Introduction

The Survey of Teachers' Attitudes Toward Information Technology Questionnaire (TAT v.3.2a) gathers data on 15 separate indices from respondents. Ten of the fifteen are well-validated subscales from the Survey of Teachers' Attitudes Toward Computers (TAC) Questionnaire (Christensen and Knezek, 1996, 1997), which include Kay's semantic perception of computers (Kay, 1993) and D'Souza's (1992) classroom learning via E-mail. The remaining five subscales were newly constructed using semantic differential items taken from Zaichkowsky's (1985) Modified Personal Involvement Inventory, a context free 16-item semantic differential scale that focuses on "a person's perceived relevance of the object based on inherent needs, values, and interests" (p. 342). The following sections describe how to score each type of scale.

Teachers' Attitudes Toward Computers (TACv3.2a) - Scoring

The recommended procedure for manual scoring is to simply sum the numeric values of the responses for the related items to produce the various subscale scores. However, forty-two items on the TAC (v3.2a) have negative wording and must be reversed before adding to the others. These items are listed below in the "SPSS command application" as variables. The variable number (to be used with statistical packages, like SPSS) is listed in parentheses after each statement in the survey.

One simple way is to use a colored pen to circle the reflected values of the numbers marked by the respondents for these items. If the respondent circled 1, make it 5: if the respondent circled 4 make it 2. For example, the subscale Computer Enjoyment (TchJ) will be the sum of nine items (1., 2., 4., 5., 10., 13., 14., 15., and 18.), with items 2, 14, and 15 reversed before inclusion in the sum. The variable numbers for these same items are (1), (2), (4), (5), (10), (15), (16), (17), and (20).

To generate an average for each subscale, take the sum of the items and divide by the number of items.

Reminder: The item number and the variable number (to be used with statistical packages) are NOT the same. The variable number is listed in parentheses after each statement in the survey.

Step-by-Step Scoring Procedures:

1. *Reverse the items negatively worded within each subscale*.

Forty-two items in the TAC (v3.2a) subscales have negative wording. These items are listed below in the "SPSS command application".

To ensure that this alternate positioning does not skew scores, the scoring process must include the reversal of items negatively worded.

SPSS command example:

```
compute varx = 6 - varx.
```
(where *x* is the variable that represents the item in the scale and where 6 is used for any 5-position scale).

SPSS command application:

```
COMPUTE VAR2=6-VAR2.
COMPUTE VAR7=6-VAR7.
COMPUTE VAR16=6-VAR16.
COMPUTE VAR17=6-VAR17.
COMPUTE VAR18=6-VAR18.
COMPUTE VAR19=6-VAR19.
COMPUTE VAR20=6-VAR20.
COMPUTE VAR22=6-VAR22.
COMPUTE VAR191=6-VAR191.
COMPUTE VAR192=6-VAR192.
COMPUTE VAR215=6-VAR215.
COMPUTE VAR218=6-VAR218.
COMPUTE VAR227=6-VAR227.
COMPUTE VAR230=6-VAR230.
COMPUTE VAR231=6-VAR231.
COMPUTE VAR241=6-VAR241.
COMPUTE VAR251=6-VAR251.
COMPUTE VAR257=6-VAR257.
COMPUTE VAR261=6-VAR261.
COMPUTE VAR262=6-VAR262.
COMPUTE VAR263=6-VAR263.
COMPUTE VAR264=6-VAR264.
COMPUTE VAR272=6-VAR272.
COMPUTE VAR65=6-VAR65.
COMPUTE VAR73=6-VAR73.
COMPUTE VAR74=6-VAR74.
COMPUTE VAR84=6-VAR84.
COMPUTE VAR112=6-VAR112.
COMPUTE VAR123=6-VAR123.
COMPUTE VAR134=6-VAR134.
COMPUTE VAR135=6-VAR135.
COMPUTE VAR138=6-VAR138.
COMPUTE VAR141=6-VAR141.
COMPUTE VAR142=6-VAR142.
COMPUTE VAR144=6-VAR144.
COMPUTE VAR150=6-VAR150.
COMPUTE VAR153=6-VAR153.
COMPUTE VAR154=6-VAR154.
COMPUTE VAR157=6-VAR157.
COMPUTE VAR176=6-VAR176.
COMPUTE VAR180=6-VAR180.
COMPUTE VAR182=6-VAR182.
```

```
MISSING VALUES VAR2 VAR7 VAR16 VAR17 VAR18 VAR19 VAR20 VAR22(6)
VAR191 VAR192(6)
VAR215 VAR218 VAR227 VAR230 VAR231 VAR241 VAR251 VAR257
VAR261 VAR262 VAR263 VAR264 VAR272(6)
VAR65 VAR73 VAR74 VAR84(6)
VAR112 VAR123 VAR135 VAR138 VAR141 VAR142 VAR144 VAR150
VAR153 VAR154 VAR157(6)
VAR180 VAR182 VAR176 VAR134(6).
```

2. *Generate an average score for each subscale.*

Add all values for each subscale and divide by the number of items

SPSS command example:

```
compute J = (var1+var2+var4+…+varn)/n.
```

SPSS command application:

```
COMPUTE TchI = (VAR3+VAR6+VAR8+VAR9+VAR10+VAR12)/6.
COMPUTE TchJ = (VAR1+VAR2+VAR4+VAR5+VAR10+VAR15
+VAR16+VAR17+VAR20)/9.
COMPUTE TchAnx = (VAR7+VAR13+VAR16+VAR17+VAR18+VAR19
+VAR20+VAR21)/8.

compute F1odd = (var186+var103+var211+var180+var181+var195
+var249+var53+var101+var270+var266+var65+var224+var191+var102)/15.

compute F2odd = (var263+var230+var182+var227+var264+var88+var153
+var112+var141+var231+var177+var157+var15+var20+var51)/15.

compute F3 = (var150+var192+var74+var154+var123+var262+var214
+var94+var84+var272+var224+var261+164)/13.

compute F4 = (VAR282+VAR284+VAR281+VAR283+VAR280+VAR276
+VAR278+VAR279+VAR277+VAR274+VAR275)/11.

compute F5 = (var142+var215+var138+var135+var144+var176+var134+
var241+var218+var257+var251)/11.

compute F6odd = (var202+var204+var226+var175+var207+var94+var149
+var162+var163+var137+var147+var170+var168+var66+var12)/15.

compute F7 = (VAR44+VAR50+VAR49+VAR41+VAR42+VAR46+VAR43
+VAR45+VAR48+VAR47)/10.
```

Computer Attitude Measure (CAM) Scoring

Kay's (1993) Computer Attitude Measure has 10 adjective pairs with seven response blanks. Step-by-step procedures for scoring this scale are:

Step-by Step Scoring Procedures:

1. Translate each response (X) to a numerical value

Each blank on the response form represents a value from 1-7.

For example, an X in the 2nd blank from the left is valued at 2.

2. Generate an average score

Add all 10 values and divide by the number of items.

SPSS command application is F7 above:

```
compute F7 = (var44+var50+var49+var41+var42+var46+var43
+var45+var48+var47)/10.
```

Zaichkowsky's (1985) Modified Personal Involvement Inventory

Semantic items are typically hand coded with a number from 1-7, representing the particular space the respondent marked between the adjective pairs, then keypunched by data entry staff. An example semantic differential scale is listed in Figure 1.

To me, Electronic Mail is:

1. important	__ __ __ __ __ __ __	unimportant
2. boring	__ __ __ __ __ __ __	interesting
3. relevant	__ __ __ __ __ __ __	irrelevant
4. exciting	__ __ __ __ __ __ __	unexciting
5. means nothings	__ __ __ __ __ __ __	means a lot
6. appealing	__ __ __ __ __ __ __	unappealing
7. fascinating	__ __ __ __ __ __ __	mundane
8. worthless	__ __ __ __ __ __ __	valuable
9. involving	__ __ __ __ __ __ __	uninvolving
10. not needed	__ __ __ __ __ __ __	needed

Figure 1. Sample Semantic Differential subscale from the TAT Questionnaire:

Part Nine (9) of the TAT (v3.2a) is based on Zaichkowsky's (1985) Modified Personal Involvement Inventory. The five semantic perception subscales are on the following target items:

1. Email for me
2. WWW for me
3. Multimedia for me
4. Computers for Professional Productivity
5. Computers in the Classroom

Step-by Step Scoring Procedures:

1. ***Reverse the items negatively worded within each scale***

Four items in each Zaichkowsky subscale have the "negative" adjective in the left-hand or first position, while the other six have the "positive" adjective in the first position. This "alternate" design ensures that respondents do not simply place X in all the right-hand blanks for an object they don't like.

To ensure that this alternate positioning does not skew scores, the scoring process must include reversal of items negatively worded.

For ease in reading, we want to make sure that responses toward "positive" adjectives show high values, and that responses toward "negative" adjectives show low values.

The Zaichkowsky's scale reverses the following items: 1, 3, 4, 6, 7, 9 in EACH of the five subscales.

Please note: Each of the five subscales consists of items numbered from 1 to 10.   However, the variable numbers (to be used with statistical packages, like SPSS) are listed on the far right-hand side of the page. The variable numbers begin with 301(but are not sequential) and continue to 380.

SPSS command example:

```
compute varx = 8 – varx.
```
(where *x* is the variable that represents the item in the scale and where 8 is used for any 7-position Zaichkowsky's scale)'

SPSS command application:

```
compute var301 = 8 – var301.
compute var303 = 8 – var303.
compute var304 = 8 – var304.
compute var306 = 8 – var306.
compute var307 = 8 – var307.
compute var309 = 8 – var309.
```

```
compute var321 = 8 - var321.
compute var323 = 8 - var323.
compute var324 = 8 - var324.
compute var326 = 8 - var326.
compute var327 = 8 - var327.
compute var329 = 8 - var329.
compute var341 = 8 - var341.
compute var343 = 8 - var343.
compute var344 = 8 - var344.
compute var346 = 8 - var346.
compute var347 = 8 - var347.
compute var349 = 8 - var349.
compute var361 = 8 - var361.
compute var363 = 8 - var363.
compute var364 = 8 - var364.
compute var366 = 8 - var366.
compute var367 = 8 - var367.
compute var369 = 8 - var369.
compute var371 = 8 - var371.
compute var373 = 8 - var373.
compute var374 = 8 - var374.
compute var376 = 8 - var376.
compute var377 = 8 - var377.
compute var379 = 8 - var379.
```

```
missing values var301 var303 var304 var306 var307 var309(8)
var321 var323 var324 var326 var327 var329(8)
var341 var343 var344 var346 var347 var349(8)
var361 var363 var364 var366 var367 var369(8)
var371 var373 var374 var376 var377 var379(8).
```

2. Generate an average score for each subscale

Add all 10 responses and divide by the number of items.

SPSS command example:

```
compute email = (var1+var2+var3+…+varn)/n.
```

SPSS command application:

```
compute email = (var301+var302+var303+var304+var305+var306
+var307+var308+var309+var310)/10.
```

```
compute WWW = (var321+var322+var323+var324+var325+var326
+var327+var328+var329+var330)/10.
```

```
compute MMedia = (var341+var342+var343+var344+var345+var346
+var347+var348+var349+var350)/10.

compute Produc = (var361+var362+var363+var364+var365+var366
+var367+var368+var369+var370)/10.

compute Class = (var371+var372+var373+var374+var375+var376
+var377+var378+var379+var380)/10.
```