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ANALISIS, INTERPRETASI, DAN PENYAJIAN DATA

Disampaikan Oleh:
Harry B. Santoso, PhD

SASARAN PEMBELAJARAN

- ➔ Mahasiswa mampu membedakan data kualitatif dan kuantitatif serta analisisnya
- ➔ Mahasiswa mampu menganalisis data yang diperoleh kuesioner, wawancara, dan observasi
- ➔ Mahasiswa mengetahui software yang dapat membantu analisis data
- ➔ Mahasiswa memahami kekeliruan umum dalam menganalisis, menginterpretasikan, dan menyajikan data
- ➔ Mahasiswa mampu menginterpretasikan dan menyajikan data secara tepat

AGENDA

- ➔ Data kuantitatif dan kualitatif
- ➔ Analisis kuantitatif
- ➔ Analisis kualitatif
- ➔ Tools yang umum digunakan
- ➔ Kerangka teoritis analisis kualitatif
- ➔ System Usability Scale (SUS)
- ➔ User Experience Questionnaire (UEQ)
- ➔ Studi Kasus

DATA KUALITATIF DAN KUANTITATIF

TIPE-TIPE DATA

Kualitatif
Naratif / Artefak

Kuantitatif
Numerik

Data **Kualitatif**: data yang **sulit diekspresikan** dalam **angka-angka**, misal : ketidaksukaan

Analisisnya menggambarkan **karakteristik elemen** dan direpresentasikan dalam **pola** dan **cerita**

TIPE-TIPE DATA

Kualitatif
Naratif / Artefak

Kuantitatif
Numerik

Data **kuantitatif** : data berupa **angka-angka**

Menggunakan **metode numerik** untuk mengukur **besar, magnitude, dan jumlah**

ANALISIS KUANTITATIF

ANALISIS KUANTITATIF SEDERHANA

Σx / n

Rerata
Mean, Median, Modus

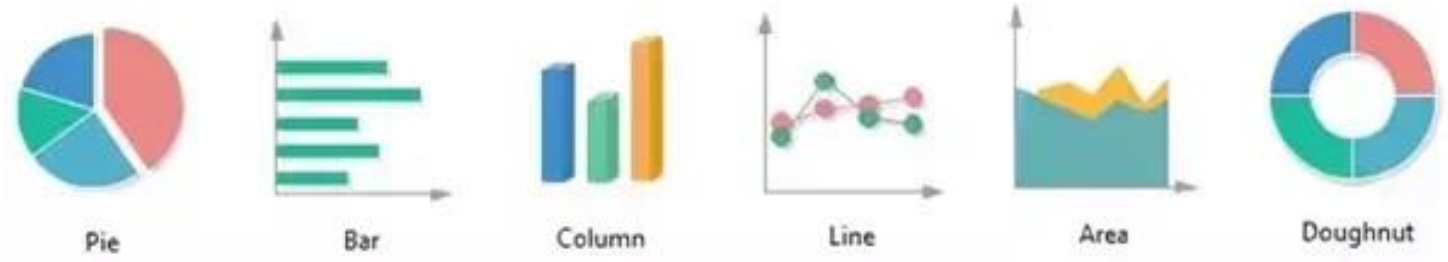
100%

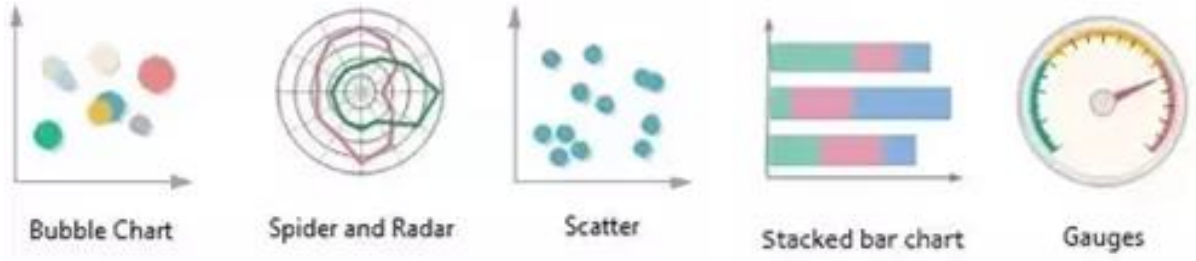
Presentase
Proporsi yang dimiliki data

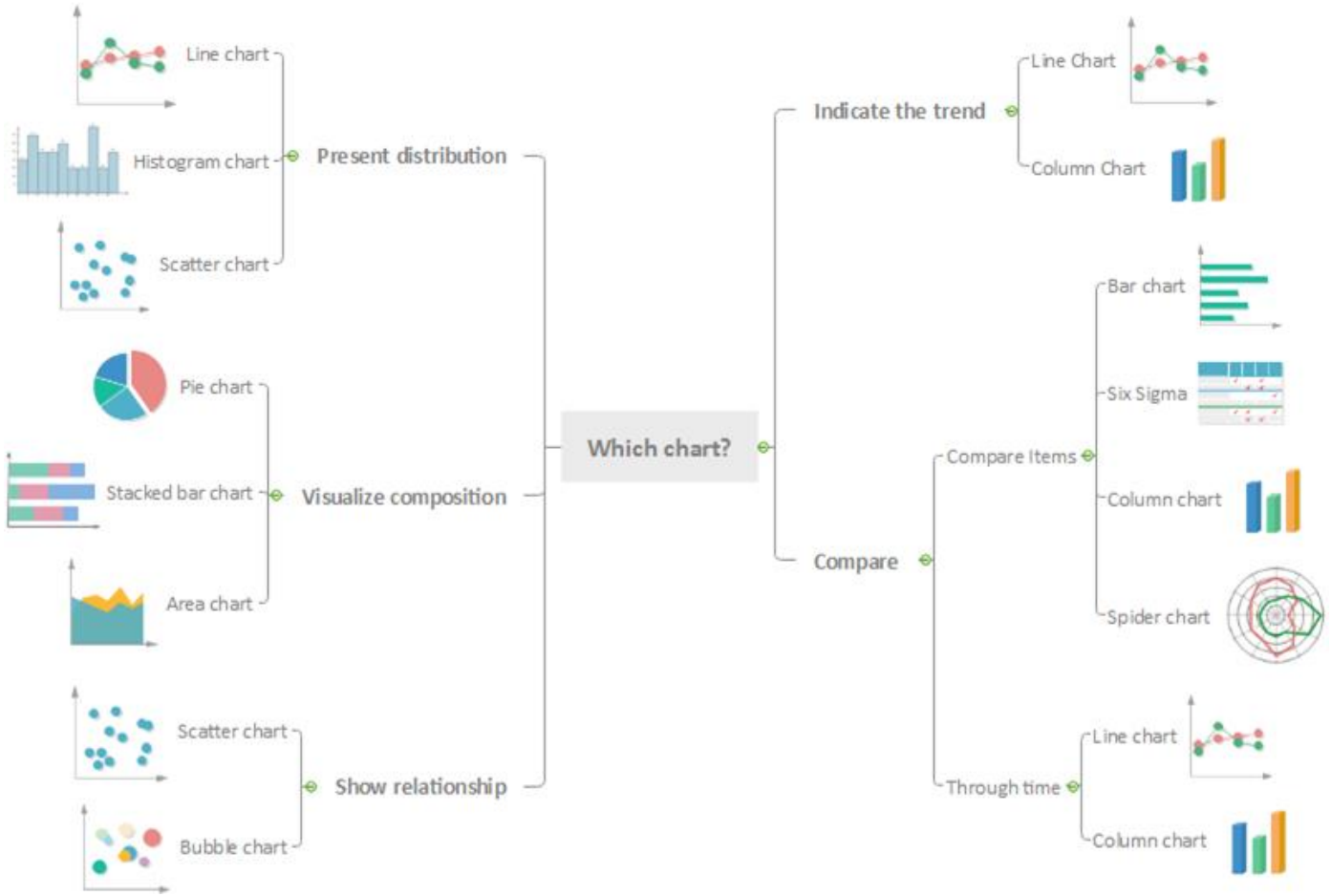
Representasi Grafis
Sebagai overview

CONTOH REPRESENTASI GRAFIS

https://www.quora.com/How-do-you-pick-the-right-chart-type-or-graph-for-your-data



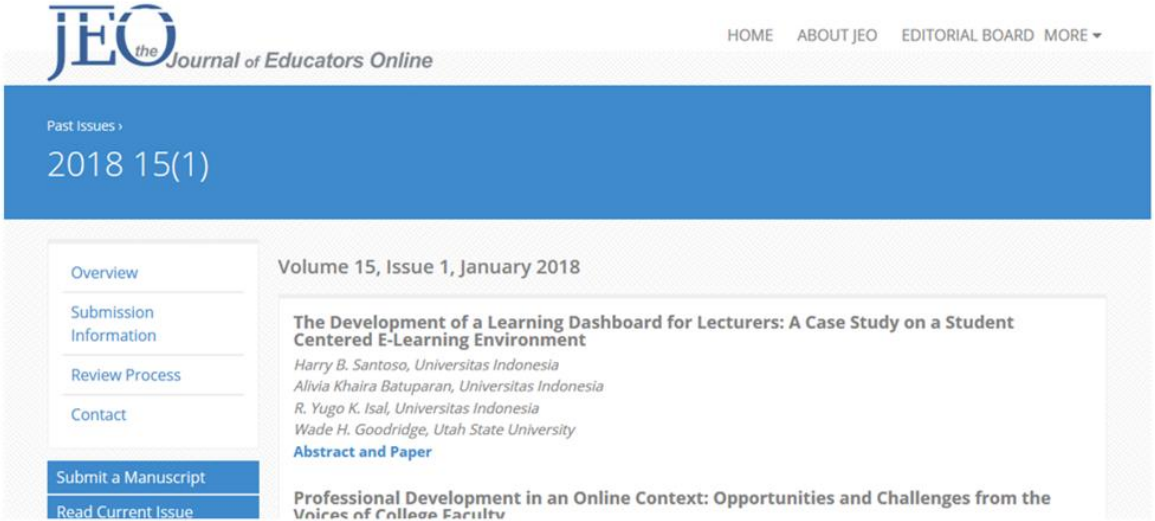




https://www.quora.com/How-do-you-pick-the-right-chart-type-or-graph-for-your-data

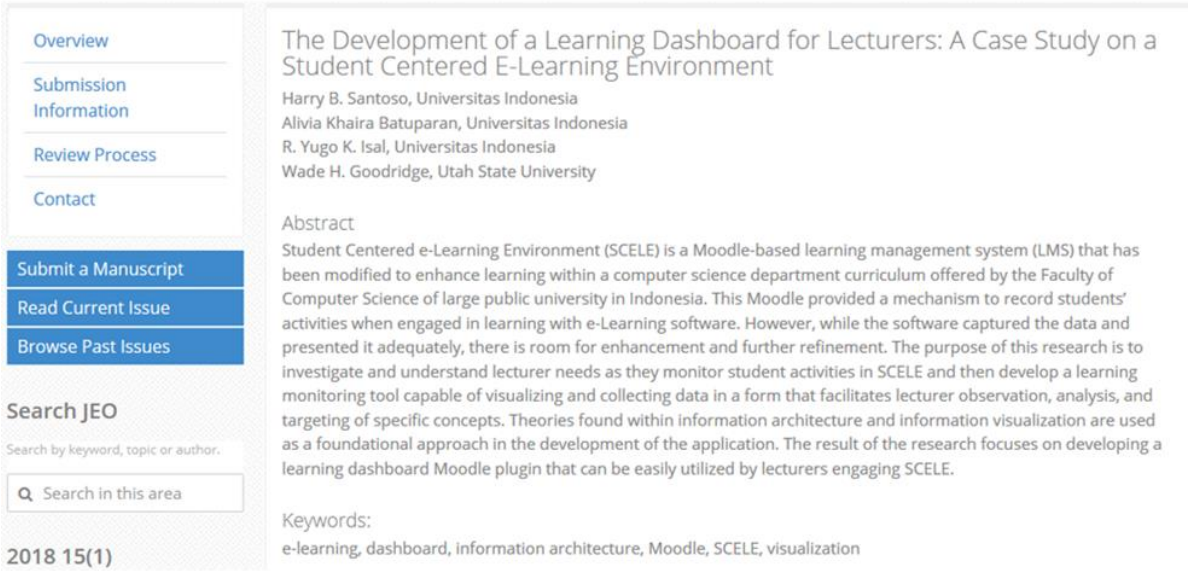
VISUALIZING LOG DATA (1)

Activity profiles of students in SCELE



VISUALIZING LOG DATA (2)

Activity profiles of students in SCELE



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2018 15(1)

The Development of a Learning Dashboard for Lecturers: A Case Study on a Student Centered E-Learning Environment

Harry B. Santoso, Universitas Indonesia
Alivia Khaira Batuparan, Universitas Indonesia
R. Yugo K. Isal, Universitas Indonesia
Wade H. Goodridge, Utah State University

Abstract

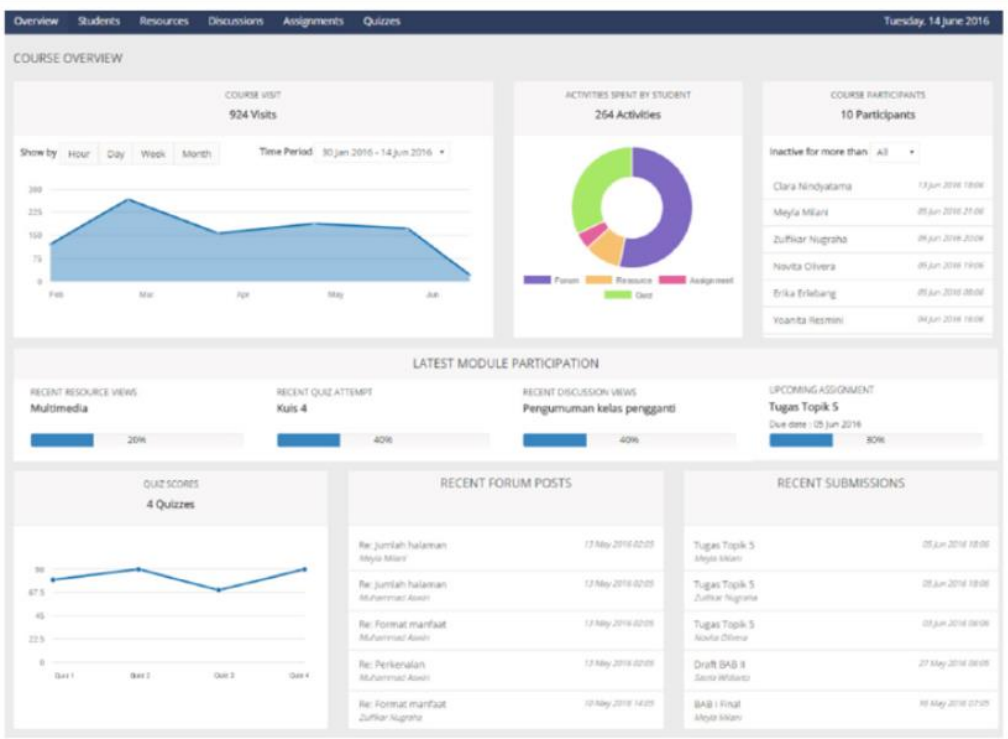
Student Centered e-Learning Environment (SCELE) is a Moodle-based learning management system (LMS) that has been modified to enhance learning within a computer science department curriculum offered by the Faculty of Computer Science of large public university in Indonesia. This Moodle provided a mechanism to record students' activities when engaged in learning with e-Learning software. However, while the software captured the data and presented it adequately, there is room for enhancement and further refinement. The purpose of this research is to investigate and understand lecturer needs as they monitor student activities in SCELE and then develop a learning monitoring tool capable of visualizing and collecting data in a form that facilitates lecturer observation, analysis, and targeting of specific concepts. Theories found within information architecture and information visualization are used as a foundational approach in the development of the application. The result of the research focuses on developing a learning dashboard Moodle plugin that can be easily utilized by lecturers engaging SCELE.

Keywords:

e-learning, dashboard, information architecture, Moodle, SCELE, visualization

https://www.thejeo.com/archive/2018_15_1/santoso_betuparan_isal_goodridge

VISUALIZING LOG DATA (3)



WEB ANALYTICS (1)

WEB ANALYTICS (2)

WEB ANALYTICS (3)

ANALISIS KUALITATIF

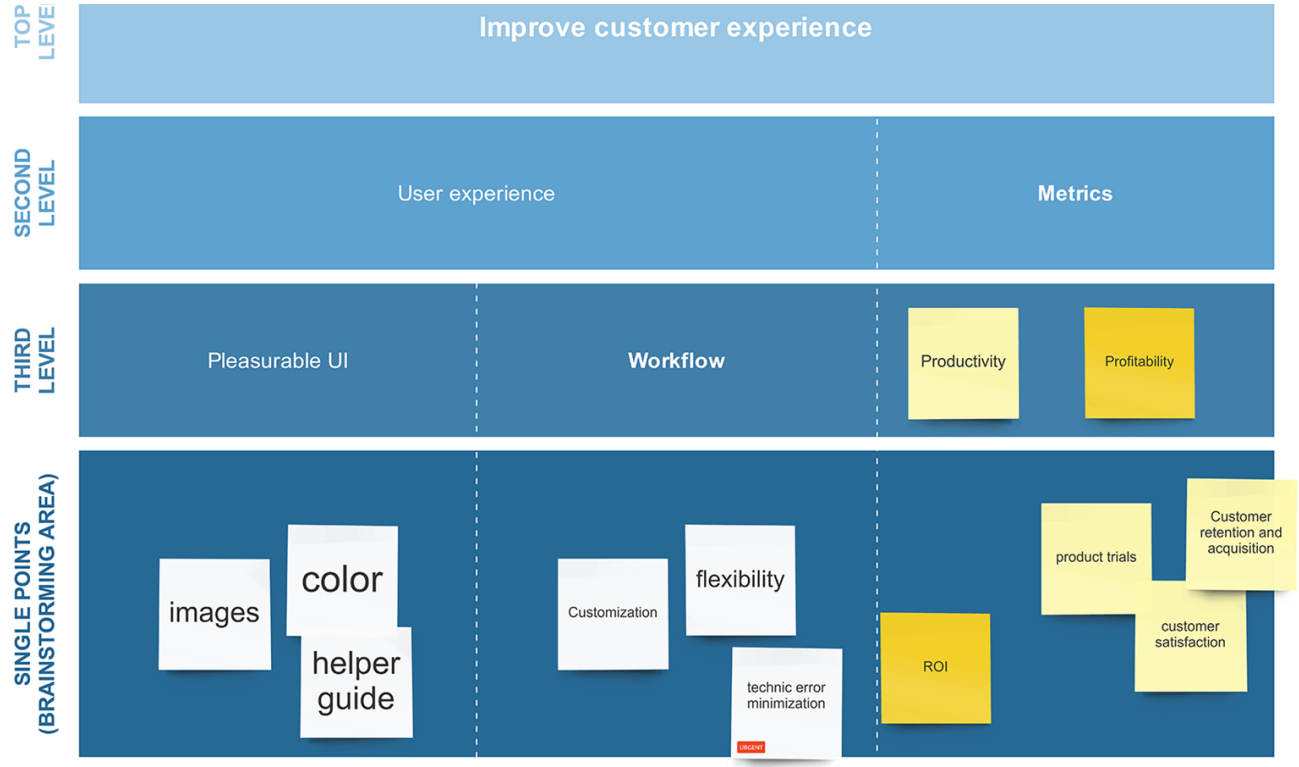
ANALISIS KUALITATIF SEDERHANA

Pola
Yang muncul dari data (Emergent)

Kategorisasi
(Emergent / Pre-specified)

Mencari Critical Incidents
(Key events)

CONTOH ANALISIS KUALITATIF : AFFINITY DIAGRAM



https://realtimeboard.com/examples/affinity-diagram/

TOOLS YANG UMUM DIGUNAKAN

TOOLS YANG UMUM DIGUNAKAN

- Spreadsheet
- Statistical Packages : SPSS
- Qualitative Data Analysis Tools
- Nvivo & Atlas.ti
- CAQDAS

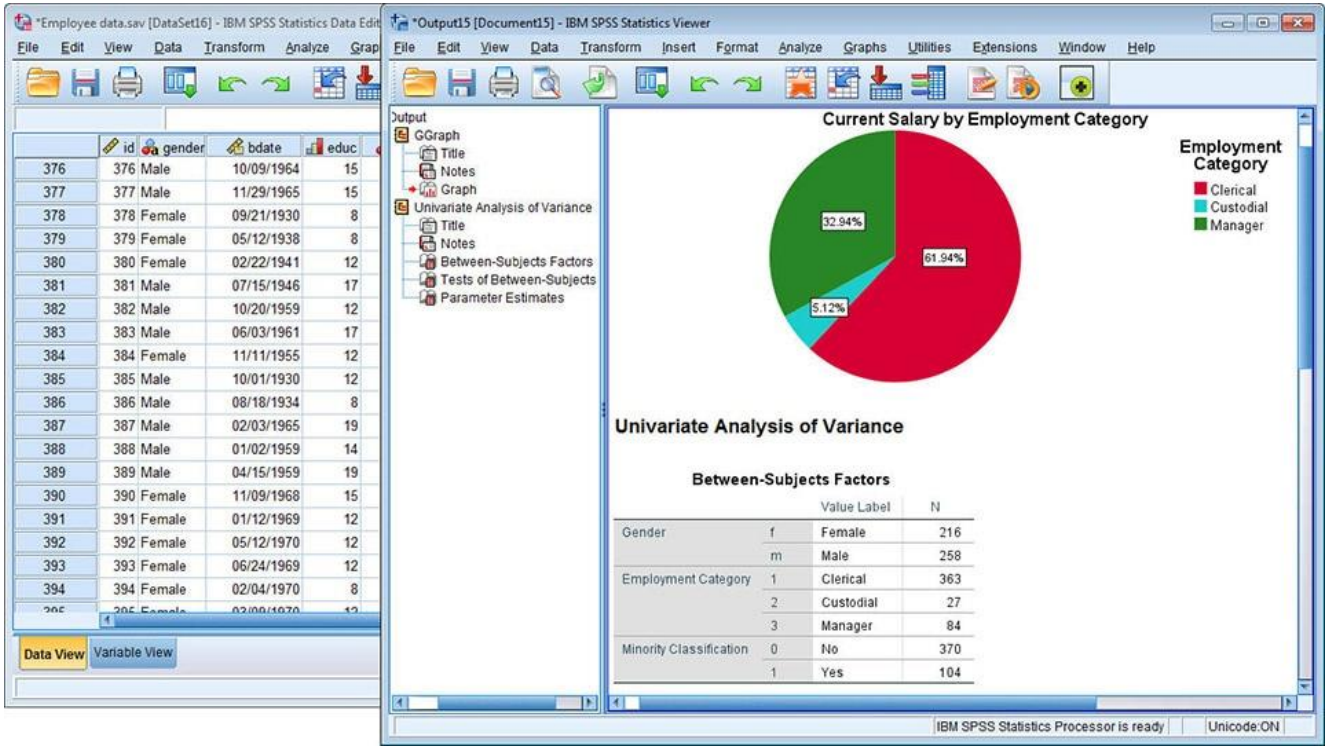
SPREADSHEET

“

Contoh Spreadsheet :
Data Analysis Tools untuk ‘Asesmen dan Pengembangan Desain User Experience Sistem Informasi Asisten Fasilkom UI’
Adinegoro, Pratama, Fiandi, dan Hasani (2018) Diajukan sebagai Tugas Akhir MPPI
UEQ Data Analysis Tools by : Dr. Martin Schrepp
UEQ Versi Bahasa Indonesia by : Harry Budi Santoso

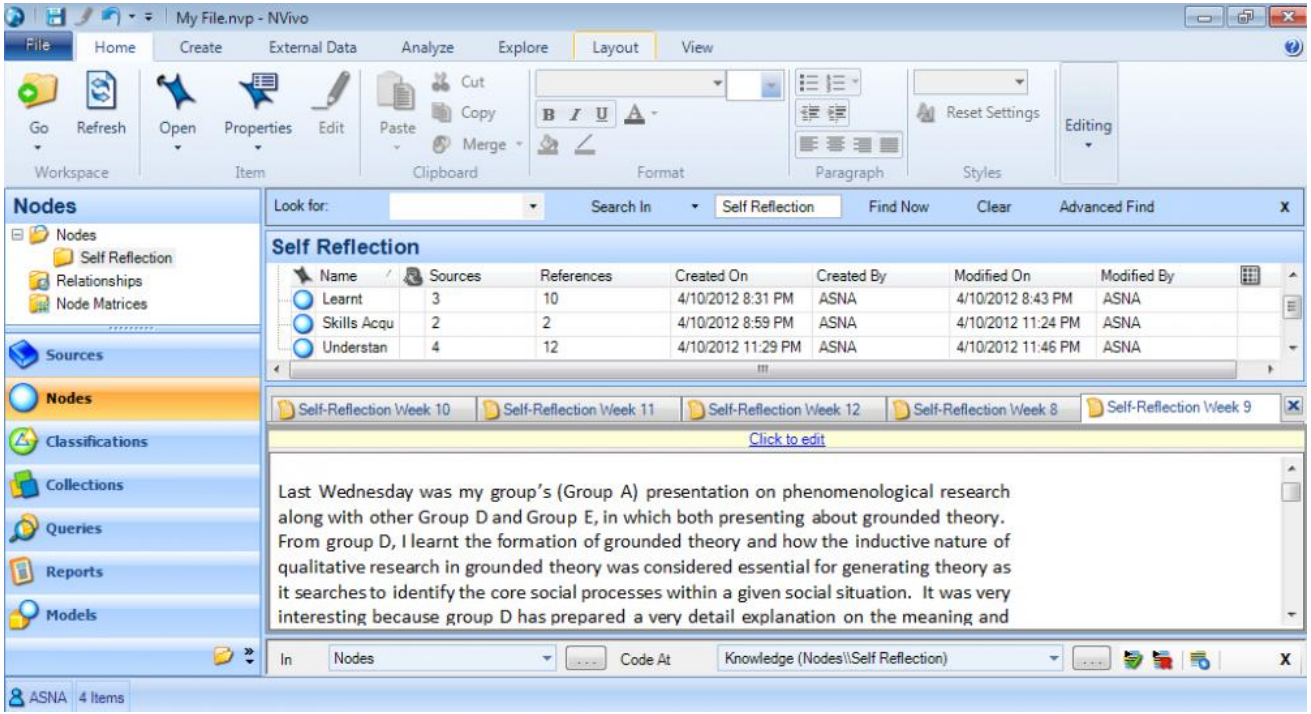
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
2															
3	Confidence interval (p=0.05) per item								Confidence intervals (p=0.05) per scale						
4	Item	Mean	Std. Dev.	N	Confidence	Confidence interval			Scale	Mean	Std. Dev.	N	Confidence	Confidence interval	
5	1	0.700	0.949	10	0.588	0.112	1.288		Daya tarik	0.500	0.906	10	0.562	-0.062	1.062
6	2	1.500	0.972	10	0.602	0.898	2.102		Kejelasan	1.250	1.275	10	0.790	0.460	2.040
7	3	-1.800	0.789	10	0.489	-2.289	-1.311		Efisiensi	0.925	1.034	10	0.641	0.284	1.566
8	4	1.100	1.524	10	0.944	0.156	2.044		Ketepatan	1.150	0.937	10	0.581	0.569	1.731
9	5	2.000	0.816	10	0.506	1.494	2.506		Stimulasi	0.375	0.892	10	0.553	-0.178	0.928
10	6	-0.600	1.075	10	0.666	-1.266	0.066		Kebaruan	-1.400	0.810	10	0.502	-1.902	-0.898
11	7	-0.200	1.033	10	0.640	-0.840	0.440								
12	8	1.500	1.179	10	0.730	0.770	2.230								

SPSS



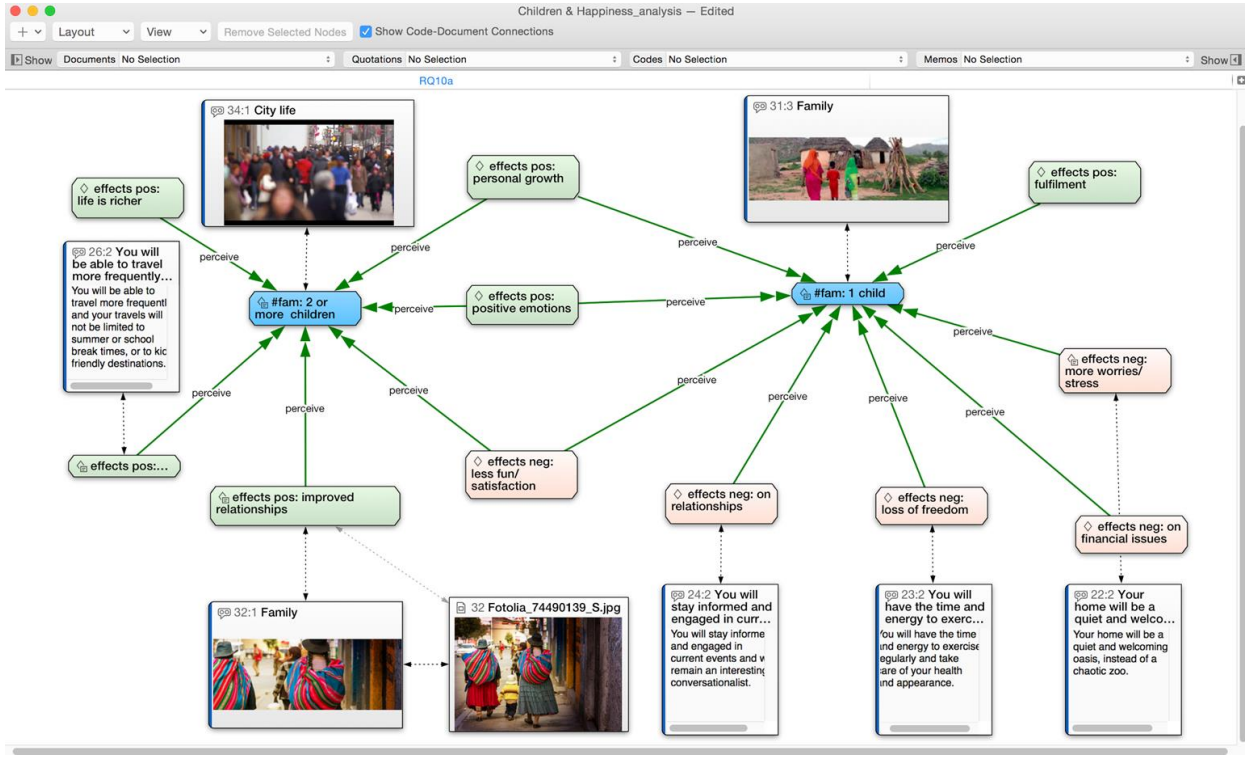
Contoh Tampilan SPSS :
https://www.ibm.com/uk-en/marketplace/spss-statistics

NVivo



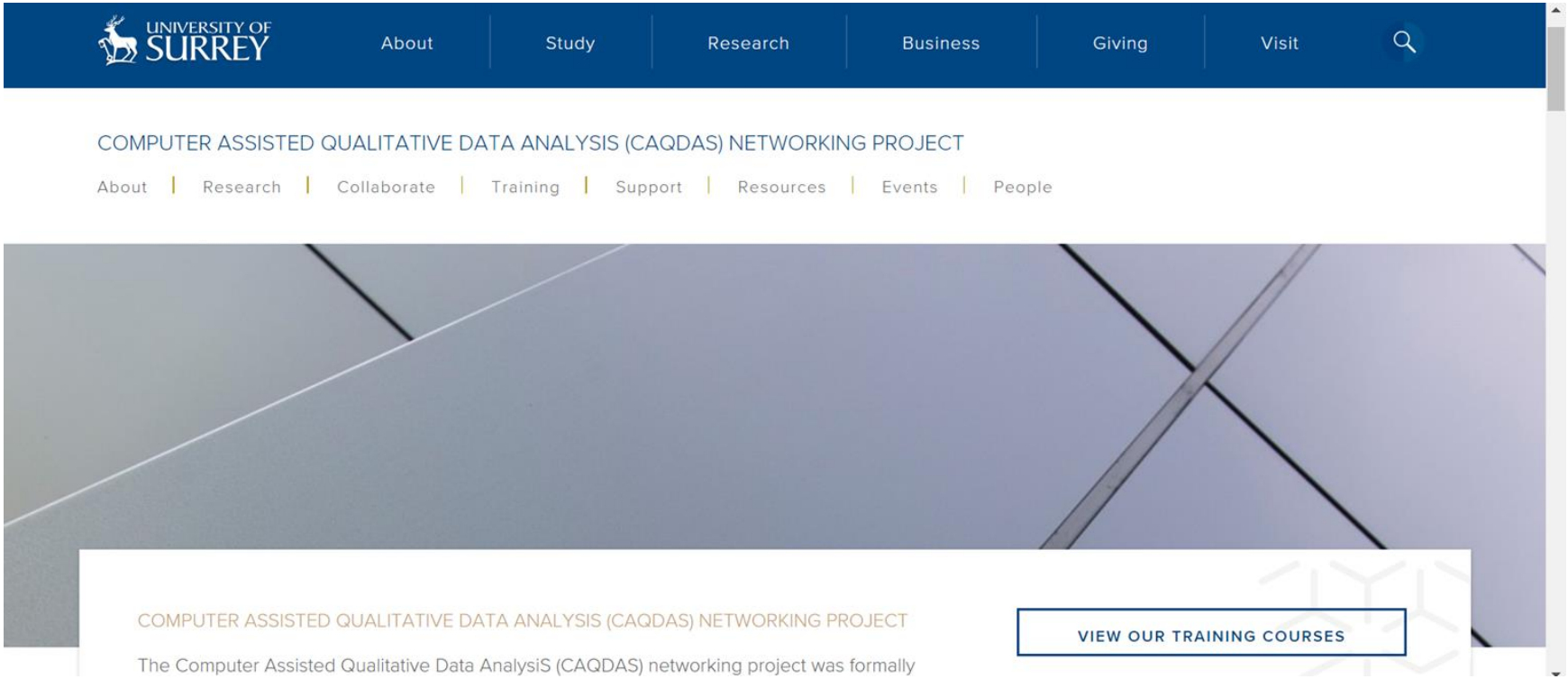
Contoh Tampilan NVivo:
http://www.rctd.org/102.html

ATLAS.TI



Contoh Tampilan Atlas.ti:
https://atlasti.com/product/mac-os-edition/

CAQDAS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COMPUTER ASSISTED QUALITATIVE DATA ANALYSIS (CAQDAS) NETWORKING PROJECT
The Computer Assisted Qualitative Data AnalysiS (CAQDAS) networking project was formally
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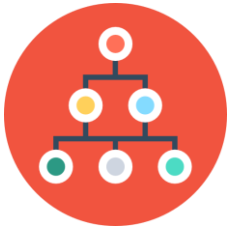
KERANGKA TEORITIS ANALISIS KUALITATIF

KERANGKA TEORITIS ANALISIS KUALITATIF

“

Analisis yang didasarkan kepada kerangka teoritis dapat memberikan pemahaman yang lebih mendalam

Grounded Theory



Distributed Cognition

Activity Theory

GROUNDED THEORY (1)

Bertujuan **memformulasikan teori** berdasarkan **analisis data**

Didasarkan kepada **pendekatan kategorisasi** (disebut juga “coding”)

Tiga Level Coding : **Open** (Identifikasi Kategori), **Axial** (Menghubungkan Subkategori), **Selektif** (Membentuk Skema Teoritis)

UX Researcher dituntut untuk mendasarkan analisisnya pada **landasan teori**

GROUNDED THEORY (2)

“

Code Book yang digunakan dalam mengimplementasikan Analisis Ground Theory

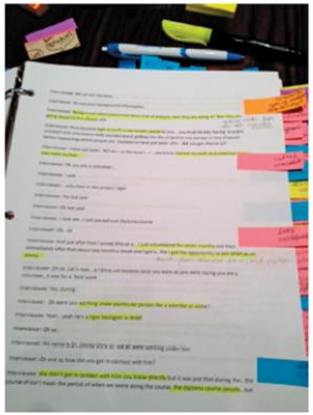


Figure 8.13 Code book used in a grounded theory analysis of citizens' motivations to contribute to citizen science

Source: Rotman, D. *et al* (2014). Does motivation in citizen science change with time and culture? In *Proceedings of the companion publication of the 17th ACM conference on Computer supported cooperative work & social computing (CSCW Companion '14).* ACM, New York, NY, USA, 229–232. ©2014 Association for Computing Machinery, Inc. Reprinted by permission.

GROUNDED THEORY (3)

“

Contoh axial coding dalam Analisis Ground Theory

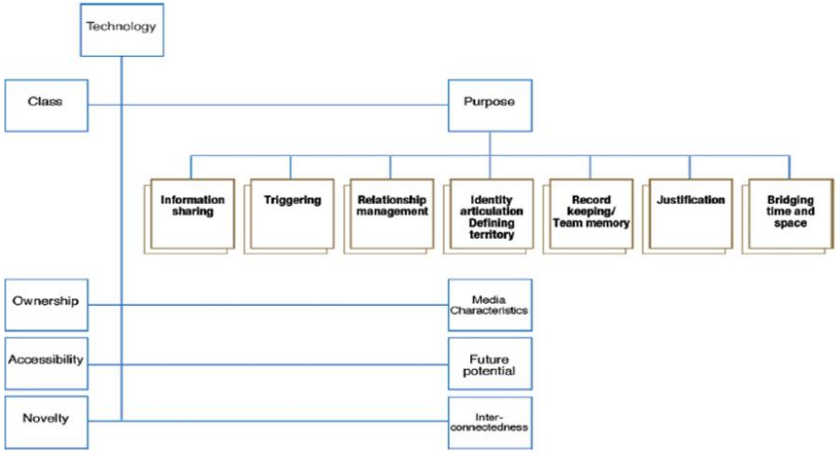


Figure 8.14 Axial coding for the technology category

Source: S. Sarker, F. Lau and S. Sahay (2001): “Using an adapted grounded theory approach for inductivetheory building about virtual team development”. *The Data Base for Advances in Information Systems*, 32(1), pp. 38–56 ©2001 Association for Computing Machinery, Inc. Reprinted by permission.

PENYAJIAN DATA

Buatlah **pernyataan** yang dapat dipertanggungjawabkan **berdasarkan data** yang Anda peroleh

Penyajian data bergantung pada **audiens**, **tujuan**, teknik **pengambilan** dan **analisis** data

Penyajian data secara **grafis** dapat menjadi teknik penyajian yang **tepat**

Teknik lainnya : (1) **Rigorous notation** (UML), (2) Menggunakan **cerita**, dan (3) **Rangkuman hasil**

SYSTEM USABILITY SCALE (SUS)

SYSTEM USABILITY SCALE

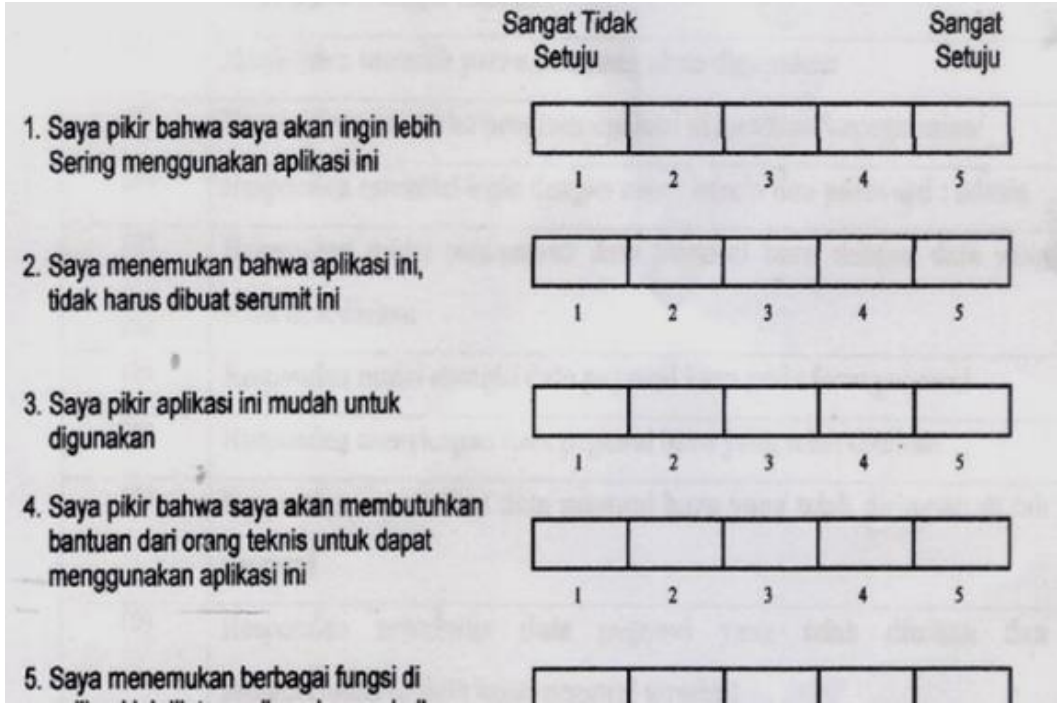
Tools analisis kuantitatif sederhana untuk menilai **usabilitas sistem**

Kuesioner **10 pertanyaan** terkait usabilitas dan menghasilkan **skala usabilitas (1 - 10)**

Tepat digunakan untuk mengetahui **usabilitas** suatu sistem secara **keseluruhan** dan **cepat**

Skala yang diperoleh dapat dimanfaatkan sebagai dasar melakukan **benchmarking**

KUESIONER SYSTEM USABILITY SCALE (1)

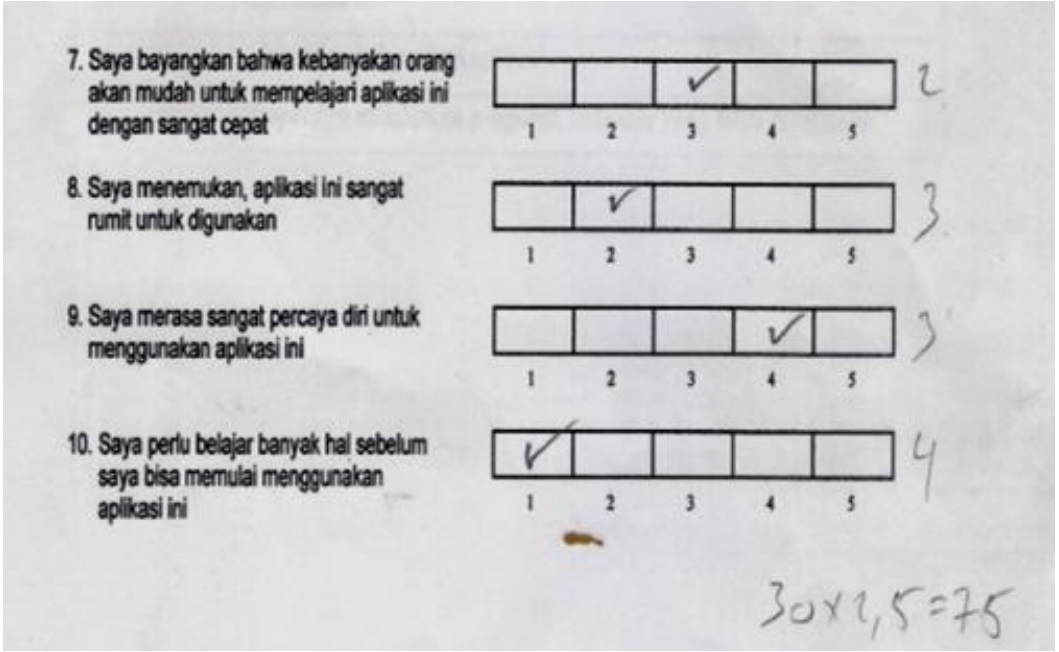


	Sangat Tidak Setuju				Sangat Setuju
1. Saya pikir bahwa saya akan ingin lebih Sering menggunakan aplikasi ini	1	2	3	4	5
2. Saya menemukan bahwa aplikasi ini, tidak harus dibuat serumit ini	1	2	3	4	5
3. Saya pikir aplikasi ini mudah untuk digunakan	1	2	3	4	5
4. Saya pikir bahwa saya akan membutuhkan bantuan dari orang teknis untuk dapat menggunakan aplikasi ini	1	2	3	4	5
5. Saya menemukan berbagai fungsi di					

“

Cuplikan Kuesioner System Usability Scale (SUS)
Pudjoatmodjo, B., & Wijaya, R. (2016).
Tes Kegunaan (Usabilty Testing) Pada Aplikasi Kepegawaian Dengan Menggunakan System Usabilty Scale (Studi Kasus: Dinas Pertanian Kabupaten Bandung). *SEMNASTEKNOMEDIA ONLINE*, *4*(1), 2-9.

KUESIONER SYSTEM USABILITY SCALE (2)



“

Cuplikan Kuesioner System Usability Scale (SUS)
Pudjoatmodjo, B., & Wijaya, R. (2016).
Tes Kegunaan (Usability Testing) Pada Aplikasi Kepegawaian Dengan Menggunakan System Usability Scale (Studi Kasus: Dinas Pertanian Kabupaten Bandung). *SEMNASTEKNOMEDIA ONLINE*, *4*(1), 2-9.

SKALA SYSTEM USABILITY SCALE (1)

Melakukan proses perhitungan SUS Score. Dari 5 responden yang melakukan proses perekaman dan pengisian kuesioner didapatkan nilai (score) SUS berdasarkan perhitungan sebelumnya, sebagai berikut :

a. Responden 1 : 75
b. Responden 2 : 75
c. Responden 3 : 72
d. Responden 4 : 75
e. Responden 5 : 70

Nilai rata-rata yang diperoleh dari persamaan (1) adalah 73,4

“

Cuplikan Kuesioner System Usability Scale (SUS)
Pudjoatmodjo, B., & Wijaya, R. (2016).
Tes Kegunaan (Usability Testing) Pada Aplikasi Kepegawaian Dengan Menggunakan System Usability Scale (Studi Kasus: Dinas Pertanian Kabupaten Bandung). *SEMNASTEKNOMEDIA ONLINE*, *4*(1), 2-9.

SKALA SYSTEM USABILITY SCALE (2)

“

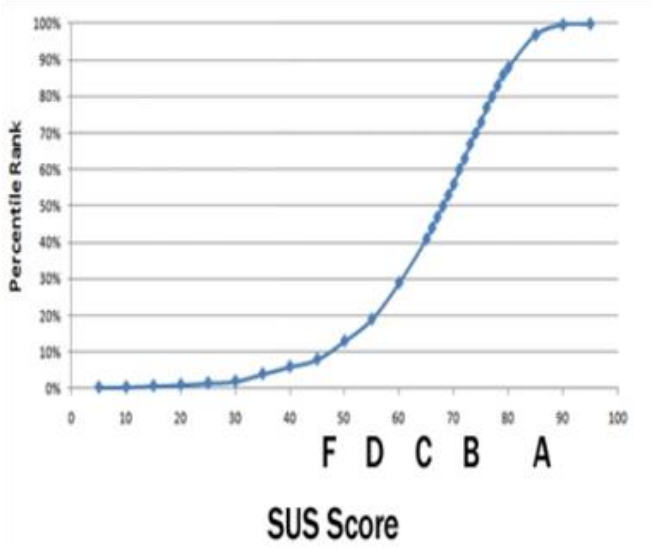
UNTUK DETAIL LEBIH LENGKAP MENGENAI CARA MENGHITUNG SUS SCORE SILAHKAN MERUJUK KE :

https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html

SKALA SYSTEM USABILITY SCALE (2)

Dari grafik rujukan, diperoleh bahwa nilai 73,4 termasuk dalam rentang B (rentang 70-80).

Hasil ini menunjukkan bahwa kualitas aplikasi kepegawaian yang dibuat mempuyai kualitas yang baik.



Gambar 9. *Grafik Rujukan*

“

Cuplikan Kuesioner System Usability Scale (SUS)
Pudjoatmodjo, B., & Wijaya, R. (2016).
Tes Kegunaan (Usabilty Testing) Pada Aplikasi Kepegawaian Dengan Menggunakan System Usabilty Scale (Studi Kasus: Dinas Pertanian Kabupaten Bandung). *SEMNASTEKNOMEDIA ONLINE*, *4*(1), 2-9.

USER EXPERIENCE QUESTIONNAIRE (UEQ)

USER EXPERIENCE QUESTIONNAIRE

Tools analisis kuantitatif yang lengkap untuk menilai **usabilitas sistem** sesuai **6 aspek**

Kuesioner **27 pertanyaan** terkait usabilitas dan menghasilkan **skala UEQ**

Skala yang dihasilkan dapat digunakan untuk **membandingkan kualitas** banyak sistem

Skala yang diperoleh dapat dimanfaatkan sebagai dasar melakukan **benchmarking**

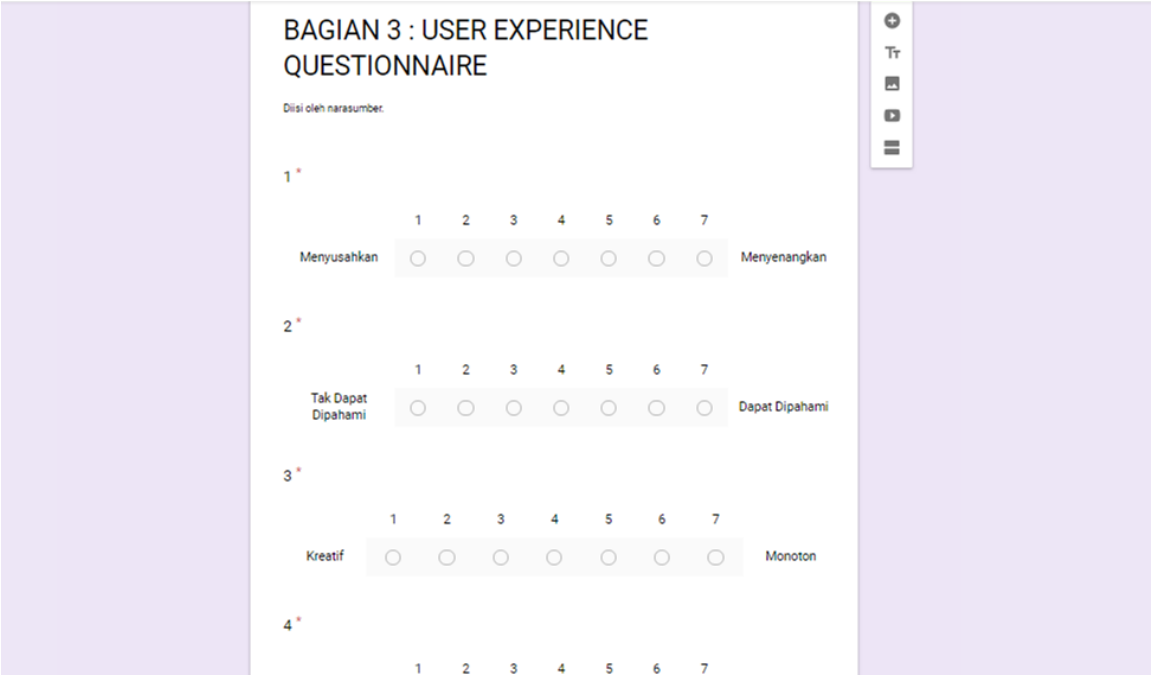
6 SKALA USER EXPERIENCE QUESTIONNAIRE

“

Aspek apa saja yang diukur dalam UEQ ?

https://www.ueq-online.org/

STRUKTUR KUESIONER UEQ



BAGIAN 3 : USER EXPERIENCE QUESTIONNAIRE

Diisi oleh narasumber.

1 *

	1	2	3	4	5	6	7	
Menyusahkan	○	○	○	○	○	○	○	Menyenangkan

2 *

	1	2	3	4	5	6	7	
Tak Dapat Dipahami	○	○	○	○	○	○	○	Dapat Dipahami

3 *

	1	2	3	4	5	6	7	
Kreatif	○	○	○	○	○	○	○	Monoton

4 *

	1	2	3	4	5	6	7	

“

Cuplikan Kuesioner UEQ : ‘Asesmen dan Pengembangan Desain User Experience Sistem Informasi Asisten Fasilkom UI’ Adinegoro, Pratama, Fiandi, dan Hasani (2018) Diajukan sebagai Tugas Akhir MPPI

UEQ Data Analysis Tools by : Dr. Martin Schrepp
UEQ Versi Bahasa Indonesia by : Harry Budi Santoso

DATA ANALYSIS TOOL UEQ

Please enter the data here!

Use the item numbers in the printed questionnaire and the categories 1 (if the alternative on the extreme left is marked) to 7 (if the alternative on the extreme right is marked).
Leave the cell empty if the person has not answered the item. Please do not enter a special caracter in such cases, since this would cause errors in the calculations.
You can enter data for a **maximum of 1000** participants. If you need more, you have to adjust the fomulas in the Excel.

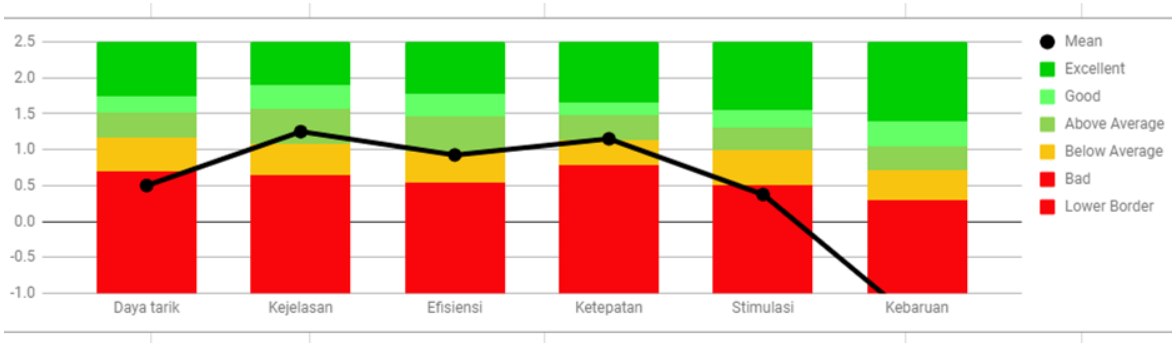
	Items																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
4	3	4	6	4	3	2	2	4	5	5	5	4	4	4	2	3	4	4	5	3	5	5	4	5	5	1
5	6	7	6	1	1	4	4	7	2	5	7	1	7	5	1	6	3	3	1	4	1	5	1	4	3	2
6	4	5	5	3	2	3	4	4	3	5	5	3	7	4	3	4	4	4	4	5	3	4	3	5	4	3
7	5	5	7	3	3	5	5	6	3	7	6	2	7	5	5	6	2	4	1	6	3	6	2	4	2	2
8	5	5	6	2	2	2	3	5	5	6	5	2	5	4	2	4	4	5	4	5	3	5	2	6	3	2
9	6	6	6	1	1	4	5	7	2	3	7	4	7	7	6	7	4	1	2	7	1	7	1	4	1	4
10	4	7	6	2	1	4	3	5	3	6	6	2	6	4	3	5	6	4	3	5	1	7	3	5	3	2
11	5	5	4	3	2	4	5	7	3	4	5	2	5	5	5	5	2	2	2	6	3	5	3	4	3	2
12	5	6	6	6	2	4	4	5	3	6	6	2	3	4	2	3	5	4	2	4	5	2	5	5	5	2
13	4	5	6	4	3	2	3	5	5	6	4	4	3	4	3	3	3	6	4	3	5	6	5	6	6	3

Read_First | Data | DT | Results | Confidence_Intervals | Scale_Consistency

> **Cuplikan Kuesioner UEQ : 'Asesmen dan Pengembangan Desain User Experience Sistem Informasi Asisten Fasilkom UI'** Adinegoro, Pratama, Fiandi, dan Hasani (2018) Diajukan sebagai Tugas Akhir MPPI

UEQ Data Analysis Tools by :
Dr. Martin Schrepp
UEQ Versi Bahasa Indonesia by :
Harry Budi Santoso

HASIL 6 SKALA UEQ



Scale	Mean	Comparisson to benchmark	Interpretation
Daya tarik	0.500	Bad	In the range of the 25% worst results
Kejelasan	1.250	Above Average	25% of results better, 50% of results worse
Efisiensi	0.925	Below Average	50% of results better, 25% of results worse
Ketepatan	1.150	Above Average	25% of results better, 50% of results worse
Stimulasi	0.375	Bad	In the range of the 25% worst results
Kebaruan	-1.400	Bad	In the range of the 25% worst results

“

Cuplikan Kuesioner UEQ : ‘Asesmen dan Pengembangan Desain User Experience Sistem Informasi Asisten Fasilkom UI’
Adinegoro, Pratama, Fiandi, dan Hasani (2018) Diajukan sebagai Tugas Akhir MPPI

UEQ Data Analysis Tools by :
Dr. Martin Schrepp
UEQ Versi Bahasa Indonesia by :
Harry Budi Santoso

CARA MENGHITUNG SKALA UEQ

“

UNTUK DETAIL LEBIH LENGKAP MENGENAI CARA MENGHITUNG UEQ SCORE SILAHKAN MERUJUK KE :

https://www.ueq-online.org/

KABAR GEMBIRA UNTUK KITA SEMUA :) KINI UEQ ADA VERSI BAHASA INDONESIA NYA :

https://www.ueq-online.org/Material/UEQ_All_Languages.zip

STUDI KASUS

Usability Evaluation of the Student Centered e-Learning Environment

International Review of Research in Open and Distributed Learning
Volume 16, Number 4

October– 2015

Usability Evaluation of the Student Centered e-Learning Environment

Inas Sofiyah Junus, Harry Budi Santoso, R. Yugo K. Isal, and Andika Yudha Utomo
Faculty of Computer Science, Universitas Indonesia, INDONESIA

Abstract

Student Centered e-Learning Environment (SCeLE) has substantial roles to support learning activities at Faculty of Computer Science, Universitas Indonesia (Fasilkom UI). Although it has

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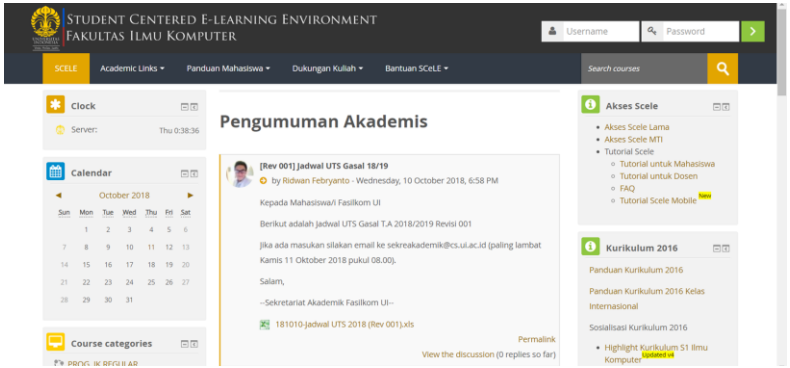
Junus, Santoso, Isal, & Utomo (2015)

PERTANYAAN PENELITIAN



“

Junus, Santoso, Isal, & Utomo (2015)

To find out the l**earning experiences** of students and lecturers in SCeLE

To find out **aspects** that are required **to be preserved** in SCeLE;

To find out aspects that are obliged **to be improved** in SCeLE along with the steps needed.

METODE ANALISIS DATA YANG DIGUNAKAN

“

Junus, Santoso, Isal, & Utomo

Likert Scale

Untuk menentukan isu yang muncul berdasarkan faktor yang diamati.

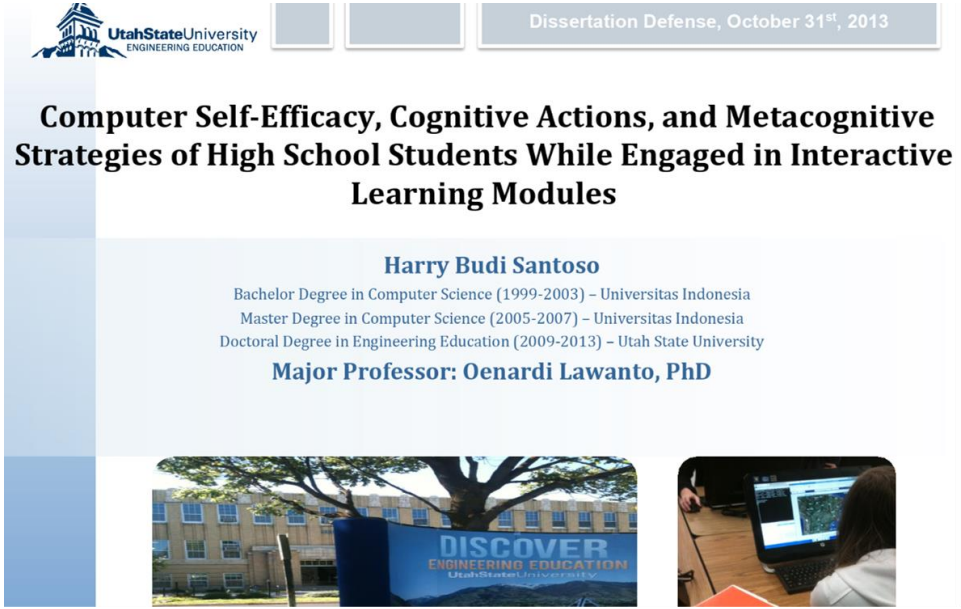
Theme Based Content Analysis (TBCA)

Menganalisis jawaban open ended question.

Solution Identification Analysis

Dilakukan berdasarkan data kuisioner responden.

Computer Self-Efficacy, Cognitive Actions, and Metacognitive Strategies of High School Students While Engaged in Interactive Learning Modules



“

Santoso, H. B.
(2013)

PERTANYAAN PENELITIAN

> **Santoso, H. B.**
> (2013)

How is students' **computer self-efficacy (CSE)** related to **cognitive** and **metacognitive strategies** while using interactive learning modules (ILM)?

How do students' **plan and monitor their cognitive actions**, and regulate their monitoring strategies during learning with ILM?

KONTEKS PENELITIAN

- School Selection:

Logan High School | Home of the Grizzlies

INTECH COLLEGIATE HIGH SCHOOL

- Participant Selection:

School	Class
Logan High School	Programming 1A and Math 1
InTech Collegiate High School	Physics

- 100 students from both schools completed all activities in this study.
- Three modules for each class were selected to be used by considering the relevance of the modules to this study.

“

Santoso, H. B.
(2013)

METODE ANALISIS DATA YANG DIGUNAKAN

“

Santoso, H. B.
(2013)

Statistik Deskriptif Rerata Nilai CSE dan SRCBL

Untuk profiling computer self-efficacy, dan strategi kognitif serta metakognitif siswa

Uji Korelasi (Pearson Test)

Melihat hubungan nilai CSE dengan strategi kognitif dan metakognitif siswa

Uji Multiple Linear Regression

Mengukur pengaruh nilai CSE dengan aksi kognitif dan strategi metakognitif siswa

METODE ANALISIS DATA YANG DIGUNAKAN

“

Santoso, H. B.
(2013)

Pengukuran Berulang (Repeated Measures)

Mengetahui perbedaan aspek seperti planning, monitoring, aksi kognitif dsb.

Cluster Analysis

Menentukan rekaman screen capture dan siswa terpilih untuk diteliti lebih lanjut

Screen Captured Video Analysis

Untuk menjelaskan lebih lanjut mengenai temuan dari analisis kuesioner

METODE ANALISIS DATA YANG DIGUNAKAN

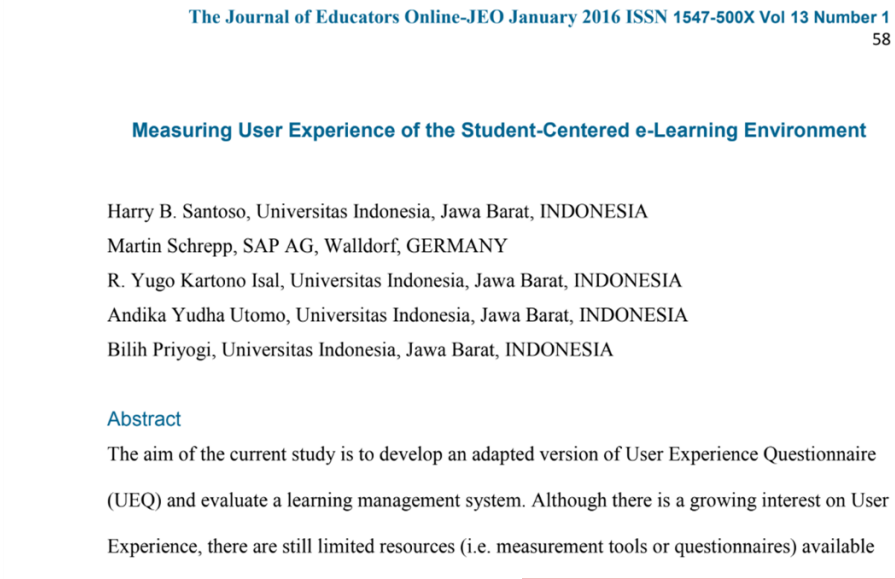
“

Santoso, H. B.
(2013)

Interview Analysis

Menjelaskan lebih lanjut temuan pada analisis video dan kuesioner

Measuring User Experience of the Student-Centered e-Learning Environment



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Measuring User Experience of the Student-Centered e-Learning Environment

Harry B. Santoso, Universitas Indonesia, Jawa Barat, INDONESIA
Martin Schrepp, SAP AG, Walldorf, GERMANY
R. Yugo Kartono Isal, Universitas Indonesia, Jawa Barat, INDONESIA
Andika Yudha Utomo, Universitas Indonesia, Jawa Barat, INDONESIA
Bilih Priyogi, Universitas Indonesia, Jawa Barat, INDONESIA

Abstract

The aim of the current study is to develop an adapted version of User Experience Questionnaire (UEQ) and evaluate a learning management system. Although there is a growing interest on User Experience, there are still limited resources (i.e. measurement tools or questionnaires) available

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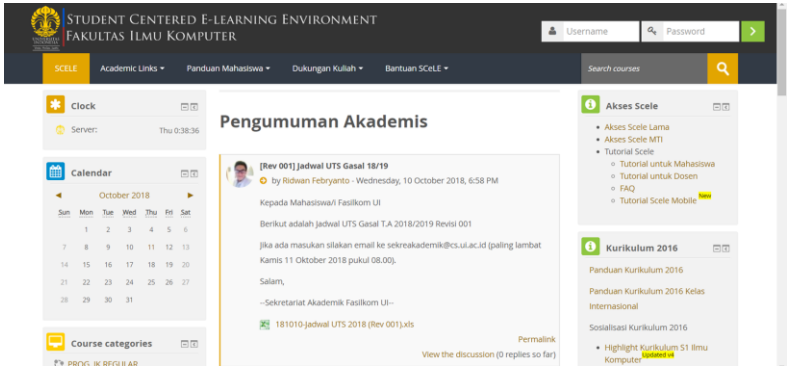
Santoso, Schrepp, Isal, Utomo, & Priyogi
(2016)

KONTEKS PENELITIAN



> **Santoso, Schrepp, Isal, Utomo, & Priyogi** (2016)

Goals :
Measure **user experience of Student Centered E-Learning Environment (SCELE)**,

METODE ANALISIS DATA YANG DIGUNAKAN

“

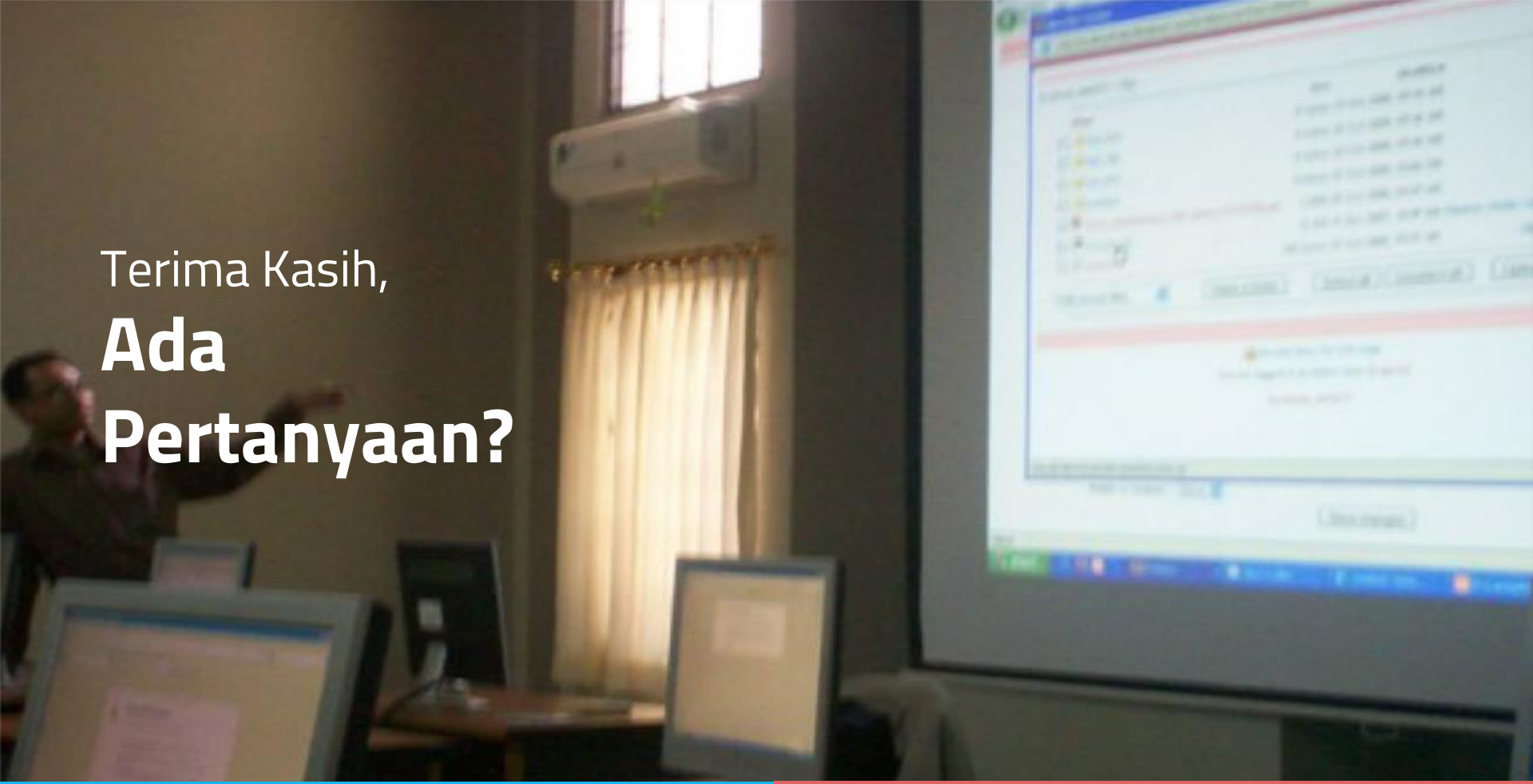
Santoso, Schrepp, Isal, Utomo, & Priyogi
(2016)

UEQ Data Analysis Tools

Untuk mengukur usabilitas SceLe berdasarkan 6 aspek UX

Analisis Open Question

Mengidentifikasi pendapat dan isu yang muncul terkait penggunaan SceLe


Terima Kasih,
Ada
Pertanyaan?