Assignment P4:

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1 QUESTION 1

Initial situation: Need to contact a professor to ask for explanation of a grade.

Rules: If the message is formal, 'email' method is chosen. If there is need for a reciprocal conversation, 'in person meeting' is chosen. If the message is brief and there is need to cite a post on Ed Discussion for a better explanation, 'posting question on Ed Discussion in private mode' is chosen.

1. **Email**
   Open the browser (5 seconds)
   Enter the Buzzport website (5 seconds)
   Enter credentials (10 seconds)
   Confirm Duo verification (5 seconds)
   Open email (2 seconds)
   Click on 'New message' (2 seconds)
   Enter professor's email address (10 seconds)
   Add a subject (30 seconds)
   Type in the body of the message (30 minutes)
   Click send (2 seconds)
2. **In person meeting**
   Find the professor's office on their website (5 minutes)
   Walk to the professor's office (10 minutes)
   Talk to the professor (15 minutes)
3. **Posting on Ed Discussion**
   Open the browser (5 seconds)
   Enter the Buzzport website (5 seconds)
   Enter credentials (10 seconds)
   Confirm Duo verification (5 seconds)
   Open Canvas (2 seconds)
   Open the course (2 seconds)
   Open Ed Discussions (2 seconds)
   Create a new thread (2 seconds)

Select the type of the message as ‘question’ (2 seconds)
Select the category that best fits the question (5 seconds)
Type down the subject (30 seconds)
Type in the body of the message (30 minutes)
Set the message to private mode (2 seconds)
Click send (2 seconds)

Goal: Contact with the professor established.

2 QUESTION 2

Complete an assignment

- Submitting the assignment to Canvas
  - Accessing the course Canvas
    - Open the browser
    - Enter the Buzzport website
    - Hit enter
    - Enter username
    - Hit tab
    - Enter password
    - Click submit
    - Press ‘send me a push’ for Duo verification
    - Grab the phone
    - Slide the screen up to view the push
    - Click confirm on the phone
    - Click on Canvas
    - Scroll down
    - Click on the course Canvas page
  - Finding the desired place for submission
    - Click on Assignments
    - Scroll up/down to fond the desired assignment
    - Click on the assignment
  - Submitting the file corresponding to the assignment

Scroll down
Click ‘choose file’
Select the desired file from file browser
Click open
Enter comments in the comments section (if any)
Click on the check box to agree with license agreement
Click submit assignment

Waiting for the notification email regarding grade and feedback

Receiving the grade and feedback

Accessing the course Canvas

Open the browser
Enter the Buzzport website
Hit enter
Enter username
Hit tab
Enter password
Click submit
Press ‘send me a push’ for Duo verification
Grab the phone
Slide the screen up to view the push
Click confirm on the phone
Click on Canvas
Scroll down
Click on the course Canvas page

Finding the grade and feedback

Click on ‘Grades’
Scroll down to find the desired grade
Visualize the score
Click on the note shape besides the grade
Scroll up/down to visualize grade for each section of the assignment and feedback notes from the TA

3 QUESTION3

For this question, a system of navigation, comprising of a married couple, a map, dashboard indicators, and road signs is considered.

From the perspective of distributed cognition, each part of the system performs different cognitive activities:

The driver concentrates on the driving by controlling the speed, checking the surroundings and trying to avoid hitting the other cars on the road (i.e., perception), and controlling the steering wheel, gas pedal, and brake pedal (i.e., acting).

The spouse on the passenger seat is responsible for carefully reading the map, finding the desired route to the destination, gas stations, and food courts on the road. The passenger requires to correctly perceive the current location of the car on the map and find the best route to the desired location (i.e., perception). Also, the passenger requires to use their memory to estimate how long the car can travel with a certain amount of fuel. This way, they are able to identify the gas station locations that they need to stop by to re-fuel the car (i.e., memory). The passenger also usually takes the responsibility to make sure that both the passenger and the driver's requirements for food and bathrooms are met. They may confirm stopping by a restaurant on the way to get food, identify a restaurant with desirable food type and cost, find the location of the restaurant on the map, find the best route to the restaurant, and give commands to the driver to arrive at the destination (i.e., reasoning and memory).

The dashboard indicators show information to the driver including current speed, current rotor speed of the vehicle's motor, gas and oil level, and radiator's heat level. The visualization of the current speed level helps the driver to adjust the speed as required (i.e., memory). The current rotor speed enables the driver to understand the speed of fuel consumption in the engine (perception). The driver might use this information to adjust the pressure they are inserting on the gas pedal. The gas and oil level in the tanks are shown by separate indicators on the dashboard. This way, the driver does not have to stop the car every once in a while to check the gas or oil level. These indicators hep the driver to instantly have a memory of these things (memory) and estimate the time to fill the tanks up. The radiator heat level is also an indicator that helps with instantly monitoring the heat level of the engine (memory). Using this indicator, the driver is able to perceive the current state of the car regarding heat level. Depending on the situation, the driver may decide to park the car in a shadow if the heat level is up. In contract, if the heat level is low, the driver might increase the heat level.

The signs on the road act as indicators for traffic rules or dangers. They help the driver perceive the requirements and rules for the current situation (i.e., perception) and guide to the correct action.

In order to compare the above-explained situation with a situation where a single driver is using a GPS system on their own, the social cognition is compared with distributed cognition. The social cognition is present when there are two people (i.e., married couple) interacting with each other to achieve a goal. The social cognition enables better perceiving the situation and improves the memory capacity.

The situation is better perceived when the married couple are interacting. For instance, them talking to each other (i.e., relationship) about the current weather or the upcoming changes of the weather on the road, gives driver a better understanding that they might not have had when alone. Also, the interactions help the driver to pay attention to the necessary details on the road. For example, a careless driver coming close from behind can be detected by the spouse sitting on the passenger seat.

The memory capacity is also increased when two people are involved. This is a distinct difference between distributed cognition and social cognition in this context. For instance, the passenger has a memory that they will be hungry and need to consume food at a likeable restaurant within a certain distance. Having this memory, enables them to plan ahead and stop by the restaurant around the desired time. The GPS system alone, however, is not able to help in this regard. It does not remember when people will be hungry, what type of restaurant they prefer, or even if that type of restaurant exists close to the location of the car around that certain time (i.e., social perspective).

With this increased level of perception and memory, not even more tasks can be accomplished, but also the tasks can be done with a higher accuracy and in a less amount of time.

4 QUESTION 4

The task I would like to discuss is meditating by the use of Muse (a brain sensing headband), the app interface associated with it, and earphones.

Muse is a headband that measures the brain activity using sensors on the forehead. This device is connected to a smartphone app and was devised to guide meditation practices ("Figure 1"). The guidance generated by the app is transferred to the user via earphones.

Figure 1 — The use of Muse headband for meditation [1]

As can be seen in "Figure 2", Muse comes with two forehead sensors (i.e., the metal parts) that are used to sense the brain activity in terms of voltages.

Figure 2 — Muse, the brain sensing headband [1]

The device is associated with a smartphone app, which interface is shown in "Figure 3". The app demonstrates the brain activity versus time (in the upper section). The states of the brain are shown by shades of purple color as 'active', 'neutral', and 'calm'. Based on these states, the app generates instructions to the user when performing meditation. For example, if the user is distracted from the task and is anxious, Muse identifies that in the brain waves and generates guidance on the way to transfer the mind to the calm state.

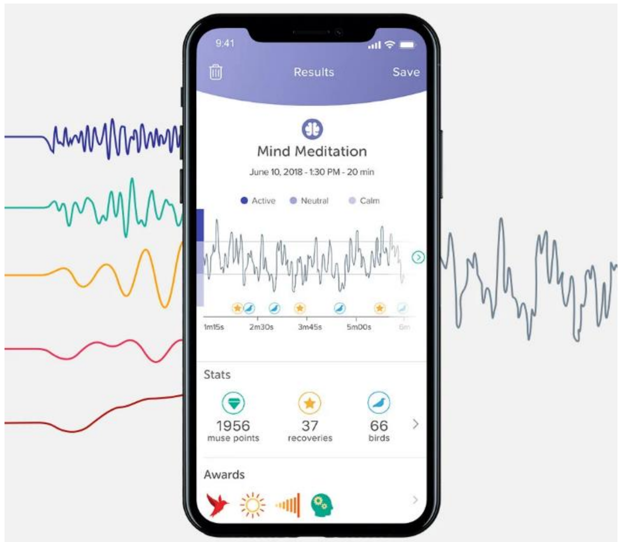

Figure 3 — Smartphone app associated with Muse

Each member of this system (i.e., the human, the Muse device, the app, and earphones) performs certain cognitive tasks. The human or the user focuses on the meditation task. The effort of the user is to calm their mind and not get distracted and anxious by the surrounding noise or thoughts. This means that the user needs to focus on performing actions. The Muse device is responsible to measure the brain activity and transfer it to the app on the phone. This is done by means of the sensor and the Bluetooth device embedded into the Muse. This means that the Muse device perceives the information (i.e., changes in brain activity) and performs the action of transferring the information to the app. When the information is received by the app, through logical processing steps, the brain waves are translated into brain states (i.e., 'active', 'neutral', and 'calm'). This means that a reasoning process is performed in the app. Based on the identified step, the app generates guiding commands to the user via earphones. This can be identified as an action. Also, the app stores the brain activity for all meditation sessions. This can be identified as memory. The earphones also receive the voice commands from the app and transfer them to the user. This can be identified as an action. The earphones might also be embedded with noise cancellation system which perceives the noise of the surroundings and eliminates it for the user. This can be identified as perception.