EBU6305

Interactive Media Design and Production

Evidence-Based Analysis

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Learning Objectives

- Comprehend the knowledge and process required for usability analysis.

- The ability to conduct usability analysis independently.

- Practice usability analysis based on facts and evidence.

Topics

- Usability Analysis Checklist
- Evidence-Based Research

Usability Analysis Checklist

- Follow a proper usability model ☑

- Avoid subjective opinions given by yourself ☑

- Support the statements by evidence ☑

Follow a Usability Model

- It is always a good practice to follow a theoretical model for any research analysis.

- This is to ensure a good structure and perspective of the analysis.

- Without it, your analysis may seem to too random, i.e. *how do you know you have covered everything?*

- Choose one that is appropriate for the product:
  - Nielsen's model
  - ISO model
  - PACMAD model

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Recap: Usability Models

Nielsen's Model	ISO Model	PACMAD Model
Proposed in 1993.	Proposed in 1997. Has been revised several times. The latest update was in 2019.	Proposed in 2013. Based on ISO Model.
For traditional computing applications.	For a wide range of computing applications.	For mobile applications.
Five attributes: • Errors • Efficiency • Satisfaction • Learnability • Memorability	Three factors: • User • Context • Goal Three attributes: • Effectiveness • Efficiency • Satisfaction	Three factors: • User • Context • Goal Seven attributes: • Effectiveness • Efficiency • Satisfaction • Learnability • Memorability • Errors • Cognitive load

Avoid Subjective Opinions

- Avoid subjective opinions given by yourself.
- Statements should be **objective** and **unbiased**.

- Avoid *"I think"*, *"I believe"*, etc. ❌

- Try to use passive voice:
  - Instead of saying *"The developer has used tab-view navigation in....."*, write *"Tab-view navigation has been used in....."* ✅

Support Statements with Evidence

- Statements should be based on facts, not common sense, or worse – your own sense.

- Whenever a statement is made, give a reference or other types of evidence.

- Avoid expressions of *"big enough", "exciting", "easy", "like", "enjoy",* etc. These are all invalid statements unless evidence are given.

"big enough"	*How big is big enough?*
"exciting"	*Exiting for whom?*
"easy"	*Easy for a 90-year-old? Or easy for a pro?*
"like", "enjoy"	*If you like it, it doesn't mean everyone else will like it.*

Why is evidence important?

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Topics

- Usability Analysis Checklist
- Evidence-Based Research

Evidence-Based Research

- Evidence-based research is a well established research methodology. We will not cover all details about it in this module – Here let's learn it via a case study.

- *Do you know how to wash your hands?*
  - *If you immediately say yes, your answer probably comes from common sense rather than academic knowledge.*

Case Study

Hand hygiene				
SP6	Hands must be decontaminated immediately before each and every episode of direct patient contact/care and after any activity or contact that potentially results in hands becoming contaminated.	*Class C*		
SP13	Clinical staff should be aware of the potentially damaging effects of hand decontamination products. They should be encouraged to use an emollient hand cream regularly, for example, after washing hands before a break or going off duty and when off duty, to maintain the integrity of the skin.	*Class D*		

SP7	Hands that are visibly soiled or potentially grossly contaminated with dirt or organic material (i.e. following the removal of gloves) must be washed with liquid soap and water.	*Class A*
SP8	Hands should be decontaminated between caring for different patients or between different care activities for the same patient. For convenience and efficacy an alcohol-based handrub is preferable unless hands are visibly soiled. Local infection control guidelines may advise an alternative product in some outbreak situations.	*Class A*
SP9	Hands should be washed with soap and water after several consecutive applications of alcohol handrub.	*Class D/GPP*
SP10	Before a shift of clinical work begins, all wrist and ideally hand jewellery should be removed. Cuts and abrasions must be covered with waterproof dressings. Fingernails should be kept short, clean and free from nail polish. False nails and nail extensions must not be worn by clinical staff.	*Class D*

SP11	An effective handwashing technique involves three stages: preparation, washing and rinsing, and drying. Preparation requires wetting hands under tepid running water before applying the recommended amount of liquid soap or an antimicrobial preparation. The handwash solution must come into contact with all of the surfaces of the hand. The hands must be rubbed together vigorously for a minimum of 10-15 seconds, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers. Hands should be rinsed thoroughly prior to drying with good quality paper towels.	*Class D*
SP12	When decontaminating hands using an alcohol-based handrub, hands should be free of dirt and organic material. The handrub solution must come into contact with all surfaces of the hand. The hands must be rubbed together vigorously, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers, until the solution has evaporated and the hands are dry.	*Class D*

SP14	If a particular soap, antiseptic hand wash or alcohol-based product causes skin irritation, review methods as described in Recommendation SP11 and 12 before consulting the occupational health team.	*Class D*
SP15	Near patient alcohol-based hand rub should be made available in all healthcare facilities.	*Class D*
SP16	Hand hygiene resources and individual practice should be audited at regular intervals and the results fed back to healthcare workers.	*Class D*
SP17	Education and training in risk assessment, effective hand hygiene and glove use should form part of all healthcare workers' annual updating.	*Class D*

▸ Read the official hand hygiene guideline produced by NHS researchers.

■ Background reading: *National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England.pdf*

▸ A total of 335 references in the article alone!

■ Everything is based on facts and evidence.

Support Statements with Evidence

- Usability statements should be supported by evidence.

- Concrete evidence includes:

  - Feedback of survey, focus group, or customer interviews, etc.
    - Ethical approval is usually required when human participants are involved.

  - Verdict from experts after formal assessments.
    - Citation and reference.

  - Research outcome from existing publications, e.g. papers, books, magazines, and even websites.
    - Citation and reference.

  - If it is an objective fact, your own testing evidence are valid, for example, functionality checkbox, listing the number of steps, *"compatible with all screen sizes"*, etc.

More Case Study

The following usability analysis examples are based on a child calculator application.

— Similar to your lab production in this module.

You don't need to know the details of the application. Let's just look at some statement examples…
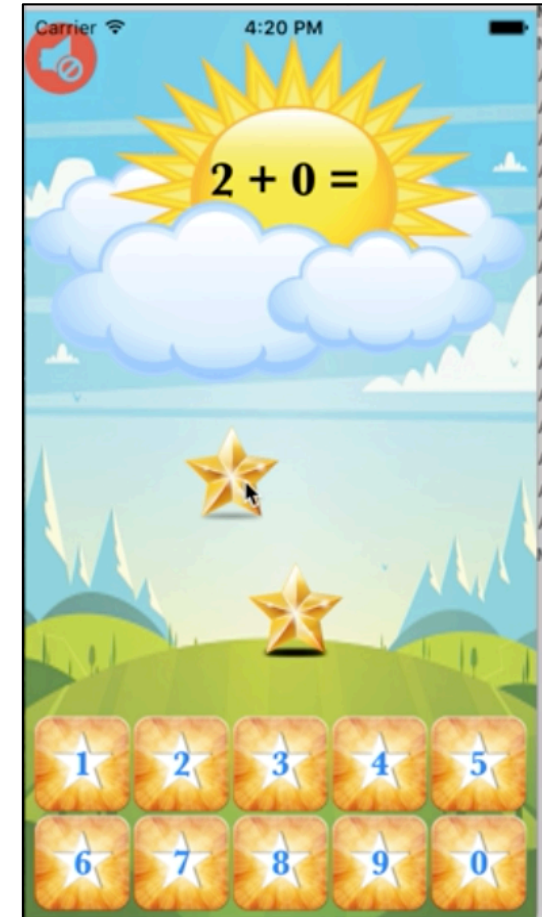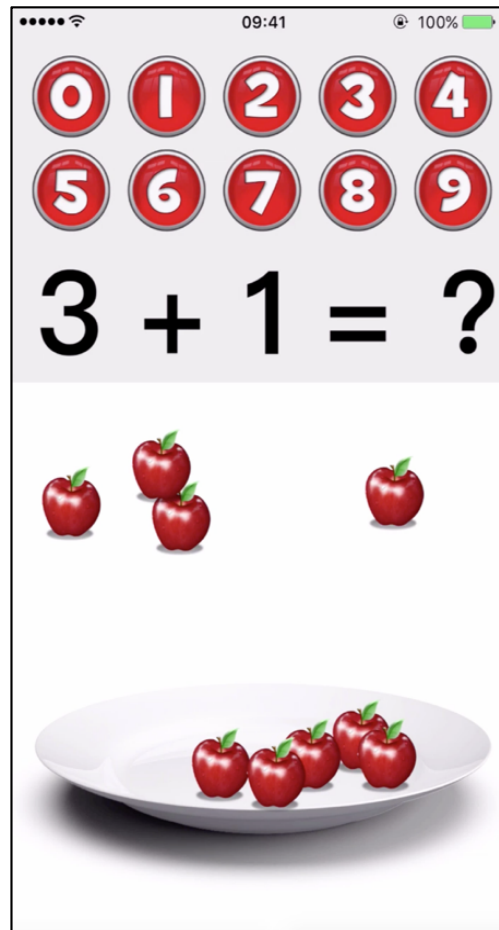
Bad Examples (1)

welcome page for the user to click for them to then move to the main part of the app, I used the colour green as it is associated with the word proceed and in this case the user will be proceeding to the next page.

The decision to choose cool toned colours was supported through colour theory as blue tones represent calmness, which would be needed as the users would potentially frustrated at constantly being wrong. As a result I used a blue sky and green hill as a background. Likewise the balloons

- These two statements attempt to justify the choice of colours, but without the support of evidence, the arguments are weak.

Bad Examples (1)

- To rectify the statement, seek a source of evidence/reference.

The decision to choose cool toned colours was supported through colour theory as blue tones represent calmness, which would be needed as the users would potentially frustrated at constantly being wrong. As a result I used a blue sky and green hill as a background. Likewise the balloons
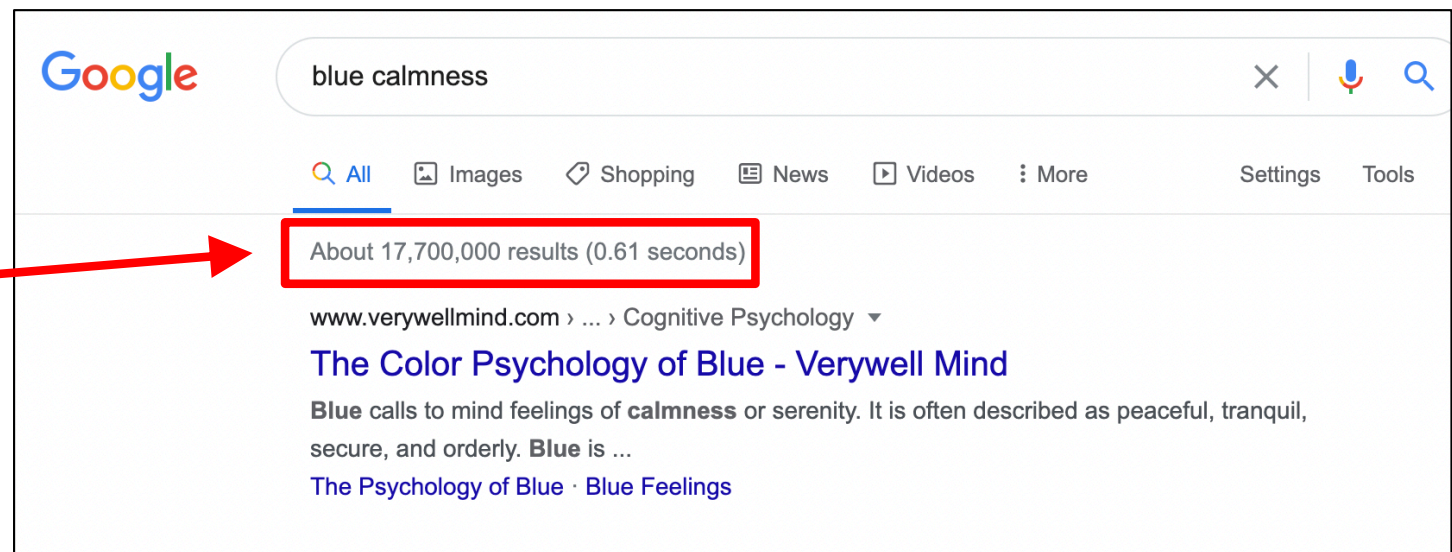
Plenty of sources to support that statement!

Google   blue calmness   ✕ 🎤 🔍

🔍 All   🖼 Images   🛍 Shopping   📰 News   ▶ Videos   ⋮ More   Settings   Tools

About 17,700,000 results (0.61 seconds)

www.verywellmind.com › ... › Cognitive Psychology ▾
The Color Psychology of Blue - Verywell Mind
Blue calls to mind feelings of **calmness** or serenity. It is often described as peaceful, tranquil, secure, and orderly. **Blue** is ...
The Psychology of Blue · Blue Feelings

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Bad Examples (2)

The size of the numbers and sweets was kept sufficiently large to allow easy interaction with fingers as smaller images or buttons are often difficult to accurately touch. The Font used for the equation

- *How do you judge the level of "sufficient"?*
- To rectify, add this:
  - Apple's iPhone Human Interface Guideline recommends a **minimum** touch area size of 44 pixels wide and 44 pixels tall. (Source: https://developer.apple.com/design/human-interface-guidelines/ios/visual-design/adaptivity-and-layout/)

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Bad Examples (3)

Children are mostly attracted towards the objects that appear bigger in real life. As you can see from (figure 2), all objects on

Desirable: The app is appealing and child friendly. I used a farm animals as a lot of children's toys use this for education purposes.

nursery rhyme/lullaby "Twinkle Twinkle, Little Star" and sometimes children get stars when they have done something good. The design was used for children to use something unusual to count with because people cannot physical have actual stars

is targeted at preschool children, a sentence will have a maximum of two words. Examples include 'well done', 'try again', 'score' etc. The child may not be able to understand these at first however as they get used to using the app they will become familiar with the terms and may start using them in everyday life.

All I ask is: How do you know they are true?
- Finding some child psychology and education paper will help.
- Understanding the characteristics of the target user group is crucial.

Bad Examples (4)

; the colours tend to keep the user occupied for few seconds.
View(UI View)- This View consist of most of the functionalitie

The app could possibly be used just for the enjoyment of these sound effects.

The next component is memorability. As the child gets older I believe they will be able to remember how to use the game after they have stopped playing it for a while. There will always be a way for the child to get to the congrats page through

Good Examples (1)

Children aged two to four, learn by sensory stimulation where, the learning process occurs through doing and trying (Solomon, 2015) and, need immediate feedback (Unger, 2017). It is important to acknowledge that these children aren't yet able to think abstractly, and hence, need visual stimulation to help in the understanding (Gelman, 2014). Therefore, the app, encourages trial and provides immediate feedback, allowing mistakes and recognising success (user control and freedom principle) to boost the child's confidence. Moreover, the ducks feature, adds value and comfort by facilitating the visualisation of the mathematical questions, for a better understanding (Intel, 2013).

The statements compliment the following design:
- Instant feedback
- Visual stimulation – duck theme

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Good Examples (2)

challenging maths problems. Moreover, conscious of colour blindness, the app does not mix the usage of red and green in the same screen (Patkar, 2014). Green is only used, along other none-red elements, when directed to a new screen to reward (children's usability principle, Ibarra, 2011) the successfully solved problem.

This statement appraises the choices of colours.

Good Examples (3)

Furthermore, since children's cognitive levels and experience, differs according to age; different authors, have emphasised the need to select intuitive and age-appropriate touch gestures (Gelman, 2014; Gallavin, 2015; Aziz et al., 2013a; Aziz, 2013b). Aziz et al. (2013a) and Aziz (2013b), evidenced that children aged two to four can only use 'tap' and 'drag/slide' gestures (Appendix 3). Hence, the app solely dispose of such intuitive gestures to click the correct answer and 'next' button and, drag/slide the ducks.

This statement appraises the choices of touch gestures.