothesis in that it tests whether seductive details break causal coherence in a text passage. The coherence break hypothesis would be supported by evidence showing decreases in general understanding and a decrease in reading speed when transitioning between seductive details and relevant text. Finally, the inappropriate schema hypothesis, similar to the diversion hypothesis, would be supported if both recall of seductive details increases and understanding is decreased for those in a seductive details condition compared to control groups.

The key experimental difference between Lehman and colleague’s (2007) work and Harp and Mayer’s (1998) work is that in the former, the researchers recorded the time spent reading each sentence for study participants. Other design modifications include increasing the grain size of the scoring distribution for recall items for both practical and statistical reasons, including a text ratings questionnaire of importance and
interest used to classify seductive details, eliminating time limits for reading text passages, and eliminating visual images to isolate a text effect.

In the first of two experiments (Lehman et al., 2007), undergraduate students rated each sentence from an adapted version of Harp and Mayer’s (1998) expository text on the formation of lightning in terms of interestingness and importance. Researchers used these ratings to classify sentences as either seductive details or base text. Of the 50 sentences, 11 were classified as seductive details, and these were interspersed throughout the text.

In the second experiment (Lehman et al., 2007) students were assigned to either a seductive details condition or a control condition. Students read each sentence of the text on a computer screen, advancing to the next screen when they were ready. In this way, the reading time for each sentence was recorded. Next, students performed a recall task similar to that used by Harp and Mayer (1998) where students were asked to write down all they could remember from the text. Finally students wrote an essay following a prompt designed to elicit students’ understandings of the causal relationships involved in lightning formation. This essay was scored according to the total claims or pieces of evidence used by the student and a more general holistic understanding score, both measures of deep learning.

Results indicated that students in the seductive details group read the base text sentences faster than those in the control group and recalled less relevant information from the base text than those in the control group, providing support for the reduced attention hypothesis. In addition, students in the seductive details group had lower total claims and holistic understanding scores compared to the control group. Within the
seductive details group, there was no evidence that students read seductive details and base text at different rates in general, though students did read base text following seductive details at a slower rate than base text in other locations in the text. In addition, there was no difference between the rate of recall of seductive and non-seductive details for this group. These results lend support for the coherence break hypothesis but only partial support for the inappropriate schema hypothesis. Together with the results from Harp and Mayer’s (1998) research, these results suggest that seductive details are damaging to learning by reducing attention, disrupting organization, and damaging integrating information into existing schema.

Important implications for this research are that instructional designers should consider the structures of our mind when including content in a lesson (Kirschner et al., 2006). When seductive details are included in a lesson, they are damaging to the attentional systems, as they lead students to spend less time reading main ideas, and lead to lower recall of main ideas. They also make organizing information in working memory more difficult as they interrupt the coherence of material by making the inherent connection of main ideas diffuse (Lehman et al., 2007). Finally, when seductive details are included in a text, the learner draws upon inappropriate existing schema to process the information, disrupting the appropriate integration of the learning material into long-term memory, which in turn leads to a decrease in higher-order processing and transfer (Harp & Mayer, 1998; Lehman et al., 2007).

The role of text type on the seductive details effect. Despite the accumulation of evidence that seductive details are harmful to learning, investigations examining whether seductive details function differently depending on type of text largely have not
been conducted (Lehman et al., 2007; Schraw, 1998). The bulk of the research has examined the impact of seductive details on expository text or expository multimedia instruction (Beishuizen et al., 2003; Garner et al., 1989; Harp & Mayer, 1997; 1998; Lehman et al., 2007; Mayer et al., 2008; Mayer, Heiser, & Lonn, 2001; Sanchez & Wiley, 2006; Shen, McCaughtry, Martin, & Dillion, 2006). However, examination of the seductive details effect on learning has also been conducted with mixed texts (Schraw, 1998; Wade & Adams 1990; Wade, Schraw, Buxton, & Hayes, 1993) and in lecture format (Harp & Maslich, 2005), but not with pure narrative texts.

Wade and Adams (1990) looked at the impact of including seductive details in biographic text on immediate and delayed recall. Biographies contain elements that are at once similar to narrative and expository text, and are therefore classified as mixed-text. The researchers conducted a two-part experiment, where they first had college students rate the interestingness and importance of sentences in a biography on a four-point scale. A second sample of students then read the biography in full. Next, half the group was assigned to an immediate free recall activity where after a five-minute delay they were directed to write down all they could remember from the text. The other half engaged in a delayed recall activity where they engaged in free recall a week after reading the biography. While there was a time effect for recall, general findings across groups remained consistent. There were main effects for interest and importance, where interesting material was better recalled than uninteresting material and unimportant information was better recalled than important information. There was also a significant interaction effect for interest and importance, so that high interest/high importance and high interest/low importance sentences were better recalled than the other sentence
categories, though not different from each other. Interestingly, low interest/low importance sentences were also better recalled than low interest/high importance sentences. In a follow-up study, (Wade, Schraw, Buxton, & Hayes, 1993) the researchers found similar deleterious effects of seductive details on recall. These results show that seductive details affect reader attention in mixed texts in potentially damaging ways since readers recalled unimportant but interesting material better than materials that are less interesting but important to main ideas or themes.

Contrary to these findings, Schraw (1998) found that while seductive details are recalled better than main ideas, seductive details did not lead to decreased recall of main ideas. Using the same biographical text as Wade and colleagues (1990; 1993), Schraw (1998) conducted a three-part study exploring the effect of seductive details on recall among undergraduate students. A second goal of the study was to test whether seductive details can be categorized as a single class of text, or if there are different kinds of seductive details. In particular, Schraw classified seductive details as either context dependent, meaning more interesting in the context of the biography’s narrative, or context independent, where interest is maintained even when decontextualized from the biographical text.

In the first experiment (Schraw, 1998), students rated sentences in terms of interestingness, either within or outside of the context of the entire biographical text, and then completed a free-recall test to see which and how many details were remembered. Results indicated that when rated in isolation, seductive details were found to be more interesting than main ideas, both seductive details and main ideas were found to be less interesting when they were decontextualized, and there was no difference in interest
ratings for seductive details and main ideas when they were made in context. In terms of recall, sentences read in context were more memorable, and seductive details were more memorable than main ideas. Finally, Schraw found that not all seductive details are the same. He classified context dependent seductive details as those that were more interesting in context, while the context independent seductive details, which mainly dealt with themes such as death, sex, and power, were interesting regardless of context.

In the second experiment, Schraw (1998) examined reading time and recall for main ideas and context dependent and independent seductive details. Results indicated that the context dependent seductive details took longer to read than the other two types of sentences, which did not differ from each other in terms of reading times. In addition, both types of seductive details were better recalled than main idea sentences, and there was no difference in recall between seductive detail type. Schraw hypothesized that context dependent seductive details took longer to read because they were more disruptive to the text coherence than other types of sentences.

In a final experiment, Schraw (1998) tested whether the presence of seductive details in the biographical text affected the recall of main idea sentences. Students were assigned to one of four conditions: Reading a text that contained main ideas plus, 1. All the seductive details, 2. Only the context dependent seductive details, 3. Only the context independent seductive details, or 4. None of the seductive details. No between group differences were found on total story recall, verbatim story recall, or main idea recall. These results indicate within a biographical text, while seductive details are better recalled, they may not negatively affect recall of main ideas.
One possible explanation for Schraw’s results (1998) is that with texts such as biographies or other types of narrative passages, the concept of what is and what is not a seductive detail becomes more vague. Goetz and Sadoski (1995) argue that biographical texts need to be considered in terms of their ecological validity, and that viewing interesting, non-thematic details as “seductive” is potentially inappropriate because these elements enrich our understanding of the contextual complexity contained in historical material. Further research conducted with varied text formats, including narrative texts, can deepen our understanding of how seductive details affect recall and higher-order learning, including complex understanding and critical thinking in different text formats. The next section will begin with a review of the literature on case-based instruction, an instructional format designed to promote complex, higher-order processing through the use of descriptive narrative texts. Case-based instruction will then be considered through the lens of the cognitive instructional design principles described above. In the last part of the section, the impact of including seductive details in cases will be hypothesized in terms of learning and affect.

**Case-Based Instruction**

With the case-based instruction method, teachers use either fictionalized or actual narratives as instructional tools to describe and explore specific learning material and concepts. The case method has been used in teacher education sporadically since the 1860s, and, modeling after other disciplines that use this method as a primary pedagogical tool, case-based instruction has gained popularity in teacher education since the 1980s (Merseth, 1991). Today, case-based instruction is used in a variety of
disciplines including medicine, science, nursing, education, engineering, and law, among others (Kim et al., 2006).

In its modern usage, the case-based instructional method was adopted in part to address concerns about lack of praxis between a discipline’s theory and practice. Dewey (1915/1994) described thinking detached from action and experience as a powerful obstacle to further learning; “Pupils who have stored their “minds” with all kinds of material which they have never put to intellectual uses are sure to be hampered when they try to think. They have no practice in selecting what is appropriate, and no criterion to go by; everything is on the same dead static level (pp. 12)”. Similarly, when performing a vocational skill, lacking knowledge about theory binds a practitioner to the limits of the action itself, unable to advance or grow in the vocation. Therefore, an essential goal of education should be to connect theory and practice in order to fill out and make real the theory when learned in the classroom, enabling students to use volitional action when entering the field of practice.

Dewey (1915/1994) suggested that educational reform would do away with passive teaching methods that treat students as empty receptacles in favor of more active learning experiences that explicitly link the realities of out-of-school experiences to the classroom. Dewey’s educational theory serves as a foundation for the basic tenant of constructivist theory; that knowledge is not transmitted directly to the learner but instead is created by the learner (Greeno, Collins, & Resnick, 1996). The case-based instructional method promises to help students make such connections between theory and practice by helping students apply their knowledge to the vocational context for which they are being trained.
Will seductive details in cases damage learning? Within teacher education, researchers have cited case-based instruction as an effective teaching method for several different reasons. First, as noted above, researchers expect that case-based instruction is an effective pedagogic method for promoting praxis (Moreno, Abercrombie, & Booker, 2008). There is also some evidence that using cases can help teacher education students become more metacognitive about their teaching practice, examine their own teaching practice and beliefs about teaching, and promote social, ethical, and epistemic growth (Lundberg, 1999). In a review of the literature on cases and case methods used in teacher education Merseth (1996), notes that theoretical works describing the promise of the case method in teacher education have outpaced empirical research on the topic. However, early evidence suggests that the case method can help foster multicultural perspectives, deeper understanding of educational theories, including motivation, and classroom management strategies. In addition, the case method can help teacher education students develop pedagogical content knowledge.

Another major goal of case-based instruction is to teach students to develop decision-making abilities (Borko, Roberts, & Shavelson, 2008), perspective-taking abilities, critical analysis skills (Lundeberg, 1999), and to solve complex, ill-structured problems (Choi & Lee, 2009). Since the problems we face in our professional lives are typically ill-defined, it is thought that providing students with practice working such problems will lead to better practical outcomes. In fact, research on problem solving indicates that we rely heavily on past experiences when coming up with problem solutions (Choi & Lee, 2009; Mayer & Wittrock, 2006). Therefore, instructional materials that provide students with the opportunity to work on and solve contextualized
problems, such as case-based instruction, may serve as frameworks for problem solving in the professional context. However, like many educational methods, the particularities of how the case method is employed and the features of the case itself likely have influence over the effectiveness of the case method for varied learning outcomes (Bruning, et al., 2008).

Drawing on the larger literature base, we can hypothesize that the inclusion of seductive details in cases will damage learning (Harp & Mayer, 1998; Lehman et al., 2007). However, much of the literature on learning with cases emphasizes that the very nature of learning from cases necessitates complexity and rich detail (Merseth, 1996), possibly justifying the inclusion of details such as seductive details. Some researchers argue that the intention of using cases in teacher education is to describe the reality of teaching, in all its messiness, so the case should replicate an actual teaching scenario as closely as possible. We are left then, with the following question: If, by removing seductive details the inherent complexity of a case is altered, can the case still be considered an ecologically valid instructional tool that promotes authentic learning and improved decision-making?

**What design elements improve learning from cases?** In an extensive review of the literature that examined 974 journal articles, books, and book chapters, from disciplines as varied as medicine, education, law and business, Kim and colleagues (2006) investigated effective strategies for constructing and using teaching cases. After the initial literature search, the researchers eliminated all references that focus solely on the general benefits of the case method, so that only those references that spoke to specific effective case design and teaching strategies were included in their discussion.
Of the nearly one thousand references examined, only 100 met the search criteria. Based on suggestions from the relevant literature, the authors constructed a conceptual framework describing 17 strategies used in case design and teaching.

Some of the learning strategies described by the researchers (Kim et al., 2006) are uncontroversial and well supported in educational research literature, such as considering the developmental level of students when writing cases and ensuring that the case addresses learning goals and objectives (Bruning et al., 2008; Cliff & Nesbitt, 2005). Other suggestions, however, are not empirically supported at this time, and are based more on conjecture or idiosyncratic evidence about characteristics of effective case design. In fact, only 15 of the 100 total articles included in the review were reporting the results of a randomized experimental design. The other 85 articles were largely descriptive. Kim and colleagues (2006) noted that because of the lack of documented evidence supporting the strategies described in the conceptual framework it is difficult to know how valid the strategies described really are. While all the suggested strategies warrant more careful consideration through empirical investigation, several of the strategies described in this paper are of particular interest to the current investigation. In particular, the strategies addressing the level and scope of detail, including strategies to increase realism, engagement and challenge relate to the current discussion of seductive details.

Kim and colleagues (2006) cite three strategies that make cases more realistic, specifically, including: 1. Authentic materials, 2. Distracters and non-pertinent details, and 3. Gradually disclosing case content. According to the authors, authentic materials are likely to contain more ambiguity and complexity, which is conjectured to lead to
better decision-making and a closer approximation to real world practice. Similarly, by including both relevant and irrelevant information in the case, a more realistic ‘real world’ scenario is created by the case. The last suggestion, gradual disclosure of the material, has more to do with the presentation of case materials than the materials themselves, and so will be excluded from the discussion.

To make the case more engaging, the authors note that rich content should be included (Kim et al., 2006). Similar to the suggestions described above, richness seems synonymous with deepened complexity and is thought to lead to more unpredictable, and therefore more authentic, decision-making opportunities and a greater opportunity for multiple perspective taking. Practically, this suggestion is akin to including more information, such as more competing information or more irrelevant information. Other suggestions under this category include offering multiple voices or perspectives and using a ‘choose your own adventure’ branching technique in case design where the outcome of the case varies depending on decisions students working the case make along the way.

Finally, to address the level of challenge presented, five different strategies are suggested: 1. Altering the difficulty of the case, 2. Including rich content in the case, 3. Using unusual cases, 4. Varying the presentation of case material, and 5. Using multiple cases at a time (Kim et al., 2006). Of these suggestions, the first two strategies are relevant to the current discussion. As described above, including rich content is thought to increase the complexity of the case itself, leading to greater challenge. The authors cite several ways that the difficulty of the case can be manipulated, such as including or withholding vital information, and adding materials or procedures to increase the
ambiguity, uncertainty or increase possibilities for solving the case. These suggestions, like those described above under realism and engagement essentially deal with the level and type of detail included in the case. To make a case more difficult, more realistic, and more engaging, a key suggestion from the case writing literature seems to be include confusing, confounding, or irrelevant details – in other words, details such as seductive details. Most importantly, even if the suggestions presented in their review do in fact lead to greater challenge, realism, and engagement, it is not clear whether or how increasing the level of challenge, realism, or engagement of a case through these means leads to better learning outcomes.

**Does increasing difficulty increase learning?** Research on learning processes has shown us that simply increasing the difficulty of learning materials does not guarantee that more learning takes place. Conscious processing takes place in our working memories, by drawing on our prior knowledge, or schemas, to process the new information. According to cognitive load theory, our working memories have a limited capacity for new information (Moreno & Park, 2010). In other words, only so much new information can be processed in our working memories at a time. According to Cognitive Load Theory (CLT), three additive sources of cognitive load, intrinsic load, extraneous load, and germane load, are imposed on our working memories during learning. Intrinsic load is the basic cognitive demand imposed by the new learning material, and is currently thought to be irreducible through improved instructional design by many researchers. In contrast to intrinsic load, extraneous load, the cognitive load imposed by factors not related to the necessary demands of the learning material, is reducible by improving instructional design. The third type of cognitive load, germane
load, is that imposed by devoting cognitive resources to the activities of learning, particularly schema activation and automation. Knowledge about the limited processing capacity of working memory has informed our understanding of instructional design, leading researchers to suggest design elements that reduce extraneous load in order to allow for more successful processing.

Numerous studies have shown that altering specific design elements in learning material leads to better learning outcomes (Moreno, 2006). For example, research shows that students learn better when material helps focus attention on relevant aspects of the learning material. Additionally, novice students have a difficult time selecting and organizing important learning principles because they lack proper automated schemas. Therefore, it is helpful to provide novice students with appropriate guidance, such as making instructional materials coherent or embedding organization systems or models of analysis into instruction. For example, providing novices with worked examples has been shown to help students improve problem solving by reducing extraneous processing demands (Cooper & Sweller, 1987). In effect, cognitive load research shows that increased difficulty by way of increased extraneous cognitive load does not lead to increased learning. Rather, increased difficulty, when it is extraneous to the learning goals, is actually damaging to learning. Therefore we can predict that including seductive details in texts will increase learning difficulty and decrease learning.

However, improved processing is not guaranteed by simply freeing up cognitive resources to increase germane load. Other factors, such as student effort and interest, demand expectation, student self-regulation, the individual versus group context of the learning environment, and even the level of learner expertise must be considered in
deciding appropriate elements of instructional design (Moreno & Park, 2010). For
example, research has shown that increased situational interest improves learning
(Alderman, 2004; Hidi, 1990; Mayer et al., 2008), presumably because students dedicate
their cognitive resources more effectively when they are interested. Therefore, when
considering the seductive details effect, we must consider both the cognitive impositions
learning materials place on our limited mental resources and the ways in which our
motivational states affect our learning.

Do authentic, realistic materials improve learning? Throughout the case-based
instruction literature, numerous authors focus explicitly on the need to include
complexity or ambiguity in order to use the case method effectively (Choi & Lee, 2009;
Kim et al., 2006; Merseth, 1996). A common argument seems to be that case-based
instruction should mirror actual practice, so that students’ thinking is rooted in the real
complexity of their vocation. While it is important for students to eventually have an
understanding of the complexities of the real life contexts, the idea that students, when
provided the right instructional tools, can be taught to function at the same level as
experts in a field denies what we know about novice versus expert thinking. Novices in a
field function very differently than experts, because they do not have rich and complex
schemas to activate during problem solving (Kirschner et al., 2006). In fact, instructional
methods that favor a one-to-one correspondence of the instructional material to the
practical vocational field do not take into consideration the pedagogical needs of novice
students who do not have the background knowledge of experts (Kirschner et al., 2006).
For novice students, providing an instructional environment that encompasses all the
complexity and ambiguity found in the “real-world” might actually provide a less
authentic, less realistic feeling learning environment and lead to less deep thinking and learning.

For example, Darling-Hammond and Synder (2000) describe cases and other problem-based inquiry tools as useful authentic assessment tools in teacher education, providing greater contextualization and increased evidence of future teaching performance than paper and pencil decontextualized measures of teaching knowledge. However, they note that if a student has limited knowledge, then using cases might lead to narrow classifications or misunderstandings at the problem identification stage, failures to recognize potential solutions, and failures to situate the learning case in broader teaching contexts or within generalized theoretical or practical teaching principles and practices. In addition, if relevant readings or discussions are not paired with the cases used during instruction, then students may fail to recognize the meaning of the case and how the case relates to specific instructional principles or practice.

In an analysis of educational authenticity, Splitter (2009) critiques the idea that authenticity in the classroom is a mirror of the “real-world”. Instead, for pedagogy to be authentic to students, it must help students perceive themselves as active participants in a discipline. In other words, students must engage thinking processes that they perceive as relevant to the discipline – they must find meaningful connections between the learning material and their own prior knowledge, including conceptions of the discipline itself. If instructional materials far outpace students’ existing knowledge because they are cloaked in the complexity of real-world practice, then there is little hope that they will be able to make meaningful connections to it. As Darling-Hammond and Synder (2000) describe, students will basically be missing the point of the material.
The concept of instructional authenticity must, therefore, be considered in terms of the students’ knowledge level. For a novice student, presenting information that far exceeds their current level of understanding, such as complex contextualized “real-world” scenarios, might in fact lead to less learning than if the materials were simplified so that specific concepts or themes are clearer and more clearly organized. This might mean that eliminating complex and unrelated details, such as seductive details, might in fact make a case more realistic for a novice student since they will be more able to relate the material to the larger learning concepts and objectives, and will therefore feel more connected to the learning enterprise.

If seductive details make material more interesting, will learning increase?

Student interest has been shown to play an important role in learning. Researchers of motivation typically describe two classifications of interest – individual and situational interest. Individual interest is personal interest in the learning material, and relates to deeper processing and increased student learning (Alderman, 2004). In contrast, situational interest is specific to the learning context and materials. While increasing situational interest can improve student learning (Alderman, 2004; Hidi, 1990; Mayer et al., 2008), research shows us that increasing interest by including seductive details is actually damaging to learning (Mayer et al., 2008).

In a recent study, researchers tested whether increasing the interestingness of extraneous details affects learning outcomes when teaching students scientific information with a multimedia presentation (Mayer et al., 2008). Researchers presented undergraduate students with information about the transmission of the cold virus in the human body and included either highly interesting details, pertaining mainly to sex and
death, or low interest details, such as health tips and facts about viruses. An additional factor, presentation format, was also included in the design to test the robustness of the effect of interesting extraneous details on learning. Results indicated that regardless of presentation format, students in the low-interest group outperformed the high-interest group on the problem solving transfer task, though no difference was found on the retention task. In a follow-up study, undergraduate students were given a powerpoint presentation that explained the steps of deglutition, and the results were replicated. Students in the high-interest group performed significantly worse on a problem-solving transfer task compared to those in the low-interest group, though the two groups did not differ in terms of retention. These results provide further evidence that increasing interestingness alone does not improve learning, and can actually decrease learning. Therefore, while seductive details might lead to greater interest, they will also likely lead to decreased learning.

**The Present Study**

Drawing on the seductive details literature base, this study will examine the effects of including seductive details in a classroom case on learning and several measures of affect, including perceptions of difficulty, realism, and interest. Teacher education students will be given learning material that will be supplemented with a case study that will either include (SD) or omit seductive details (NSD), or a control condition that will be given a typical classroom activity instead of a classroom case (C). Several competing learning effects are hypothesized. Based on the larger body of evidence showing the damaging effects of seductive details on learning (Beishuizen et al., 2003; Garner et al., 1989; Harp & Maslich, 2005; Harp & Mayer, 1997; 1998; Lehman et al.,
2007; Mayer et al., 2008; Mayer, et al., 2001; Sanchez & Wiley, 2006; Shen et al., 2006; Wade & Adams, 1990; Wade et al., 1993; Wade et al., 1995), it is predicted that students who are assigned to the case study with seductive details group will have lower recall and transfer scores than those in the non-seductive details groups. Alternately, it is possible that since cases are a form of narrative text, seductive details will not have the damaging effect on recall and transfer that they would have in expository texts (Goetz & Sadoski, 1995; Lehman et al., 2007; Schraw, 1998). Based on the evidence that case-based instruction teaches decision-making and transfer, but the lack of claim that it increases recall of factual knowledge it is predicted that the NSD group will outperform the C group on transfer, but it is likely that either no difference between the NSD and C groups on recall will be found, or the C group will outperform the NSD group on recall (Merseth, 1996).

Three different constructs will be measured with a learning perceptions questionnaire: perceptions of difficulty, perceptions of realism, and interest. First, it is predicted that students in the SD group will report greater difficulty in learning than those in the NSD group, since the seductive details will add extraneous cognitive load to the learning task (Moreno & Park, 2010). Next, since perceptions of authenticity and realism are relative to experience (Darling-Hammond & Synder, 2000; Kirschner, et al., 2006; Splitter, 2009), and this study is conducted with teacher education students who may accurately be considered novices in their field, it is likely that the SD group will report lower realism than the NSD group. Finally, based on the evidence from the situational interest and seductive details research (Alderman, 2004; Hidi, 1990; Mayer et al., 2008), the SD group is predicted to have higher interest ratings than the NSD group. The
predicted outcomes of these three constructs for the C group compared to the SD and NSD groups is unclear. However, based on the hypothesis that case-based instruction is more engaging and realistic than traditional instruction (Merseth, 1991), it is possible that students in the C group will have lower ratings of interest and realism than those in either case group.

Research questions

1. Do teacher education students recall and transfer learning material about how to provide feedback better after reading a classroom case without seductive details compared to reading a classroom case with seductive details and compared to engaging in a traditional review exercise?

2. Do teacher education students perceive learning from a classroom case with seductive details as more difficult than learning from a classroom case without seductive details or learning from a traditional review exercise?

3. Do teacher education students perceive learning from a classroom case with seductive details as more authentic than learning from a classroom case without seductive details or learning from a traditional review exercise?

4. Do teacher education students perceive learning from a classroom case with seductive details as more interesting than learning from a classroom case without seductive details or learning from a traditional review exercise?
Chapter 2  
METHODS

This chapter describes the methods used to investigate the relationship between case structure, learning, and learning perceptions in an instructional module in teacher education. First, a two-step pilot study is explained. The purpose of the pilot study is threefold. First, the pilot study was used to identify seductive details in the classroom case used in the main dissertation study. Second, the pilot study tested the main dissertation study’s materials, so that refinements could be made before the main study was conducted. Third, the data from the pilot study was used to conduct a power analysis so that an appropriate sample size was used in the main dissertation study. After the description of the methods and results of the pilot study, the methods of the main dissertation study are described. All procedures and materials described herein where approved by the University of New Mexico’s Human Research Protections Institutional Review Board.

The pilot study was a two-step process, employing two different samples. The first sample included undergraduate teacher education students, the target population for the main study, and the second sample included graduate students familiar with the content of the learning material. The rationale behind collecting information from these two samples lies in the literature on expertise. The teacher education students are novices in the subject area, and so are likely not as capable as differentiating features of a classroom case salient to the learning material, while the graduate students in step two of the pilot study have considerable expertise in the learning material content and are more likely be able to identify which aspects of the classroom case relate to the learning
material (Borko et al., 2008). The main dissertation study was conducted with undergraduate students, as the purpose of the study is to investigate how differences in material affect this population when learning about teaching.

The learning material, identical in the pilot and dissertation study, was about principles of writing effective feedback to students. Feedback was chosen as the subject for the learning material because of its relationship to student performance. A meta-analysis based on 607 effect sizes indicated a positive effect of feedback on performance ($d=.41$) (Kluger & DeNisi, 1996). However, just over a third of the feedback had a negative effect on performance, indicating that not all feedback has the desired result. Since, in the classroom, teachers are the primary feedback source for students, it is critical to improving students’ learning outcomes that teachers are taught how to give effective feedback.

**Method - Pilot Study Step 1**

In this section, the methods and results of the first step of the pilot study are described. The purpose of this part of the pilot study was threefold and included gathering data from the novice sample to be used for the classification of case sentences as seductive details, testing study materials for the main study, and conducting a power analysis for the main study.

**Participants**

Participants were 23 undergraduate students (19 female, 4 male; 1 American Indian, 10 Hispanic, 8 White, 4 Multi-ethnic students) enrolled in an undergraduate educational psychology course at the University of New Mexico. Average age of
participants was 23.5 years (SD = 6.62). As part of their course requirement, students enrolled in Educational Psychology 303, Human Growth and Development, or Educational Psychology 310, Learning and the Classroom, courses are given the option of participating in a laboratory study in order to fulfill a research participation requirement (edpypool.unm.edu). Almost equal representation from the two courses was present in the sample (11 students from EDPY 303; 9 students from EDPY 310; 3 students from both). Student participants represented a variety of majors, with most students majoring in elementary or secondary education. The majority of participants had some experience working in an educational setting, such as student teaching (n=1), community education (n=11), volunteering in the schools (n=9), substitute teaching (n=2) or working as a classroom aid (n=2).

**Design**

Participants were randomly assigned to one of three groups. The control (C) group received the instructional module, but did not read the classroom case. Instead, they received time equivalent to that needed to read the case and respond to the reflection questions to engage in a traditional review activity. The Case-No Seductive Details (NSD) group received the classroom case without the seductive details. The Case-Seductive Details (SD) group received the classroom case with seductive details. Due to the multi-purpose nature of the pilot study, where fewer students were needed to conduct the between groups comparisons but more students were needed for seductive details rating, only 6 students were assigned to either the C or NSD groups, and 11 students were assigned to the SD group.
Materials

Demographics Questionnaire. The demographics questionnaire was a seven-item questionnaire used for descriptive purposes in both the pilot study and the main dissertation study. Participants were asked to report their ethnicity, gender, and age. In addition, participants were asked to report whether they are currently enrolled in Educational Psychology 303, 310, or both, their academic major, any prior teaching experience, and the number of semesters until they will be student teaching. A copy of the demographics questionnaire can be found in appendix A.

Multiple-Choice Pretest. The multiple-choice pretest consisted of 15 items about feedback written to correspond with material in the learning module. A total of 30 multiple-choice items relevant to the learning material were created, and then half were randomly selected for use in the pretest and half for the posttest, in order to make the two tests equivalent. As several of the questions were dependent on the same vignette for their completion, these questions were grouped together and counted as one during the random selection process. The multiple-choice pretest can be found in appendix B.

Instructional Module. The instructional module was a chapter entitled, How to Give Effective Written Feedback, from Susan Brookhart’s (2008) book, How to Give Effective Feedback to your Students. Based on educational theory on effective feedback, this book provides both theoretical information and practical advice on providing feedback to students.

Classroom Case. The classroom case was a narrative description of a teacher providing students with feedback on a written assignment, based loosely on The Research
Paper, from Ormrod and McGuire’s (2007) Case Studies Applying Educational Psychology. The case depicts a seventh grade teacher who assigns his students a research paper to be completed in two drafts. Upon receiving the first draft, the teacher corrects spelling and grammar errors, and provides some very general comments, but fails to provide conceptual suggestions to his students. When he receives the final drafts of the paper, he is surprised to see that his students corrected the mechanical errors that he pointed out, but did not improve their papers in more substantive ways. The case was written to include numerous potential seductive details throughout. The body of the case is followed by three questions designed to invoke reflective thinking, based on the prompts used by Harrington (1999), designed to help students properly frame the case’s problem, connect theory to practical aspects of the case, and reflect on personal theories and strategies for addressing case issues. The classroom case can be found in appendix C, and an appended version of the case with hypothesized seductive details removed can be found in appendix D.

Traditional Review Activity. The traditional review activity was used in place of the case as a review of the learning material for students in the control group. Instead of reading the classroom case, students were asked to reflect on a time they received feedback, following the same general prompts used in the classroom case condition described above. The traditional review activity can be found in appendix E.

Learning Perceptions Questionnaire. The learning perceptions questionnaire contained items to measure three constructs – perceived difficulty, perceived authenticity, and interest. Perceived difficulty was measured with two items adapted from Moreno’s (2007) work on cognitive load and Yeo and Neal’s (2008) work on subjective cognitive
effort. Interest was measured with 4 items based on Harp and Meyer’s (1998) research, two questions to invoke emotional interest and two to invoke cognitive interest. Perceived authenticity was measured with four items based on Splitter’s (2009) discussion on perceived authenticity in education. The learning perceptions questionnaire can be found in appendix F.

**Multiple-Choice Posttest.** The multiple-choice posttest contains 15 items written to correspond to the learning material on feedback. As described above, 30 multiple-choice items total were written, and then half were randomly selected for use in the multiple-choice pretest and half in the multiple-choice posttest. The multiple-choice posttest can be found in appendix G.

**Transfer Posttest.** The transfer posttest was designed to measure how well students are able to apply the learning material to providing actual feedback on student work. Students read an actual student’s short essay (Northwest Regional Educational Lab, 1998), and were prompted to imagine they are this student’s teacher and need to provide the student with feedback that will help the student improve the essay. The transfer posttest can be found in appendix H.

**Text Ratings Questionnaire.** With the text ratings questionnaire, each sentence of the classroom case was individually rated by each of the participants according to whether the sentence is essential or non-essential to the learning task, and whether the sentence is interesting or uninteresting using a binary scale. A copy of the text ratings questionnaire can be found in appendix I.

**Procedure**
Participants were given a consent form, and were verbally informed about the study, including all potential risks and benefits involved in participating in a research study and specific information about this research study. After students agreed to participate in the study and signed the consent form, they were brought into the laboratory and seated at an individual station. Before students entered the laboratory, the researcher prepared the appropriate number of packets of all the study materials, with to-be-filled-out sections labeled with each participant’s unique id. For the sake of protecting the anonymity of study participants, students at no time entered their name on the study materials. However, in order to avoid accidentally collecting duplicate data and for the purposes of lab record keeping, student names were logged on a participation sheet with the date, the condition to which they are assigned, and the course number and instructor name for the educational psychology course to which research participation credit was to be applied. The participation sheet remained in the lab until the conclusion of all data collection, and was then destroyed.

Participants were assigned to one of three conditions, and materials appropriate to each condition were prepared for each participant in advance. Participants were told to work at their own pace, so that when they finish with one section of the packet, they could then move on to the next section. First, they each filled out the demographics questionnaire, and then they took the multiple-choice pretest. Next they read the instructional module about feedback. After reading the instructional module, students were given either the full text of the classroom case (SD) or the version with proposed seductive details removed (NSD) and corresponding to-be-worked reflection questions, or the traditional review activity (C). After they finished reading and responding to the
reflection questions, participants were instructed to fill out the learning perceptions questionnaire, followed by the multiple-choice posttest and the transfer posttest. Following the posttests, students in the SD group were given the text-rating questionnaire to complete. Upon completion of all study materials participants were prompted to raise their hand to inform the proctor. Each participant was then given the opportunity to ask any questions about the study, given a debriefing form to be turned in to their classroom instructor for course credit, and was thanked for their participation.

*Figure 1. Schematic of Pilot 1 Procedures*

Analyses

All data collected in the pilot study were entered into a data file for analysis, organized according to the unique id assigned at the time of participation. No student names or other unique personal identifying information were entered into any data file in any phase of the pilot or dissertation study. The data from the demographics questionnaire were tabulated, and are reported above in “participants”. As noted above, the purpose of conducting the pilot study was threefold: to identify seductive details in the case, to test the learning materials, and to conduct a power analysis. Below, analysis and discussion of the results in terms of these three objectives is discussed.
Identification of Seductive Details. Ratings for each sentence collected with the text rating questionnaire were analyzed using the content validity ratio described by Rungtusanatham (1998) and Lawshe (1975):

\[ CVR_i = \frac{n_e - \frac{N}{N^2}}{\frac{N}{2}} \]

where

- \( CVR_i \) = The content validity ratio for the item
- \( n_e \) = the total number of essential ratings for the item across raters
- \( N \) = the total number of raters

For each sentence, the total number of ratings of essential were be tabulated, and the \( CVR \) was then calculated for each. For example, if half of the raters rated a sentence as essential, the \( CVR \) score will equal zero, if all of the raters rated the sentence as essential, the \( CVR \) score will equal 1, and if none rated it as essential, will equal -1. Therefore, the closer the \( CVR \) score is to zero, the more rater disagreement there was about the item.

Using null-hypothesis testing, Lawshe established the significance criteria of whether an item can be considered different from nonessential. According to a one-tailed significance test at alpha = .05 and a sample of 11 raters total, any rating with a \( CVR \) score less than .59 can be considered nonessential. This process was then repeated for interestingness ratings. Table 1 reports the results of the content validity analysis of the teacher education students’ text ratings of the case sentences in terms of both essentialness and interestingness. These results were then compared to the text ratings results collected with the expert sample described in the pilot study step 2 section to
determine which sentences from the case are both non-essential and interesting, and may thereby be classified as seductive details.

Table 1

*Novice Teachers Essentialness and Interestingness Ratings for Each Case Sentence*

<table>
<thead>
<tr>
<th>Sentence</th>
<th>CVR Essential</th>
<th>CVR Interesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mesa Middle School is a medium size school located in a small town in northern New Mexico.</td>
<td>.09</td>
<td>-.09</td>
</tr>
<tr>
<td>2. Approximately 92% of the students are Hispanic, 2% are white, 1% are African American and 5% are American Indian.</td>
<td>-.09</td>
<td>.82+^</td>
</tr>
<tr>
<td>3. Of the 540 students attending Mesa, approximately 86% of students are eligible for the Free and Reduced lunch program.</td>
<td>-.27</td>
<td>.64+^</td>
</tr>
<tr>
<td>4. In 2007, only 26% of Mesa’s ninth grade students scored proficient or better on the New Mexico Standards Based Assessment (SBA) for reading, compared to 44% state-wide scoring proficient or better on this test.</td>
<td>.82*</td>
<td>.64+</td>
</tr>
<tr>
<td>5. Mr. Garcia has been teaching seventh-grade English at Mesa Middle School for 2 years, since the beginning of his career.</td>
<td>.09</td>
<td>.27</td>
</tr>
<tr>
<td>6. He grew up in northern New Mexico, and feels a special kinship to his students and their families.</td>
<td>-.27</td>
<td>.45</td>
</tr>
<tr>
<td>7. He decided to become a teacher to give back to his community, and to help inspire young minds to meet their full potential.</td>
<td>-.09</td>
<td>.64+^</td>
</tr>
<tr>
<td>8. This year, Mr. Garcia has decided to assign his students a 10-page research paper on a topic of their choice, due at the end of the semester.</td>
<td>1.0*</td>
<td>.64+</td>
</tr>
<tr>
<td>9. He has never assigned such a long paper to his seventh-graders, but thinks this assignment will give his students the chance to improve their writing and critical thinking skills.</td>
<td>.82*</td>
<td>.45</td>
</tr>
<tr>
<td>10. Since his students haven’t written such a long paper before, he decides to assign a rough draft due two weeks in advance, so that he can provide them with feedback.</td>
<td>.82*</td>
<td>.64+</td>
</tr>
<tr>
<td>11. Mr. Garcia collects the rough drafts of the research paper on a Friday, and promises his students that he will grade them over the weekend and return them with feedback they can use for the final drafts of their research papers.</td>
<td>.64*</td>
<td>.09</td>
</tr>
<tr>
<td>Sentence</td>
<td>CVR Essential</td>
<td>CVR Interesting</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>12. On Saturday morning, he pulls out his red pen and gets to work.</td>
<td>-.82</td>
<td>-.45</td>
</tr>
<tr>
<td>13. On each paper, Mr. Garcia makes sure to pay strict attention to</td>
<td>1.0*</td>
<td>.45</td>
</tr>
<tr>
<td>correcting any mechanics problems, by underlining mistakes and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>telling the students how to fix them.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. He saves any additional written feedback for the end of the paper,</td>
<td>.64*</td>
<td>.45</td>
</tr>
<tr>
<td>where he writes his general impression of the work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. For example, Susana handed in a paper on her favorite contestant on</td>
<td>.64*</td>
<td>.45</td>
</tr>
<tr>
<td>American Idol, and Mr. Garcia wrote “Good job! I liked Crystal the</td>
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<td></td>
</tr>
<tr>
<td>best this season too.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. He tries to keep all his comments positive and general, even if</td>
<td>.64*</td>
<td>.45</td>
</tr>
<tr>
<td>the paper isn’t very good, because he does not want to turn his</td>
<td></td>
<td></td>
</tr>
<tr>
<td>students off from writing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. He figures he should save any criticisms for the final research</td>
<td>.45</td>
<td>.64+^</td>
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<td>paper, because by that point he thinks his students will be much more</td>
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<td></td>
</tr>
<tr>
<td>confident in their work.</td>
<td></td>
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<td>18. Besides, he thinks, isn’t the point of a rough draft simply to get</td>
<td>.27</td>
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</tr>
<tr>
<td>your ideas out their on the page, so that they can be refined for the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>final draft?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. On the day the final research papers are due, Mr. Garcia collects</td>
<td>.09</td>
<td>-.09</td>
</tr>
<tr>
<td>them and then dives into grading them as soon as he has a free period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. He is excited to see how the papers developed since the rough</td>
<td>-.64</td>
<td>-.09</td>
</tr>
<tr>
<td>draft stage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. As he starts to grade, however, he notices that most students</td>
<td>.82*</td>
<td>1.0+</td>
</tr>
<tr>
<td>didn’t improve the content of their work at all.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Instead, they just made the corrections to grammar and mechanics</td>
<td>.82*</td>
<td>1.0+</td>
</tr>
<tr>
<td>that Mr. Garcia had pointed out in the rough drafts!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Rated as Essential to understanding the case in the context of the learning material
+Rated as Interesting
^Potential Seductive Detail

Examination of Study Materials. The second goal of step 1 of the pilot study was to test and refine the study materials, particularly the learning measures. To this end, the answers to the pretest and posttest multiple-choice questions were entered into the
data file and examined, and the answers to the transfer posttest were scored, entered into the data file, and examined. The results of these analyses are described in this section.

For each multiple-choice item from the pre- and posttest measures, an item analysis was conducted to determine the frequencies for each response for each item. First, the frequencies for the key and each distracter for each item were examined. No apparent problems for any item were detected, so none of the items were initially changed or eliminated. Next, each item was converted to a dichotomous correct (1) versus incorrect (0) scale in order to determine the difficulty of each item.

In general, the item analysis of the original pretest showed that most questions had a moderate level of difficulty, ranging in probability of correct response from \( p = .261 \) to \( p = .87 \). In addition, the pretest appeared to be somewhat reliable, Cronbach’s \( \alpha = .503 \). In contrast, analysis of the posttest initially seemed less satisfactory with item difficulty estimates ranging from \( p = .478 \) to \( p = 1 \), indicating a potential ceiling effect, and poor reliability, \( \alpha = .164 \). However, further analysis suggested that a ceiling effect did not in fact exist, and there was adequate variance in posttest scores. An Analysis of Covariance (ANCOVA) with score on the pretest as the covariate, group as the between-subjects factor, and score on the posttest as the dependent variable, was conducted to see if the learning effect was group specific. Results indicated that a significant effect for group on the learning measure was present, \( F(2, 17) = 15.923, p < .001, \eta^2 = .65 \).

Follow up post-hoc analyses employing Fisher’s Least Significant Difference test (LSD), revealed a significant difference between each of the three groups, with the C group performing the best (\( M=14.40, SD=.55 \)), the NSD group second best (\( M=13.00, SD=.71 \)), and the SD group performing significantly worse than the other groups
(M=11.91, SD=.94). It was hypothesized that the large group differences coupled with the high scores on the posttest are likely responsible for the poor reliability estimate of the posttest. Since the sample sizes for these comparisons were quite small, these results need to be viewed cautiously. However, they do suggest that the posttest measure is adequate in discriminating between groups. Therefore, the items for the posttest were not modified for the final version of the test. However, in order to ensure that the high p-values were in fact due to learning and not to a form effect, the two multiple-choice measures used in the pilot were counterbalanced for the main dissertation study, so that half the sample received one test as the pretest and the other as a posttest, and the other received the tests in the reverse order. Additional analysis to identify any form effect was conducted with data from the main study and is described in the results section.

The transfer posttest data were scored by two independent raters using the transfer posttest scoring rubric (appendix J). The data was scored in full by the dissertation author and a 30% random sample was scored by an educational psychology graduate student volunteer. Reliability estimates indicated that the total score of the transfer test were reliable Cronbach’s $\alpha = .90$. In addition, scores from individual rubric categories appeared reliable, ranging from Cronbach’s $\alpha = .65$ to $\alpha = 1.0$. However, based on communication between the two scorers, the wording of the final scoring rubric was slightly modified for the main dissertation study, with the goal of even greater consistency in scoring. For example, under the 4-point “clarity” category, the descriptor was modified from “The feedback is clear and uses simple and appropriate vocabulary and sentence structure…” to “The feedback is clear and uses simple and appropriate vocabulary, sentence structure, abbreviations, and notation…” since the feedback often
contained abbreviations and notation in addition to written words. The modified scoring rubric can be found in appendix K.

The transfer posttest scores were also examined to determine the quality and difficulty of the transfer task. The transfer posttest scores spanned across the entire score continuum, with scores ranging from 0 to 16 on the 16-point scale ($M = 7.57, SD = 4.31$). However, no between group difference was identified, $F (2, 20) = 1.10, p = .352$. It was not clear whether the lack of group difference was due to no actual difference or to the large amount of within group variance on the task and the small sample size. However, since the average score fell at about the midpoint of the scoring range, indicating no ceiling or floor effect, the task was not altered for the main dissertation study.

**Power Analysis.** The third goal of step 1 of the pilot study was to conduct a power analysis to estimate the minimum acceptable sample size for the main study. The power analysis was based on the estimated effect size (Cohen’s $f$) determined from prior research, alpha of .05, correlation between learning measures, and a power ($1-\beta$) of .80. Since the sample size of the pilot was so small, the effect size from prior research was used to estimate effect size for the power analysis. Lehman and colleagues found a medium effect size for seductive details on recall ($d = .55$) and a medium to large effect for deeper processing ($d = .68$). The power analysis was conducted by converting the effect size from prior research to Cohen’s $f$, then conducting the power analysis using the power analysis software G*Power 3.1.2 (Faul, Erdfelder, Lang, & Buchner (2007). However, the pilot data was a necessary part of the power analysis, since the correlations between the learning measures needed to be calculated. The correlations between the multiple-
choice pretest, multiple-choice posttest, and the transfer posttest were calculated, indicating shared variance between the measures (see table 2).

Table 2

Means, Standard Deviations, and Pearson Correlation Coefficients for Learning Measures - Pilot Study I

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>MC Pretest</th>
<th>MC Posttest</th>
<th>Transfer Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC Pretest</td>
<td>8.95</td>
<td>2.46</td>
<td>1.00</td>
<td>.153</td>
<td>.479</td>
</tr>
<tr>
<td>MC Posttest</td>
<td>12.78</td>
<td>1.38</td>
<td>1.00</td>
<td>.320</td>
<td></td>
</tr>
<tr>
<td>Transfer Posttest</td>
<td>7.57</td>
<td>4.31</td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

The average correlation between the learning measures was then calculated ($r = .317$), for use in the power analysis. As mentioned above, based on prior research (Lehman et al., 2007), a medium to medium-large effect size was anticipated ($Cohen’s f = .27$) (Cohen, 1988). The power analysis software G*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007) was then employed to estimate the appropriate sample size for the study. At a power of .80, with three groups, and three learning measures, at $\alpha = .05, f = .27$, and the correlation set at $r = .317$, for a repeated measures design with a between factors effect, it was estimated that a total sample size of $N = 78$ would be the minimum sufficient sample, with an actual power of $1-\beta = .817$. A sample of $N = 120$ would yield a power of .953, so a sample between 78 and 120 would be ideal.

**Method – Pilot study, Step 2**

In this section, the methods and results of step 2 of the pilot study are described. The purpose of this phase of the pilot study was to have more expert students rate the
content of the classroom case, so that the classification of the case sentences as seductive details could be most accurate.

Participants

Participants were a sample of nine educational psychology graduate students, recruited through the educational psychology list-serve (see Appendix M for the text of the recruitment email). All participants were female (eight White, one Hispanic), with a mean age of 40.00 years (SD = 12.18). Two participants reported no teaching experience at all, three reported PK-12 teaching experience, and five reported experience teaching either as a teaching assistant or a faculty member at a college/university. On average, participants had 4.39 years experience teaching at the college level (SD = 3.92). While none of the participants reported teaching a course explicitly focused on assessment at either the undergraduate or graduate level, three participants reported teaching a course that contained content on assessment practices. In addition, eight participants reported learning about feedback in their own coursework, three reported teaching the concepts of feedback within a college course, one reported reading extensive literature on feedback, and two reported conducting research on feedback. Based on the combined experience of teaching and studying the theories of feedback, it can be surmised from these data that the graduate students who participated in this portion of the pilot study, while not experts on assessment, were well qualified to rate whether or not the content of the classroom case related directly to the learning material on effective feedback practices.

Materials

Demographics Questionnaire. The demographics questionnaire used in this portion of the study was not the same used with the undergraduate students, as the two
samples were assumed to be quite different. Participants were asked to self-report their gender, ethnicity, age, and teaching experience, plus their level of familiarity with research on providing effective feedback to students. A copy of the demographics questionnaire is attached in appendix L.

**Learning Module.** The learning module was identical to that presented to the undergraduate students in the first phase of the pilot study.

**Classroom Case.** The classroom case was identical to that presented to the undergraduate students in the SD group in the first step of the pilot study (appendix C).

**Text Ratings Questionnaire.** The text-rating questionnaire was almost identical to the undergraduate students in the first step of the pilot study, with the only difference being that all questions asking for ratings of interestingness were eliminated from this version.

**Procedure**

After volunteering to participate in the study, participants were given a consent form informing them about the purpose of the study, in addition to a verbal description of the study. After agreeing to participate and signing the consent form, participants were given a packet containing the demographics questionnaire, learning module, the full classroom case with reflection questions (SD), and the revised text ratings questionnaire. Participants were instructed to fill out the demographics questionnaire, read the learning module and the classroom case, respond to the reflection questions and then fill out the text ratings questionnaire, where they rated the importance of each sentence of the classroom case to the learning material on a binary scale. Upon completion of all study
materials, the participants returned the study materials to the researcher and were thanked for their participation.

*Figure 2. Schematic of Pilot 2 Procedures*

![Flowchart showing the procedures of the pilot study]

**Analyses**

All data collected in phase 2 of the pilot study were entered into a data file for analysis. The frequencies for the demographics questionnaire were calculated and reported above. Similar to the first phase of the pilot study, the results of the text ratings questionnaire were analyzed by calculating the $CVR$ for essentialness to understanding the case in terms of the learning material. Based on Lawshe’s (1975) criteria, a one-tailed significance test at alpha=.05 and a sample of 9 raters total, any rating with a $CVR$ score less than .78 can be considered nonessential. Table 3 reports the results of the content validity analysis for the expert teachers, and compares these results to those found in step 1 of the pilot study.

**Table 3**

*Expert and Novice Teachers Essentialness and Interestingness Ratings for Each Case Sentence*

<table>
<thead>
<tr>
<th>Sentence</th>
<th>CVR Essential Novice, Expert</th>
<th>CVR Interesting Novice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mesa Middle School is a medium size school located in a small town in northern New Mexico.</td>
<td>.09, -1.0</td>
<td>-.09</td>
</tr>
</tbody>
</table>
2. Approximately 92% of the students are Hispanic, 2% are white, 1% are African American and 5% are American Indian.  
\[-.09, -1.0, .82^+\]

3. Of the 540 students attending Mesa, approximately 86% of students are eligible for the Free and Reduced lunch program.  
\[-.27, -1.0, .64^+\]

4. In 2007, only 26% of Mesa’s ninth grade students scored proficient or better on the New Mexico Standards Based Assessment (SBA) for reading, compared to 44% state-wide scoring proficient or better on this test.  
\[.82^*, .33, .64^+\]

5. Mr. Garcia has been teaching seventh-grade English at Mesa Middle School for 2 years, since the beginning of his career.  
\[.09, -.33, .27\]

6. He grew up in northern New Mexico, and feels a special kinship to his students and their families.  
\[-.27, -.56, .45\]

7. He decided to become a teacher to give back to his community, and to help inspire young minds to meet their full potential.  
\[-.09, -.78, .64^+\]

8. This year, Mr. Garcia has decided to assign his students a 10-page research paper on a topic of their choice, due at the end of the semester.  
\[1.0^*, .78^*, .64^+\]

9. He has never assigned such a long paper to his seventh-graders, but thinks this assignment will give his students the chance to improve their writing and critical thinking skills.  
\[.82^*, .33, .45\]

10. Since his students haven’t written such a long paper before, he decides to assign a rough draft due two weeks in advance, so that he can provide them with feedback.  
\[.82^*, .78^*, .64^+\]

11. Mr. Garcia collects the rough drafts of the research paper on a Friday, and promises his students that he will grade them over the weekend and return them with feedback they can use for the final drafts of their research papers.  
\[.64^*, -.11, .09\]

12. On Saturday morning, he pulls out his red pen and gets to work.  
\[-.82, -.78, -.45\]

13. On each paper, Mr. Garcia makes sure to pay strict attention to correcting any mechanics problems, by underlining mistakes and telling the students how to fix them.  
\[1.0^*, 1.0^*, .45\]

14. He saves any additional written feedback for the end of the paper, where he writes his general impression of the work.  
\[.64^*, 1.0^*, .45\]
<table>
<thead>
<tr>
<th>Sentence</th>
<th>CVR Essential Novice, Expert</th>
<th>CVR Interesting Novice</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. For example, Susana handed in a paper on her favorite contestant on <em>American Idol</em>, and Mr. Garcia wrote “Good job! I liked Crystal the best this season too.”</td>
<td>.64*, .56</td>
<td>.45</td>
</tr>
<tr>
<td>16. He tries to keep all his comments positive and general, even if the paper isn’t very good, because he does not want to turn his students off from writing.</td>
<td>.64*, 1.0*</td>
<td>.45</td>
</tr>
<tr>
<td>17. He figures he should save any criticisms for the final research paper, because by that point he thinks his students will be much more confident in their work.</td>
<td>.45, 1.0*</td>
<td>.64+^</td>
</tr>
<tr>
<td>18. Besides, he thinks, isn’t the point of a rough draft simply to get your ideas out on their page, so that they can be refined for the final draft?</td>
<td>.27, .78*</td>
<td>.27</td>
</tr>
<tr>
<td>19. On the day the final research papers are due, Mr. Garcia collects them and then dives into grading them as soon as he has a free period.</td>
<td>.09, -1.0</td>
<td>-.09</td>
</tr>
<tr>
<td>20. He is excited to see how the papers developed since the rough draft stage.</td>
<td>-.64, -.78</td>
<td>-.09</td>
</tr>
<tr>
<td>21. As he starts to grade, however, he notices that most students didn’t improve the content of their work at all.</td>
<td>.82*, .78*</td>
<td>1.0+</td>
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<tr>
<td>22. Instead, they just made the corrections to grammar and mechanics that Mr. Garcia had pointed out in the rough drafts!</td>
<td>.82*, 1.0*</td>
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</tr>
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</table>

*Rated as Essential to understanding the case in the context of the learning material
+Rated as Interesting
^ Potential Seductive Detail

Taken together, the results from the content validity analysis from both samples suggest that up to 5 sentences might be considered seductive details (sentences 2, 3, 4, 7, and 17). Three of these sentences (2, 3, and 7) may clearly be considered seductive details, since both the novice and expert samples agree that the content is non-essential to the learning material yet interesting. For sentence 4, although the novice students viewed the content as essential to understanding the case in terms of the learning material, the experts did not. In contrast, with sentence 17, the novice students did not view the
material as related to the learning material, but the experts did. In each instance, due to their more extensive backgrounds in education and familiarity with the principles of effective feedback, the expert opinion was determined to be a more accurate classification, and so sentence 4 was classified as a seductive detail while sentence 17 was not. Therefore, in total, four sentences in the case were classified as seductive details, and were subsequently eliminated from the version of the case presented to the NSD group in the main study.

Method – Main Dissertation Study

This section describes the methods used for the main dissertation study. The section begins with a description of the participants and design, and all the study materials used. Then, the study procedure is described. The results of the study are described in the next chapter.

Participants

Participants were 108 aspiring teachers enrolled in a section of one of two undergraduate educational psychology courses at the University of New Mexico. The sample size was based on a power analysis conducted based on an alpha level of .05 for a repeated measures ANCOVA design, described above. The power analysis results suggested a minimum of N=78, however, due to the high demand for lab participation opportunities from the students enrolled in EDPY 303 and 310, data from more participants were collected.

In total, 30 males and 78 females participated in the study, from varied ethnic backgrounds (5 =American Indian/Alaska Native, 3 = Asian or Pacific Islander, 1 = African American, 37 = Hispanic, 44 = White, 17 = Multiple ethnicities, and 1 = Other
Participant age ranged from 19 to 51 (M = 25.44, SD = 6.94). The majority of students were either Elementary Education majors (n = 52) or Secondary Education majors (n = 31), with Physical Education (n=5), Special Education (n = 4), Art Education (n = 4), Early Childhood/Multicultural Education (n = 1), and Other (n = 11) together comprising only 23.1% of the majors represented. In addition, 7 students reported having a second major, including special education (n = 4), Nutrition (n=1), or Other (n=2). Students also reported having varied experience working in education (No teaching experience = 17; Student teaching = 16; Community education = 65; Volunteering in Schools = 43; Classroom Aid = 19; Substitute teaching = 12; and Other = 18) though it is clear none of these students reported being independent teachers.

**Design**

Participants were randomly assigned to one of three groups. Those in the control group (C) did not read the classroom case. Instead, they engaged in a traditional review activity. The Case-No Seductive Details (NSD) group received the classroom case without the seductive details, as determined by the analysis in the pilot study. The Case-Seductive Details (SD) group received the classroom case with seductive details.

**Materials**

**Demographics Questionnaire.** Based on the data collected from the pilot study, two minor changes were made to the demographics questionnaire from the pilot study step1 for the main dissertation study. First, under a question asking students to report the number of semesters until they begin student teaching, a “not applicable” category was added since not all students enrolled in EDPY 303 and 310 plan to student teach. Second, tutoring was added as an example of a form of community education, since this
response was commonly written in under the “other” category. The modified demographics questionnaire can be found in appendix M.

**Multiple-Choice Pretest/Posttest.** Based on an item analysis conducted with the multiple-choice questions from the pilot study, none of the multiple-choice questions were eliminated from the pretest or posttest. Instead, the two forms were relabeled as form A (appendix B) and form B (appendix G), and counterbalanced, so that half of the students received form A as a pretest and B as a posttest, and the other half received form B as a pretest and form A as a posttest.

**Learning Module.** The learning module was identical to that described in the pilot study materials section.

**Classroom Case and the Traditional Review Activity.** The content of the classroom case varied depending on the condition of the student. The NSD group received the classroom case without the seductive details, as determined by the content validity analysis in the pilot study (appendix N). The SD group received the classroom case including seductive details, identical to the original case in the pilot study. The C group received the traditional review activity, identical to that from the pilot study.

**Learning Perceptions Questionnaire.** The learning perceptions questionnaire was identical to that used in step 1 of the pilot study (appendix F).

**Transfer Posttest.** The final transfer posttest was unaltered from the pilot study, and the scoring rubric was modified to ensure more consistent scoring (appendix K).

**Procedure**

At the onset of the dissertation study, a participant sheet was prepared listing condition in randomly ordered blocks of six participants each for the number of
participants needed for the study, also counterbalancing the multiple-choice tests. Similar to the participant sheet described in the pilot study, the sheet was used to record unique ID, condition, participant name, and the course number and instructor name for the educational psychology course to which research participation credit was to be applied. Prior to the beginning of each laboratory session, the proctor prepared the appropriate number packets of materials needed for that session and on each set of materials wrote the unique id for each participant on each form. At the onset of each session, participants were given a consent form, and were verbally informed about the study, including all potential risks and benefits involved in participating in a research study and specific information about this research study. Then, participants were given a packet with the forms to be completed, and were instructed to work through the packet from the first form to the last, setting aside each form when it was completed. The demographics questionnaire was the first form to be completed. Next, participants took the multiple-choice pretest, and then learned about feedback by reading the learning module chapter. After the learning module, participants read the classroom case and responded to the related reflection questions (the SD and NSD groups) or engaged in the traditional review assignment (C). Then the participants responded to the learning perceptions questionnaire, the multiple-choice posttest, and then the transfer posttest. Upon completion of the learning measures, students were given the opportunity to ask any questions about the study, were given a debriefing form to be turned in to their classroom instructor for course credit, and thanked for their participation.
Figure 3. Schematic of Main Study Procedures
CHAPTER 3
RESULTS

In this chapter the results from the main dissertation study are analyzed and reported. First, the reliability analysis of the pre- and post- multiple-choice tests is reported, and the decision to eliminate the covariate from further analysis is described. Next, the reliability analysis of the transfer posttest is described. Then, statistical analysis of the group effect on the two learning tests, the multiple-choice recall measure and the transfer posttest are described, and follow up analyses are explained. The chapter ends with the analysis of group differences on the three perceptual measures – perceptions of difficulty, authenticity, and interest. Discussion of the interpretation, application, and limitations of the results is located in Chapter 4.

Reliability Analysis of the Multiple-choice Tests

As described in the methods section, the 15 item Multiple-choice tests A and B were counterbalanced, so that half of the participants in each group received Form A as the pretest and B as the posttest, and the other half received the tests in the reverse order. In order to test for any form differences, the performance on the two forms at pretest were compared, with form as the between subjects factor and score on the test as the dependent variable. Results indicated a significant form effect, $F(1, 106) = 42.93$, $p<.001$, with the students receiving Form B ($M = 11.46$, $SD = 1.85$) outperforming those receiving Form A ($M = 9.11$, $SD=1.88$). Therefore, form differences were modeled in the final equation for the learning outcomes.

Next, the reliability of the two forms at pretest and posttest was estimated. For students taking Form A as a pretest, internal consistency estimates were remarkably low
(α = .081), indicating that the scores lacked reliability. Similarly, Form B lacked internal consistency at pretest (α = .335). This indicates that these tests are not consistently measuring knowledge about a single domain at pretest. At posttest, the reliability of the measures improved, with the internal consistency estimate for Form A (α = .559), and for Form B (α = .503). While numbers indicate these tests are by no means ideal measures of the construct, they are certainly more consistent at posttest than they were at pretest.

In addition, a principle axis factor analysis was conducted for each form, to discern if the elimination of specific items would make the forms more consistent. For this analysis, the scores for all participants, regardless of whether the form was given at pretest or posttest, were analyzed together. For Form A, the factor pattern revealed six constructs with eigenvalues greater than one, together explaining 58.54% of the total variance. Similarly, for Form B, seven constructs with eigenvalues greater than one were identified, explaining 62.67% of the total variance.

These results, taken together demonstrate that the multiple-choice forms used in this intervention are limited in their interpretability, and may be limited in their ability to measure prior knowledge and learning at posttest. Additional analysis showed that while the pretest scores and the scores on the transfer measure were significantly correlated (r = .364), the correlation between pretest scores and posttest scores was quite low (r = .087). When the internal consistency data, the results of the factor analysis, and the correlations between measures were taken into account, the decision was made to drop the pretest scores in the learning model as a covariate. Since the purpose of the covariate is to minimize error variance due to prior knowledge, yet both versions of the pretest proved
to be unreliable, and the correlation was so low with the posttest, including the covariate in the final equation would not be adding anything useful to the model.

**Analysis of Transfer Posttest**

The responses to the transfer posttest were scored in their entirety by the dissertation author, and a 30% randomly selected reliability sample of responses was scored by a graduate student volunteer. Neither scorer was aware of participant condition at the time of scoring. The overall reliability was acceptable, with Cronbach’s alpha = .77 for the total transfer score, and reliabilities for the individual rubric categories ranging from .61 to .72 (Cat 1 = .70; Cat 2 = .69; Cat 3 = .61; Cat 4 = .72). In all subsequent analyses, the scores from the 100% rater were used.

**Analysis of the Learning Measures**

**Do teacher education students in the NSD group better recall and transfer learning material about how to provide feedback compared to the SD and C groups?** To measure the effects of seductive details in cases on recall and transfer, a repeated measures ANOVA, with group as the between subjects factor, and scores on the two learning measures – the multiple-choice posttest and the transfer posttest – as the within subjects factor was conducted. Additionally, to control for any form effect, since two different versions of the multiple-choice posttest were used to measure recall, form version was included as an additional between subjects factor. However, since the form effect is not essentially a variable of interest, analysis of the three-way interaction between group, form, and learning measures was omitted from the model. To check to see if the data met the assumption of multivariate normality, Q-Q plots for each learning measure were examined. In general, the data appeared to approximate normal, and, since
in practical application tests of univariate normality can be used to estimate multivariate normality, plus ANOVA tests are robust to violations of this assumption (Stevens, 2002), the assumption was assumed met.

Table 4

*Recall and Transfer Means and Standard Deviations by Group*

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Recall M</th>
<th>SD</th>
<th>Transfer M</th>
<th>Cat1 SD</th>
<th>Cat2 M</th>
<th>Cat2 SD</th>
<th>Cat3 M</th>
<th>Cat3 SD</th>
<th>Cat4 M</th>
<th>Cat4 SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>36</td>
<td>11.75 2.05</td>
<td>6.39 3.88</td>
<td>1.78 1.33</td>
<td>1.33 1.27</td>
<td>1.78 1.15</td>
<td>1.50 1.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form A</td>
<td>18</td>
<td>11.22 2.29</td>
<td>7.00 4.35</td>
<td>1.89 1.28</td>
<td>1.44 1.50</td>
<td>2.00 1.19</td>
<td>1.67 1.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form B</td>
<td>18</td>
<td>12.28 1.67</td>
<td>5.78 3.35</td>
<td>1.67 1.41</td>
<td>1.22 1.00</td>
<td>1.56 1.10</td>
<td>1.33 .97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSD</td>
<td>36</td>
<td>12.06 1.93</td>
<td>9.00 3.92</td>
<td>2.17 1.46</td>
<td>2.39 1.25</td>
<td>2.33 1.22</td>
<td>2.11 1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form A</td>
<td>18</td>
<td>11.83 1.82</td>
<td>9.67 3.52</td>
<td>2.44 1.46</td>
<td>2.56 .92</td>
<td>2.33 1.24</td>
<td>2.33 .77</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form B</td>
<td>18</td>
<td>12.28 2.05</td>
<td>8.33 4.30</td>
<td>1.89 1.45</td>
<td>2.22 1.52</td>
<td>2.33 1.24</td>
<td>1.89 1.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>36</td>
<td>12.39 2.21</td>
<td>7.39 4.48</td>
<td>2.22 1.33</td>
<td>1.67 1.47</td>
<td>1.89 1.43</td>
<td>1.61 1.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form A</td>
<td>18</td>
<td>12.11 2.52</td>
<td>8.11 5.20</td>
<td>2.33 1.41</td>
<td>1.78 1.67</td>
<td>2.22 1.52</td>
<td>1.78 1.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form B</td>
<td>18</td>
<td>12.67 1.88</td>
<td>6.67 3.63</td>
<td>2.11 1.28</td>
<td>1.56 1.29</td>
<td>1.56 1.29</td>
<td>1.44 .922</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results indicated a significant group by learning measure interaction, $F(2, 104) = 3.415, p = .037$, and a significant form effect, $F(1, 104) = 6.785, p = .011$. Figure 4 depicts the raw scores for each group on the learning measures, while Figure 5 depicts standardized scores for each group on the learning measures. Next, follow-up analyses of the group by learning measure interaction were conducted in two ways. First, a tetrad comparison was conducted to determine if there were group differences on the differences between the learning measures. Results indicated significant group differences on the difference scores for the NSD group compared to both the SD group, $t
= 2.41, \( p = .018, d = .57 \); and the C group, \( t = 2.03, p = .045, d = .48 \). These results indicate that both the difference between the NSD group compared to the SD group, and the NSD group compared to the C group, was greater on the transfer test compared to the recall test. In other words, student performance on the two measures was differentially affected by the learning intervention.

An additional follow-up comparing the simple main effects of the interaction was then conducted. This follow-up analysis differs from the tetrad comparison in that the group differences are examined for each learning measure in isolation, rather than considering the comparison of differences in performance on both measures simultaneously. While the tetrad comparison is the more statistically appropriate comparison to follow a between groups interaction on a repeated measures ANOVA (Marascuilo & Levin, 1970), the simple main effects are commonly reported as they provide an easier way to interpret the group differences. To calculate the simple main effects, Fisher’s LSD was employed to compare the group differences on the recall measure and the transfer measure scores separately. No group differences were found at recall; however, there was a significant difference between the NSD and the SD group at transfer, with the NSD outperforming the SD group (\( t = 2.72, p = .008, d = .92 \)).
Figure 4. Unstandardized Group Differences on Recall and Transfer

Figure 5. Standardized Group Differences on Recall and Transfer
Next, in order to gain a more fine-grained insight into the group differences at transfer, additional exploratory analyses were conducted. Four univariate ANOVAs were conducted comparing the group scores on each category of the transfer rubric (see Table 4 for category means and standard deviations). The rubric categories were based on the material from the learning module, including: 1. Feedback clarity, 2. Feedback tone, 3. Specificity of feedback, and, the general category, 4. Overall quality of the feedback (see appendix K). No group differences on categories 1, 3, or 4 were found. However, there was a significant group effect on category 2, $F(2, 105) = 5.90, p = .004$. Follow-up analyses employing Fisher’s LSD test indicated that the NSD group scored higher on feedback tone compared to both the SD ($d = .79$) and the C ($d = .54$) groups.

**Analysis of Learning Perceptions Measures**

In this section, the three research questions regarding learning perceptions are addressed. Specifically, group differences in perceptions of difficulty, authenticity, and interest are examined. The group means and standard deviations for each learning perceptions measure are reported in table 5.

Table 5

<table>
<thead>
<tr>
<th>Group</th>
<th>Difficulty</th>
<th>Authenticity</th>
<th>Interest</th>
<th>Emotional Interest</th>
<th>Cognitive Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>N=36</td>
<td>M=2.29, SD=.66</td>
<td>M=4.11, SD=.64</td>
<td>M=3.76, SD=.78</td>
<td>M=3.36, SD=.98</td>
</tr>
<tr>
<td>NSD</td>
<td>N=36</td>
<td>M=2.43, SD=.75</td>
<td>M=4.04, SD=.73</td>
<td>M=3.69, SD=.75</td>
<td>M=3.38, SD=.94</td>
</tr>
<tr>
<td>C</td>
<td>N=36</td>
<td>M=2.24, SD=.78</td>
<td>M=4.09, SD=.63</td>
<td>M=3.66, SD=.77</td>
<td>M=3.27, SD=.92</td>
</tr>
</tbody>
</table>
Do teacher education students in the SD group perceive learning as more difficult compared to students in the NSD group or the C group? To test the effects of case condition on perceptions of difficulty, a univariate ANOVA with group as the between subjects variable, and average score on the perceptions of difficulty ratings as the dependent measure, was conducted. Levene’s test of equality of error variances indicated that the data met the assumption of homogeneity of variances, $F(2, 105) = .853$, $p = .429$. In addition, the assumption of normality was tested by examining Q-Q plots, and the data were found to meet the assumption of normality. No between group difference on perception of difficulty were found, $F(2, 105) = .677$, $p = .510$.

Do teacher education students in the SD group perceive learning as more authentic compared to students in the NSD group or the C group? To test the effects of case condition on perceptions of authenticity, a univariate ANOVA with group as the between subjects factor and average score on the perceptions of authenticity ratings as the dependent measure was conducted. The Levene statistic indicated that the assumption of homogeneity of variances was met for these data, $F(2, 105) = .906$, $p = .407$. The Q-Q plots were examined, and the data were deemed to meet the assumption of normality. No between group differences on perception of authenticity were found, $F(2, 105) = .144$, $p = .866$.

Do teacher education students in the SD group perceive learning as more interesting than students in the NSD group or the C group? To test the effects of case condition on interest, a univariate ANOVA with group as the between subjects factor and average score on the interest rating as the dependent measure was conducted. The Levene statistic indicated that the assumption of homogeneity of variances was not violated, $F(2,
105) = .094, \( p = .91 \). The statistical assumption of normality was tested through examination of the Q-Q plots, and the data seemed to approximate normal. No between group difference on interest were found, \( F(2, 105) = .821, \ p = .443 \). For the sake of thoroughness, two additional tests comparing groups on the interest measure were conducted. After failing to find differences in ratings of texts of interest including and not including seductive details, Harp and Mayer (1997) separated out the questions on the measure into two groups – questions on emotional interest and questions on cognitive interest. The researchers found that students rated a text including seductive details relatively high on emotional interest and low on cognitive interest, thereby differentiating between interest related to entertainment and interest based on understanding the text. Since in interest questions used in the current study were based on Harp and Mayer’s (1997) questionnaire, it was possible to conduct a post hoc follow-up to compare group differences on emotional and cognitive interest with the current sample. When the groups were compared with a univariate ANOVA with the average on the emotional interest measures only, no difference was found, \( F(2, 105) = 1.278, \ p = .283 \). Similarly, no difference was found with the comparison on cognitive interest items only, \( F(2, 105) = .493, \ p = .612 \). Taken together, no evidence was found for group differences on any of the perception measures.
CHAPTER 4
DISCUSSION

This chapter will begin with a summary restatement of the research problem, and then a description and interpretation of the results. Next, the limitations of the current study, including measurement and effect size issues and limitations due to the artificiality of the research setting and brevity of the intervention will be discussed. Then six potential directions for future research will be described. The chapter will conclude with a description of how the results from the current study apply to the classroom setting.

General Discussion

This study investigated whether the inclusion of seductive details in a classroom case affects student learning and learning perceptions when engaging in an instructional module that employs case-based instruction. Results indicated that there were group learning differences, demonstrating that the inclusion of seductive details in cases affect learning. In particular, students who received the case intervention with seductive details removed (NSD) had a different performance outcome than both the group that received the case with the seductive details (SD) and the control group (C) on the transfer task compared to the recall task, as demonstrated by the significant group by learning measure interaction and follow-up tetrad comparisons. Practically, these results indicate that while the NSD group and the other groups had only minor differences on recall, they had much greater differences on the transfer task. Therefore, cases, when they are designed to exclude seductive details, are more effective learning tools for promoting learning transfer compared to recall. In addition, cases that exclude seductive details are superior
to other learning tools, such as the traditional review activity, which employed reflection on personal experience, on promoting transfer, but not necessarily recall.

Analyses of the simple main effects further elucidate these findings. The NSD group outperformed the SD group on the learning transfer task, where students were asked to apply their learning by providing a student written feedback. Exploratory analyses examining the quality of the feedback by rubric category provide even more information, indicating that students in the NSD group wrote feedback with a higher quality tone. Feedback tone, as defined by the scoring rubric and the instructional material (Brookhart, 2010) concerns situating the learner as an active agent in their learning, “by inspiring creativity, thought, or wondering through the use of asking provocative, ill-defined, and guiding questions (scoring rubric, appendix K)”. Of all the scoring rubric categories used, tone is particularly important in terms of quality of feedback, because it is here that we see the feedback providing a path forward for the student by reducing the gap between current understanding and desired performance (Hattie & Timperley, 2007).

The current study’s results have important theoretical implications, adding to our knowledge base about how seductive details function in narrative texts. The hypothesized effects of seductive details on learning from cases are partially supported, with evidence that seductive details negatively affect learning transfer. These results are similar to prior research outcomes that show that seductive details damage learning transfer (Garner et al., 1989; Mayer et al., 2008). In addition, no evidence was found that reading a case either with or without seductive details impacted recall of learning material studied just prior to the case intervention. The lack of evidence for group
differences on recall is similar to Schraw’s (1998) findings indicating no difference on several measures of recall when learning from biographical text, which shares format characteristics to case narratives. However, since the recall measure was found to have low reliability, it is possible that no group differences on recall were found due to lack of statistical power. Furthermore, since the current study did not test how well students remembered the actual details of the case itself, but rather the effect seductive details in cases play on recall of the learning material with which the case is paired, no commentary on the role seductive details played in simple recall of case details can be made here, distinguishing it from other studies. It is clear from the current study that having seductive details embedded within a classroom case affects the processes that allow students’ to relate the learning material to the case content, thereby making it meaningfully encoded and transferable to a learning application activity.

No evidence was found that novice teacher education students perceived learning from cases with seductive details as more difficult, more interesting, or more authentic than cases that did not contain seductive details, or compared to the traditional review activity. However, these results do not conclusively determine whether no true difference exists between groups on these measures. Several possible explanations exist regarding the lack of finding on learning perceptions. First, it is likely that there was not enough statistical power to detect a group difference on these measures. Although a power analysis was conducted to determine the appropriate sample size for the study, the effect sizes used in this analysis were based on learning outcomes from prior research, not perceptual differences. Second, perhaps the learning perceptions measures, which contained only a few items each, were not sensitive enough to detect group differences.
More elaborated measures that offer a more discriminating score scale might better be able to detect group differences. Third, from anecdotal evidence, students reported enjoying the instructional chapter (Brookhart, 2010), and indicated that it was deeply engaging, so reported views on the learning material might have been more heavily influenced by the learning chapter compared to the cases or the traditional review activity, therefore obscuring the meaning of the perceptual ratings. Finally, it is possible that truly no group differences on learning perceptions exist, and that all the three groups received equally interesting, difficult, or authentic material.

Limitations

The current study also has a number of limitations that bear on both the reliability and the generalizability of the results. First, as noted in the results chapter, the multiple-choice measures had low but acceptable reliability at posttest, indicating that the results on the recall measure might not represent dependable scores on knowledge of a single construct. Improving the measures might yield more reliable results, and give us a better idea of actual student learning from the intervention.

As with any study conducted in a laboratory setting with a single intervention, there are limits to the interpretability of the results, since these conditions do not match those found in actual instructional environments. In particular, the laboratory setting might impede successful learning, where stakes are low to non-existent, since learning the material is not tied to a course grade or other performance outcome in which the students are more personally invested. Therefore, the students’ motivation for achievement might have been lower or more varied than it would have been in an actual classroom setting. In addition, the laboratory setting does not contain the rich and
contextualized environment features found in actual classrooms where the learning materials are augmented with other instructional supports beneficial to student learning. Finally, the results are limited in terms of sample representation. The sample represented only a small cross-section of teacher education students from a southwestern university, which may differ in substantive ways from teacher education student populations in other areas of the country and the world.

**Future Research**

Several potential directions for future research come out of the current study. First, since the population under investigation was limited to novice teacher education students, more investigation is needed to see if seductive details damage learning application for more experienced students, such as experienced classroom teachers. Research on teacher decision-making indicates that while novice teachers must actively draw upon theories, beliefs, objectives, and limited experiences during the decision-making process, more experienced teachers make classroom decisions more automatically, since they have much broader experiential schema to draw from (Borko et al., 2008). It is hypothesized that simulations, such as cases, can help novice teachers build their teaching schema, thus lightening cognitive effort needed during actual classroom decision-making. However, research on the expertise reversal effect indicates instructional strategies that have been shown to reduce the cognitive load of novice students are not necessarily effective for more experienced learners (Kalyuga, Ayres, Chadler, & Sweller, 2003). For example, evidence shows that the perception of text coherence is actually different for expert and novice learners, so that what looks like a minimally coherent text for a novice is actually fully coherent for an expert. However,
the research examining text coherence differences for experts and novices focuses on including more redundant details for novice students in order to boost text coherence. It is not clear if the elimination of details that increase text incoherence, such as seductive details, will have the same functional effect found in prior research. Further investigation into how experts versus novices process texts with seductive details can help elucidate whether the expertise reversal effect applies here.

Second, a more fine-grained investigation into the rationale both the expert and novice students used to classify seductive details in the case can provide insight into why student and school characteristics were identified as seductive details in the current study, also potentially shedding light on perceptions of text coherence for these two groups. Two potential methods may be used to gain insight into the processes used by participants when classifying case details. A text analysis of the written responses to the reflection questions after each case condition may clarify what students were paying attention to when they were reading different versions of the case. Future studies might also employ think-alouds or reflective interviews in conjunction with both the case analysis and the text rating questionnaires. These analyses would provide insight into the processes students were using to attend to, classify, and encode the details of the cases.

Third, the role student characteristics play in learning from cases is ripe for investigation. For example, cognitive, conative, or affective characteristics not tested here might affect how individuals learn from cases. In addition, demographic characteristics, such as student gender, ethnicity, or culture might influence which details are classified as seductive details, and which are characterized as simply unrelated and uninteresting. The current study did not focus on how demographically different students might
differentially classify particular case details as seductive details, or how the inclusion of such details might differentially affect students’ learning based on their presence in the case. An investigation into these differences is particularly salient when using a case intervention such as presented in the current study, since student characteristics, including ethnicity, poverty status, chronic low achievement on standards based assessment, and the teacher’s sense of community relatedness were the only case details classified as seductive details.

It is possible that students from different backgrounds or experiences might respond differentially to these types of details in a case. For example, it is well known throughout the psychological sciences that stereotype threat, where contextual factors induce the threat of being negatively stereotyped due to group membership, depresses performance on academic tasks (Steele, 1997). For example, when a woman is made self-conscious about her gender when engaging in a task that women as a group have been culturally deemed inadequate in, such as math, the threat of the stereotype being applied to the individual can actually act as a barrier to success at the math task. It holds that a similar phenomenon might occur among teachers when particular student or school characteristics linked to teacher underperformance are explicitly pointed out in a case narrative. In the current case, the seductive details tell readers that the students are primarily Hispanic, poor, and underperforming on standardized tests. This information might lead student teachers who are self-conscious about negative social stereotypes about the effectiveness of teachers in such schools to feel stereotype threat, thus affecting their abilities to enact effective teaching strategies. In addition, the presence of a stereotype threat might further be exacerbated by a student teacher’s own social or
cultural background. To evaluate if teachers’ performance on the case containing seductive details is in some way related to a stereotype threat, or other beliefs and biases, more detailed analysis of how the teachers perceived the case, perhaps collected through exit interviews, could be employed.

A fourth possible direction for future research is to launch a more careful investigation into the issues surrounding authenticity and cases, as this issue was only touched upon in the current study. Some researchers make a distinction between cases and simulations; claiming cases directly replicate real world circumstances or have high fidelity, while simulations systematically omit real world details, or have low fidelity (Merseth, 1996). In the current study, the distinction between cases and simulations was not made. However, it is clear that under this classification system, the current study falls within the purview of a simulation since it calls for the elimination of contextual details from the case content in order to focus more exclusively on those case details that relate directly to the learning material. When considering the complexity of the classroom – the material environment, multiple events occurring simultaneously, the internal states and traits of students and teacher - plus the artificiality of any case-based learning environment, whether the case is presented as a text, a video, or with actors; it can be argued that no artificial reenactment of any classroom is completely accurate. Rather than falsely dichotomizing case-based instructional materials as either cases or simulations, the issue of fidelity in a case might better be conceptualized as existing on a continuum. Future research exploring the relationship between case content and characteristics, and perceptions of authenticity, realism, and fidelity promises to be a
fruitful path to better understanding the nature of case instruction and the ways in which cases themselves might relate to student perceptions, engagement, and learning.

The current research was limited to a case on how to write effective feedback, a type of formative assessment. A fifth possible direction for future research is to test whether and how the results replicate when using cases and learning materials focused on different content, particularly content with less well-defined guidelines for best instruction practices. Examining the role of seductive details and other case characteristics play in learning, across content areas both within and outside of teacher education, will help define the generalizability of the findings from the current study.

A final possible direction for research is looking at whether teaching type and quality plays a moderating or mediating role when examining the effects of case design on learning from cases. In the current study, case details were examined while instructional conditions were held constant in order to identify if the case details alone have an impact on learning. However, in a real-world teaching environment, it is likely that both the case itself and the teaching strategies that are paired with the case influence the learning environment. In fact, some argue the very power of the case-based instructional method lies not in the materials used but in how adeptly the material is drawn out through instruction (Kim et al., 2006). While the current study shows that the details of a case do matter in so far as they affect learning when other factors are held constant, a deeper understanding of interaction between case materials and the instruction might alter this finding.
Application to Practical Settings

These results have direct application to actual classroom instruction. The findings from the current study provide further evidence that including seductive details in instructional materials, particularly classroom cases used in teacher education, is in fact damaging to student learning, and therefore should be avoided. Rather than attempting to enrich case-based instructional materials through the employment of seductive details, instructional designers might better serve students by devoting their attention to drawing out the most salient features in the cases related to the instructional content, so that students might grow a greater awareness of the implicit complexity contained within any single issue. While this approach might not highlight the quantity of issues that one might attend to when involved in any classroom scenario, it promises to make instruction more focused, more meaningful, and lead to potentially deeper engagement when learning from cases.
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Appendix A: Demographics Questionnaire - Pilot Step 1

Directions: The following questionnaire will provide us some general information about who is participating in this study. All information collected here will be confidential, and will be used for descriptive purposes. Please fill out the following questionnaire completely.

1. What is your ethnicity (choose all that apply)?
   - American Indian/Alaska Native
   - Asian or Pacific Islander
   - African American
   - Hispanic
   - White
   - Other ___________________________

2. What is your gender?
   - Male
   - Female

3. What is your age?
   _____ Years

4. Are you:
   - Currently enrolled in Educational Psychology 303
   - Currently enrolled in Educational Psychology 310
   - Currently enrolled in BOTH Educational Psychology 303 and 310

5. How many semesters until you student teach?
   - Currently student teaching
   - Will begin student teaching in ________ semesters

6. What is your major?
   - Elementary Education
   - Secondary Education
   - Special Education
   - Physical Education
   - Nutrition
   - Early Childhood Multicultural Education
   - Art Education
   - Family Studies
   - Other: ______________________________

7. What is your teaching experience (check all that apply)?
   - No teaching experience
   - Student teaching
   - Community education (e.g. summer camp, coaching, religious education instructor)
   - Volunteering in schools
   - Classroom aid
☐ Substitute teaching
☐ Other: _________________________________
Appendix B: Multiple-choice Pretest/Form A

_____ 1. Which of the following statements is most true about feedback?
   a. Written feedback has little influence on student performance
   b. Written feedback always helps students improve their performance
   c. Written feedback helps students improve performance in some cases
   d. Written feedback is the most influential factor on student performance

_____ 2. When students are self-regulated, they use active strategies to control their learning. Which of the following statements best describes the relationship between feedback and self-regulation?
   a. Feedback is not related to self-regulation
   b. Feedback that corrects mistakes is most helpful to self-regulation
   c. Feedback that helps students decide what to do next is most helpful to self-regulation
   d. Feedback that praises students’ intelligence is most helpful to self-regulation

“I need to make sure that I sound like a knowledgeable authority”, Bob Jones thinks to himself as he writes his students feedback. As he writes, he makes sure to include a lot of information so that his students will see that he really knows what he is talking about.

_____ 3. What is the likely outcome of Bob’s feedback strategy?
   a. His feedback is likely to be less clear than feedback directed at student knowledge
   b. His feedback is likely to have a greater influence on student learning than more simple feedback
   c. His feedback is likely to be more motivating than simpler feedback

_____ 4. Which of the following is NOT a strategy to improve the clarity of written feedback?
   a. Use simple language and sentence structure
   b. Use language to match your student’s developmental level
   c. Use language appropriate to your students’ background knowledge
   a. Use highly complex descriptive language

Julie is in 3rd grade and her teacher is working on helping her write interesting paragraphs that include rich description. For this assignment, Julie’s teacher wanted Julie to be as descriptive as possible when writing about a personal experience. Julie wrote the following paragraph:

When I was walking out of my house I saw two cars crash on the street. The color of the car that crashed into the other car was black.
The color of the other car was red. When they crashed it made a bad bump sund.

5. Of the following, which is the best example of clear feedback for Julie?
   a. “Nice job!”
   b. “You should work on your mechanics”
   c. “I like how you described the sound of the cars crashing. What else can you tell us about the sound?”
   d. “This was a very clear paragraph with good description. What other aspects of the car crash can you describe?”

6. Of the following, which is the best example of specific feedback for Julie?
   a. “You spelled street and sound wrong, make sure you check your spelling”
   b. “Try to be more descriptive”
   c. “You included a lot of description about the cars and the sound of the crash! Nice job!”
   d. “The most descriptive part was the sound of the crash. How can you make the other sentences more descriptive too?”

7. Of the following, which feedback has the most appropriate tone for Julie?
   a. “I liked your paragraph a lot. Great job!”
   b. “Next time, include more description about the cars.”
   c. “Great try!”
   d. “Nice description about the sound. What else can you add to make the other sentences more descriptive?”

8. Which of the following is the most appropriate place to write feedback?
   a. Directly in the margins
   b. On rubrics or grading forms
   c. On either the first or last page of the work
   d. Appropriate placement depends on the content of the feedback

9. When written with a positive tone, students are more receptive to feedback. Regarding a positive tone, which of the following suggestions is most accurate?
   a. Start with praise to help a student feel open to criticism
   b. Avoid any criticism so that you don’t hurt the student’s self-esteem
   c. Make sure to end the feedback with praise so the student feels good
   d. Use positive language when providing constructive criticism

10. Research shows that students’ motivation is affected by teacher expectations. Which of the following feedback scenarios indicates that a teacher has low expectations for Sondra?
    a. After Sondra answers a question incorrectly, Mr. Baker says “Good job!”
b. When called on to answer a question, Sondra pauses. Instead of calling on someone else, Mrs. Estrella waits for Sondra to come up with an answer.
c. When Sondra answers a question incorrectly, Ms. Gill asks Sondra to elaborate on why she thinks that is the correct answer.
d. When Sondra turns in her essay, Mr. Gregor provides Sondra with a list of suggestions for improvement.

11. Some teachers use detailed rubrics to grade their students’ work. These rubrics contain explanations of the grading criteria. In terms of feedback, which of the following is a benefit of using a rubric for grading?
   a. Since the rubric explains the grade, teachers are freed from having to write feedback.
   b. Since the rubric explains the grade, the teacher is freed to write meaningful personalized feedback to each student.
   c. Since the rubric pairs feedback with a grade, students will take the feedback more seriously.

12. In general, feedback is a type of __________ assessment.
   a. Formative
   b. Summative
   c. Repetitive
   d. Demonstrative

13. When students are provided feedback and a grade simultaneously, the assessment can be considered___________.
   a. Formative
   b. Summative
   c. Demonstrative
   d. Conditional

14. Which of the following best describes the purpose of feedback?
   a. To make students feel good about their work
   b. To demonstrate that the teacher is committed to student learning
   c. To help students determine how to improve their work
   d. To help students identify personal weaknesses

15. A major advantage of using coversheets to provide students with feedback is:
   a. Coversheets help organize feedback with learning criteria
   b. Coversheets contain personalized information for the student
   c. Coversheets can be constructed by students
   d. Coversheets point out students’ weaknesses as well as strengths
Appendix C: Classroom Case with Seductive Details and Reflection Questions

Based on “The Research Paper” (Ormrod & McGuire, 2007)

Mesa Middle School is a medium size school located in a small town in northern New Mexico. Approximately 92% of the students are Hispanic, 2% are white, 1% is African American and 5% are American Indian. Of the 540 students attending Mesa, approximately 86% of students are eligible for the Free and Reduced lunch program. In 2007, only 26% of Mesa’s ninth grade students scored proficient or better on the New Mexico Standards Based Assessment (SBA) for reading, compared to 44% state-wide scoring proficient or better on this test. Mr. Garcia has been teaching seventh-grade English as Mesa Middle School for 2 years, since the beginning of his career. He grew up in northern New Mexico, and feels a special kinship to his students and their families. He decided to become a teacher to give back to his community, and to help inspire young minds to meet their full potential.

This year, Mr. Garcia has decided to assign his students a 10-page research paper on a topic of their choice, due at the end of the semester. He has never assigned such a long paper to his seventh-graders, but thinks this assignment will give his students the chance to improve their writing and critical thinking skills. Since his students haven’t written such a long paper before, he decides to assign a rough draft due two weeks in advance, so that he can provide them with feedback.

Mr. Garcia collects the rough drafts of the research paper on a Friday, and promises his students that he will grade them over the weekend and return them with feedback they can use for the final drafts of their research papers. On Saturday morning, he pulls out his red pen and gets to work. On each paper, Mr. Garcia makes sure to pay strict attention to correcting any mechanics problems, by underlining mistakes and telling the students how to fix them. He saves any additional written feedback for the end of the paper, where he writes his general impression of the work. For example, Susana handed in a paper on her favorite contestant on American Idol, and Mr. Garcia wrote “Good job! I liked Crystal the best this season too.” He tries to keep all his comments positive and general, even if the paper isn’t very good, because he does not want to turn his students off from writing. He figures he should save any criticisms for the final research paper, because by that point he thinks his students will be much more confident in their work. Besides, he thinks, isn’t the point of a rough draft simply to get your ideas out their on the page, so that they can be refined for the final draft?

On the day the final research papers are due, Mr. Garcia collects them and then dives into grading them as soon as he has a free period. He is excited to see how the papers developed since the rough draft stage. As he starts to grade, however, he notices that most students didn’t improve the content of their work at all. Instead, they just made the corrections to grammar and mechanics that Mr. Garcia had pointed out in the rough drafts!
Questions

1. What is this case about? Explain your answer.
2. What are the pros and cons of Mr. Garcia’s feedback strategies?
3. Considering what you now know about teaching and feedback, what would you advise Mr. Garcia to do differently next time?
Mr. Garcia, is a seventh grade English teacher at Mesa Middle school. This year, Mr. Garcia has decided to assign his students a research paper on a topic of their choice, due at the end of the semester. He decides to assign a rough draft due two weeks in advance, so that he can provide them with feedback.

Mr. Garcia collects the rough drafts of the research paper on a Friday, and promises his students that he will grade them over the weekend and return them with feedback they can use for the final drafts of their research papers. On each paper, Mr. Garcia makes sure to pay strict attention to correcting any mechanics problems, by underlining mistakes and telling the students how to fix them. He saves any additional written feedback for the end of the paper, where he writes his general impression of the work. He tries to keep all his comments positive and general, even if the paper isn’t very good, because he does not want to turn his students off from writing. He figures he should save any criticisms for the final research paper, because by that point he thinks his students will be much more confident in their work.

On the day the final research papers are due, Mr. Garcia collects them and then dives into grading them as soon as he has a free period. He is excited to see how the papers developed since the rough draft stage. As he starts to grade, however, he notices that most students didn’t improve the content of their work at all. Instead, they just made the corrections to grammar and mechanics that Mr. Garcia had pointed out in the rough drafts!

Questions

1. What is this case about? Explain your answer.
4. What are the pros and cons of Mr. Garcia’s feedback strategies?
5. Considering what you now know about teaching and feedback, what would you advise Mr. Garcia to do differently next time?
Appendix E: Traditional Review Activity

Directions: Think of a time that you received feedback from an instructor about your work. With this situation in mind, answer the following questions:

1. What was the feedback about? Explain your answer.
2. What were the pros and cons of the feedback you received?
3. Considering what you now know about teaching and feedback, what could your instructor have done differently to help you learn?
Appendix F: Learning Perceptions Questionnaire

Directions: Respond to each of the following items by circling the place on the scale that indicates your feelings best.

1. How difficult was it to learn about feedback from the learning material?
   1 very easy  2  3  4  5 very difficult

2. How much effort did you have to invest to learn about feedback from the learning materials?
   1 no effort at all  2  3  4  5 a lot of effort

3. How interesting was the learning material?
   1 boring  2  3  4  5 interesting

4. How entertaining was the learning material?
   1 tiresome  2  3  4  5 entertaining

5. How much did this material help you to understand the principles of effective feedback?
   1 not at all  2  3  4  5 very much

6. How helpful was this material for teaching you how to deliver effective feedback?
   1 unhelpful  2  3  4  5 helpful

7. How meaningful were the materials on feedback?
   1 not at all meaningful  2  3  4  5 very meaningful

8. How authentic was the information about feedback?
   1 not at all authentic  2  3  4  5 very authentic

9. Did this activity help you think like a real teacher?
   1 not at all  2  3  4  5 very much

10. Would you be able to use the strategies for giving feedback that you came up with in a real classroom?
    1 definitely not  2  3  4  5 absolutely
Appendix G: Multiple-choice Posttest/Form B

_____ 1. Which type of feedback best helps students become active learners?
   a. Feedback with a judgmental tone
   b. Feedback with a descriptive tone
   c. Feedback with a passive tone
   d. Feedback with an authoritarian tone

_____ 2. Which of the following statements is most accurate about the purpose of feedback?
   a. Feedback helps motivate students
   b. Feedback helps improve understanding
   c. Feedback is both motivational and helps improve understanding
   d. Feedback helps teachers’ explain grades

Mrs. Gomez, a 9th grade science teacher, just returned the first draft of a term paper to her students. For each student, she offered general suggestions for improvement on the last page. Since it was the first draft, she didn’t grade the papers. During lab time, she met with students to discuss the feedback and to check to see if they had any questions. Max didn’t understand the vocabulary Mrs. Gomez used in her feedback to him, so when he met with Mrs. Gomez he said he didn’t have any questions. Mrs. Gomez briefly met with Max, but since he didn’t have any questions, she assumed he understands what to do next. Julie, one of the top students in the class, was concerned that the drafts weren’t graded and wanted to know whether or not Mrs. Gomez thought that she had written an “A” paper. Manuel found Mrs. Gomez’s comments sparked new ideas, and talked with her about his plan for improving his paper.

_____ 3. Which student best demonstrated self-regulation?
   a. Max
   b. Julie
   c. Manuel

_____ 4. What strategy could Mrs. Gomez use in the future to improve the clarity of her feedback?
   a. She should provide students with grades on their work
   b. She should make sure to use simple vocabulary that everyone understands
   c. She should write comments on the first page of the draft, not the last
   d. She should only provide written feedback on the final draft

_____ 5. According to research on feedback, what is the best explanation for why Mrs. Gomez did not give her students grades on their first draft?
   a. In general, when students receive grades their motivation decreases
b. When students receive grades and written feedback together, they tend to focus on the grades over the feedback
c. When students receive grades on a first draft, they expect they will get the same grade on the second draft
d. In general, grades are more motivating to students than written feedback

_____ 6. What mistake did Mrs. Gomez make when giving Max feedback?
   a. She did not provide him with enough detail.
   b. She did not check to make sure he understood the feedback.
   c. Her expectations for Max were too high.
   d. She did not provide Max with a grade.

_____ 7. Feedback is most effective if it focuses on ______________.
   a. The learning task
   b. The student’s learning style
   c. The student’s self esteem
   d. Broad course objectives

Janet Smith is a 7th grade language arts teacher. She is trying to decide how to improve her students’ vocabulary. One strategy she is trying is that when she provides them with feedback, uses advanced vocabulary words that they will have to look up in the dictionary.

_____ 8. Which of the following outcomes can Janet expect from her feedback strategy?
   a. Because of the difficult vocabulary, Janet’s students will not understand her feedback
   b. Janet’s students will work harder because they need to research the vocabulary she uses in her feedback
   c. Janet’s students will be more motivated by her feedback than they would be with feedback that is written to their level

_____ 9. What is the purpose of formative assessment?
   a. To help students learn
   b. To help students get better grades
   c. To meet state standards
   d. To fulfill accountability standards

_____ 10. When students are provided feedback and no grade, the assessment can be considered __________.
   a. Formative
   b. Summative
   c. Demonstrative
   d. Unconditional
11. What strategy best ensures that students will use the feedback given to them by a teacher?
   a. Make sure students have an opportunity to use the feedback in another assignment
   b. Make sure students read the feedback carefully
   c. Make sure students bring the feedback home for parents to read
   d. Make sure students collect the feedback in a portfolio

12. When providing students with feedback, which of the following is most effective?
   a. Compare the student’s work with the work of other students in the class
   b. Compare the student’s work to the student’s own past performance on other assignments
   c. Compare the student’s work to the learning objectives for the assignment

13. In terms of timing of feedback, which is the most effective strategy?
   a. Provide feedback to students within two weeks of completing an assignment
   b. Provide feedback to students within a day or two of completing an assignment
   c. Provide feedback to students at the end of a course or semester
   d. Provide feedback to students whenever it is convenient for you as the teacher

14. Which of the following best characterizes positive feedback?
   a. Feedback compliments the student
   b. Feedback that avoids criticism
   c. Feedback that comments on the students’ intelligence
   d. Feedback that points out strengths and places for improvement

15. Which is the best rule of thumb when providing students with feedback?
   a. Try to write as much as possible, you can never provide too much feedback.
   b. Only offer one or two suggestions so that students don’t get overwhelmed.
   c. Make sure that you comment on every error so that the student will fix any mistakes.
   d. Consider the individual student and learning objectives when deciding how much feedback to provide.
Imagine you are a fifth grade language arts teacher. You have been teaching your students about the 6+1 Trait® Writing Model, and are currently working on teaching your students about Organization. According to the 6+1 Trait® Writing Model, Organization deals with having an attention-grabbing introduction, linking the introduction and conclusion, sequencing logically and clearly, and transitioning from one idea to the next smoothly. To help your students apply what they learned about Organization to their writing, you assigned your students a short essay about what they did over the weekend, and you just collected the first of two drafts of the assignment. Below is one student’s first draft. Using the guidelines you learned about today, provide this student with written feedback that will help prepare them to write a second draft. You may write on any part of the page as you provide your feedback.

My weekend

Over the weekend I went to Madison. I went there to see a play. It was really good. It was called the Magichin’s Nephew. I liked it a lot. Then we went to Michael’s Custurd and brough custurd home for my Grandpa and Dad and Al. The play was the first of Narnia. It was about God our creator. Then I went up north. When we got in Parteevillie there was 101 grage sales (I didn’t count. I’m just being sarcastic.) There was grage sale after grage sale. We stoped at one but didn’t get anything. When we got up north my cousin Annie asked if I wanted to go over to my Granny’s old house. I said sure. She has a go cart and trampoline. My cousin caught a cat fish like two feet long. We went on our boat. The gocart is not ours. It is my Uncle Tom. But we use it because we let him use our boat. We just got a boat lift for it. I didn’t catch anything. Her cabin is up the hill and down. She is going to sale her cabin. My Uncle Tom (a different one) wants to look at her cabin for a cabin. Well bye.
## Appendix I: Text Rating Questionnaire

Directions: Consider how the content of each of the sentences below relates to what you learned about providing students with written feedback. For each sentence rate whether the content is pertinent to understanding how feedback was used in this case by circling either *essential* or *non-essential*. Also, for each sentence, circle whether the content is *interesting* or *uninteresting* to you. Make sure to rate each of the following sentences on BOTH Essentialness and Interestingness.

<table>
<thead>
<tr>
<th>Circle One:</th>
<th>Circle One:</th>
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<tbody>
<tr>
<td>Essential or Non-essential</td>
<td>Essential or Non-essential</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Essential or Non-essential</th>
<th>Interesting or Uninteresting</th>
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<tr>
<td>Essential or Non-essential</td>
<td>Interesting or Uninteresting</td>
</tr>
</tbody>
</table>

1. Mesa Middle School is a medium size school located in a small town in northern New Mexico.

2. Approximately 92% of the students are Hispanic, 2% are white, 1% is African American and 5% are American Indian.

3. Of the 540 students attending Mesa, approximately 86% of students are eligible for the Free and Reduced lunch program.

4. In 2007, only 26% of Mesa’s ninth grade students scored proficient or better on the New Mexico Standards Based Assessment (SBA) for reading, compared to 44% state-wide scoring proficient or better on this test.

5. Mr. Garcia has been teaching seventh-grade English as Mesa Middle School for 2 years, since the beginning of his career.

6. He grew up in northern New Mexico, and feels a special kinship to his students and their families.

7. He decided to become a teacher to give back to his community, and to help inspire young minds to meet their full potential.
<table>
<thead>
<tr>
<th>Essential or Non-essential</th>
<th>8. This year, Mr. Garcia has decided to assign his students a 10-page research paper on a topic of their choice, due at the end of the semester.</th>
<th>Interesting or Uninteresting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential or Non-essential</td>
<td>9. He has never assigned such a long paper to his seventh-graders, but thinks this assignment will give his students the chance to improve their writing and critical thinking skills.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>10. Since his students haven’t written such a long paper before, he decides to assign a rough draft due two weeks in advance, so that he can provide them with feedback.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>11. Mr. Garcia collects the rough drafts of the research paper on a Friday, and promises his students that he will grade them over the weekend and return them with feedback they can use for the final drafts of their research papers.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>12. On Saturday morning, he pulls out his red pen and gets to work.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>13. On each paper, Mr. Garcia makes sure to pay strict attention to correcting any mechanics problems, by underlining mistakes and telling the students how to fix them.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>14. He saves any additional written feedback for the end of the paper, where he writes his general impression of the work.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>15. For example, Susana handed in a paper on her favorite contestant on <em>American Idol</em>, and Mr. Garcia wrote “Good job! I liked Crystal the best this season too.”</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>16. He tries to keep all his comments positive and general, even if the paper isn’t very good, because he does not want to turn his students off from writing.</td>
<td>Interesting or Uninteresting</td>
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<td>----------------------------</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>17. He figures he should save any criticisms for the final research paper, because by that point he thinks his students will be much more confident in their work.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>18. Besides, he thinks, isn’t the point of a rough draft simply to get your ideas out their on the page, so that they can be refined for the final draft?</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>19. On the day the final research papers are due, Mr. Garcia collects them and then dives into grading them as soon as he has a free period.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>20. He is excited to see how the papers developed since the rough draft stage.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>21. As he starts to grade, however, he notices that most students didn’t improve the content of their work at all.</td>
<td>Interesting or Uninteresting</td>
</tr>
<tr>
<td>Essential or Non-essential</td>
<td>22. Instead, they just made the corrections to grammar and mechanics that Mr. Garcia had pointed out in the rough drafts!</td>
<td>Interesting or Uninteresting</td>
</tr>
</tbody>
</table>

96
### Appendix J: Transfer Posttest Scoring Rubric - Pilot Step 1

<table>
<thead>
<tr>
<th></th>
<th>4 points</th>
<th>2 points</th>
<th>0 points</th>
</tr>
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<tbody>
<tr>
<td><strong>Clarity</strong></td>
<td>The feedback is clear and uses simple and appropriate vocabulary and sentence structure for a 5&lt;sup&gt;th&lt;/sup&gt; grade student.</td>
<td>The vocabulary and sentence structure are mostly appropriate for a 5&lt;sup&gt;th&lt;/sup&gt; grader, though may not be clear or completely comprehensible.</td>
<td>The vocabulary and sentence structure are complex, are not appropriate for a 5&lt;sup&gt;th&lt;/sup&gt; grade student, are not clear or comprehensible, or are focused on demonstrating teacher knowledge instead of student understanding</td>
</tr>
<tr>
<td><strong>Tone</strong></td>
<td>The feedback situates the learner as the agent by inspiring creativity, thought, or wondering through the use of asking provocative questions</td>
<td>The feedback mostly situates the learner as active, though is somewhat bossy/authoritarian, and uses questions that to a limited extent are thought provoking</td>
<td>The feedback situates the learner as the passive recipient of instruction and does not use questions, or only uses questions that are obvious, not thought provoking</td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td>The feedback is focused on the providing the student with conceptual information about how the essay met the learning objectives around Organization</td>
<td>The feedback is somewhat focused to the learning objectives but may discuss other elements, or is somewhat conceptual in nature though may be too broad or too narrow.</td>
<td>The feedback is not focused on the learning objectives, or is not conceptual in nature, either too broad or too narrow.</td>
</tr>
<tr>
<td><strong>Overall Quality</strong></td>
<td>Overall, the feedback is of the highest quality and will help the student complete a successful 2&lt;sup&gt;nd&lt;/sup&gt; draft</td>
<td>Overall the feedback is acceptable, and offers at least one usable suggestion for the student to complete a 2&lt;sup&gt;nd&lt;/sup&gt; draft</td>
<td>Overall the feedback is low quality or unacceptable, and will not be beneficial to the student.</td>
</tr>
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**Total Score:**
## Appendix K: Transfer Posttest Rubric - Main Study

<table>
<thead>
<tr>
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<th>4 points</th>
<th>2 points</th>
<th>0 points</th>
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</thead>
<tbody>
<tr>
<td><strong>Clarity</strong></td>
<td>The feedback is clear and uses simple and appropriate vocabulary, sentence structure, abbreviations, and notation for a 5th grade student.</td>
<td>The vocabulary, sentence structure, abbreviations, and notation are mostly appropriate for a 5th grader, though may not be clear or completely comprehensible.</td>
<td>The vocab, sentence structure, abbreviations and notation are complex, are not appropriate for a 5th grade student, are not clear or comprehensible, or are focused on demonstrating teacher knowledge instead of student understanding</td>
</tr>
<tr>
<td><strong>Tone</strong></td>
<td>The feedback situates the learner as the agent by inspiring creativity, thought, or wondering through the use of asking provocative, ill-defined, guiding questions</td>
<td>The feedback mostly situates the learner as active, though is somewhat bossy/authoritarian, and uses questions that to a limited extent are thought provoking, open-ended, and guiding</td>
<td>The feedback situates the learner as the passive recipient of instruction and does not use questions, or only uses questions that are obvious, not thought provoking or guiding</td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td>The feedback is focused and limited to providing the student with conceptual information about how the essay met the learning objectives around Organization.</td>
<td>The feedback is somewhat focused to the learning objectives but may discuss other elements, such as spelling, or is somewhat conceptual in nature though may be too broad or narrow.</td>
<td>The feedback is not focused on the learning objectives, or is not conceptual in nature, either too broad or too narrow, such as containing too much information about issues other than the learning objectives.</td>
</tr>
<tr>
<td><strong>Overall Quality</strong></td>
<td>Overall, the feedback is of the highest quality and will help the student complete a successful 2nd draft</td>
<td>Overall the feedback is acceptable, and offers at least one usable suggestion about Organization for the student to complete a 2nd draft</td>
<td>Overall the feedback is low quality or unacceptable, and will not be beneficial to the student.</td>
</tr>
<tr>
<td><strong>Total Score:</strong></td>
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Appendix L: Pilot Study Step 2 Demographics Questionnaire

Directions: The following questionnaire will provide us some general information about who is participating in this study. All information collected here will be confidential, and will be used for descriptive purposes. Please fill out the following questionnaire completely.

1. What is your ethnicity (choose all that apply)?
   - American Indian/Alaska Native
   - Asian or Pacific Islander
   - African American
   - Hispanic
   - White
   - Other ___________________________

2. What is your gender?
   - Male
   - Female

3. What is your age?
   _____ Years

4. What is your teaching experience (check all that apply)?
   - No teaching experience
   - preK-12 classroom teacher
   - College/University Teaching Assistant
   - College/University Faculty
   - Other: ___________________________

5. If applicable, how long have you taught at College/University level?
   _____ Years

6. If you have taught at the College/University level, which of the following have you taught?
   - A course devoted to assessment theory and practices to undergraduates
   - A course devoted to assessment theory and practices to graduate students
   - A course that contains some information about assessment to undergraduates
   - A course that contains some information about assessment to graduate students
   - I have not taught content about assessment

7. How familiar are you with research on feedback (check all that apply)?
   - I learned about principles of feedback in my coursework
   - I have taught principles of feedback in a college/university course
   - I have read extensively about principles of feedback in research journals
   - I have conducted research on feedback
Appendix M: Demographics Questionnaire - Main Study

Directions: The following questionnaire will provide us some general information about who is participating in this study. All information collected here will be confidential, and will be used for descriptive purposes. Please fill out the following questionnaire completely.

1. What is your ethnicity (choose all that apply)?
   - American Indian/Alaska Native
   - Asian or Pacific Islander
   - African American
   - Hispanic
   - White
   - Other ___________________________

2. What is your gender?
   - Male
   - Female

3. What is your age?
   _____ Years

4. Are you:
   - Currently enrolled in Educational Psychology 303
   - Currently enrolled in Educational Psychology 310
   - Currently enrolled in BOTH Educational Psychology 303 and 310

5. How many semesters until you student teach?
   - Currently student teaching
   - Will begin student teaching in ________ semesters’
   - Not applicable/will not be student teaching

6. What is your major?
   - Elementary Education
   - Secondary Education
   - Special Education
   - Physical Education
   - Nutrition
   - Early Childhood Multicultural Education
   - Art Education
   - Family Studies
   - Other: _______________________________

7. What is your teaching experience (check all that apply)?
   - No teaching experience
   - Student teaching
   - Community education (e.g. summer camp, coaching, religious education instructor, tutoring)
   - Volunteering in schools
   - Classroom aid
   - Substitute teaching
   - Other: _______________________________
Appendix N: Classroom Case with Seductive Details Removed and Reflection Questions

Based on “The Research Paper” (Ormrod & McGuire, 2007)

Mesa Middle School is a medium size school located in a small town in northern New Mexico. Mr. Garcia has been teaching seventh-grade English as Mesa Middle School for 2 years, since the beginning of his career. He grew up in northern New Mexico, and feels a special kinship to his students and their families.

This year, Mr. Garcia has decided to assign his students a 10-page research paper on a topic of their choice, due at the end of the semester. He has never assigned such a long paper to his seventh-graders, but thinks this assignment will give his students the chance to improve their writing and critical thinking skills. Since his students haven’t written such a long paper before, he decides to assign a rough draft due two weeks in advance, so that he can provide them with feedback.

Mr. Garcia collects the rough drafts of the research paper on a Friday, and promises his students that he will grade them over the weekend and return them with feedback they can use for the final drafts of their research papers. On Saturday morning, he pulls out his red pen and gets to work. On each paper, Mr. Garcia makes sure to pay strict attention to correcting any mechanics problems, by underlining mistakes and telling the students how to fix them. He saves any additional written feedback for the end of the paper, where he writes his general impression of the work. For example, Susana handed in a paper on her favorite contestant on American Idol, and Mr. Garcia wrote “Good job! I liked Crystal the best this season too.” He tries to keep all his comments positive and general, even if the paper isn’t very good, because he does not want to turn his students off from writing. He figures he should save any criticisms for the final research paper, because by that point he thinks his students will be much more confident in their work. Besides, he thinks, isn’t the point of a rough draft simply to get your ideas out their on the page, so that they can be refined for the final draft?

On the day the final research papers are due, Mr. Garcia collects them and then dives into grading them as soon as he has a free period. He is excited to see how the papers developed since the rough draft stage. As he starts to grade, however, he notices that most students didn’t improve the content of their work at all. Instead, they just made the corrections to grammar and mechanics that Mr. Garcia had pointed out in the rough drafts!

Directions: Respond to the following questions:

1. What is this case about? Explain your answer.
2. What are the pros and cons of Mr. Garcia’s feedback strategies?
3. Considering what you now know about teaching and feedback, what would you advise Mr. Garcia to do differently next time?
Appendix O: Graduate Student Recruitment Email

To the members of the Educational Psychology Listserv,

My name is Sara Abercrombie, and I am currently conducting my dissertation research study, where I am testing certain design elements of instructional materials. Specifically, I am testing whether including seductive details in case-based instruction is helpful to learning and learning perceptions (see abstract below). I am writing to you today to recruit your participation in my project. Specifically, I am looking for 10 graduate student volunteers to help me evaluate one of my instructional materials. Basically, after giving informed consent and providing some basic demographic information, you will be asked to read a short chapter from a teacher education text about the principles of effective feedback, and then read a case-study that describes a teacher’s experience giving feedback. Then you will be asked to rate each sentence from the case in terms of its relatedness to the learning material. The entire participation time is estimated at half an hour. Although you will not be paid for participation, there are benefits to participating, including enriching your knowledge of the research process and learning more about effective feedback processes and case design. If this sounds interesting to you, and you would like to participate, please reply to this email. I thank you for your time and consideration.

Sincerely,
Sara Abercrombie, M.A.
Doctoral Candidate
Educational Psychology

Abstract

With the case-based instructional method instructors use fictionalized or actual narratives as an instructional tool to support learning and decision-making and improve transfer to practical settings. Educational theorists and researchers specializing in case based instruction have suggested that cases can be made more realistic, engaging, and challenging, thus leading to better learning and decision-making, by including richly contextualized details, adding distracters or irrelevant details, and increasing ambiguity (Kim, Philips, Pinsky, Brock, Phillips, & Keary, 2006). In contrast, research on human cognitive architecture suggests that including seductive details, details that are interesting but irrelevant to learning objectives, damages learning by reducing attention to relevant information, disrupting organizing within working memory, and by activating inappropriate schema thus leading to ineffective integration of learning material into long-term memory (Harp & Mayer, 1998; Lehman, Schraw, McCrudden, & Hartley 2007). However, the effects of seductive details on learning and motivation have not been tested within the case-based instructional context. The current study investigates
the role of seductive details on recall, transfer, and perceptions of authenticity, interest, and difficulty within the context of teacher education.


Appendix P: Institutional Review Board Approval

The Main Campus Institutional Review Board has reviewed and approved the above referenced protocol. It has been approved based on the review of the following:

1. Expedited Review Application submitted 12/22/2010;
2. Investigator Protocol submitted 12/10/2010;
3. UNM Main Study Consent version 12/22/2010;
4. UNM Pilot 1 Consent version 12/22/2010;
5. UNM Pilot 2 Consent version 12/22/2010;
6. Demographics Questionnaire submitted 12/20/2010;
7. Multiple Choice Pretest submitted 12/10/2010;
8. Instructional Module submitted 12/10/2010;
9. Classroom Case with Seductive Details (SD) submitted 12/10/2010;
10. Classroom Case without Seductive Details (NSD) submitted 12/10/2010;
11. Traditional Review Activity (C) submitted 12/10/2010;
12. Perceptions Questionnaire submitted 12/10/2010;
13. Multiple Choice Posttest submitted 12/10/2010;
14. Transfer Posttest submitted 12/10/2010;
15. Text Rating Questionnaire submitted 12/10/2010;
17. Pilot Study Step 2 Demographics Questionnaire submitted 12/10/2010;

Consent Decision:
Requires a signed consent form
HIPAA Authorization Addendum not applicable
If a consent is required, we have attached a date stamped consent that must be used for consenting participants during the above noted approval period.

If HIPAA authorization is required, the HIPAA authorization version noted above should be signed in conjunction with the consent form.

As the principal investigator of this study, you assume the following responsibilities:

- **CONSENT:** To ensure that ethical and legal informed consent has been obtained from all research participants.
- **RENEWAL:** To submit a progress report to the IRB at least 30 days prior to the end of the approval period in order for this study to be considered for continuation.
- **ADVERSE EVENTS:** To report any adverse events or reactions to the IRB immediately.
- **MODIFICATIONS:** To submit any changes to the protocol, such as procedures, consent/assent forms, addition of subjects, or study design to the IRB as an Amendment for review and approval.
- **COMPLETION:** To close your study when the study is concluded and all data has been de-identified (with no link to identifiers) by submitting a Closure Report.

Please reference the protocol number and study title in all documents and correspondence related to this protocol.

Sincerely,

J. Scott Tonigan, PhD  
Chair  
Main Campus IRB

* Under the provisions of this institution's Federal Wide Assurance (FWA#00000490), the Main Campus IRB has determined that this proposal provides adequate safeguards for protecting the rights and welfare of the subjects involved in the study and is in compliance with IRB Regulations (45 CFR 46).