



# Connecting Core Curriculum Skills and Building Momentum with an Assignment that Combines Math and English

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Stephen Raynie

Gordon State College

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# What I am trying to do

- This assignment applies Momentum Principles to ask students to write to a friend who will be starting college in the fall to help her create a quantitative argument that minimizes her expenses in school, minimizes her debt after school, and minimizes her time to graduation.
- It is framed in terms of a utility value intervention, but I want to see if a positive affect can extend beyond the immediate context of the assignment.

# What I would like to find out

- What I would like to find out is whether a particular assignment in an English course that involves math influences completion of Area A.
- My purpose here is to come up with and test something that would apply to students with low skills confidence at access institutions with high minority enrollments.

# Assignment purpose (short-term benefit)

- Students will be able to integrate quantitative data into a written argument.
- Students will be able to apply math and writing skills together to achieve an authentic purpose.
- Students will be able to understand better issues relating to financing education.
- But as I noted, longer term goals include increasing the first-year completion rate of Area A by influencing student interest and confidence in both subjects through an authentic application.

# Saying is believing (self-persuasion)

- We tend to remember what we believe and say to other people.
- Here, my hope is that writers persuade themselves about the importance of graduating in the shortest time with the least amount of debt. In addition, we know that reinforcing the utility value of new skills can influence student interest, performance, and motivation (Durik, Shechter, Noh, et al., 2015; Canning & Harachiewicz, 2015).
- We also know that students who complete their math and English course in the first year are far more likely to be retained and ultimately graduate.

# Momentum toward graduation (longer-term outcome)

- By connecting learning across disciplines and by creating an authentic assignment, we demonstrate to students the relevance of both disciplines to their learning goals.
- If we can help students internalize the value of both math and English competence in a low-stakes scenario, I hope we can increase the completion rate of Area A within the first year.

# Utility value interventions are complex

- One type is a direct information utility value intervention. Participants are given information about the value of something in a brochure or lecture and then asked to perform a task.
- A second type of utility value intervention is self-generated. Participants are asked to imagine how a new skill might be important to their success and to write about it. Instead of passively receiving information, students can personalize the application of learning through self-persuasion or “saying is believing.”

# Durik et al. (2015)

- Durik et al. (2015) discovered that while a direct persuasion method promoted interest for confident participants, it had a negative affect for students with low confidence. In this study, students with low confidence and without a success expectancy intervention “actually showed less interest in the new [math] technique after being told about its utility value” (p. 109).
- The direct information intervention did work for students with low confidence when they were given an expectancy boost, and this finding is consistent with Dweck’s work on growth mindset.

# Limitations

- It is somewhat problematic that this study was carried out at a “large Midwestern university” [the University of Wisconsin] where the participants were 2% African American (Durik et al., 2015, p. 106).
- Participation was also extra credit in a psychology course, so the participants may have also already had an increased level of motivation. As Durik et al. themselves noted, “Individuals who initiate a task while caring about doing well invest themselves more in the activity” (p. 110).

# Limitations

- Students at Gordon State College, an access institution in the University System of Georgia, is 38% African American.
- According to the USG Mindset Survey data from pre-pandemic admissions criteria, almost 44% of our students reported having a family income under \$35,000 per year.

# Limitations

- Our USG mindset survey composite scores from early in the term reveal that 31.5% of our student agree or slightly agree that “you cannot change your basic math intelligence” and 22.5% agree or slightly agree that “you cannot change your basic English intelligence.”
- Nearly 19% report at the beginning of the term that they are not confident that they can understand the material in their math course.
- As noted, these data are from fall 2019 *prior* to the changes in the admissions environment and the creaming effect of eliminating test scores as part of admissions criteria.

# Direct information discussion

- Canning and Harackiewicz (2015) found “a significant interaction between Utility Value Type and confidence on perceived confidence measured after the interventions, indicating that everyday leisure utility examples increased confidence for those with low initial confidence” (p. 64).
- It appears that when material is related to high-stakes career and school goals for students with low confidence, the information can seem threatening. In addition, for individuals who are majoring in fields where math is less relevant, information about the use of math in a career may have actually reinforced perceptions of irrelevancy (p. 65).

# Direct information discussion

- It could be that less confident students already feel threatened by the environment of college, and the decreased engagement is a function of the fixed mindset when faced with a challenging task.
- Durik et al. (2015), in fact, did find that “when participants received an expectancy boost prior to learning the [mental math] technique, the presence of utility value increased situational interest among those with low PCM [perceived confidence in math]” (p. 112).

# Saying is believing (self-persuasion)

- Hulleman and Harackiewicz (2009) found that a self-persuasion exercise about the personal relevancy of science could improve both performance and interest in the subject for students who had low confidence in their ability to be successful.
- Canning and Harackiewicz (2015) hypothesized that “It may be that self-generated U[tility] V[alue] is especially important for less confident individuals because they become more engaged when they participate in generating personal relevance examples, whereas confident individuals already find the task engaging” (p. 50). It may actually be the case, they continued, that “directly communicated U[tility] V[alue] may be particularly harmful for participants who lack confidence because it adds pressure, causing them to disengage from the task” (p. 50).

# Saying is believing (self-persuasion)

- Canning and Hackiewicz (2015) also combined some direct information with a self-generated response and found a positive effect on students with low confidence.
- When students can internalize information they have been given through reflection on personally generated examples, it seems to boost confidence (p. 61). This effect makes sense in light of the concept of scaffolding Jerome Bruner (1976) pioneered. Bruner suggested that “reducing degrees of freedom to manageable limits” (p. 99) “maintains direction” (p. 99) in the completion of a task. It is possible that providing some direct information creates a scaffolding effect for students with low confidence.

# To summarize

- Direct information utility value interventions can undermine performance and interest for low confidence students (Canning and Harackiewicz, 2015) if they are not first accompanied by an expectancy boost (Durik et al., 2015).
- When students are able generate their own examples of how information might be applied, the negative effects of direct information can be decreased (Canning and Harackiewicz, 2015).
- It appears that when direct information includes everyday leisure activities, the threat level for students with low confidence decreases (Canning and Harackiewicz 2009)

# Limitations

- The experiments often simulate a single class with a single mental math technique, and it is not clear how well, if at all, this research would apply to learning in other disciplines.
- We want to design something that affects course performance, not just task performance, and we need to track confidence and interest longitudinally in the short term and in the long term.

# Limitations

- In these studies too, there was also no separate gender, race, or socioeconomic disaggregation.
- The population of underprepared students in Georgia may or may not respond to an intervention, and if they do, we do not know what the effect would be on retention and progression, both of which are longer term measures.

# The goal

- I want to change attitudes and behaviors in students with low confidence at access institutions early on in their academic career in ways that support their completion of Area A requirements in math and English.
- I am proposing is that basic skills courses be contextualized with each other at least to some degree. They are placed together as Area A in the USG core curriculum as “essential skills” without making it explicit to new freshmen how math and English will be used together in their later professional lives.
- This will counter the cultural myth: we have students who just say, “I am not a math person.”

# Contextualization and multimodal design

- Making the connections among courses more visible so that their relevance is more prominent and personal might increase student motivation in the material (Perin, 2011)
- Asking students to think about how information can be represented to an audience in multiple modes engages metacognitive processes that deepen learning (McDermott, 2010).

# Getting to the main point

- Expectancy boosts prior to a direct information utility value intervention help students with low confidence increase their interest.
- For students with low confidence, direct information utility value interventions boost interest and performance if they are accompanied by self-persuasion (“saying is believing”), when participants are given a chance to generate personal examples to support the utility of a task.

# Still getting to the point

- For students with low confidence, direct information should not focus on potentially threatening applications like long term career goals and instead focus on applications immediately in their personal lives.
- Interdisciplinary contextualization can boost performance.
- A multimodal approach can also boost performance.

# And finally, the assignment

- The assignment is preceded by a short lecture about the “why of composition” that develops the difference between job training and education.
- I talk about the liberal arts as the leadership arts, and I explain that the primary purpose of writing in college is for students to make their thinking visible.
- I explain the difference between knowledge consumption—being about to use a phone, for example—and knowledge production—being able to build a phone.
- In college, students learn not only what to do (job training), but they also learn how to figure out what to do (education).

# The assignment

- The heart of the assignment is not a high-stakes formal paper. The tone, in fact, should be informal since it is a letter to a friend.
- I want students to focus on the thinking rather than language conventions in this assignment: “Your friend, who will be starting college in the fall, has no plan to fund his or her education. Create a plan for her that minimizes her expenses in school, minimizes her debt after school, and minimizes her time to graduation.”
- Students need to look at loan interest rates, amortization schedules, and scholarship and grant possibilities. They should also include a chart or graph in the assignment.

# The assignment

- Be sure your friend realizes that taking 15 or 16 hours per semester will cut one year off the time it takes her to graduate. Students who take 12 or 13 hours per semester take 10 semesters to complete a bachelor's degree, while those who take 15 or 16 hours, complete one in eight semesters.
- In addition to direct expenses of being in college, there is also something called “opportunity cost” that could influence your persuasion plan. You can research this idea to find out how it might influence your friend.

# The assignment

- Gordon State College, like other colleges, has tuition, fees, housing, and meals costs posted on its web site. Be sure to look these up and add an estimate for the cost of books.
- If you recommend that she borrow money, be sure to calculate interest accrual during school and after graduation. Many web sites exist that can help you with understanding amortization and debt repayment.
- Be sure to explore the Gordon State College Foundation web site or other sites for scholarship options.

# Study design

- Pre-intervention and post intervention questions.
- Perception of English and math utility,
- Perception of English and math relevance,
- Perception of English and math confidence,
- Perception of English and math preparedness
- English and math growth mindset.
- Follow up with a post-assignment reflection

# Conclusion

Stephen Raynie

Gordon State College

[sraynie@gordonstate.edu](mailto:sraynie@gordonstate.edu)

678.359.5282

Let me know if you are interested in this project.