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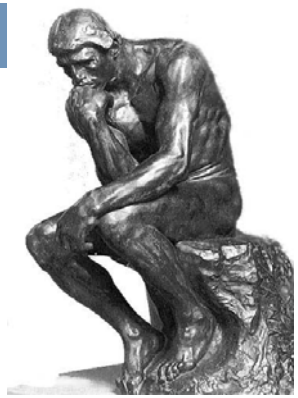
AK HCI: Applying User-Centered Design 706.046

<QUALITY & BUSINESS IN HCI & UE>

Graz, Mo, 14.06.2010, 14:00 (s.t.)

http://hci4all.at

Repetitio est mater studiorum



- Which measurement scales do we know?
- What physiological parameters can we measure?
- What is ANOVA and what is its purpose?
- What is the difference between an inventor and a discoverer?

Read the following text. What does the F value mean?

computed the learning performance (i.e., score in posttest – score in pretest). An univariate analysis of variance (ANOVA) yielded a significant effect of the learning condition ($F(2, 86) = 13.47$, $p < .001$) while gender did not result in significant differences ($F(1, 86) = .85$, $p = .361$). Interestingly, a significant interaction of condition and gender was found at the 5%-level ($F(2, 86) = 3.47$, $p = .036$). As shown in Figure 4, females performed better in condition T while males achieved slightly higher scores in conditions H and V. A post-hoc Scheffé test for learning conditions indicated that condition V resulted in significantly higher scores ($p < .001$) than both other conditions. Conditions T and V did not result in different scores ($p = .966$).

- The grade for the written work follows also the Austrian 5-point-grading scale and ranges from very good (Sehr gut - 1 -) to fail (Nicht genügend - 5 -).
- 100 point scale, whereby

Fail	Poor	Average	Good	Very Good
Nicht genügend	Genügend	Befriedigend	Gut	Sehr gut
5	4	3	2	1
0-50	51-69	70-79	80-89	90-100

Criteria

- For each criteria you get up to 10 points, with exception of the formal criteria, which must be fulfilled and any missing part will result in a “not accepted”.
-
- 0) FORMAL CRITERIA CHECKLIST

- 1) ABSTRACT (up to 10 points)
- 2) INTRODUCTION AND MOTIVATION (up to 10 points)
- 3) BACKGROUND (up to 10 points) - The background constitutes the necessary theories, concepts and fundamentals
- 4) RELATED WORK (up to 10 points) - The related work constitutes current work that relates to your topic – state of the art
- 5) METHODS AND MATERIALS (up to 10 points)
- 6) RESULTS (up to 10 points)
- 7) DISCUSSION AND LESSONS LEARNED (up to 10 points)
- 8) BUSINESS CASE (up to 10 points)
- 9) CONCLUSION (up to 10 points)
- 10) FUTURE OUTLOOK (up to 10 points) - Each work should form the basis for future and continuing work

- 0) FORMAL CRITERIA CHECKLIST
- (every point must be completed before consideration of submission)
- ☐ Is the cover sheet correct?
- ☐ Is the title ok?
- ☐ Is the abstract formally ok und ist die deutsche Zusammenfassung ok (see also cat. 3)?
- ☐ Are the keywords and the ACM classifications correct?
- ☐ Is the Eidestattliche Erklärung signed?
- ☐ Is the list of abbreviations and acronyms used in your work complete?
- ☐ Is the table of contents complete?
- ☐ Is the formal structure ok (margins, page numbers, line spacing, Times New Roman 12 pt)?
- ☐ Are all page breaks correct?
- ☐ Are all figures readable, correctly aligned and described with figure captions?
- ☐ Are all references correct?
- ☐ Is the work well written and proofread (spelling, grammar, logical sentences, readability)?

- 1) ABSTRACT (up to 10 points)
- ☐ Does the abstract concisely describe the purpose, goal, and/or objective of the work?
- ☐ Does the abstract concisely demonstrate the motivation for this work?
- ☐ Does the abstract concisely describe the methods and materials used?
- ☐ Does the abstract concisely describe what the work contributes/adds to the scientific body of knowledge?
- ☐ Does the abstract stimulate an expert to read further?

- 2) INTRODUCTION AND MOTIVATION (up to 10 points)
- ☐ Is the problem well defined?
- ☐ Is it clearly described why this work is important?
- ☐ Is it clearly described how this work contributes to the scientific/engineering community?

- 3) BACKGROUND (up to 10 points)
- (The background constitutes the necessary theories, concepts and fundamentals)
- ☐ Is the background work described relevant to your work?
- ☐ Does the background work accurately describe the necessary foundation for your work?
- ☐ Is the necessary theoretical background sufficiently described?
- ☐ Are the – for this particular work – necessary theoretical concepts described?

- 4) RELATED WORK (up to 10 points)
- (The related work constitutes current work that relates to your topic – state of the art)
- ☐ Is the relevant related work described and commented?
- ☐ Is the state-of-the art clearly visible?
- ☐ Have relevant patents been considered?

- 5) METHODS AND MATERIALS (up to 10 points)
- ☐ Are the methods and materials appropriately described?
- ☐ Is the design and development process appropriately described?
- ☐ Are all used materials, equipment, devices appropriately listed and described?

- 6) RESULTS (up to 10 points)
- ☐ Are the results adequately presented?
- ☐ Are the statistics correct and relevant for your work?
- ☐ Are all tables, graphics and charts well related to your work?

- 7) DISCUSSION AND LESSONS LEARNED (up to 10 points)
- ☐ Are the results adequately interpreted?
- ☐ Are the lessons learned well presented?
- ☐ Is a clear contribution towards beyond-state-of the art visible?

- 8) BUSINESS CASE (up to 10 points)
- ☐ Is there a business case for your work?
- ☐ Are there any industrial implications resulting from your work?

- 9) CONCLUSION (up to 10 points)
- ☐ Is the conclusion a careful summary of the main outcome of the work?

- 10) FUTURE OUTLOOK (up to 10 points)
- (Each work should form the basis for future and continuing work)
- ☐ Is future work clearly described?
- ☐ Can your completed work be used as a basis for a future work?
- ☐ Have you outlined your plans for future work to a certain degree?

Table 1. Types of software engineering research questions	
Type of question	**Examples**
Method or means of development	How can we do/create/modify/evolve (or automate doing) X? What is a better way to do/create/modify/evolve X?
Method for analysis or evaluation	How can I evaluate the quality/correctness of X? How do I choose between X and Y?
Design, evaluation, or analysis of a particular instance	How good is Y? What is property X of artifact/method Y? What is a (better) design, implementation, maintenance, or adaptation for application X? How does X compare to Y? What is the current state of X / practice of Y?
Generalization or characterization	Given X, what will Y (necessarily) be? What, exactly, do we mean by X? What are its important characteristics? What is a good formal/empirical model for X? What are the varieties of X, how are they related?
Feasibility study or exploration	Does X even exist, and if so what is it like? Is it possible to accomplish X at all?

Shaw (2003)

Table 2. Types of research questions represented in ICSE 2002 submissions and acceptances			
Type of question	**Submitted**	**Accepted**	**Ratio Acc/Sub**
Method or means of development	142(48%)	18 (42%)	(13%)
Method for analysis or evaluation	95 (32%)	19 (44%)	(20%)
Design, evaluation, or analysis of a particular instance	43 (14%)	5 (12%)	(12%)
Generalization or characterization	18 (6%)	1 (2%)	(6%)
Feasibility study or exploration	0 (0%)	0 (0 %)	(0%)
TOTAL	298(100.0%)	43 (100.0%)	(14%)

Shaw (2003)

ICSE 2012: June 2-9, 2012, Zürich, Switzerland

Types of research results

Table 3. Types of software engineering research results	
Type of result	**Examples**
Procedure or technique	New or better way to do some task, such as design, implementation, maintenance, measurement, evaluation, selection from alternatives; includes techniques for implementation, representation, management, and analysis; a technique should be operational—not advice or guidelines, but a procedure
Qualitative or descriptive model	Structure or taxonomy for a problem area; architectural style, framework, or design pattern; non-formal domain analysis, well-grounded checklists, well-argued informal generalizations, guidance for integrating other results, well-organized interesting observations
Empirical model	Empirical predictive model based on observed data
Analytic model	Structural model that permits formal analysis or automatic manipulation
Tool or notation	Implemented tool that embodies a technique; formal language to support a technique or model (should have a calculus, semantics, or other basis for computing or doing inference)
Specific solution, prototype, answer, or judgment	Solution to application problem that shows application of SE principles – may be design, prototype, or full implementation; careful analysis of a system or its development, result of a specific analysis, evaluation, or comparison
Report	Interesting observations, rules of thumb, but not sufficiently general or systematic to rise to the level of a descriptive model.

Shaw (2003)

What did you contribute beyond state-of-the-art?

It's better for you as the author to explain than for the program committee to guess. Be clear about your claim …

Awful	▼	• I completely and generally solved … (unless you actually did!)
Bad	▼	• I worked on galumphing. (or studied, investigated, sought, explored)
Poor	▼	• I worked on improving galumphing. (or contributed to, participated in, helped with)
Good	▲	• I showed the feasibility of composing blitzing with flitzing. • I significantly improved the accuracy of the standard detector. (or proved, demonstrated, created, established, found, developed)
Better	▲	• I automated the production of flitz tables from specifications. • With a novel application of the blivet transform, I achieved a 10% increase in speed and a 15% improvement in coverage over the standard method.

Explain the relation to other work clearly …

Awful	▼	The galumphing problem has attracted much attention [3,8,10,18,26,32,37]
Bad	▼	Smith [36] and Jones [27] worked on galumphing.
Poor	▼	Smith [36] addressed galumphing by blitzing, whereas Jones [27] took a flitzing approach.
Good	▲	Smith's blitzing approach to galumphing [36] achieved 60% coverage [39]. Jones [27] achieved 80% by flitzing, but only for pointer-free cases [16].
Better	▲	Smith's blitzing approach to galumphing [36] achieved 60% coverage [39]. Jones [27] achieved 80% by flitzing, but only for pointer-free cases [16]. We modified the blitzing approach to use the kernel representation of flitzing and achieved 90% coverage while relaxing the restriction so that only cyclic data structures are prohibited.

Shaw (2003)

- Questions?

Let us make together, today Computer Applications of tomorrow more usable for all!

Herzlichen Dank für Ihre Aufmerksamkeit!

References

- Card, S. K., English, W. K., and Burr, B. J. Evaluation of mouse, rate-controlled isometric joystick, step keys, and text keys for text selection on a CRT, Ergonomics 21 (1978), 601-613.
- Carroll, J. M. (ed.), Toward a multidisciplinary science of human-computer interaction, (San Francisco: Morgan Kaufmann, 2003).
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- Newell, A., and Card, S. K. The prospects for psychological science in human-computer interaction, Human-Computer Interaction 1 (1985), 209-242.