Chapter 10 IeV^ A_Rj dZlR_UCVgZ/h

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10.1 Overview

BWWcV Raajj Z_XZeV^ cVda`_dV eYV cj (ICE) dIRIZ_X e` eYV EIMDD 2003 RIYZVgV^ V e UReR e` UVcZgV def UV e^ ReYV^ ReZid R U diZV TV RIYZVgV^ V e dl' cVd Wc R_Rlj dZd R_U cVa` ceZ_X, eYV EIMDD & PICLD I_eVc_ReZ_Rl Def Uj CV_eVcT_UFTeVURcVgZVh`VVRcR_XV`VVZRX_`deZTdeReZdeZTde`ViR^Z_VR_U VgRJf ReVeYVad TY`^ VecZTTYRcRTeVcZbZtd`VWRTY RTYZ/gV^ V_eZeV^ Z_eYV49 Tf ecZldR UWfcBV TY^ Rc\ZXaRceZlZaR edZ EIMDD 2003. EYZdcVgZlh a | Right VUR Tof TZR| c` | VZ_ eYV b f R| Zej Robf cR_TV` VeYV EIM DD 2003 UReR, V_RS | Z_X eYVUVeVTeZ_`Wf_fdfRlZeV^ ac`aVceZvdeYReTflUdZX_RlRac`S|V^`cVcc`c WcRaRceZIf |RcTf eqi. F`cViR^a|V, R ZeV^eYRehRdf TYRcRTeVcZteZIR||j VRdi `cUZWTF |e `cYRUR_f_fdfR||j| |`h UZdTcZ\Z_ReZ_Xa`hVc,Tf|UZ_UZ TReVRa`eV eZRJac`SIV^ h ZeY VZeYVc ecR dReZ `cacZ eZ X DZ^ ZRcji, RT ded TeVU-cVda`_dVZeV^ hZeY f_fdfR]jj]`hdfcZ_XcV]ZeSZZejTfjUZ_UZIReV Rac`S|V^ hZeYRdTcZ_XdScZTZ_RaRceZff|RcTf_eqj.I_eYVcRcVZ_deR_TVc h YVcV df TY ZeV^ dh VcV Wf _ U, eYV T f _eq 'decR_dReZ _ gVcZ TReZ _ U Tf - $^{\prime}$ V_edR_U acZ_eVUS``\ | Vedh VcV Vi R^ Z_VU Wc ~ Rh d`c Z_RTIf cRIZVdR_U, ZV_VTVcbRcj, eYVZeV^ hRdcV^`gVUV&'^ eYVZ_eVc_ReZ_RJ UReRSRdVVVc eYRc T f egi. EYZdTYRaeVc UVdTcZSVd eYV SRdZTZEV^ deReZtEZTd eYRe h VcV T df leVU R_UeYVcVgZh TcZeVcZReYRehVcVRaajZvu, R_Uac`gZvvdViR^ajVdWi^ eYV RddWdd V_ee Zlf decReV eYV cVgZ/h ac TVdd

10.2 Statistics for Item Analysis

def TeVU-cVda`_dVZeV^, cVdaVTeZeVj. DeRezdeZdd Wc VRIY ZeV^ h VcV UzdaJRj W. RjaYRSVeZIRJj Sj T f_ecj, h ZeY eYV Z_eVc_ReZ_RJ RgVcRXVWc VRIY deRezdeZT Z_eYV S`ee`^ c`h. F`ceY`dVT f_ecZvdeYReeVdeWUZ_^`cVeYR_`_VJR_Xf RXV, deRezdeZdd VcVacVdV_eVU dvaRcReVjj Sj JR_Xf RXVXc`f a. F`cRJ ZeV^ d, cVXRcU-JVdl`VZeV^ Wc^ Re, deRezdeZddZ TJf UVU eYV _f^ SVc`Vdef UV_edeYRecVda`_UVU Z_VRIYT f_ecj, eYV UZDVIF Jej JVgVJ (eYV a VcTV_eRXV`Vdef UV_edeYReR_dh VcVL eYV ZeV^ T ccVIej), R_U eYV UZDICZ Z_ReZ_Z_UVi (eYV a`Z_e SZEVCZRJ T ccVJR-eZ_SVeh W_ df TTVdd`_eYV ZeV^ R_U Re`eRJ df cV). AJd` ac`gZUVU h Rd R_VEZ^ ReV`VeYV ZeV^ 'dUZDVIF Jej f dZ_XR CRdIY`_V-aRcR^ VeVc ICE^` UVJ. EYV ZeVc ReZ_RJ^ VR d`VeYV ZeV^ UZDVIF Jej f dZ_XR CRdIY`_U-aRcR^ VeVc ICE^` UVJ. EYV ZeVc ReZ_RJ^ VR d`VeYV ZeV^ UZDVIF JezVdR UZEV^ UZDVIF ZeVc Add VeYV ZeV^ ddVezVL RdXf ZUVde` eYV`gVcRJ deRezdeZlzIRJ ac`a VceZVd` VeYV ZeV^ d

 $\label{eq:pct_1} \textbf{PCT_1, PCT_2, and PCT_3:} FoWUWcT_decf TeWU-cVda`_dVZeV^ d`_|j_(dWEiYZeZe 10.2), WRIYT_|f^_Z_UZIReVdeYVaVcTV_eRXV`Wdef-UV_eddI`cZ_XRe_eYVaRceZIf_|Rc_dI^ cV_|VgV|, fae`R_UZ_T]f_UZ_XeYV^ Ri_Z^ f^ dI^ cV_|VgV| Wc_eYVZeV^ . N`e_cVRIYVUZeV^ dh_VcVVi_T]f_UVUW^ eYVUV_ `^ Z_Re`c_Wc_eYVdV_TR[Tf_|ReZ_d_d$

 $\label{eq:pct_in:} \textbf{PCT_IN:} \ F \ dW \ Wc \ ^f \] \ eZa \]V-TY \ ZV \ ZeV \ d \ _ [j , eYZdh \ Rd eYV \ a VcTV_e \ RXV \ Wtef \ UV_edeYRe \ ac \ gZUW \ R_ \ Z gR]ZU \ cVda \ _ dVe \ R \ ^f \] \ eZa \ |V-TY \ ZV \ ZeV \ . \\ \ Ej \ aZIR] \ [j , Z gR]ZU \ cVda \ _ dVdh \ VcV \ eYV \ cVdf \]e \ Wtef \ UV_ed \ dV]V \ eZ \ X \ \ cV \ eYR_ \ \ _ \ VcVda \ _ dV \ aeZ \ Wc \ eYV \ dR \ VZeV \ .$

 $\label{eq:pct_om:ext} \textbf{PCT_OM:} \ EYZdZdeYVaVcTV_eXXV`WdefUV_edhY`, YRgZ_XcVRIYVUeYVZeV^ , UZU_`eac`gZdVRcVda`_dV. N`ecVRIYVUZeV^ dhVcVViT]fUVUW'^ eYVUV_`^Z_Re`chYV_TR[Tf]ReZ_XeYZddeReZdeZT.$

 $\label{eq:Reliability - Cases: E`ac`gZUVR^VRdfcV`V&YVcV]ZRSZZej`V&YVdfcZ_X`V&YVT_decfTeVUcVda`_dVZeV^d_eY`dVZeV^dZ_Raac`iZ^ReV]j 25 aVcTV_e`V&YVeVdeS``\]VedZ_VRIYTf_ecj_h VcVdfcVUSj_eh`Z_UVaV_UV_edfcVcd EYZdTlf^ Z_UZIReVdeYV_f^SVc`V&Z^VdVRIYZeV^hRdUfSIVdfcVUZ_RTf_ecj.$

Z_XeYVdVZeV^ deReZdeZtd, eYVRZ\ hRde`UVeVTeR_j f_fdfR]TYR_XVdZ_ZeV^ ac`aVceZvdSVchW_RddVdd^V_ed, hYZTY^ZeYeZ_UZTReVRac`S]V^ Z_fdZ_XeYVZeV^ e`^VRdfcVTYR_XV.

10.21 Item-by-Country Interaction

 $A \ | eY \ f \ XY \ T \ f \ = ez \ Xd \ RcV \ V \ a \ VIeVU \ e` \ V \ YZSZe \ d` \ V \ gRcZReZ \ Z \ a \ VcWc^ \ R_TV \ RIc` \ cd \ ZeV^ \ d \ Z \ XV_ \ VcR], \ T \ f \ = ez \ Xd \ h \ ZeY \ YZSY \ Rg \ VcRXV \ a \ VcWc^ \ R_TV \ - eYV \ RIYZVgV^ \ V_e \ eV \ eV \ Rd \ R \ h \ Y` \ | V \ dY \ f \ | U \ U' \ | Vcd \ h \ V] \ h \ V | VzV \ YZSY \ d \ R_TV \ VzV \ d \ R_TV \ VzV \ d \ R_TV \ VzV \ RYZSY \ d \ cZ \ XT \ f \ eg \ YRd \ h \ a \ VcWc^ \ R_TV \ - R_ZeV^ \ - h \ YZIY \ eYVc \ T \ f \ = ez \ Xd \ RcV \ Z \ Xh \ V], \ eYVc \ Zd \ dRZU \ e` \ W \ T$

Z - - ` Z e ` H

VddY`f]UHV

e` T ^ aRcVaVcWc^ R_TVW' ^ `_VRU^ Z_ZbcReZ_ e` eYV_Vi e Ae eYV dR^ V eZ` V, eYV UZba]Rj TR_ SV f dMU e` UVeVTe ZeV^ -Sj -T f_ecj Z_eVcRTeZ_dRTc` dd R]| T f ecZVd

10.3 Scoring Reliability

AS`fe` VeYZU`WYYZW^ dZ eYVEIMDD 2003 RctWcth' V eh VcVT decf TeWUcVch`_dvZw^ dT ^ acZtZ_X_VRcjj YRJWWYVdT cVa`Z_edWceYVRctWcth' V_e5 A_ VctV_eZRJ cVbf ZcV^ V_eWcfdV`WfTY ZeV^ dZdeYReeYVj SVcVJZSSjj dT cWUSj RJJ aRceZtZaR_ed EYRe Zd RaRceZtf JRc def UV_e cVda`_dv'dy`f JUcVTVZgVeYVdP^ VdT cV, cVXRcUJVdd`WYVdT cVc I_T_UfTeZ_XEIMDD 2003, ^ Wrofc cVceX\V_e` V_dfcVeYReeYVT _drofTeWUcVda`_dvZeV^ dh VcVdT cWucVJZrSJj Z_RJJ Tf_ecZvdZ_TJfUVUUVgVJ`aZ_XdT`cZ_XXfZUVdWcVRTYT_drofTeWUcVda`_dv'bf VdeZ_ (h YZTY ac`gZUVUVdTcZaeZ_d`WRTTVaeRSJVcVda`_dv'dWcWTYdT`cVa`Z_egRJfVJ, E_Uac`gZUZ_XVieV_dZgVecRZ_Z_XZ_eYVRaaJZTReZ_` VeYVdT`cZ_XXfZUVd DT`cZ_Xac`TWfcVdWc`cXR_ZkZ_XR_U^`_Ze`cZ_XeYVdT`cZ_XXd\dtZ_dh VcV`fe\Z_WZ_eYV

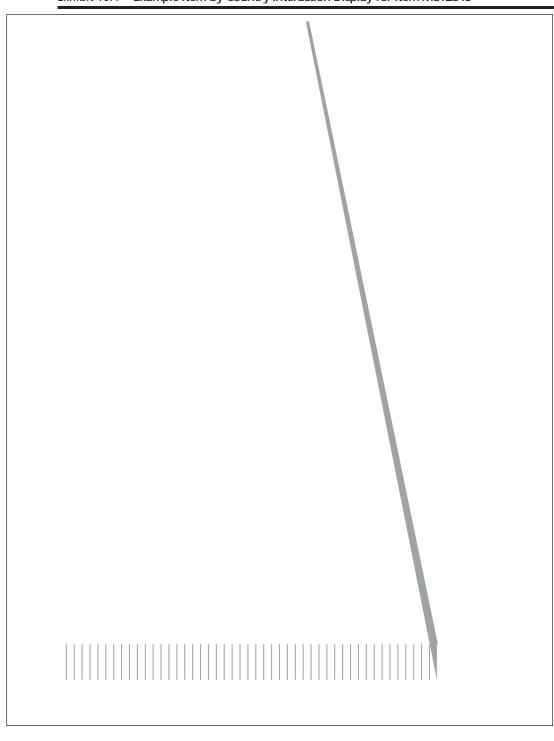


Exhibit 10.4 Example Item-by-Country Interaction Display for Item M012040

EXHIBIT 10.5	Example Item-by-Country Interaction Display for Irend Item M012001



10.4 Item Review Procedures

EYVI_eVc_ReZ_R] Def Uj CV_eVc eY`c`f XY|j cVgZVh VU eYV ZeV^ deReZeEZId Wc R]| aRceZIZaReZ_XT f_ecZVde`V_df cV eYRe ZeV^ dh VcV aVcWc^Z_XT^ aRceS|j RIc`ddT f_ecZVd I_ aRceZIf |Rc, ZeV^ dh ZeY eYV W|]`h Z_Xac`S|V^ dh VcVT_dZVcVU Wc a`ddS|V UV|VeZ_W^ eYV Z_eVc_ReZ_R] UReRSRdV:

- † A_Vcc`chRdUVeVTeVUUfcZ_XEIMDD2003ecR_d|ReZ_gVcZ_TReZ_SfehRcc
 `eTccVTeVUSVWcVeVceRU^Z_ZtecReZ_.
- $\uparrow DReRTYVI \setminus \underline{Z} XcVgVRJVUR \land f JeZaJV-TY \cdot ZIVZeV \land h ZeY \land `cV `c Wh Vc `aeZ_c `extra fill for the fill$

Exhibit 10.6 TIMSS 2003 Within-Country Constructed-Response Scoring Reliability Mathematics Items – Eighth Grade (Micontinu d

	Correctr	ness Score Aç	greement	Diagnostic Score Agreement		
Countries	Average of Exact Percent	Exact	nge of : Percent :eement	Average of Exact Percent	Range of Exact Percent Agreement	
	Agreement Across Items	Min	Max	Agreement Across Items	Min	Max
Philippines	99	97	100	97	92	100
Romania	100	98	100	99	94	100
Russian Federation	R00 99	95	100	97		

Exhibit 10.7	TIMSS 2003 Within-Country Constructed-Response Scoring Reliability Science Items – Eighth Grade Mcontinu d
Countries	
Countries	

Exhibit 10.8 TIMSS 2003 Trend Item Scoring Reliability Mathematics Items - Eighth Grade

Countries	Correctne	Correctness Score Agreement			ic Score Agr	eement
	Average of Exact Percent	Exact Exact Percent Percent Agreement		Average of Exact Percent	Range of Exact Percent Agreement	
	Agreement Across Items	Min	Max	Agreement Across Items	Min	Max
Australia	98	88	100	94	73	100
Belgium (Flemish)	98	92	100	94	78	100
Bulgaria	99	82	100	94	71	100
Chile	99	97	100	92	73	100
Chinese Taipei	98	95	100	94	79	100
Cyprus	98	91	100	94	79	100
Hong Kong, SAR	98	91	100	96	84	100
Hungary	98	89	100	95	86	100
Indonesia	98	90	100	93	60	100
Iran, Islamic Rep.	98	83	100	89	24	99
Israel	98	91	100	92	74	100
Italy	99	91	100	97	86	100
Japan	98	87	100	96	76	100
Jordan	99	96	100	96	87	100
Korea, Rep. of	98	88	100	94	67	100
Latvia	90	34	100	78	32	100
Lithuania	98	93	100			

10.5 Item Position in Booklet

 $\label{eq:localize} Ad UVdICZSVU Z_ CYRaeVc 2, EIMDD YRdR T^a]ZIReVU def UV_eS``\JVe UVdZ_. \\ A JeY`f XY VRIY def UV_eT^a]VeVd [f de`_VS``\JVe, eYVcV RcV 12 UZWWcV_e def UV_eS``\JVed Re VRIY XcRUV JVgVJ, h ZeY dZ_S]`T\d`W^ReYV^ReZId R_U dIZV_TVZeV^d dZ_VRIY S``\JVe Ad ZJf decReVU Z_Ei YZSZe 10.12, S]`T\d`WZeV^c RaaVRc Z_UZWWcV_ea`dZeZ_dZ_UZWWcV_eS``\JVed F`c Vi R^aJV, eYV ZeV^c CZ_S]`T\M1 RaaVRc Rd eYV \cdot \cdot CZ_B``\JVe 1, Rd eYV dVT_US]`T\Z_B``\JVe 6, R_U Rd eYV eYZcUS]`T\Z_B``\JVe 12. EYZd RJ`h d eYV S``\JVed e`SV JZ_\UU e`XVeYVc WWIZV_eJj, Sf e RJd`e`^`_Ze`c R_U T`f_eVcSRJR_TV R_j a`dZeZ_WWIE$

A_ Z`a`ceR_e ceWa Z_eYV ZeV^ cVgZvh ac`TVct!^ RUVa`ctZS]VSj eYV Tf_eVcSR]R_TVUS``\]Ve UVcZx_, h Rde`T^aRcVeYV TYRcRTeVcZteZtd`VZeV^ S]`T\dRaaVRcZ_XZ_UZXWcV_eS``\]Vea`dZcZ_de`UVeVTeR_j a`dZz_WwWTe Ac

References

EIMDD (2002), TIMSS 2003 Survey Operations Manual, acVaRcVUSj eYVI_eVc_ReZ_R] Def Uj CV_eVc, CYVde_f eHZ], MA: B`de`_ C`]JVXV.