Solver: Yew Shao Jie

1)   a)   A graphic designer is someone who assembles together images, typography, or motion graphics to create a piece of design for a product or system. An instructional designer is someone who create, content to help user in learning. Such example 1s user manual guide for product/application.

   b)   i)   Rate of errors: Measure of the types and frequency of errors made by users. Because it is meant for senior citizens, thus error must be keep to the minimum to prevent mishap from happening.
      or
      Time to learn: Measure of the time for user to learn how to use. This is because most of the elderly are not use to new technology. Thus, the equipment has to be made easy for them to pick up.

   ii)   • Time to learn: Measure how long it takes for few selected elderly to learn and be able to use the equipment
      • Speed of performance: Measure the time of how long the equipment need to start up and also the loading time it required.
      • Rate of errors: Observe and count the average amount of errors made by the few selected elderly in a period of time.
      • Retention over time: Select a few users to learn and use the system. Have the user be back after 1 week without using the system. Count the average number of features user remembered and not remembered.
      • Subjective satisfaction: do survey with the user who have tested the system.

      *Editor's comment:* Usability measures are **always with respect to the user**. As such, for like speed of performance, it is not about how long the *equipment* need to start up and load. It is about how long the user takes! Also, as stipulated by the lecturer, it is mandatory to **contextualise** and provide a **specific use case** to illustrate how the measures are obtained. It is insufficient to say like "measure time required to use the software". What kind of use case? How is the time measured?

   iii)   Overly attention on the text message is made by David. Multiple attributes like red font, blinking text and alert would be too much. David should not use blinking and red font as the user will be able to hear the audio and look at the large text. David could make it more flexible such that user could change the font setting instead of deciding by the developer.

2)   a)   Using Photoshop to paint a cat drawing

| Forming the goal | I want to paint the cat's head |
|---|---|
| Forming the intention | I will use the paint bucket |

| Specifying the action | To do this, I need to click on the paint bucket icon then the cat's head region |
|---|---|
| Executing the action | Physically doing the action with the mouse and clicks |
| Perceiving the system state | Display has changed |
| Interpreting the system state | Cat's head is orange |
| Evaluating the outcome | Outcome is my goal |

b)      Gulf of evaluation, mismatch of system representation and user's expectation. Because user was expecting the machine to prompt her to enter password after performing the action, which is to put bank card in ATM. However, does not display "enter password".

c)      Gulf of evaluation, action was specifying amount to withdraw but ATM does not issue her the cash and display transaction as successful which is not was she was expecting. She was expecting money to come out.

d)      Permit easy reversal of actions - The units of reversibility may be a single action, a data entry, or a complete group of actions.
Offer informative feedback - As much as possible, design the system so the user cannot make a serious error. If an error is made, the system should be able to detect the error and offer simple, comprehensible mechanisms for handling the error.

3)   a)      Due to human having eyes on the left and right and not up, down, we have wider side view compare to the height of visual. Thus, most people dislike vertical mode of videos, Display has been evolving from circular to square to rectangle, which provides us with wider view to much our human visual field.

b)   i)      Pixel density is defined by the number of pixel per inch. The higher the density, the clearer the screen will look. However, if a display is view further away, such as a television, the pixel density does not need to be as dense as a mobile phone screen because our human eyes will not be able to see the pixel in the television screen in a distance, thus it looks clear.

ii)      The hint given is rather misleading as similar triangle makes us assume that pixel density is directly proportional to the distance, but this should not be the case. We assume that required pixel density is **inversely proportional** to the distance.

For the HDTV,  pixel density = $\dfrac{30}{300} \times 300 = 30$ ppi

For the laptop,  pixel density = $\dfrac{30}{10} \times 300 = 900$ ppi

c) I. Analogical mapping – the user maps relevant pairs through observation, B maps to bold and I maps to italic
II. Inductive reasoning – a rule created by user after a few observations
III. Abductive reasoning – reverse thinking based on the result

d) Show user empathy / encouragement – when something undesirable or failure happens, display an empathy message or emoticon.

4) a) i) Stenotype is a specialized chorded keyboard or typewriter used by stenographers for shorthand use. Reasons why it is faster than QWERTY keyword:
   • Stenotype has far fewer keys than a conventional alphanumeric keyboard
   • Multiple keys are pressed simultaneously (known as 'chording' or 'stroking') to spell out whole syllabus, words and phrases with a single hand motion

   ii) • Due to it being wearable on wrist, only one hand can eb used. Thus, a specialised keyboard for single handed is faster.
   • Most wearable display have screen smaller than a smartphone, thus it may be inaccurate to type on a keyboard with many keys.

b) Anthropomorphisms interfaces are systems with human characteristics. Example, iPhone Siri has an algorithm that is developed based on human thinking and reply like a human. Another example is to give a human avatar to a system.

c) For example, when we search an ambiguous keyword 'NTU' on Google search engine, it could mean Nanyang Technological University or National Taiwan University. Thus, Google makes use of location service to decide on which result to display in the first few results. If user lives in Singapore, then it would display Nanyang Technological University.

d) Each pattern has context (where is the problem encountered), problem (what is the problem and are there similar related problems) and solution sections (set of solutions steps and key considerations). Each solution may have dependencies to other patterns to solve subproblems. Thus, non-expert just needs to go through each pattern and its solution to solve subproblems. Each solution has well-tested ideas about how to choose different patterns. Step-by-step pattern to follow and won't miss out important steps and consideration.

--End of Answers--