

EVALUATION — USABILITY ANALYSIS

Version 1.0
BSc Computing for Games

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Introduction

In this assignment, you will evaluate the play interface for your COMP140 game and novel input device. For this evaluation, you will deploy a heuristic analysis technique. You will present the results of your analysis as a 500-word report.

Design is both an art and a science. Humans, being mimetic creatures that share much physiology, infer the affordances of artefacts (e.g., a handle can be grasped with a hand). Such affordances provide a framework for creating ergonomic play interfaces, addressing usability concerns that impede commercial success. Hence, an ability to evaluate usability of a design is important for success in the industry.

This assessment has three components, A, B, and C as follows:

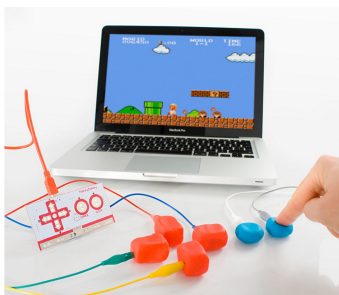
- (a) Conduct a heuristic analysis with the support of four peers:
 - i. **Define** a set of heuristics appropriate for the evaluation;
 - ii. **Supervise** a team of four peers use your heuristics to evaluate your game and controller;
 - iii. **Record** the feedback from the four peers;
 - iv. and then **analyse** the feedback.
- (b) Prepare a draft 500-word report that must:
 - i. **Tabulate** the heuristics;
 - ii. **Briefly explain** the heuristics **and how** they have been adapted;
 - iii. **Briefly describe** the analysis procedure **and** the results;
 - iv. and then **recommend TWO** design improvements, **briefly outlining** their justification.
- (c) Prepare a final 500-word report that must:
 - i. **Revise** any concerns raised by peers and tutors.

Part A consists of a **single formative group activity**. This work will be assessed on a **threshold** basis. The threshold is set at 10%. This means that 10% of the total marks available for the coursework overall are awarded on a pass or fail basis. In other words, satisfactory completion is worth 10%. However, unsatisfactory completions will receive 0%. The following criteria are used to determine a pass or fail for each submission in Part A:

- (a) An appropriate set of heuristics has been defined;
- (b) Evaluators were provided sufficient guidance and time to do reviews;
- (c) Evidence (e.g. photographs or a video) are provided to show the analysis was conducted in a professional manner.

"My mantras: focus and simplicity. Simple can be harder than complex. You have to work hard to get your thinking clean to make it simple. But it's worth it in the end because once you get there, you can move mountains."

— Steve Jobs



The MaKey MaKey allows a multitude of materials to be used to create videogame controllers.

You may request the presence of the tutor for immediate feedback, or your tutor will review your evidence in a personal tutorial and provide feedback.

Part B is a **single individual formative** submission and will be assessed on a **threshold** basis. The threshold is set at 5%. This means that 5% of the total marks available for the coursework overall are awarded on a pass or fail basis. In other words, satisfactory submissions will be awarded 5%. However, unsatisfactory submissions will receive 0%.

A pass is determined through attendance to the peer-review session with a draft and submission of a satisfactory peer-review.

Part C is a **single individual summative submission** and will be assessed on a **criterion-referenced** basis. This submission is expected to take students from the threshold of 15% (F) up to the maximum of 100% (A*). This means that 85% of the total marks available for the coursework overall will be awarded.

The following criteria are used to allocate marks:

- (a) Appropriateness of Heuristics;
- (b) Adequacy of Procedure;
- (c) Depth of Analysis;
- (d) Appropriateness of Design Recommendations;
- (e) Adequacy of Use of Figures and Tables;
- (f) Quality of Academic Writing;

"If it costs \$1 to make a change on paper, then it costs \$10 in code and \$100 when the (game) is up."

— Theresa Cunnington

"The dumbest mistake is viewing design as something you do at the end of the process to 'tidy up' the mess, as opposed to understanding it is a 'day one' issue and part of everything."

— Tom Peters

Submission Instructions

Part A

After completing the heuristic analysis, meet with your tutor with your evidence.

You will receive immediate feedback.

Part B

Part B must be completed as a single PDF document, prepared in LaTeX. Fork the GitHub project at the following URL:

<https://github.com/Falmouth-Games-Academy/comp150-evaluation>

You will need to create a pull-request prior to the review session.

You will receive feedback shortly after the session.

Part C

Part C must be completed as a single PDF document, prepared in LaTeX. The LaTeX source files should be hosted on GitHub in the `comp150-evaluation` repository. A single PDF document must be submitted to the LearningSpace by the final submission deadline shown on LearningSpace. Please note that the LearningSpace will only accept a single PDF document.

You will receive formal feedback three weeks after the submission deadline shown on LearningSpace.



Rhythm games such as *Guitar Hero* and *Rock Band* are excellent examples of games which make use of unique input devices to enhance gameplay.

Additional Guidance

This assignment has been designed to encourage greater independence and self-organisation. As part of the university experience, you will be given more and more independence in order to facilitate your transition into a self-regulated life-long learner. As such, you are being expected to identify peers who can assist with your work and, likewise, you will organise your time in order to support peers who request your support. However, if you are struggling to find reviewers able to participate in your heuristic analysis, your tutor is available to facilitate and help shepherd groups together.

Normally, reviewers are usability experts. They will likely have used heuristics in the past and will be familiar with them. In the university context, reviewers are novices who perhaps have never conducted such an analysis before. It is the responsibility of the supervisor to provide support to reviewers in understanding the heuristics they propose the reviewers should use. This has the benefit of sharing good practice and perhaps helping each other identify flaws in the way the heuristics themselves are being interpreted.

It is worthwhile helping out your peers at the same time they are helping you out. In small groups of five, you can rotate responsibilities as reviewer and supervisor. This can be done one meeting at a time, or even asynchronously by sharing the game and the controller. If there are any concerns, tutors may be invited along to facilitate. However, their availability is not guaranteed.

"A bad web site (design) is like a grumpy salesperson."

— Jakob Nielsen

"Make it idiot-proof and someone will make a better idiot!"

— Anonymous

A key difficulty with this assignment is identifying appropriate heuristics and adapting them to the games domain. Many heuristics do not require any change at all to be applicable to games, while others may require removal or a minor tweak in terminology. If you propose additional heuristics, ensure that there is sufficient rationale to do so. That is, cite relevant research and construct a sound argument for their inclusion.

The analysis itself is quite formulaic. Refer to and follow the guidelines published by Jakob Nielsen. Although his book chapter and website are not a how-to guide, they are quite comprehensive. Create a diagram to illustrate this procedure. This will not only aid in its correct application, but will help you to reflect on the rationale of the exercise, the *how* and *why*, which will be useful to include in the report. Particularly, as it will help to reduce the wordcount.

So long as you follow the procedure accurately, it should be straightforward to identify several design flaws. It only takes four reviewers to catch most well-known flaws. You only need to address one of these flaws through the recommended design changes, as the same flaw could be targetted through several changes. Do not attempt to fix everything in such a short essay.

Additional Resources

- Norman, D. (2013) *The Design of Everyday Things*. Revised Edition. MIT Press.
- Przybylski, A.K., Deci, E.L., Rigby, C.S., and Ryan, R. M. (2014) Competence-Impeding Electronic Games and Players' Aggressive Feelings, Thoughts, and Behaviors. *Journal of Personality and Social Psychology*, 106(3), pp. 441-457.
- Nielsen, J. (2002) Heuristic Evaluation. *Usability Inspection Methods*, 17(1), pp. 25-62.
- Peters, T. (2008) *Design: Tom Peters Essentials*. Gabal Verlag GBMH.
- <https://www.nngroup.com/topic/heuristic-evaluation/>
- <http://gameaccessibilityguidelines.com/>



The Dreamcast Fishing Controller, released as a peripheral for the game *Sega Bass Fishing*. Even peripherals which appeal to only a small audience can enjoy moderate commercial success.

Marking Rubric

Criterion	Weight	F (0 – 39)	D (40 – 49)	C (50 – 59)	B (60 – 69)	A (70 – 79)	A* (80 – 100)
Satisfactory Completion of Heuristic Analysis Procedure	10%	Analysis has not been signed-off by your tutor.					Analysis has been signed-off by your tutor.
Satisfactory Preparation of Draft for Peer-Review	5%	Either no draft is available for review or the review provided is unsatisfactory.					Participated in peer review and provided an appropriate review.
Appropriateness of Heuristics	20%	No heuristics are listed.	A set of heuristics is listed. It is not clear how the heuristics have been derived, or there is a lack of academic rigor.	A set of heuristics is listed. The heuristics have been copied verbatim from a scholarly source, or has been adapted poorly.	An appropriate set of heuristics is listed. The heuristics have been adapted from one or more scholarly sources.	An appropriate set of heuristics is listed. The heuristics have been adapted from one or more scholarly sources. Appropriately justified adaptation for use in a games domain has been attempted.	An appropriate set of heuristics is listed. The heuristics have been adapted from one or more scholarly sources. Rigorously justified adaptation for use in a games domain has been attempted.
Adequacy of Procedure	5%	No description of procedure.	A very weak procedure is evidenced.	A weak weak procedure.	A sufficient procedure is evidenced.	An appropriate procedure is evidenced.	An well-conducted procedure is evidenced.
Depth of Analysis	20%	No analysis.	Little analysis.	Some analysis.	Much analysis. Some depth of insight is demonstrated.	Significant analysis. Much depth of insight is demonstrated.	Exemplary analysis. Significant depth of insight is demonstrated.
Appropriateness of Design Recommendations	20%	No design changes are recommended.	At least one generally appropriate design change is proposed.	At least one specific and achievable design changes are proposed.	At least two generally appropriate design changes are proposed. At least one specific and achievable design changes are proposed.	At least two specific and achievable design changes are proposed. At least one of the proposed changes is a significant improvement and well-justified.	At least two specific and achievable design changes are proposed. The proposed changes are both significant improvements and well-justified.
Adequacy of Use of Figures and Tables	5%	No tables or figures are used.	Very poor tables or figures are present.	Poor tables or figures are present.	Sufficiently designed tables and figures are present.	Appropriately designed tables and figures are present.	Well designed tables and figures are present.
Appropriateness of Academic Writing	5%	No evidence for partial-mastery of academic writing. The reference section is missing.	Some evidence for partial-mastery of academic writing. The reference section is incomplete and/or malformed.	Much evidence for partial-mastery of academic writing. The reference section is complete and well-formed in either ACM or IEEE format. Most in-text citations and quotations are correct.	Some evidence for mastery of academic writing. The reference section is complete and well-formed in either ACM or IEEE format. All in-text citations and quotations are correct.	Much evidence for mastery of academic writing. The reference section is complete and well-formed in either ACM or IEEE format. All in-text citations and quotations are correct.	Significant evidence for mastery of academic writing. The reference section is complete and well-formed in either ACM or IEEE format. All in-text citations and quotations are correct.
Appropriateness of Spelling and Grammar	5%	Substantial spelling and/or grammar errors.	Many spelling and/or grammar errors.	Some spelling and/or grammar errors.	Few spelling and/or grammar errors.	Almost no spelling and/or grammar errors.	No spelling or grammar errors.
Appropriateness of Report Structure	5%	There is no structure, or the structure is unclear.	There is little structure.	There is some structure. A few sentences and paragraphs are well constructed.	There is much structure. Some sentences and paragraphs are well constructed. There is a clear introduction and conclusion.	There is much structure, highlighting the recommendations. Most sentences and paragraphs are well constructed. There is a clear and well-constructed introduction and conclusion.	There is much structure, highlighting the recommendations. All sentences and paragraphs are well constructed. There is a clear and well-constructed introduction and conclusion.