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*Leonardo Marques, Walter Nakamura, Luis Rivero, Natasha Valentim, Tayana Conte  
{lcm, walter, luisrivero, natashavalentim, tayana}@icomp.ufam.edu.br*

*USES - Grupo de Pesquisa em Usabilidade e Engenharia de Software  
Programa de Pós-Graduação em Informática  
Universidade Federal do Amazonas  
Manaus AM, 69077-000*



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## ABSTRACT

This report presents the description of the exclusion criteria that were used during the process of selecting UX evaluation methods. During the selection process, two refinements were applied to select the methods. In the first refinement, these criteria were used to exclude the UX evaluation methods that were not suitable for the purpose of the study, and the second refinement was based on a query of the details of the methods available on the AllAboutUX site, which were not excluded in the first refinement. In this report, in addition to the description of the exclusion criteria, the methods that were excluded in the first and second refinements, in addition to the criteria used in the exclusion, are also presented. At the end, a classification of the methods is presented according to the exclusion criteria.

## 1. Description of exclusion criteria

The criteria that were used to select the two methodologies applied in this work are described below:

**EC1 – Type of Technology:** For this criterion, the methodologies could be characterized in:

- a) Methods - A process to evaluate UX;
- b) Tools - A wizard for the application of a specific method.

In this criterion, all evaluation methods characterized as a tool were excluded because the purpose of the study was to use methods that would qualify as a process to evaluate UX and not an assistant for the application of the method.

**EC2 – Availability:** For this criterion, the methodologies could be categorized into:

- a) Available free of charge - It has been published or is accessible through the internet;
- b) Available under license - It is necessary to pay to have access to the method;
- c) Not available - Designed for internal / personal use or is not published or accessible over the internet.

In this criterion, methods not available for free or unavailable were excluded.

**EC3 - Data Source:** In this criterion, the methodologies could be categorized into:

- a) Users - Potential users of the product;
- b) Development team - Professionals working on project development;
- c) Professionals of UX - Professionals with a high degree of knowledge in UX and practical experience in its evaluation;

In this criterion, the methods in which its source of data was not provided by users were excluded, since the study would be conducted with the users of the evaluated application.

**EC4 - Location (where the method is applied):** In this criterion, the methodologies could be categorized into:

- a) Laboratories or industries - In a controlled environment;
- b) Field Specific - Context of actual use chosen by the researcher;
- c) Free field - Context of actual use chosen by the user.

In this criterion, methods whose application is not possible in controlled environments were excluded because the study would be run in a controlled environment.

**EC5 - Type of Assessed Product:** In this criterion, methodologies could be categorized into:

- a) Generic - Any type of application can be evaluated;

- b) Web Application - An application that should be viewed through the web browser;
- c) Mobile Web Application - An application that was developed specifically for mobile devices;
- d) Other - Other types of applications that are developed for specific context: Ex: Journalism, others.

In this criterion, only those methods that cannot be applied in the evaluation of mobile applications have been excluded.

**EC6 - Type of Assessed Artifact:** For this criterion, methodologies could be categorized into:

- a) Conceptual Ideas - Product in the conception phase and still there is nothing tangible;
- b) Design Models - Non-functional models or prototypes;
- c) Functional prototypes or finished applications.

In this criterion, the methods whose evaluated artifact are not functional prototypes or finished applications were excluded, since the objective of the study was to evaluate a commercially available Virtual Learning Environment (AVA), whose evaluation result could support teachers in choosing an AVA for the support of the teaching-learning process.

**EC7 - Period of Experience Reviewed:** For this criterion, methodologies could be categorized into:

- a) Before Use -When evaluation occurs prior to user's use of the product;
- b) During Use (Single Episode) - When product evaluation is performed only once, during product use, usually through monitoring and restricted to the evaluation of some specific resources;
- c) During Use (long term use) - When the evaluation of the product is performed in the long term, allowing to verify the variation of the perception of the user about the product over time;
- d) After use - When the evaluation is performed after the use of the product by the user.

In this criterion, considering that the objective is to evaluate the UX after the use of the product, the methods whose evaluation of UX occurs before or during the use of the evaluated system were excluded.

## 2. Methods excluded and selected in the first refinement

In this section are presented the methods that were excluded in the first refinement based on the exclusion criteria described in Section 1 (see Table 1) and the methods that were selected in this step (see Table 2).

Table 1. Methods excluded in the first refinement according to the exclusion criteria.

<b>ID</b>	<b>Method Name</b>	<b>Exclusion Criteria</b>
1	2DES	EC1
2	Aesthetics Scales	EC5
3	Affect Grid	EC5
4	Affective Diary	EC1
5	AXE (Antecipaded eXperience Evaluation)	EC2
6	Co-Discovery	EC7
7	Context-aware ESM (MyExperience)	EC1
8	Controlled Observation	EC7
9	Day Reconstruction Method	EC4
10	Differential Emotions Scale (DES)	EC2
11	EMO2	EC2
12	Emotion Sampling Device (ESD)	EC2
13	Experience clip	EC4
14	Experience Sampling Method (ESM)	EC2
15	Facereader	EC2
16	Feeltrace	EC1
17	Game experience questionnaire (GEQ)	EC2

<b>18</b>	Geneva Appraisal Questionnaire	EC4
<b>19</b>	Immersion	EC3
<b>20</b>	Intrinsic motivation inventory (IMI)	EC2
<b>21</b>	iScale	EC2
<b>22</b>	Kansei Engineering Software	EC1
<b>23</b>	Living Lab Method	EC2
<b>24</b>	Long term diary study	EC4
<b>25</b>	Mental effort	EC4
<b>26</b>	OPOS – Outdoor Play Observation Scheme	EC4
<b>27</b>	PAD	EC2
<b>28</b>	Paired comparison	EC4
<b>29</b>	Physiological arousal via electrodermal activity	EC2
<b>30</b>	Playability heuristics	EC3
<b>31</b>	Positive and Negative Affect Scale (PANAS)	EC4
<b>32</b>	PrEmo	EC2
<b>33</b>	Product Attachment Scale	EC4
<b>34</b>	Property checklists	EC3
<b>35</b>	Psychophysiological measurements	EC2
<b>36</b>	Reaction checklists	EC7
<b>37</b>	Sensual Evaluation Instrument	EC2
<b>38</b>	SUMI	EC2
<b>39</b>	TRUE Tracking Realtime User Experience	EC2
<b>40</b>	TUMCAT	EC1
<b>41</b>	UTAUT	EC4
<b>42</b>	UX Curve	EC4

43	UX Expert evaluation	EC3
44	WAMMI (Website Analysis and Measurement Inventory)	EC2
45	Workshops + probe interviews	EC4

Table 2. Methods accepted in first refinement

ID	Method Name
46	3E
47	AttrakDiff
48	Attrak-Work questionnaire
49	Contextual Laddering
50	Emocards
51	Fun Toolkit
52	Geneva Emotion Wheel
53	Group-based expert walkthrough
54	Hedonic Utility scale (HED/UT)
55	Human Computer trust
56	Mental mapping
57	Presence questionnaire
58	Private camera conversation
59	Product Personality Assignment
60	Repertory Grid Technique (RGT)
61	Self Assessment Scale (SAM)
62	Sentence Completion
63	Valence method

### 3. Methods excluded in the second refinement

In this section are presented the methods that were excluded by analyzing the characteristics of each method available on the AllAboutUX<sup>1</sup> website. Table 3 shows the methods excluded in this second refinement and Table 4 shows the methods that were classified in this step.

<sup>1</sup> <http://www.allaboutux.org/all-methods>

Table 3. Methods excluded in second refinement

<b>ID</b>	<b>Method Name</b>	<b>Exclusion Criteria</b>
46	3E	The adequacy of the method is for field study
48	Attrak-Work questionnaire	Developed for specific journalism context
49	Contextual Laddering	Requires an experienced interviewer
50	Emocards	It has to be applied with one user at a time.
51	Fun Toolkit	Designed to measure children's fun
52	Geneva Emotion Wheel	It only evaluates aspects related to pleasure, that is, to the hedonic dimension of UX. Considering that when evaluating an LMS it is important to consider the pragmatic aspects (facility), this method was excluded.
53	Group-based expert walkthrough	Focused on Usability and is used in the design phase of the product, in addition to needing a specialist to conduct the evaluation.
55	Human Computer trust	The method has not been validated and does not apply to mobile software evaluation
56	Mental mapping	Designed for hardware projects
57	Presence questionnaire	Designed for virtual environments or games
58	Private camera conversation	Requires a laboratory equipped with special equipment
59	Product Personality Assignment	Most suitable method for visual projects
60	Repertory Grid Technique (RGT)	It requires a trained researcher and great effort from the participants because it is a method that is being built during elicitation.
62	Sentence Completion	Evaluates UX in the long term
63	Valence method	The analysis of valence markers is difficult and often unreliable. It is stated that more research is needed.

Table 4. Methods classified in the second refinement

<b>ID</b>	<b>Name</b>
47	AttrakDiff
54	Hedonic Utility scale (HED/UT)
61	Self Assessment Scale (SAM)



#### 4. Balancing the groups

To perform the UX evaluation using the two methods, subjects were divided into two groups balanced according to their previous experiences of using Edmodo. One group used Attrakdiff and the other group used HED/UT. Some subjects in the HED/UT group were less than 18 years old and could not have their data included in this study.

Table 5. Number of Subjects per Method

	<b>AttrakDiff</b>	<b>HED/UT</b>
<b>Number of subjects</b>	22	16

#### 4. Classification of each of the UX evaluation methods

Paper ID	Method Name	Q1		Q2			Q3			Q4			Q5				Q6			Q7			
		A	B	A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	A	B	C	D
1	2DES		X			X	X			X			X						X		X		
46	3E (Expressing Experiences and Emotions)	X		X			X			X						X			X				X
2	Aesthetics scale	X		X			X			X	X	X		X					X				X
3	Affect Grid	X		X			X			X			X						X				X
4	Affective Diary		X	X			X					X	X						X			X	X
47	AttrakDiff	X		X			X			X	X	X	X						X				X
48	Attrak-Work questionnaire	X		X			X			X		X				X			X				X
5	AXE (Anticipated eXperience Evaluation)	X				X	X			X	X		X				X	X		X			X
6	Co-discovery	X		X			X			X			X				X	X	X		X		
7	Context-aware ESM (MyExperience)		X	X			X					X			X				X			X	
49	Contextual Laddering	X		X			X			X			X						X				X
8	Controlled observation	X		X			X			X			X				X	X	X		X		
9	Day Reconstruction Method	X		X			X				X		X						X				X
10	Differential Emotions Scale (DES)	X				X	X				X		X						X				X
11	EMO2	X				X	X			X			X						X				X
50	Emocards	X		X			X			X			X				X		X				X
12	Emotion Sampling Device (ESD)	X				X	X					X	X						X			X	
13	Experience clip	X		X			X					X			X				X		X		
14	Experience Sampling Method (ESM)	X				X	X					X	X						X			X	
15	Facereader	X				X	X			X			X						X		X		
16	Feeltrace		X	X			X			X			X						X		X		

Paper ID	Method Name	Q1		Q2			Q3			Q4			Q5				Q6			Q7			
		A	B	A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	A	B	C	D
51	Fun Toolkit	X		X			X			X	X		X						X	X			X
17	Game experience questionnaire (GEQ)	X				X	X				X					X			X		X		X
18	Geneva Appraisal Questionnaire	X		X			X				X		X						X	X			X
52	Geneva Emotion Wheel	X		X			X			X			X						X				X
53	Group-based expert walkthrough	X		X			X	X	X	X						X	X		X		X		X
54	Hedonic Utility scale (HED/UT)	X		X			X			X					X				X				X
55	Human Computer trust	X		X			X			X						X			X				X
19	Immersion	X		X					X		X	X							X			X	
20	Intrinsic motivation inventory (IMI)	X				X	X				X		X						X				X
21	iScale	X				X	X				X		X						X				X
22	Kansei Engineering Software		X			X	X				X			X					X				X
23	Living Lab Method	X				X	X				X					X			X		X		
24	Long term diary study	X		X			X					X	X						X			X	
25	Mental effort	X		X			X				X		X						X				X
56	Mental mapping	X		X			X		X	X			X						X				X
26	OPOS – Outdoor Play Observation Scheme	X		X			X					X				X			X		X		
27	PAD	X			X		X			X			X						X				X
28	Paired comparison	X		X			X					X	X						X				X
29	Physiological arousal via electrodermal activity	X			X		X			X				X					X		X		
30	Playability heuristics	X		X					X	X						X	X	X			X		
31	Positive and Negative Affect Scale (PANAS)	X		X			X				X		X						X				X
32	PrEmo	X			X		X			X			X						X				X
57	Presence questionnaire	X		X			X			X						X			X				X
58	Private camera conversation	X		X			X			X			X				X	X	X	X	X		X
33	Product Attachment Scale	X		X			X					X	X						X			X	

Paper ID	Method Name	Q1		Q2			Q3			Q4			Q5				Q6			Q7			
		A	B	A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	A	B	C	D
59	Product Personality Assignment	X		X			X			X			X						X	X			X
34	Property checklists	X		X					X	X			X				X	X	X		X		
35	Psychophysiological measurements	X			X		X			X						X			X		X		
36	Reaction checklists	X		X			X			X			X				X	X	X		X	X	
60	Repertory Grid Technique (RGT)	X		X			X			X			X						X				X
61	Self Assessment Scale (SAM)	X		X			X			X			X						X				X
37	Sensual Evaluation Instrument	X				X	X			X	X					X			X		X		X
62	Sentence Completion	X		X			X			X	X	X	X				X		X	X			X
38	SUMI	X			X		X			X	X	X	X						X				X
39	TRUE Tracking Realtime User Experience	X				X	X	X			X					X			X		X		X
40	TUMCAT		X			X	X					X				X	X		X		X	X	
41	UTAUT	X		X			X				X		X						X				X
42	UX Curve	X		X			X				X		X						X				X
43	UX Expert evaluation	X		X					X		X					X			X		X		
63	Valence method	X		X			X			X	X		X						X		X		X
44	WAMMI (Website Analysis and Measurement Inventory)	X			X		X				X			X					X				X
45	Workshops + probe interviews	X		X			X				X		X						X	X			X