Ender's Game: Using Science Fiction to Teach Child Development

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Students in two sections of a developmental psychology course wrote five-page papers about 10 aspects of child development depicted in the science fiction book Ender's Game (Card, 1977). *Analysis of the book required using theory and research from the course. The assignment received favorable ratings from students and helped them understand and think critically about course material.*

Application assignments provide students with the challenging task of applying multiple discipline-specific themes, such as concepts and theories in developmental psychology, in a medium that students typically do not view with a critical eye, such as the entertainment media. In order to accomplish this task, students must understand the concept they are to apply, identify the concept in the medium under scrutiny, and explain, in written form, how the concept is being applied.

Instructors have had students apply psychological concepts beyond the classroom though interviews (Walton, 1988), letter writing (Junn, 1989), newspaper portfolios (Kirsh, 1996; Rider, 1992), personal journals (Hettich, 1990), and analysis of books (Boyatzis, 1992; Lips, 1990) and animated films (Kirsh, 1998). These types of assignments are particularly interesting because they improve students' critical thinking ability (Anderson, 1992) and increase their involvement in course material (Fleming, Piedmont, & Hiam, 1990). In addition, students rate these types of assignments as enjoyable and valuable (Boyatzis, 1994; Kirsh, 1998).

Application assignments involving mass media have been used to help students connect course concepts to the world beyond the classroom and increase their understanding of course material. One such assignment is a newspaper portfolio (Rider, 1992), which requires students to find news-

paper articles, pictures, or editorials relevant to their coursework and then analyze the content of each item using materials from the course. Similarly, film assignments (Anderson, 1992; Kirsh, 1998) require students to apply discipline-specific content from such fields as social psychology or developmental psychology to the content of a film.

In addition to news and film media, researchers have used literary works to teach developmental principles. For example, Boyatzis (1992) had students analyze the content of Maya Angelou's autobiography, *I Know Why the Caged Bird Sings* (1969), in terms of multiple developmental concepts (for instance, self-esteem, effects of abuse, and identity formation). Although application assignments using literature have focused primarily on nonfiction texts such as autobiographies, other genres of writing also have been used. Lips (1990), for example, had students identify, explain, and discuss issues related to the psychology of sex and gender in a science fiction novel.

Given Lips's success using science fiction in the classroom, the purpose of this study was to examine the efficacy of using a science fiction text, *Ender's Game,* as a medium for having students apply concepts and theories in a developmental psychology course. The *Ender's Game* assignment is meant to provide educators with an empirically tested strategy for engaging students in learning and applying course content.

The *Ender's Game* Writing Assignment

My aim for the *Ender's Game* assignment was to enrich students' understanding of theory and research relevant in Child Development, a second-year course that is primarily taken by education, speech, and psychology majors. Sixty-nine students (86% female, 98% Caucasian) in two sections of the course wrote five-page papers about 10 aspects of development depicted in *Ender's Game* (Card, 1977).

Synopsis of Ender's Game

Ender's Game is the story of Andrew "Ender" Wiggin, a six-year-old genius. The premise of the story is that Earth has been attacked and nearly destroyed by an alien species. In order to prevent annihilation of the planet, exceptional children are trained to become soldiers and commanders in Earth's defense forces. The story follows not only Ender's development at battle school, where his training is intense, manipulative, and ruthless, but also his relationships with his violent brother, Peter, and his loving sister, Valentine. The book also focuses on Ender's rela-

tionships with his peers, most of whom despise him, and on his own struggle with his identity as both the savior of humanity and its homicidal and unwittingly genocidal commander.

Writing Assignment

For the writing assignment, I instructed students to discuss Ender's (or his siblings') childhood experiences in terms of 10 aspects or topics of psychological development. Having students consider 10 topics allowed for sufficient breadth of coverage of the course material. I allowed students to cover a maximum of two topics per chapter. Thus, the number of chapters used by students in the assignment ranged from 5 (using 2 topics per chapter) to 10 (using 1 topic per chapter.) Each developmental topic required approximately one half page to write up. Students' papers were graded on the following criteria: relevance to the course (only developmental psychology concepts were allowed), accuracy of concept identification, clarity of explanation, and breadth of coverage.

Aiding Students' Understanding of the Assignment

To facilitate students' understanding of the assignment, the course syllabus provided a detailed example of how to write up a developmental topic (for example, hostile aggression). Specifically, the syllabus described how to define a developmental concept (for example, "Hostile aggression occurs when an individual purposely tries to injure or harm another person"), describe a corresponding example from *Ender's Game* (for example, "An example of hostile aggression is when Stilson hits Ender"), and explicitly connect the example from the book to the developmental concept under review (for example, "Stilson's behavior is an act of hostile aggression because the intent of his actions is to harm Ender").

To develop further their ability to perceive and analyze developmental concepts in the media, several times during the semester students participated in a general discussion on how to identify and discuss developmental themes in animated films. For instance, after viewing a scene from the film *The Lion King* (Hahn, Allers, & Minkoff, 1994) in which Simba and Nala go to an elephant graveyard, students identified depictions of evocative and active genetic-environmental correlation. An evocative genetic-environmental correlation occurs when a child's genetic makeup (for instance, personality) influences the behavior of others. In contrast, in an active genetic-environmental correlation, the child's

genetic makeup affects the environments that the child seeks out and prefers. Although animated films and books are different modes for presenting information, the ability to identify a developmental concept in either book or film form involves the same processes. Students need to understand the developmental concept they are being asked to apply and then to identify the concept in the form of media under analysis. An advantage of a book assignment over a film assignment, however, is that the greater amount of self-reflective statements and narration in books provides more opportunities for analysis. For instance, *Ender's Game* is replete with paragraphs in which Ender thinks about his life and his past and current predicaments. Thus, students are easily able to assess aspects of Ender's view of himself and his cognitive ability because his thought processes are clearly described.

Implementation Issues

Students analyzed *Ender's Game* based on developmental theory and research that was either presented in class or found in their textbook. For each aspect of development they identified, students were to provide at least one example from *Ender's Game* and then to explain clearly how the example depicted that aspect of development. I encouraged students to discuss both accurate and inaccurate applications/depictions of developmental concepts in the book. For instance, an inaccurate depiction of a developmental concept is the fact that Ender engages in abstract thinking at age 6, which, according to Piaget's theory of child development, is five years before he is supposed to be able to do so. In all, students discussed over 80 different topics. Some of the topics they discussed included hostile aggression (for example, Bonzo attacks Ender after losing a battle simulation to him), abstract reasoning (for example, Ender figures out the "Bugger" battle strategy), emotional display rules (for example, Ender thinks to himself that if he cries at Battle School he will be ridiculed by his peers), spatial intelligence (for example, Ender realizes that the battle room has a different orientation than the rest of the space station), sibling rivalry (for example, Peter is jealous of Ender's admission to battle school), and the looking-glass self (for example, Ender's self-esteem is based upon how others view him).

I encouraged students to show me their list of developmental topics and a sample draft of their paper prior to submitting it. Although most students had little problem finding 10 developmental topics in the book to write about, a few them had great difficulty making the explicit connection between a developmental concept and the content of the book.

That is, these students failed to explain clearly why a particular behavior in the book exemplified a particular developmental concept. After I worked briefly with these students, all of them were able to complete the paper.

Evaluation of the Assignment

Immediately after handing in the assignment, students responded anonymously to a five-item questionnaire. The first three questions used a four-point scale ranging from 1 (*poor*) to 4 (*excellent*). Students gave a mean rating of 3.35 (*SD*=.66) to the question of how well the assignment improved their ability to understand course material, a mean rating of 3.28 (*SD*=.57) to the question of the assignment's educational value, and a mean rating of 3.61 (*SD*=.52) to the question of the assignment's usefulness for enhancing critical thinking. Students also rated the assignment in terms of its enjoyability and ability to challenge their thinking. Fifty-one (74%) of the students rated the assignment as fun and challenging, 5 (7%) rated it as fun but not challenging, 13 (19%) rated it as challenging but not fun, and no one rated the assignment as not fun and not challenging. Finally, 65 (94%) of the students recommended the writing assignment for future classes.

Written student comments about the assignment requested on the questionnaire also were favorable. One student claimed the assignment "really helped me apply my knowledge of the things I've learned in class." Another student wrote, "I loved reading the book. It was interesting and it kept my attention. I liked writing the paper because it tied everything together from the whole course." The assignment clearly allows students to apply the knowledge they have learned in class to a medium that they have not typically viewed with a critical eye.

The positive attitudes that students reported about the assignment were supported by quality work. I graded their papers on the number of themes they identified (including the issue of breadth of coverage), the accuracy of content, the quality of the explanations relating developmental concepts to the book, and the relevance of the concepts to child development. In general, students successfully identified the requisite number of developmental themes and provided accurate descriptions of those themes. Although in the past I have found that students have difficulty making the connection between a developmental concept and the content of *Ender's Game,* no such problem occurred with this assignment. I believe that the explicit examples of how to complete the assignment that I included in the syllabus, the classroom practice with the process

that we did using animated films, and the significant number of students who brought me sample drafts of their papers improved the students' ability to write clear and explicit analyses.

Conclusions

The findings of this study along with those of Lips (1990) suggest that application assignments involving science fiction novels like *Ender's Game* are useful techniques for increasing students' understanding of course material in psychology. Given that science fiction novels raise a variety of interesting technical, biological, cultural, and social issues, teachers outside of psychology may want to consider using this type of application assignment. In *Ender's Game,* for instance, sociologists could study a society that authorizes only two children per family and allows children to be trained as commanders in war; biologists could analyze the communication and social behavior of the ant-like alien "buggers"; physicists could address the possibility of instant communication across light years and the development of a molecule-destroying, planet-killer weapon; and mass media personnel could focus on the use of Internet dialogue for setting public policy.

In summary, similar to a journal, portfolio, or animated film assignment, an application assignment using *Ender's Game* seems to facilitate students' understanding and application of course material in developmental psychology. Furthermore, this assignment appears to foster learning in a manner that is both fun and challenging. As one student put it, "the assignment made me think (which is a good thing)."

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