

The Impact of Text Genre on Science Interest in an Authentic Science Learning Environment

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Abstract: A gap exists between research on learning and research on interest. Cognitive researchers rarely consider motivational processes, and interest researchers rarely consider cognitive process. However, it is essential to consider both since achievement and interest are in fact intertwined. In this paper we (1) discuss a theoretical model that intertwines cognitive and interest development, (2) describe how that model informed the development of educational materials, and (3) report on the results of the motivational components of a randomized research study examining the impact of text genre on interest. We hypothesized that students with low levels of interest would receive greater benefit from narrative text formats, whereas students with high levels of science interest would benefit more from expository text formats. The results of this research showed the opposite effect. Students with high levels of interest perceived the narrative texts as more interesting and useful for learning.

Significance of the Project

Research on the low levels of science proficiency and motivation, overall, as well as the findings on the gaps between White and African American/Hispanic students provide an important backdrop to the myriad of national reports making clarion calls for increasing the number of students who pursue careers in science (Robelen, 2010). The recommendations stemming from these reports tend to focus either on increasing student achievement in science or increasing student interest in pursuing a career in science. However, these reports tend to ignore research indicating that achievement and interest are in fact intertwined (Hidi, 1990). This body of research has shown that as student achievement in science increases, students tend to value science more. In parallel, the development of interest in science increases the selection of opportunities to further develop skills, such that individuals who value math and science are more likely to seek out additional math and science courses. For example, high school students who aspire to major in science tend to take more advanced science courses in high school (Simpkins, Davis-Kean, & Eccles, 2006), thus performing better on college achievement tests (Easton, Ponisciak, & Lupescu, 2008).

These findings suggest that both motivational and cognitive processes need to be examined together. In this paper we (1) discuss a theoretical model of interest development that intertwines learning and interest, (2) describe how that model informed the development of educational materials about the life history of a variety of consumer species in the El Yunque rainforest in Puerto Rico, and (3) report on the preliminary results of the motivational components of a randomized research study examining the impact of those materials on students' interest in science. Future reports will incorporate analyses related to the impact on learning outcomes.

Four-Phase Model of Interest

Hidi and Renninger (2006) articulated a phase-based model of interest development describing how instructional elements interact with both interest and cognitive development. They make a distinction between *situational* interest, which is supported primarily by the environment, and *individual* interest, which is driven by internal characteristics. In addition to describing the phases of the model, they specify which instructional supports are likely to facilitate interest development at each phase. A key element of the model is that the educational supports for situational and individual interests are not the same. Therefore, instructional enhancements will only promote interest if they are customized to learners' existing levels of individual interest.

In the case of situational interest, it is primarily the characteristics of instructional materials that trigger interest. Situations that are rich in novelty, surprise, and incongruity as well as group work, hands-on activities, fantasy contexts, and narrative texts can trigger situational interest, which is the first phase of situational interest (see Schraw & Lehman, 2001 for a review). Triggered situational interest is a short-term experience of focused attention and involvement that is supported almost entirely by features of the situation (Hidi & Renninger, 2006). If individuals become sufficiently involved in the material and find the content meaningful, they might experience maintained situational interest, the second phase of situational interest, and continue to engage in the material or choose to enter very similar situations in the future.

On the other hand, the phases of individual interest are supported more by factors inside the person. Individuals with individual interest have some stored knowledge of the content area and value that knowledge. They have also developed some fluidity in the way they work with domain content. However, individual interest still requires some external support. Specifically, the presence of factors such as expert models, challenging

goals, and opportunities for knowledge building can promote the development of individual interest.

Given this framework and the variability between instructional supports that enhance situational versus individual interest, a critical question is how to design instructional materials to support the development of interest for all learners. An assumption underlying most instructional materials and most research on the factors that can promote interest is that “one size fits all.” In most of the prior experimental research testing the effects of situational factors on interest, pre-existing individual interest, if measured, is not tested as a moderator of the effects of situational factors (e.g., Harp & Mayer, 1997). In other words, there is an assumption that learners will respond to situational enhancements with greater interest regardless of their level of individual interest.

Consistent with the four-phase model, evidence is beginning to accumulate that the effects of situational enhancements work differently depending on individuals’ pre-existing orientations towards the task (Hulleman & Harackiewicz, 2009). For example, learners with low individual interest in math, showed higher situational interest after learning the material with colorful versus plain instructional materials, whereas learners with high individual interest in math showed the opposite pattern. In addition, learners with high individual interest in math showed higher task interest after learning how a new math technique could be personally useful to their lives (Durik & Harackiewicz, 2007). In other words, the effect of situational enhancements designed to raise interest in educational contexts seem to work best if the type of enhancement is paired with learners’ existing level of individual interest.

Implication of Four-Phase Model of Interest on the Design of Instructional Texts

The four-phase model of interest development suggests that students’ interest in any given learning task is a function of the task characteristics and students’ prior individual interest in the subject of study. The genre of a reading passage is a task characteristic that has been shown to influence interest. Research in which both expository and narrative texts are included often shows that readers find narrative texts more interesting than expository texts (Dai & Wang, 2007). Several characteristics of narrative texts have been identified to increase text interest (see Schraw & Lehman, 2001), such as, rich detail about concepts and ideas (Schraw, 1997), as well as suspense and resolution (Iran-Nejad, 1987). Coherence is also a critical variable related to text interest because texts that readers perceive to be coherent are more interesting (Sadovski, Goetz, & Rodriguez, 2000).

On the other hand, narrative texts can be more challenging than expository texts in supporting reading to learn (Lee & Spratley, 2010). Expository texts tend to be organized around the structure of the subject matter to be learned, whereas narrative texts can lead readers astray from the main ideas conveyed in a text (Kintsch, 1998). Consistent with this, Harp and Mayer (1997) measured two kinds of self-reported situational interest following a reading activity in order to separate the affective and cognitive value of texts. They found that seductive details, which are common in narrative texts, increased affective interest (enjoyment) but decreased cognitive interest (utility). In this study, we also examine the effects of text characteristics (i.e., narrative or expository genre) on cognitive and affective situational interest. We also expand on prior research by testing whether the effects of genre differ depending on initial levels of individual interest.

Design of Instructional Texts

The four-phase model of interest development and the empirical research on the impact of text characteristics on learning and interest provide a framework for the design of instructional materials that can be used to enhance interest and learning at different phases of interest. For students who are low in science interest, it is important to maximize the instructional enhancements that will promote interest and engagement. For students who are high in individual science interest, it is important to provide students with challenging material.

In this paper, we describe an effort to modify the background materials in a middle school, inquiry-based curriculum unit called *Journey to El Yunque* (<http://elyunque.net>). We have developed two parallel forms (narrative and expository) of the background readings. The narrative form describes the life history of each species by presenting anthropomorphic characters that show students key limiting factors through vivid imagery and rich descriptions. The narrative version contains the text-based features that prior research has shown to trigger situational interest in students with low individual interest. In contrast, the expository versions present the same key limiting factors as in the narrative form, but the information is conveyed as a general description. The expository version minimizes the text-based features that prior research has shown to be distracting for students with high individual interest. We will now describe the context of the *Journey to El Yunque* program and outline the creation of parallel narrative and expository versions of the background readings.

The *Journey to El Yunque* program aims to improve middle school students’ understanding of the dynamic interrelationships among organisms and the environment. The four-week, web-based unit exposes students to authentic research practices at the Luquillo Long-Term Ecological Research station in Puerto Rico, commonly known as El Yunque. It is the only tropical rainforest among 25 sites within the overall Long-Term Ecological Research network. El Yunque is the site of some of the earliest ecosystem-level studies in ecology (Odum, 1970). More recently, El Yunque has been struck by two severe hurricanes (Hurricane Hugo in 1989 and Hurricane Georges in 1998). Researchers in El Yunque have provided comprehensive studies of the

resilience of ecosystems to natural disturbances like hurricanes. The research surrounding these hurricane recovery periods provides a rich example of basic ecosystem processes at work.

Journey to El Yunque engages students in the same problems that researchers in El Yunque are investigating. The program consists of four modules that support the overarching goal of investigating what will happen to the rainforest if severe hurricanes end up striking the rainforest more frequently, as suggested by climate models. The introductory module introduces students to the historical patterns of hurricane frequency and damage in El Yunque. In the second module, students investigate what happens to the producers in El Yunque after a hurricane. In the third module, students investigate what happens to the consumers in El Yunque after a hurricane. In the fourth module, students explore the impact of a hurricane on an entire food chain.

The background readings in this study come from the third module on consumers. Prior to engaging in modeling activities, students are presented with background readings about the life history of each species. The program introduces students to six consumer species that are representative of the types of hurricane responses researchers have found in El Yunque. There are two decomposers, two primary consumers, and two secondary consumers. As part of the investigation cycle, students read about the life history of their assigned consumer, make a prediction about the population dynamics after hurricane Hugo, and explore a model of population dynamics to explain what happened to their species after hurricane Hugo.

When investigating population dynamics after a disturbance, scientists in El Yunque typically consider changes to five primary limiting factors for a given species: access to prey, avoidance of predators, direct mortality from the hurricane, and suitability to changes in environmental conditions, in particular drought conditions and the influx of forest debris from the hurricane. Each species has five background readings focused on providing the life history of each limiting factor. During the modeling activities, students manipulate parameters related to these five limiting factors and investigate the impact on population dynamics.

Parallel Readings

In order to address the need to have instructional texts that can accommodate students with either low or high individual interest, we developed parallel background readings (narrative or expository) for each of the five limiting factors for each of the six species. There are three dimensions on which we ensured that the readings were parallel: reading complexity, word length, and idea units. We developed the readings to be at a 5th grade reading level to ensure that the readings would be within the reading range of most middle school students. We used the Lexile text score to measure reading complexity (Smith, Stenner, Horabin, & Smith, 1989). The Lexile bases text difficulty on the average sentence length and the complexity of the text vocabulary. In classroom settings, teachers can assess students' reading abilities on the same Lexile scale. Therefore, students' reading abilities can be matched to text difficulty. The interquartile Lexile range for 5th grade students is 565L – 910L(1). Books that are more than 50L above students' Lexile scores are considered too complex for students to read (2). Therefore, each of the background readings was developed to have a Lexile score between 565L and 910L and the Lexile scores for the parallel versions were within 50L points of each other to be considered equivalent.

At the end of 5th grade, the average student's reading fluency for a 5th grade text is 139 words correct per minute (Hasbrouck & Tindal, 2006, Table 1, p. 69). Based on that result, we assumed that most middle school students would be able to read a 5th grade text at 125 words per minute. Therefore, five 500-word essays would take students about 20 minutes to complete. We limited the word length differences between the parallel versions to be within 12 words for each reading, which would correspond to a 30-second differential for the average student when reading about all five limiting factors for one species.

In order to ensure that the readings had parallel content, we first outlined the key concepts for each species. These content outlines were provided to a professional fiction author. He created narrative, anthropomorphic characters and situations to convey the life history of the species. Next, the narrative stories and the content outline were provided to a science textbook writer, who developed a parallel expository version that was within the word length and reading complexity parameters of the narrative version. Lastly, the narrative and expository versions were reviewed by an ecologist who studies El Yunque to ensure that the content was scientifically accurate and the content was parallel across both versions. Through this process we developed five narrative and five expository readings for each species that are parallel in text complexity, word length and idea units. Therefore, the primary difference between the parallel versions is the genre — narrative or expository.

Method

The study was conducted during the 2012-13 school year in 20 seventh and eighth grade classrooms from 7 different middle schools in the Midwest. Five of the seven schools were urban elementary schools with greater than 90% of the students eligible for free or reduced lunch. One school was a Catholic elementary school situated in an urban neighborhood with a 20% poverty rate. The remaining school was a suburban junior high school with 0% of the students eligible for free or reduced lunch.

The intervention took place over five class periods. During the first class period, students completed pre-surveys and on the fifth class period, students completed post-surveys. During the middle three days of the intervention, students studied three of the six species—one species on each day (randomly assigned at the classroom level to ensure generalizability across species). Students within classrooms were randomly assigned to read either narrative or expository versions of the readings. In order to ensure that levels of prior individual interest in ecology were evenly distributed across conditions, we did blocked random assignment on students' prior individual interest (see the Measures section below for a description of the prior interest survey).

The delivery of the educational materials was conducted through a web-based system. Once a student was assigned to a treatment condition, an account was created for the student and the account was assigned to readings associated with the assigned experimental condition. The experimenter provided students with their login information at the start of class period 2. Class periods 2-4 took place in a computer lab setting in which participants in the same class were reading about the same species, but presented in different genres. All of the experimental instructions were delivered via text. The experimenter monitored the students as they participated in the activities and took note of any behavior that fell outside of the study protocol, such as students talking with each other, obvious distractions, and technical problems.

For class period 2, students logged in to the system and went through an initial 5-minute introduction and training on the system. Then, the system presented students with the activities for the first of the three species they had been assigned. The timing and structure of the activities was the same regardless of which genre students were presented based on their experimental condition.

The students were instructed that they had 20 minutes to read the articles associated with the species with the goal of learning about the factors that affect the size of the population and then applying that information to make a prediction about what happened to that species after Hurricane Hugo. At the end of 20 minutes, the students were automatically moved to the next step. If students finished early they could move on to the next step. We controlled for time on task by obtaining the actual time spent on the reading task, which could be used as a control variable in the analyses. Students were able to take notes on a paper-based worksheet that contained a column for the limiting factors included in the reading and a column for taking notes about that limiting factor. The paper notes could be used during subsequent activities related to the species.

Once the students completed the reading and note-taking task, they completed a comprehension task by summarizing the main factors that affect the survival of the species. After completing the comprehension task, we gauged students' situational interest by first asking them to describe anything they were curious about. Next, students responded to situational interest survey questions (see measures below). After completing the situational interest survey, the system presented students with the prediction activity, which is an application of their reading comprehension. Students were instructed to use what they learned from the background readings to draw a prediction of what the graph of the population looked like after Hurricane Hugo. The students used the interactive graphing tool in *Journey to El Yunque* to draw a graph predicting what the populations levels would be each quarter over a 60-month period. After the students completed their drawing, they developed and submitted a justification for their prediction. Once they completed the graph and submitted the justification, the program overlaid a graph of the actual population on their graph of the predicted population. The students then generated a hypothesis that used what they had learned about the species from the background reading to explain how changes in the limiting factors affected the population. The students repeated the same protocol on class periods 3 and 4 for the second and third species they been assigned respectively. In this paper, we focus on the interaction of prior individual interest and genre on students' situational interest.

Measures

The pre- and post-surveys contain measures of individual interest and general ecology knowledge. The pre-survey also measures students' reading fluency and collects demographic information. Since this study focuses on individual and situational interest, the individual and situational interest measures are described below.

Self-report measure of individual interest. Individual interest in ecology was measured on the pre-survey with 6 items that were adapted from prior research (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008). Half of the items focused on feelings associated with the domain (e.g., "How much are you interested in ecology?") whereas the other half focused on meaningfulness of the domain (e.g., "How important is ecology as a subject?"). The response options ranged from 1 (*Not at all* ___) to 7 (*Very* ___) and the anchor labels were tailored to each item (e.g., *Not at all interested* to *Very interested*). Prior to answering the questions, students were given a basic definition of ecology. The reliability for the scale for the current sample, as measured by Cronbach's alpha, was 0.80.

Self-report of cognitive and affective situational interest. Two types of situational interest were measured on each day after students completed the reading tasks (Harp & Mayer, 1997). Cognitive situational interest refers to the extent to which individuals believe that the learning materials helped them learn the content (e.g., "How much did the readings help you understand this topic?"). Affective situational interest reflects students' beliefs that the material was interesting and entertaining (e.g., "How interesting was the material in the

readings?”). Participants rated each item on the same 7-point scale as used for individual interest, and each construct was tapped with two items. The reliability estimates for cognitive and affective interest for each day were high, with Cronbach’s alphas exceeding 0.84 for each scale on each day.

Population

There were 488 students who participated in the intervention. There were 321 students included in the analyses. Students were dropped from the analyses if they did not provide informed consent or were absent on the day of the pre-survey. Of the participating students a little over half were girls (52%). The largest racial group was Hispanic (57%), followed by Caucasian (33%), and African American (18%). Around 6% of the students indicated membership in other racial groups. The percentages add up to more than 100% since students were able to indicate more than one racial group. Students who were designated as special education or English Language Learners (6%) were also included in the study. In addition to blocking on prior interest, students were also blocked during the random assignment process based on their special population status.

Results

In our analyses, we explored the impact of prior individual interest and genre on students' cognitive and affective situational interest related to the background readings about the species. The overall averages for both cognitive and affective situational interest was above the scale midpoint (4.0) on each day, indicating in general that students found the readings enjoyable and useful for learning. Prior to examining the interaction effect, we explored the main effect of three factors: group of readings, genre, and prior individual interest.

The first factor we examined was whether there were any differences in cognitive or affective situational interest depending on which species the students read about. The six species were organized into two groups of readings (A or B). If there are minimal differences between the groups then we can combine the two groups for subsequent analyses. We conducted separate ANOVAs for cognitive and affective situational interest for each day using group as the independent variable (Tables 1 and 2 report the means and standard deviations). For affective situational interest, there were no statistical differences between the two groups on any of the three days of the intervention (see Table 1). For cognitive situational interest, there were no statistical differences between the two groups on the first two days of the intervention (see Table 2). However, on the third day, students found the snails readings slightly more beneficial for learning than the mushroom readings, with a small effect size, $F(1,300) = 3.94, p < .05, d = 0.2$. Given that there was only a small difference on one dimension of situational interest for one of the species, we combined the two groups for all subsequent analyses.

Table 1: The effect of group, genre, and prior individual interest on affective situational interest

Day	Group		Genre		Prior Interest Slope (R^2)
	Group A	Group B	Narrative	Expository	
1	4.3 (1.5)	4.5 (1.4)	4.3 (1.4)	4.5 (1.5)	0.09* (20%)
2	4.7 (1.5)	4.6 (1.5)	4.4 (1.6)	4.8 (1.4)	0.13* (36%)
3	4.4 (1.6)	4.5 (1.5)	4.5 (1.6)	4.4 (1.5)	0.13* (35%)

Table 2: The effect of group, genre, and prior individual interest on cognitive situational interest

Day	Group		Genre		Prior Interest Slope (R^2)
	Group A	Group B	Narrative	Expository	
1	4.8 (1.3)	5.0 (1.1)	4.8 (1.2)	5.0 (1.2)	0.07* (14%)
2	5.0 (1.3)	5.0 (1.2)	4.8 (1.3)	5.2* (1.2)	0.08* (22%)
3	4.7 (1.4)	5.0* (1.2)	4.8 (1.4)	4.9 (1.3)	0.08* (21%)

The second factor we examined was whether there was a main effect of genre on cognitive or affective situational interest related to the background readings. We conducted separate ANOVAs for cognitive and affective situational interest for each day using genre as the independent variable (Tables 1 and 2 report the means and standard deviations). For affective situational interest, there were no statistical differences between the narrative and expository readings on any of the three days of the intervention (see Table 1). For cognitive situational interest, there were no statistical differences between the narrative and expository readings on the first and third days of the intervention (see Table 2). However, on the second day, students found the expository readings slightly more beneficial for learning than the narrative readings, with a small effect size, $F(1,285) = 7.8, p < .01, d = 0.3$. Given that there was only a small difference on one dimension of situational interest for one of the days, we concluded that there was no main effect of genre on situational interest. Given our hypothesis that there is an interaction effect between prior individual interest and genre, it is possible that the effects of genre are masked by the interaction.

The third factor that we examined was whether there was a main effect of prior individual interest on cognitive or affective situational interest related to the background readings. We conducted separate regressions

on cognitive and affective situational interest for each day using prior individual interest as the independent variable. Tables 1 and 2 show the beta coefficients and R^2 values for each regression. Overall, prior individual interest in ecology was a strong predictor of both cognitive and affective situational interest related to the background readings on each of the three days of the intervention. Students with higher levels of individual interest found the readings to be more enjoyable and useful for learning than students with lower levels of individual interest.

In order to analyze the interaction between genre and prior individual interest on situational interest, there are two primary issues that negate the appropriateness of conducting separate analyses for each day using linear modeling. First is that days are not independent of each other. Days are embedded within students. Students' experiences on one day may impact their experiences on subsequent days. Second, due to absences from one day to the next, there is variation in the number of observations on each day. A dataset that only includes students who were in attendance on all three days would be significantly reduced. Hierarchical linear modeling (HLM) addresses both of these issues. HLM analysis constructs a growth model for each student, which includes an intercept and a slope for each student. These individual growth models can be constructed even if students were not in attendance on all three days. These intercepts and slopes for each student can then be analyzed at the student level for interactions between prior individual interest and genre. Tables 3 and 4 show the results of the HLM analyses for affective and cognitive situational interest. For ease of presentation, we computed the expected values of the intercepts and slopes for students whose prior individual interest was at the average of the population (medium), one standard deviation above the average (high) and one standard deviation below the average (low). The growth models were centered at the first day of the intervention, so that the intercepts represent the expected values on the first day of the intervention.

Table 3: The interaction of prior individual interest and genre on the intercepts and slopes related to affective situational interest

Prior Individual Interest	Narrative		Expository	
	Intercept	Slope	Intercept	Slope
Low	3.7	-0.12	4.0	-0.12
Medium	4.4	0.09	4.7	-0.07
High	5.1	0.30	5.4	-0.01

Table 4: The interaction of prior individual interest and genre on the intercepts and slopes related to cognitive situational interest

Prior Individual Interest	Narrative		Expository	
	Intercept	Slope	Intercept	Slope
Low	4.3	-0.15	4.5	-0.07
Medium	4.8	-0.002	4.9	-0.08
High	5.4	0.15	5.2	-0.09

There is a statistically significant interaction effect between prior individual interest in ecology and genre of the background readings. Students with higher levels of prior individual interest tended to rate the narrative readings higher by the end of the intervention than the expository readings and students with lower levels of prior individual interest tended to rate the expository readings higher by the end of the intervention than the narrative readings. Figures 1 and 2 provide a graphical representation of these results. The intercepts for affective situational interest show a positive main effect for expository over narrative and a positive main effect for prior individual interest, but no interaction effect. The intercepts for cognitive situational interest show a main effect for prior individual interest in ecology and an interaction effect with genre. Students with lower levels of prior individual interest rated the expository readings more helpful for learning whereas the students with higher levels of prior individual interest rated the narrative readings as being more helpful for learning.

The slopes for both affective and cognitive situational interest show an interaction effect. In the expository condition, students' ratings of both cognitive and affective situational interest generally decreased over the course of the three-day intervention. However, in the narrative condition, the change in situational interest over time depended on students' prior individual interest in ecology. Students in the narrative condition with high prior individual interest showed positive growth in both cognitive and affective situational interest to the point that they rated their narrative readings higher than the high interest students in the expository condition. In contrast, students with low prior interest in both the narrative and expository condition showed negative growth in both affective and cognitive situational interest over the three days.

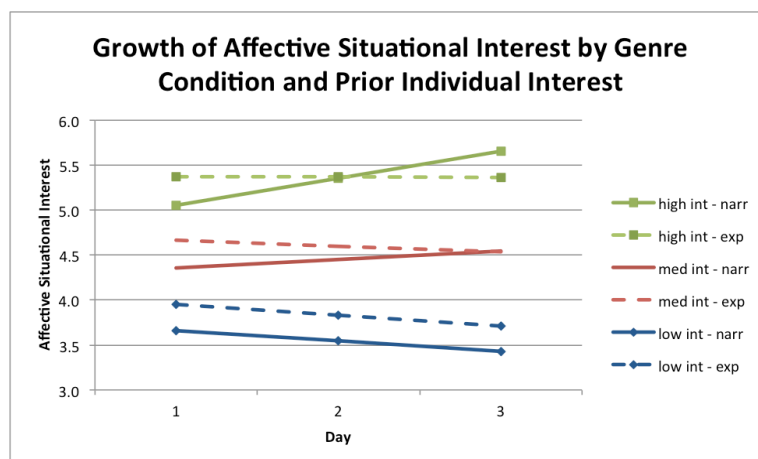


Figure 1. Interaction effect of prior individual interest and genre on affective situational interest

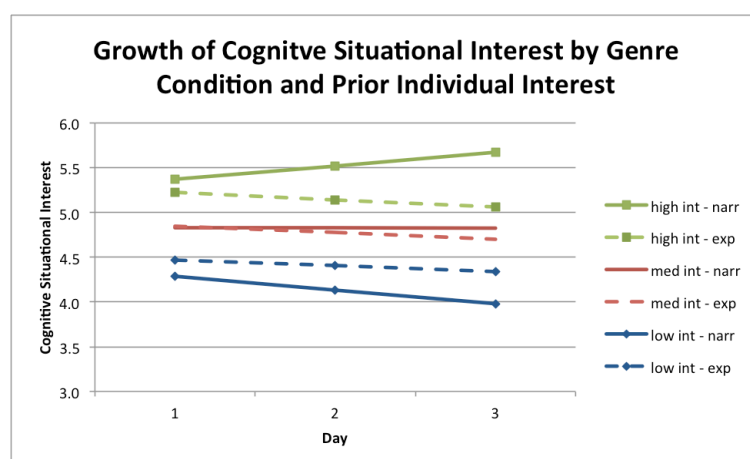


Figure 2. Interaction effect of prior individual interest and genre on cognitive situational interest

Conclusion

The four-phase model of interest development (Hidi & Renninger, 2006) suggests that students' interest in any given learning task is a function of the task characteristics and students' prior individual interest in the subject of study. Task interest for students with low individual interest in a subject area is increased through task enhancements that are outside of the subject of study. Prior research on text characteristics has found that narrative texts with rich descriptions are generally more interesting than expository texts (Dai & Wang, 2007), and could be used as enhancements to trigger situational interest in a science text among students with low individual interest. On the other hand, for students with high individual interest in the subject area, creating challenging learning tasks enhances task interest. Narrative texts can be more challenging in a scientific context than expository texts because they can lead readers astray from the main ideas conveyed through a narrative text (Kintsch, 1998).

The results of this study support the conclusion that students' task interest in reading about the life history of species in El Yunque is dependent on their individual interest in ecology and the characteristics of the text. We attempted to vary text characteristics so as to optimally support the task interest of students who were low or high in individual interest in ecology. For students who were low in individual interest in ecology, both the narrative and expository readings triggered at least some level of interest at first (3.5-4.0 out of 7 on affective interest and 4.0-4.5 out of 7 on cognitive interest). However, neither genre of reading was able to maintain the triggered interest of students who were low in individual interest in ecology. The ratings of situational interest for both narrative and expository decreased as the intervention progressed. These results are not consistent with prior research indicating that narrative texts tend to be more interesting than expository texts. Further work needs to be done to uncover the characteristics of science tasks that will both trigger and maintain situational interest for students who are low in individual interest in science.

On the other hand, for students who were high in individual interest in ecology, both the narrative and expository readings triggered high levels of interest at first (5.0-5.5 out of 7 on both affective and cognitive interest). As was the case for students low in individual interest in ecology, the expository readings were not

able to maintain the triggered interest of students who were high in individual interest. The ratings of situational interest for the expository readings decreased as the intervention progressed. In contrast, the narrative readings did maintain and even increase the triggered situational interest of students who were high in individual interest. When viewing these results through the lens of prior research that characterizes the challenge of extracting important ideas from narrative texts, these results seem to be consistent with the four-phased model of interest development. Hidi and Renninger (2006) suggest that challenging tasks heighten the level of task interest for those students who are already high in individual interest in a subject area. These results raise interesting possibilities about the use of narrative texts in science as a means to challenge students with high individual interest in science.

Endnotes

- (1) <http://lexile.com/about-lexile/grade-equivalent/grade-equivalent-chart/>
- (2) <http://lexile.com/using-lexile/lexile-at-home/reading-outside-of-your-lexile-range/>

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