UK RASCH USER GROUP 2017

The main aim of this presentation is to speak to the range of PhD studies that have implemented the Rasch model as the main focus for their data analysis.

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Overview of Information Systems Research: Implementing Rasch Model – IRT data analysis

• Barefah, A. 2017	An empirical investigation of the effectiveness of eLearning strategies in higher education: A Rasch model for Saudi Arabia
• Yang, H. 2017	A context-aware recommendation system for improving the performance of targeted mobile advertising using data analytics
• Bakkar, M.N. 2016	An investigation of mobile healthcare (mHealthcare) training design for healthcare employees in Jordan
• Mohamad, M. 2012	The effects of web-mediated instructional strategies and cognitive preferences in the acquisition of introductory programming concepts: A Rasch model approach
•Mat-Jizat, J.E. 2012	Investigating ICT-literacy assessment tools: Developing and validating a new assessment instrument for trainee teachers in Malaysia
•Alwi, A. 2017	Investigation of the interactive effects of information systems interfaces (ISI) and personal cognitive preferences in museum learning experiences
•McKay, E. 2000	Instructional Strategies Integrating Cognitive Style Construct: A Meta-Knowledge Processing Model

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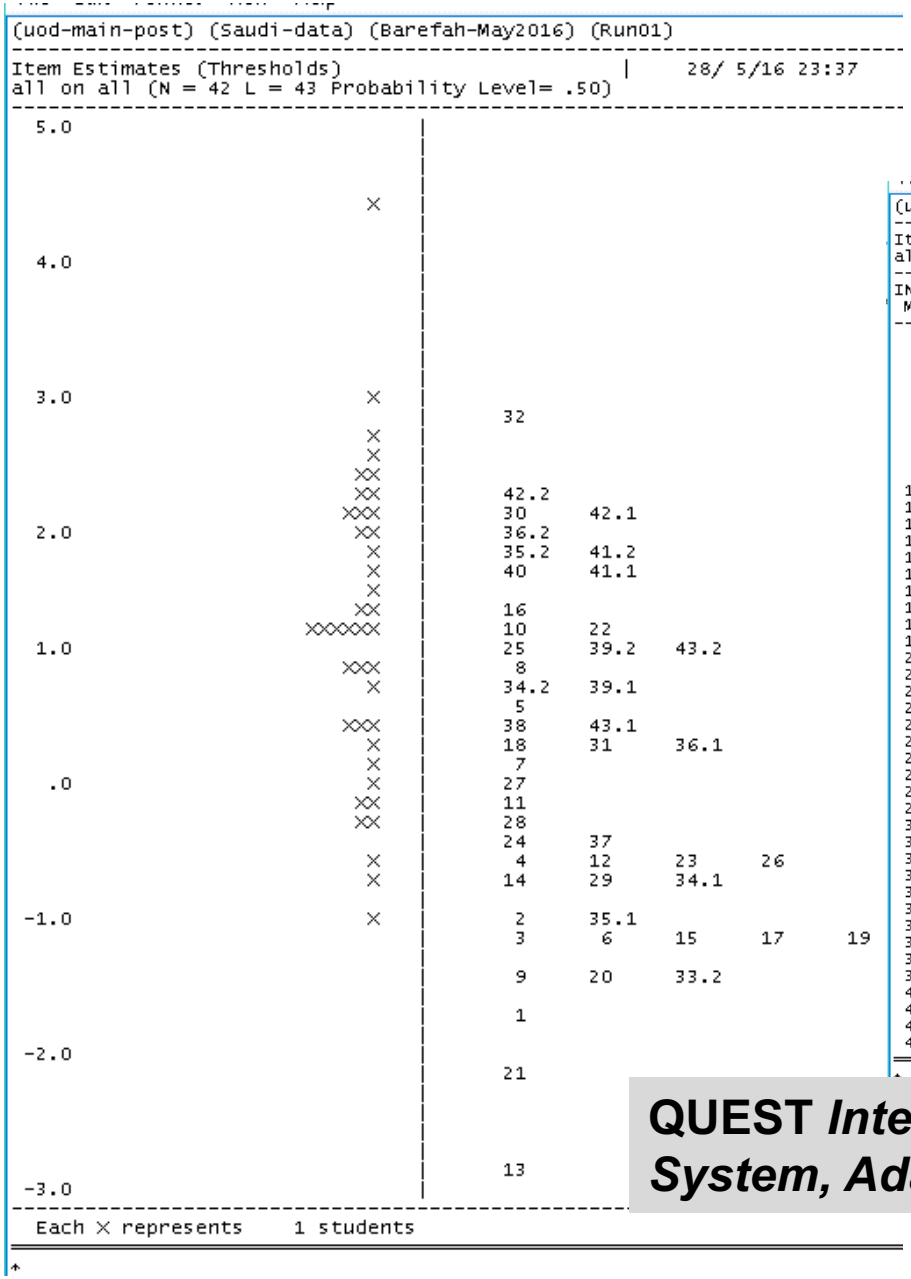
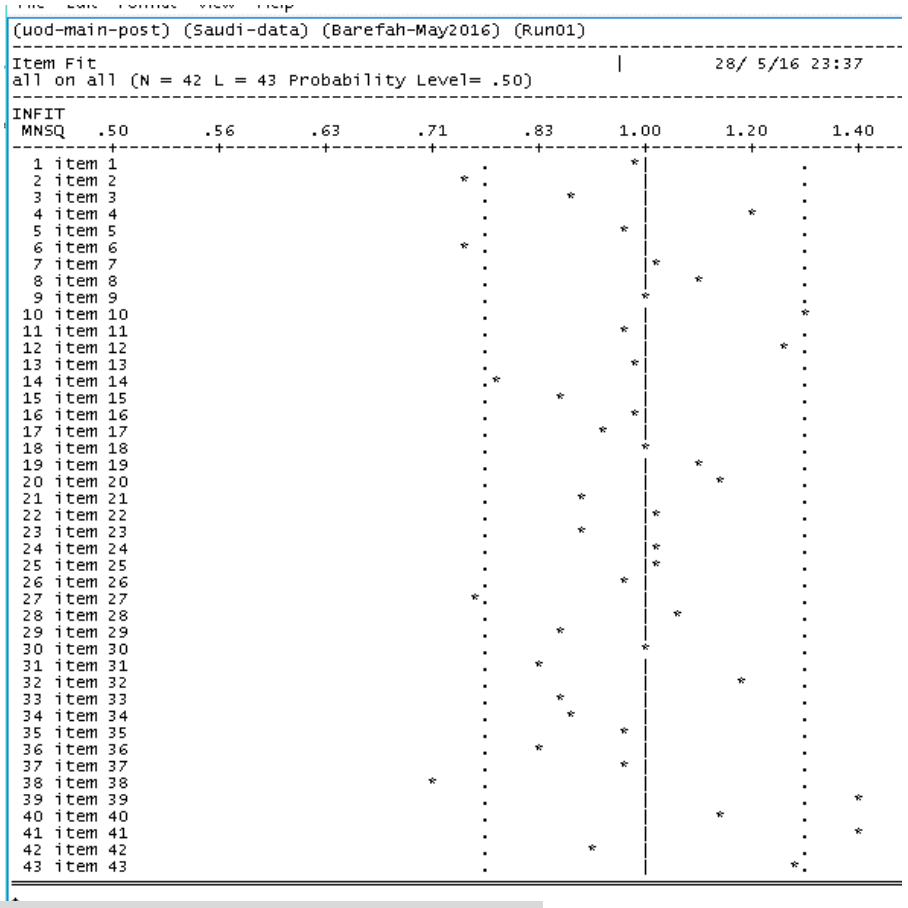
Allaa Barefah – 2017

An empirical investigation of the effectiveness of eLearning strategies in higher education: A Rasch model for Saudi Arabia



Data Flow Diagrams
Systems Analysis & Design



QUEST *Interactive Test Analysis System, Adams & Khoo, 1996*

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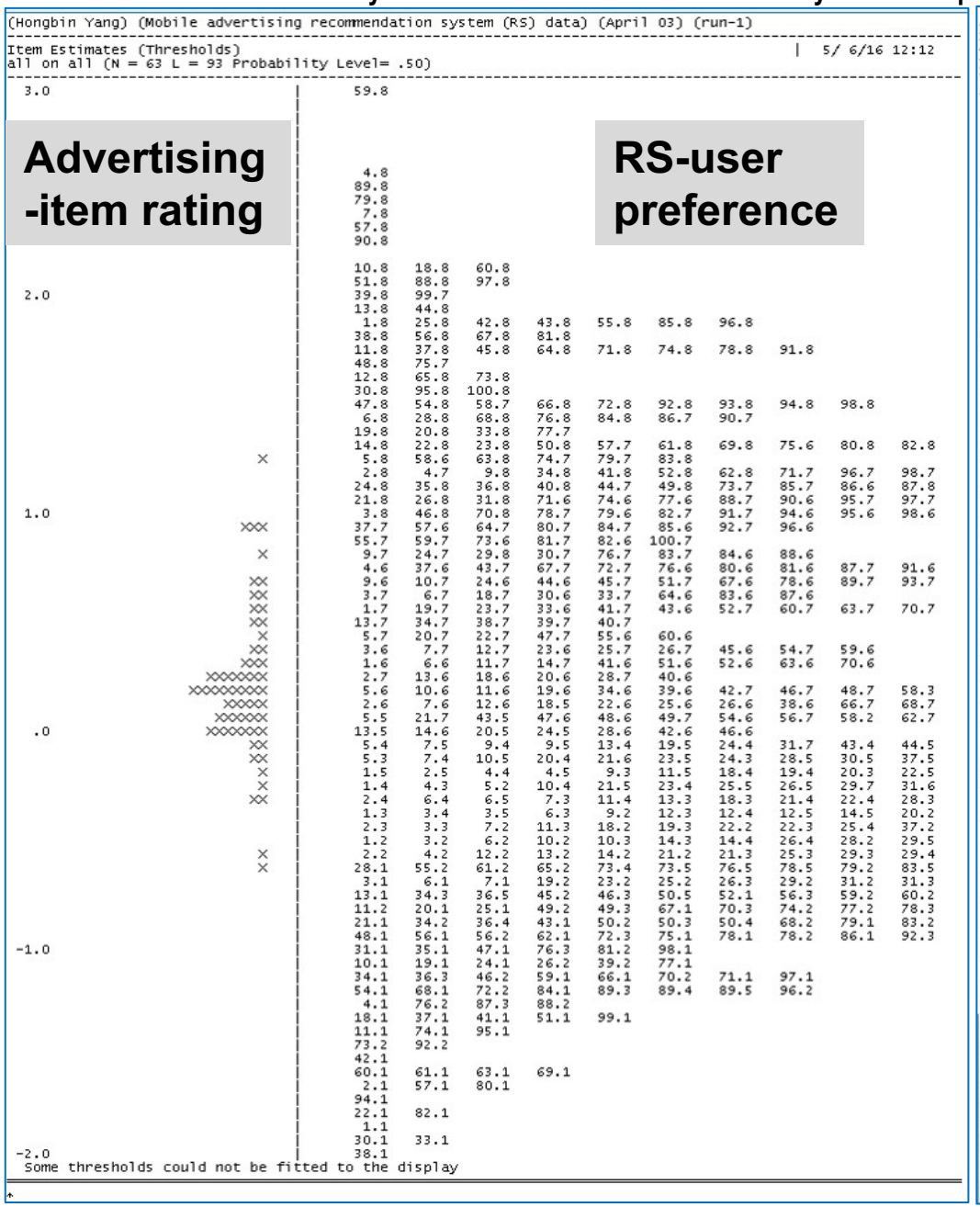
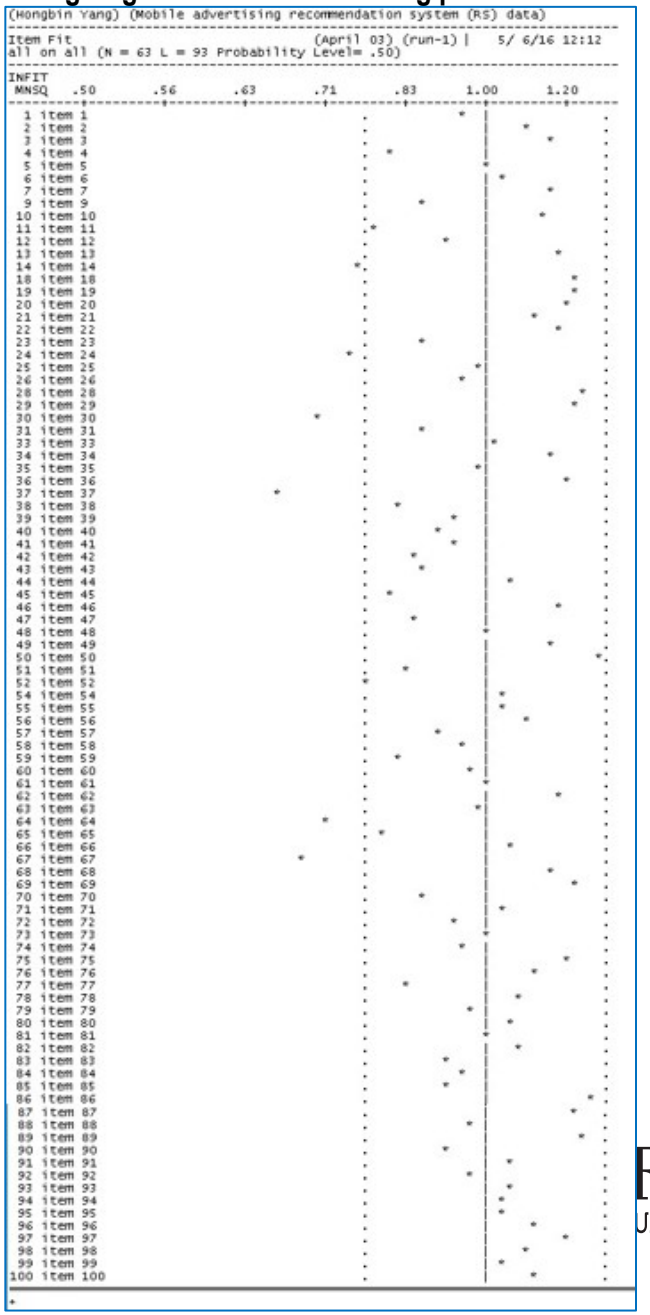
Hongbin Yang – 2017

A data analytics context-aware recommendation system for improving targeted mobile advertising performance





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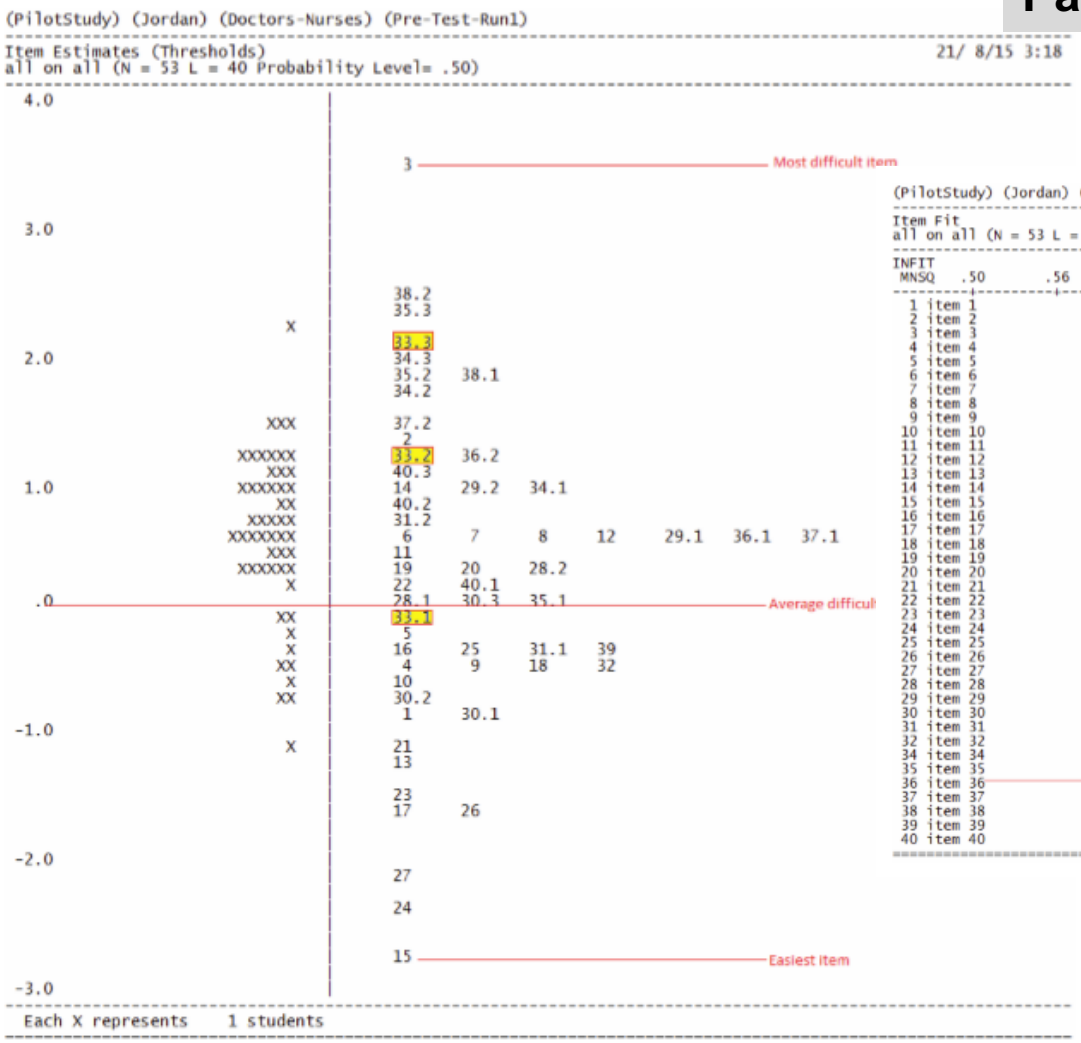
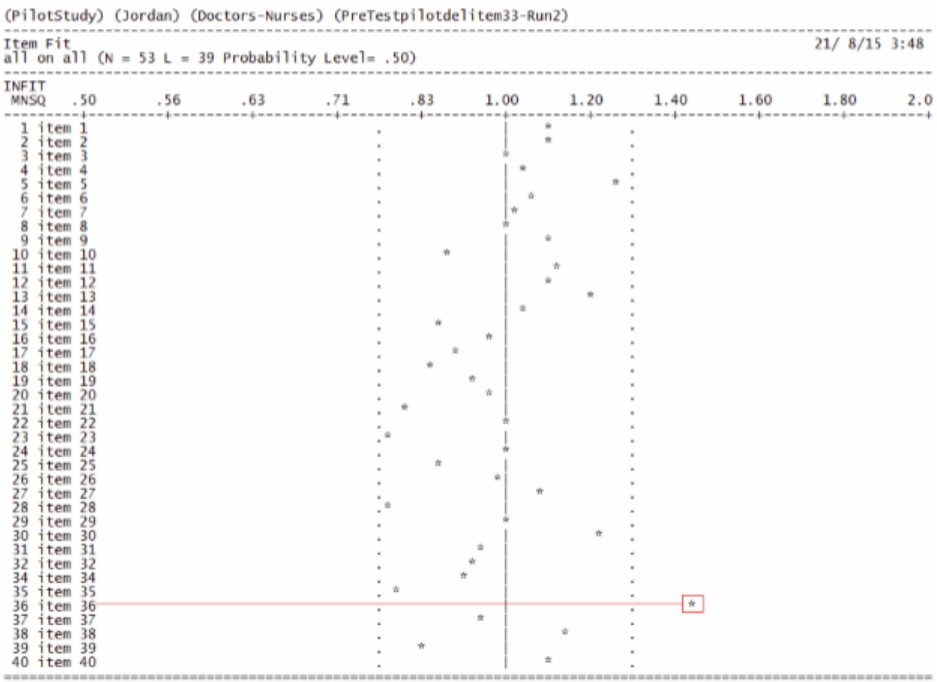
Mahmoud Bakkar – 2016

An investigation of mobile healthcare (mHealthcare) training design for healthcare employees in Jordan

Patient and Family Rights Standards





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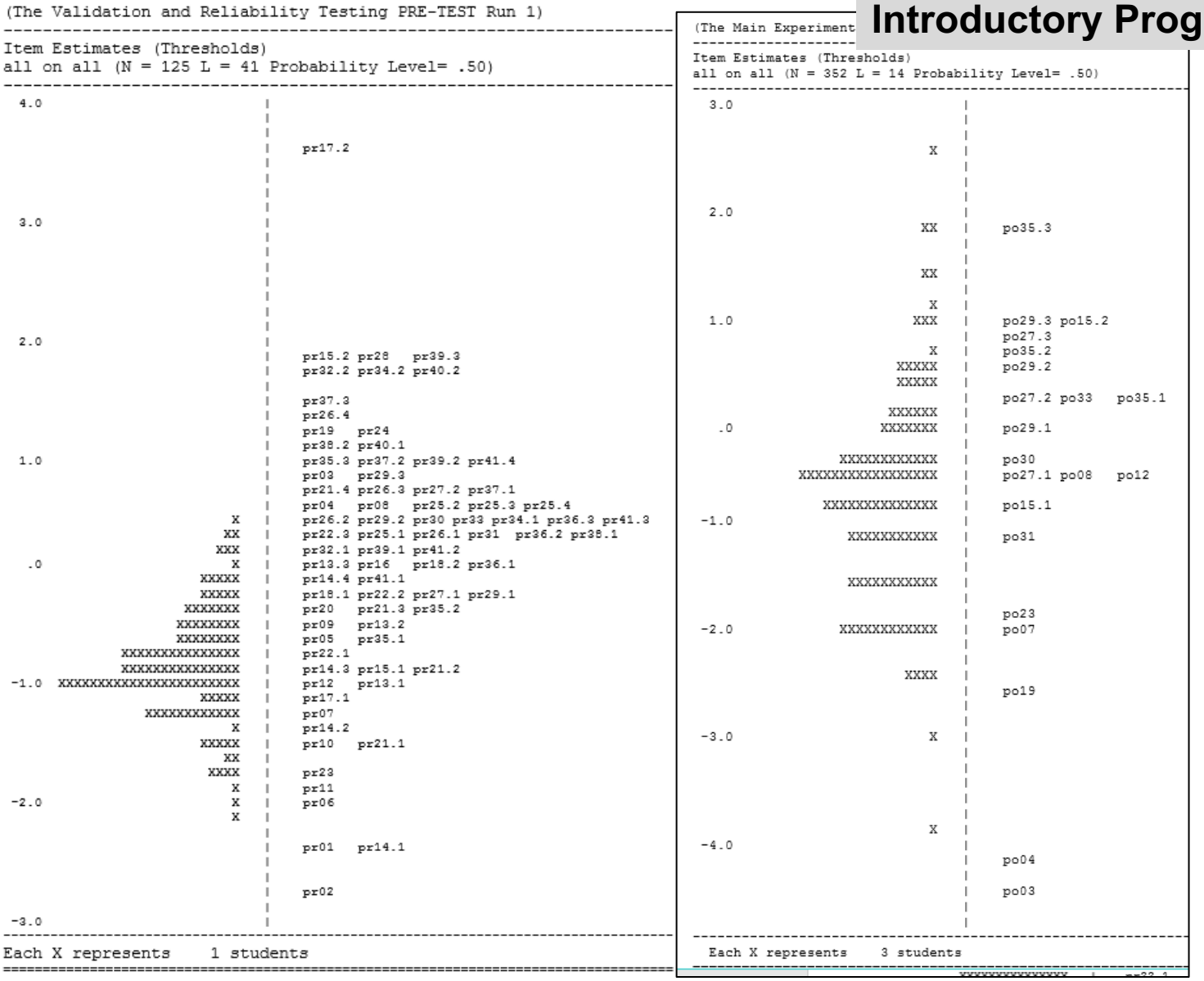
Marlina Mohamad – 2012

The effects of web-mediated instructional strategies and cognitive preferences in the acquisition of introductory programming concepts: A Rasch model approach

Introductory Programming C++



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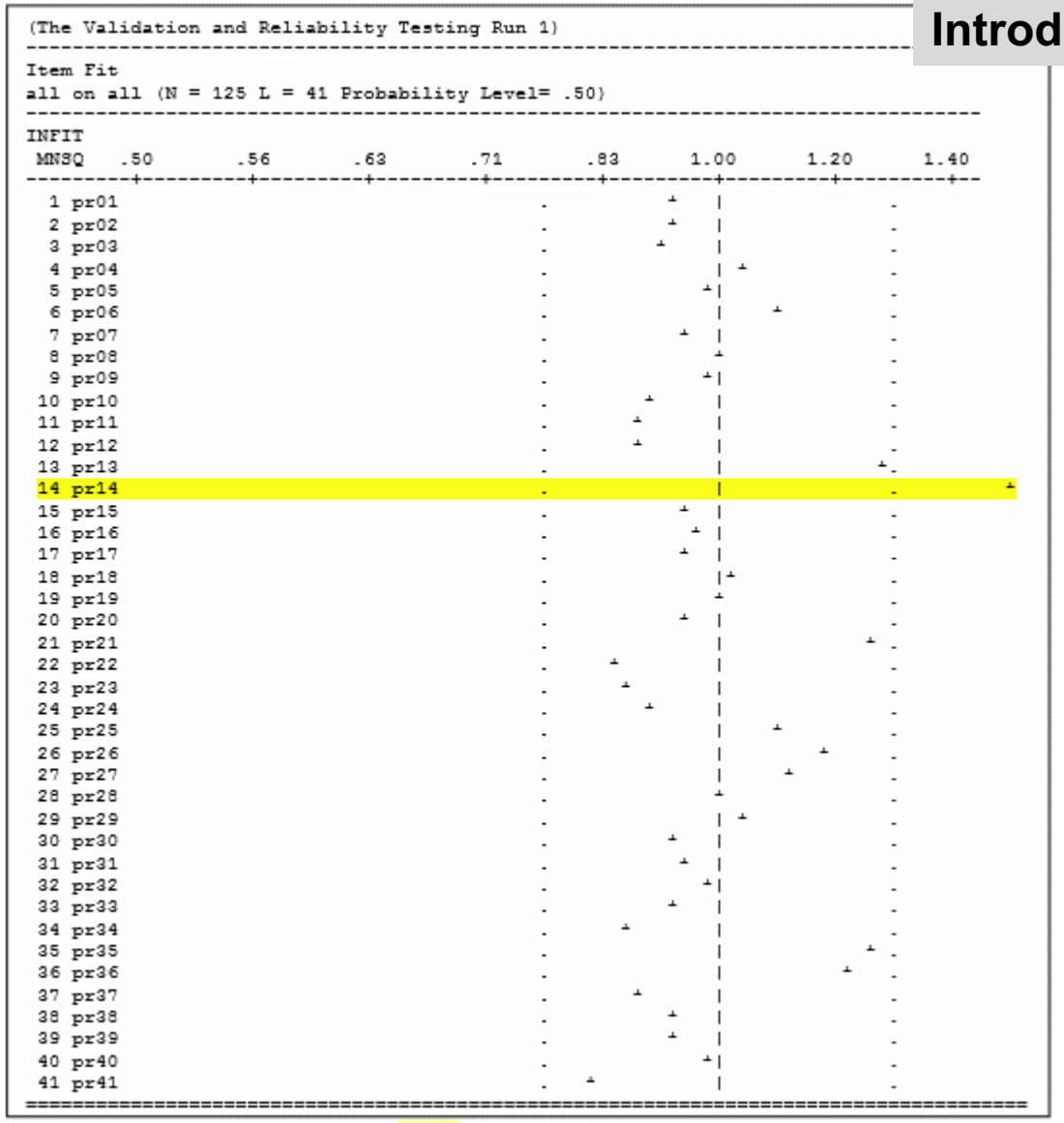

Figure 5.1: Item fit map (Run 1) of pre-test in VRT study

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Jessnor Elmy Mat Jizat – 2012

Investigating ICT-literacy assessment tools: Developing and validating a new assessment instrument for trainee teachers in Malaysia

Chapter-6 : Data Analysis and Findings – Phase-3 Instrument validation and testing

Tool to Measure ICT-literacy

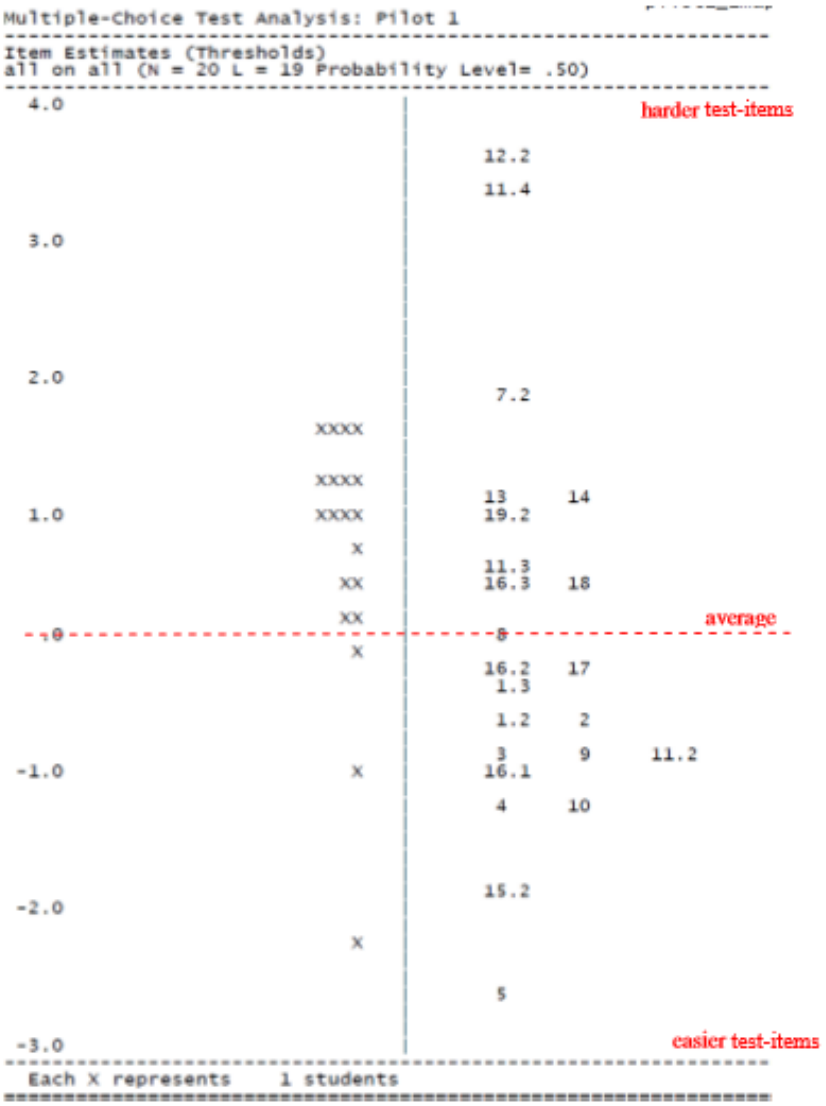

Figure 6.19. Quest variable map (Pilot test_2) Thesis page: 150

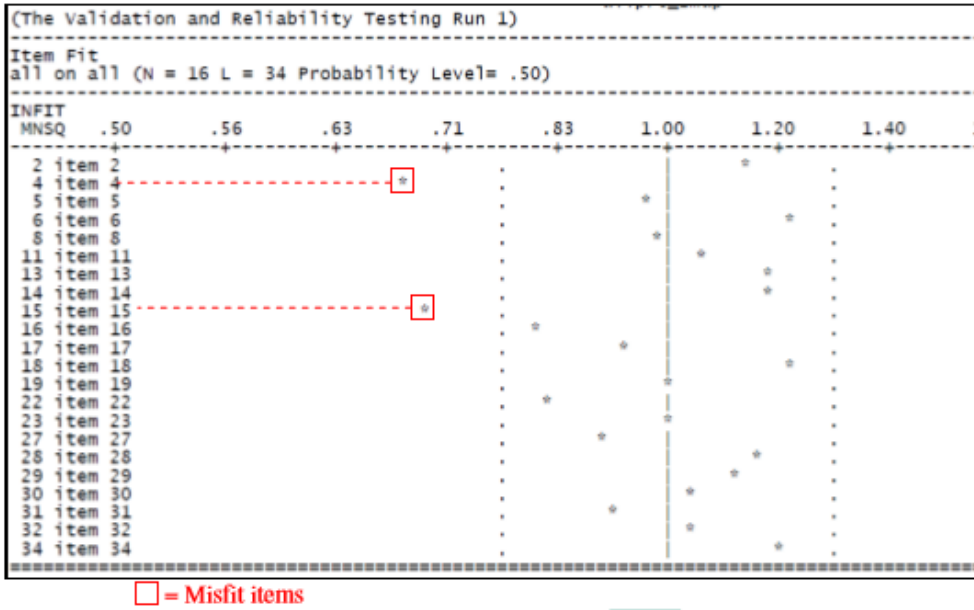

Figure 6.2. Test-item fit map

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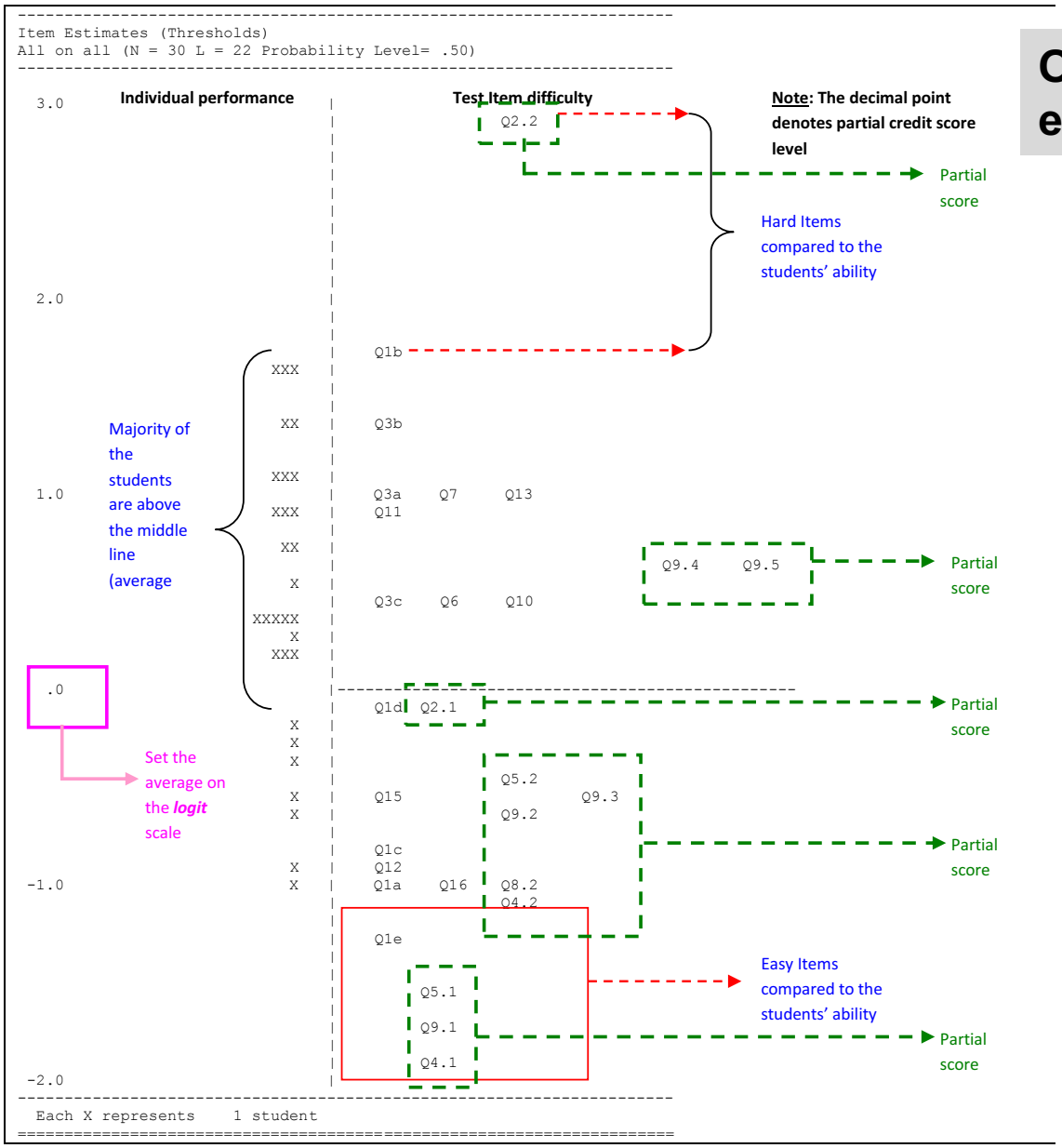
Asmidah Alwi – 2017

Investigation of the interactive effects of information systems interfaces (ISI) and personal cognitive preferences in museum learning experiences



Online dinosaur museum exhibition

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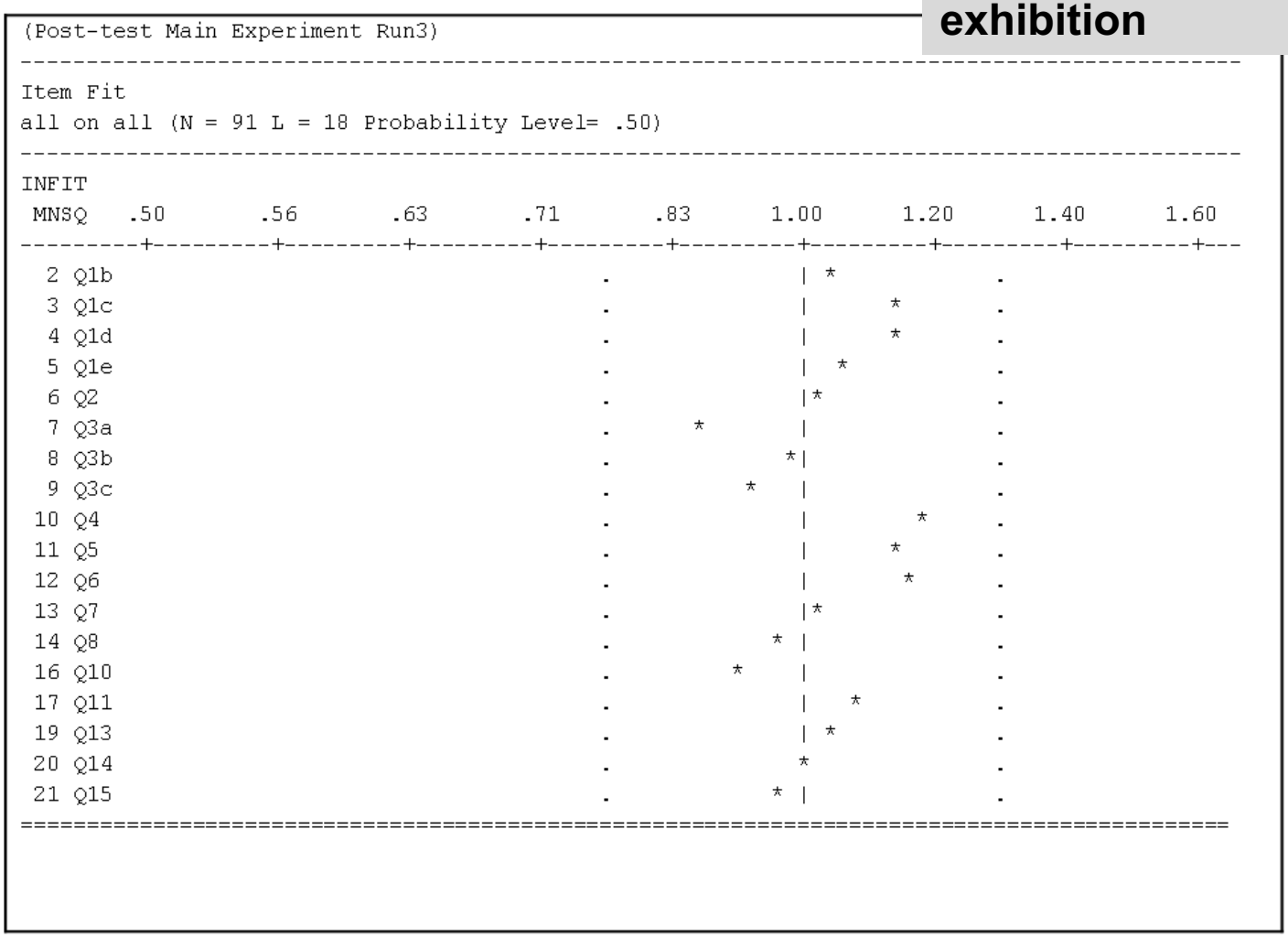
Asmidah Alwi – 2017

Investigation of the interactive effects of information systems interfaces (ISI) and personal cognitive preferences in museum learning experiences

Online dinosaur museum exhibition



```
(Post-test Main Experiment Run3)
-------------------------------------------------------------------------------------------
Item Fit
all on all (N = 91 L = 18 Probability Level= .50)
-------------------------------------------------------------------------------------------
INFIT
 MNSQ   .50       .56       .63       .71       .83      1.00      1.20      1.40      1.60
---------+---------+---------+---------+---------+---------+---------+---------+---------+---
  2 Q1b                                  .              | *           .
  3 Q1c                                  .              |      *      .
  4 Q1d                                  .              |      *      .
  5 Q1e                                  .              |   *         .
  6 Q2                                   .              |*            .
  7 Q3a                                  .      *       |             .
  8 Q3b                                  .             *|             .
  9 Q3c                                  .          *   |             .
 10 Q4                                   .              |        *    .
 11 Q5                                   .              |      *      .
 12 Q6                                   .              |       *     .
 13 Q7                                   .              |*            .
 14 Q8                                   .            * |             .
 16 Q10                                  .         *    |             .
 17 Q11                                  .              |    *        .
 19 Q13                                  .              | *           .
 20 Q14                                  .              *             .
 21 Q15                                  .            * |             .
===========================================================================================
```

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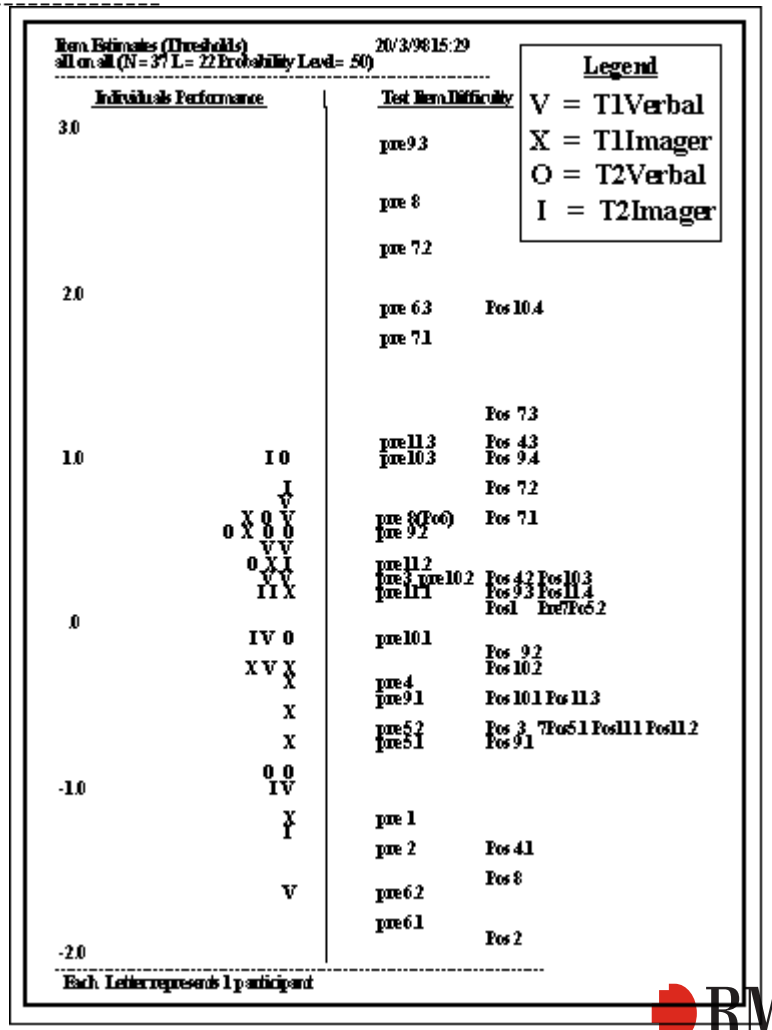
Elspeth McKay – 2000

Instructional strategies integrating cognitive style construct: A meta-knowledge processing model

Intro programming concepts

```
:studyctl.ctl: OVERALL PERFORMANCE RUN2 : ANCHOR ON
-------------------------------------------------------------------------------------------------
Item Estimates (Thresholds)                                                    9/ 7/98 15:14
all on all (N = 195 L = 40 Probability Level= .50)
-------------------------------------------------------------------------------------------------
  4.0                          |
                               |    pr16
                               |
                               |
                               |
                               |
  3.0                          |    pr18
                               |
                               |    3pr5
                               |    pre9.4 pr10
                               |
  2.0                          |    9p13
                               |    pr12.2
                               |
                               |    pr11
                               |
                               |    pr12.1
                               |    pre5.1 pre5.2 pre5.3
                               |    pr15.3 POS1
  1.0                          |    pr19.3 PO10.3
                               |    pr14.2
                               |    pr19.2
                             X |    pr19.1 18SM
                               |    pre7   PO14.4
                               |    pre9.3 pr20.3
                            XX |    pr20.2 PO10.2
   .0                       XX |    pr20.1 POS6.3 PO15.4
                          XXXX |    pre4.2 pre4.3 19SM.4
                    XXXXXXXXXXXX |
                          XXXXXXXXX |    pre6   pr15.2 PO10.1
              XXXXXXXXXXXXXXXXXXXX |    pr15.1 2pr4.2 2pr4.3 19SM.3
               XXXXXXXXXXXXXXXXXXX |    pre3   PO15.3
                    XXXXXXXXXXXXXX |    pre8.1 pre8.2 POS6.2 PO14.3 19SM.2
                XXXXXXXXXXXXXXXXXX |    pre4.1 POS5   PO15.2 PO20.4
 -1.0       XXXXXXXXXXXXXXXXXXXXX |    pr14.1 P7SM   8p12.2 PO14.2
                  XXXXXXXXXXXXXXX |    PO15.1 19SM.1 PO20.2 PO20.3
                     XXXXXXXXXXXX |    2pr4.1 POS4   POS6.1 PO14.1 PO20.1
                     XXXXXXXXXXXX |    pre9.2 1210   1311
                   XXXXXXXXXXXXXX |    pre2   8p12.1 PO11   17SM
                        XXXXXXXXX |    pre1
                     XXXXXXXXXXXX |    16SM
                              X    |
 -2.0                      XXX    |
                               |
                               |
                               |
                            XX |
                               |    pre9.1
                               |
 -3.0                          |
-------------------------------------------------------------------------------------------------
  Each X represents     1 students
```



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Instructional strategies integrating cognitive style construct: A meta-knowledge processing model

QUEST pkpb Scale -2.5 to 3.0	Measurable Instructional Outcomes			Test Item Codes			MIO levels
	Cognitive Skill	Knowledge Bands	Demonstrated Abilities	Item No	Level	Pretest	
pkpb12	Cognitive strategy	Procedural knowledge (the how)	Recognizes unstated assumptions : Logic flow	23.00	SF	5	4.2
pkpb10				29.00	MR	13	
pkpb9			Knows how to redefine a problem	21.00	SF		4.1
pkpb8			Identifies a plausible starting point for a loop control statement	30.03	MR		5.3
			Recognizes unstated assumptions : Process concept	38.00	Adu	18	4.1
pkpb7			Knows how to correctly terminate repetition structure	34.04	Adu		5.3
			Identifies a plausible conditional logic statement	30.02	MR		
			Provides a complete sequential listing of tasks	26.03	SF		3.2
			Knows how to correctly terminate repetition structure	35.04	Adu	15	5.3
pkpb6			Knows how to correctly terminate the loop structure	39.04	Adu	19	5.3
			Identifies a plausible repetition question	30.01	MR		
			Knows how to correctly terminate the conditional logic structure	39.03	Adu	19	
pkpb5	*Verbal information*	*Declarative knowledge*	*Knows basic terms*	*22.02*	*SF*	*4*	*1.3*
				22.03		*4*	*1.2*
	Cognitive strategy	Identifies sub-tasks	Applies sequential processing inside repetition logic construct	34.03	Adu		5.4
				35.03		15	5.3
			Knows how to correctly apply the conditional logic structure	39.02		19	
			Understands concept of printing final total at the end of process	26.02	SF		3.1
			Knows how to correctly terminate the repetition logic construct	*40.04*	*Adv*	*20*	
			Understands concepts & principles	25.00	SF	4	4.1
				35.02	Adu	15	5.3
				28.02	SF	12	2.3
pkpb4	Intellectual skill	Declarative knowledge (Higher-Order-Rules)	Understands concepts & principles	27.00	SF	7	2.3
			Applies plausible repetition (WHILE) with correct control value	34.02	Adu		5.3
			Knows how to place heading before start of loop structure	35.01		15	
			Knows how to correctly start the loop structure	39.01		19	
			Applies control repetition construct for 100 iterations	*40.03*	*Adv*	*20*	*5.3*
			Concrete concept	22.01	SF	4	1.1
			Understands how to get input sequential processing logic	40.02	Adu	20	5.3
			Understands concept of repetition logice for getting inputs	26.01	SF		3.2
			Applies concepts & principles to new situations	24.00			2.1
			Problem solving techniques	32.00	MR	10	3.1
			Knows how to place heading before start of loop structure	34.01	Adu		5.3
			Knows how to apply a plausible sequential sequence	40.01		20	
			Problem solving techniques	33.00	MR	11	3.1
pkpb3	Verbal information	Declarative knowledge (Rule only)	Discriminates programming concept only	28.01	SF	12	2.3
				31.00	MR	4	4.1
				37.00		17	2.3
				36.00		16	

Introductory programming concepts

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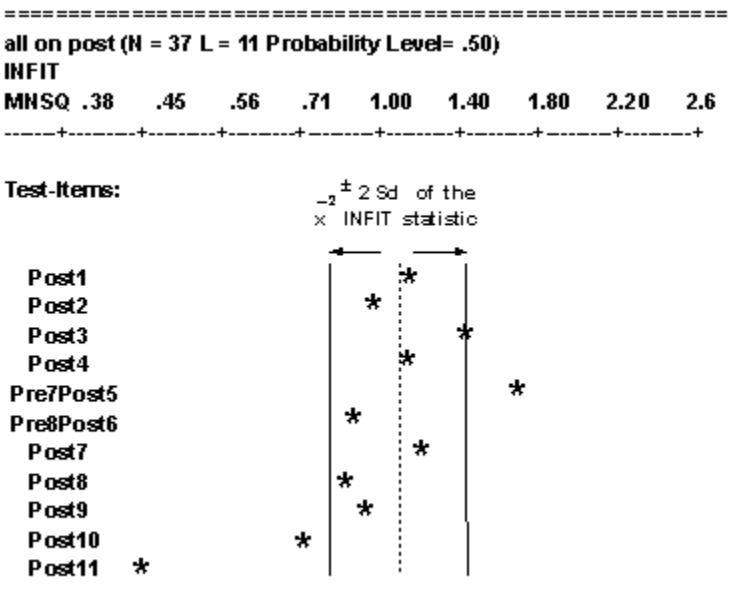
Instructional strategies integrating cognitive style construct: A meta-knowledge processing model



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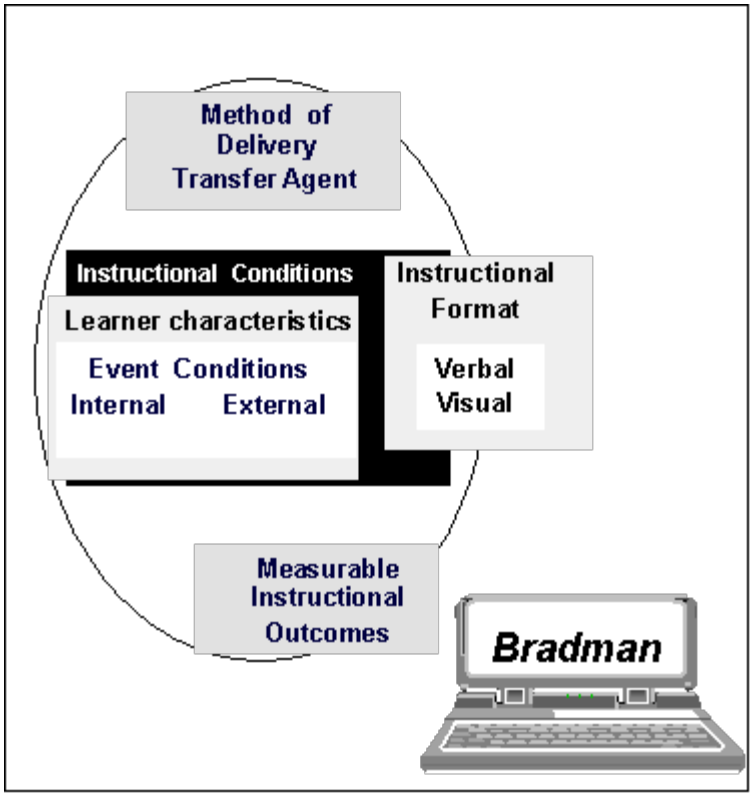
Intro programming concepts



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