**Overview:**Age of Learning’s Data and Analytics team provides meaningful insights to the various departments across the company, including Marketing, Finance, Curriculum, Strategy and Product teams. It is imperative that all of our Analysts are able to think critically about using data to address business issues and conduct high-quality analyses to provide insights that result in relevant action for our stakeholders.   
  
**Objective:**   
The purpose of this task is to showcase your ability to use analytics and statistics to uncover insights through analysis as well as your ability to communicate (verbally, in writing and through visualizations) these results to technical and non-technical audiences.   
**Task Prompt:**   
This role supports product teams for our mastery products, specifically My Math Academy and My Reading Academy. See introductions here:

<https://www.youtube.com/watch?v=x2qRe4p_Y8Q>

<https://www.youtube.com/watch?v=t117AmsVYM0>

Upon entering the program, students are placed in a placement mode where they engage in a range of activities with varying levels of difficulty. This phase is designed to assess their current knowledge and skill level. Once sufficient data is gathered, the program transitions the student out of placement mode and into regular gameplay. During regular gameplay, an AI-driven recommendation engine suggests 1-3 activities tailored to the student’s zone of proximal development. As students progress through these activities, they master various skills, which research has shown to correlate with improved performance on end-of-year assessments (see supporting research: <https://www.ageoflearning.com/research/>).

Our sales team frequently collaborates with districts to launch pilot implementations, typically lasting 8-12 weeks. At the conclusion of the pilot period, the customer often requests a data review meeting to evaluate student progress during the implementation and assess the potential for expanding into a long-term partnership.

As an analyst, your responsibility is to analyze the provided data and prepare a presentation that accurately documents student progress. By employing data storytelling techniques, your goal is to present insights in a compelling manner that highlights the program’s impact and persuades the customer to consider a district-wide partnership. Below you will find several questions that are similar to what our Product Analysts consider as they prepare for these presentations.

1. How much program usage occurred during the pilot implementation? Including the number of students, time spent in the placement mode, time spent after placement, etc.
2. Did students demonstrate measurable and meaningful skill growth during the implementation? Analyzed overall and by individual skill domains.
3. Were there meaningful usage patterns that contributed to optimal growth? What factors might explain the variability in student achievement?

**Deliverables:**

1. Presentation: A PPT presentation that will be shown to business stakeholders, mimicking the customer-facing data review meeting. We expect that your presentation will take around 20-25 minutes. We will follow a seminar style format, during which the audience will ask questions and engage you in discussion throughout. The presentation section of the interview will last an hour total, including introductions and time for you to ask the audience questions.
2. Technical Submission: Please provide a file that shows your process in dealing with the provided data, including data cleaning, exploration, and conclusions. Can be provided in language of choice but Python, Tableau, and/or SQL are recommended based on Age of Learning’s tech stack.

**Data Dictionary:**

* **Product:** The relevant Age of Learning product (e.g., my\_reading\_academy, my\_math\_academy)
* **Student\_id**: A unique student identifier
* **Grade:** The student’s assigned grade level
* **Completed Placement:** A Boolean value of whether the student completed the placement pretest
* **in\_app\_time\_spent\_placement\_minutes**: The total number of minutes that the student spent in placement mode (total app time)
* **in\_app\_time\_spent\_post\_placement\_hours**: The total number of hours that the student spent after completing the placement pretest (total app time)
* **in\_game\_time\_spent\_post\_placement\_hours**: The total number of hours that the student spent after completing the placement pretest (limited to just activity/game time)
* **active\_days\_in\_placement**: The total number of days that the student worked in the placement mode
* **active\_weeks\_in\_placement**: The total number of weeks that the student worked in the placement mode
* **active\_days\_since\_placement**: The total number of days that the student worked after placement mode
* **active\_weeks\_since\_placement**: The total number of weeks that the student worked after placement mode
* **avg\_minutes\_per\_week\_post\_placement:** The average number of minutes per week that the student spent in the program, calculated using only active weeks (weeks where the student logged in), excluding inactive weeks.
* **sum\_skills\_mastered:** The total number of skills where the student has demonstrated proficiency within normal gameplay (i.e., not placement mode)
* **sum\_skills\_passed\_in\_placement:** The total number of skills where the student demonstrated proficiency in placement mode, and are therefore assumed as prior knowledge.
* **minutes\_post\_placement\_per\_skill\_mastered:** The total number of minutes (in app) that the student spent post placement mode divided by the **sum\_skills\_mastered**
* **Domain:** Each skill belongs to a certain skill group, or domain.
* **sum\_ngr\_skills\_mastered:** The total number of skills mastered in this domain. NGR is an acronym that stands for next-grade-readiness. This filters for skills that are relevant to the student’s grade level, within a district assigned standard set (e.g., common core, Texas state standards, etc.).
  + **Data Check:** Because sum\_skills\_mastered is not limited to a student’s grade level or standard set, the sum\_skills\_mastered is not expected to be equal to the sum of student’s NGR skills across all of their domains.
* **sum\_ngr\_skills\_passed\_in\_placement:** The total number of skills in this domain where the student demonstrated proficiency during the pretest.
* **cnt\_total\_ngr\_skills\_available:** The total number of skills that correspond to a student’s grade level, within their assigned standard set.
* **pct\_skill\_growth:**  One metric we commonly calculate to show growth is the percentage of student’s ngr skills mastered in the program. As provided to you, this only takes into account the percentage of skills mastered in program. Analysts also frequently calculate a student’s current percentage that takes both their mastered and their passed\_in\_placement skills into account.