

**Software name:** Coach Z “virtual sleep boot camp for students”

**Software Overview:** Interactive sleep diary with that provides customized feedback based on diary responses

- The app consists of three features: 1) sleep diary, 2) customized sleep tips, 3) sleep graphs
- Both sleep tips and sleep graphs are generated from diary completion

### Software Requirements

Min:

- Data storage capabilities
- Customized user feedback
  - Algorithms in the software to provide sleep tips based on diary entries
  - Tips will be saved in data storage and selected based on diary entry
    - There is an approximate total of 40 sleep hygiene tips (still working on this)
      - Sleep tips are organized into different categories that relate to sleep diary questions, and this will be what the algorithms will be based on.
    - There will be a two week rotation of algorithms
      - ie: day 1- tips come from questions 1&2, day 2- tips come from 3&4, etc.
    - Customized feedback will involve both behavior change information and positive reinforcement on what students are doing well
    - Ability for users to revisit written list of tips they have been provided (archive)
- Calculations and graphing capabilities from diary entries
  - Total sleep time ( time in bed for sleep- but subtract night-time awakenings and time it takes to fall asleep)
  - Sleep efficiency scores- total sleep time/ TIB
    - \*can round diary entries to 10 min intervals if this easier- 8:03 = 8:00

Mid:

- Health coach- talking head (2-d)
  - to provide verbal/written provision of tips
- Diary completion reminders
  - Both for morning and evening entries
- Alert system for when tips and interaction with health coach are available
- Two modes: 1) boot camp mode (two weeks of diary reminders), 2) refresher mode (no reminders, use as you would like)

Max:

- Ability to interact with other devices (fitbit, alarm clock)
- More advanced avatar health coach
  - Expressive capabilities (positive reinforcement- smiling)
- Login capabilities (zipcode)
  - Additional demographic information: age, gender, dorm/off-campus housing
- More complex algorithm system

## Considerations

- 1) Tips based on diary feedback could come at any time
- 2) It is okay for some of the same tips to be repeated
- 3) This is meant to be a short-term behavior change intervention, so it is not expected that students would use this for months at a time, but that they would use it for a short period to help with a change. However, they could log in again as a refresher, and use at a later time. I wasn't sure if there were two modes whether you would need two different algorithm systems or how complex that would be?
- 4) If it could interact with other devices, it would be interesting if it connects with a fitbit and then as sleep efficiency is poor, it can recommend the app again
- 5) How will the sleep diary know the date- can there be a built in calendar function? Should individual just select day of the week each time they make an entry?
- 6) Should there be a system in place for if a person does not fill out the diary? Provision of daily tip even if they miss a day? If a student misses a day or multiple, can that day be left blank in sleep graph?
  - a. If students miss a day, instead of a tip, there could be a standard interaction from the avatar health coach reinforcing the importance of sleep and encouraging them to fill out diary.
- 7) What considerations about copyright need to be made when making an app (images, information being provided)?