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### Assignment 3—Create an Adaptive Course in GIFT

[My course](#) aims at cultivating the awareness of social justice through the lens of equations.

My original idea is to let my tutor adapt to sensitiveness and knowledge similar to the project I did last semester. To debrief, there will be three levels of social justice topic (check-cashing- gender- race, and gender) and three levels of difficulty level (write linear equation expression, write systems of linear equation, and write and solve systems of the linear equation).

Nevertheless, after interacting with the system, especially the setup of LTI, I realized it is impractical to adapt to two of these two levels due to multiple factors including time and communication between systems regarding knowledge assessment. So I decided to focus on one concept (equation: how to write and solve systems of the equation in the context of social justice word problem) in the alignment of [CCSS.MATH.CONTENT.8.EE.C.8.C](#). My initial design is the combination of a welcome webpage, an adaptive flow (rule: video; example: elaborated tutor targeting at guided discovery; recall: three questions (word problem and pure math)). And after fixing the obvious bugs (wrong number in tutor, choice of video), I invite an Econ graduate student to do a user testing. Based on her think-aloud (overall clear flow), I realized that I mistook recall for the practice phase in the flow. Once students are exposed to the conceptual materials, worked examples (tutor to some extent adds agency to students) and later tested by recall questions (in my case, it is practice), the flow ends. With that info, I added the practice phase (a less scaffolded tutor: trying to analyze solving steps they took) and decided to change recall questions more general but kept the content in the end in consideration of my consistency between rule (“they discuss how to write the 2 equations in 2 variables as well as how to solve

the equations using the substitution method and the elimination method”) and recall. In other words, my course in terms of math focuses mainly on procedural knowledge (how-to).

In the comparison of CTAT and GIFT, the strengths of CTAT lie in the step loop and knowledge component (a concept in GIFT). CTAT could walk students through all the steps taken to reach a destination and have a more precise depiction of students’ cognition. GIFT falls behind in this realm and only has question banks (survey form) itself despite that it could integrate with other systems (even if it could, the communication and setup of knowledge modeling could be challenging). In addition, the concept is more general although the effectiveness of this depends more on the application. It still fails to help novices to understand thoroughly. However, GIFT works well in the control of multimedia and EMAP. GIFT will calculate the length of the video and instructors could set the minimum watching time to prompt students to digest the info. Also, although EMAP modeling is on a less granular level compared to CTAT, it finds itself a good spot considering trade-offs between precision and cost.

I feel like the most difficult part of this assignment would be the integration of CTAT. Not only it has multiple procedures to follow, but it is a tough decision to decide the transfer of score. I actually did not quite get this and finalize this. In the practice phase, I changed all KCs into the equation concept and clicked the default. I spent three days (intermittently). I did not like the design of setting knowledge assessment in adaptive flow. It could not be edited if you came back the second time. So every time I would copy a new one, delete the old one and edit it.

## Appendix

1. a screenshot of material from each phase of (at least one of) your Adaptive Courseflow object(s)

The screenshot displays a 'Knowledge Assessment Survey' interface. At the top, it says 'Concept Questions Page'. There are three questions:

1. Hazel and Leo are comparing the number of keys on their keychains. If Leo has four more keys on his keychain than Hazel does on hers and the two of them have 18 keys combined, how many keys does Hazel have on her keychain?
2. In 2018, the median annual income of black women is approximately 60% of that of white men. John is a white man and Jasmine is a black woman. Both of them happened to have annual income that equals the median income of their groups in 2018. John made \$20,000 more than Jasmine.  
How much did John make in 2018?  
 500  
 50000  
 20000  
 40000
3.  $x - 7y = -11$   
 $5x + 2y = -18$   
X=?

Below the questions, there is a 'Review concepts needing remediation' button with a right arrow. Underneath, a 'Tests & Quizzes' section is visible, with a sub-section for 'Tutor Assessments' showing 'Remediation needed on' followed by a list containing 'equation'. The bottom part of the screenshot shows a red apple on a wooden surface against a green chalkboard background.

2. Show a screenshot showing a hint message and a feedback message on a question

18 keys combined, how



Hazel amount of keys is X,  
Leo has 4 more keys, means  
 $X+4$

Complete Survey

Content Feedback



Please stay tuned. You will get more info.