Enjoyment of Science Lessons

**Instrument Name:** Test of Science Related Attitudes (TORSA)

**Scale/Subscale Name:** Enjoyment of science lessons

**Source:** http://www.pearweb.org/atis/tools/13

**Developers:** Fraser (1978), School of Education, Macquarie University, North Ryde, NSW, 2113, Australia

**Year:** 1978, (1981 current version)

**Target Audience(s):** Middle School and High School students

**Language other than English available:** Not available, however TORSA is utilized in many countries, suggesting that the TORSA is available in other languages.

**Type:** Attitude

**Data collected:** Quantitative

**Data collection format:** Self report - Pre/post

**Reading Level:** Flesch-Kincaid Grade level: 8.5

**Existence of test/technical manuals, user guides, supplemental materials:** Handbook available (Fraser, 1981)

**Level of training necessary for administration/scoring/interpretation:** None necessary for administration. Basic understanding of statistical methods necessary for scoring.

**Widespread Use/Professional Endorsements:** TORSA is listed on the Pearweb.org, “Assessment Tools in Informal Science (ATIS)” website; TOSRA has been widely used in science education research (Lang, Wong, & Fraser, 2005; Cheung, 2009).

**Cost of Use:** No cost is associated with the use of this survey; Fraser requests that comments and validation data be sent to the author (School of Education, Macquarie University, North Ryde, NSW, 2113, Australia).
Description:
- The TORSA was developed to measure seven science-related attitude scales: social implications of science, normality of scientists, attitude toward scientific inquiry, adoption of scientific attitudes, enjoyment of science lessons, leisure interest in science, & career interest in science.
- The TOSRA has been extensively field tested and is commonly used in science education, research and evaluation.
- Scores are meant to be interpreted only at the scale level, not as a whole instrument.
- 10 items

Psychometrics:
*Information on reliability and validity are provided below. If information on a particular psychometric was not found, it is indicated as “no information provided.” It should be noted that this is not necessarily an indication of a lack of reliability or validity within a particular scale/instrument, but rather a lack of rigorous testing, for various reasons, by the developers or other researchers.*

Reliability:  *A correlation of at least .80 is suggested for at least one type of reliability as evidence; however, standards range from .5 to .9 depending on the intended use and context for the instrument.*

*Internal Consistency:* .82; has been shown to be highly reliable over time; scale reliabilities (year 10 sample): .82, enjoyment of science lessons, .89.

*Inter-rater reliability:* No information provided

*Test-Retest:* From Years 8 and 9 samples (238 students): .78 (mean of scales); .76, enjoyment of science lessons, .82.

Validity:  *The extent to which a measure captures what it is intended to measure.*

*Content/Face Validity:* Extensive empirical validation, sound theoretical basis.

*Criterion Validity:* No information provided

*Construct Validity:* Discriminant validity (mean correlations with other scales): .39, social implications of science, .27, enjoyment of science lessons, .39 (Fraser, 1978, 1981) found seven unique factors; however subsequent analyses suggest possibility of fewer unique factors (Cheung, 2009).
**References:**


Construct: Science - Enjoyment

Scale Name: Enjoyment of science lessons/activities

Developers: Fraser

Instructions:
This test contains a number of statements about science. You will be asked what you think about these statements. There are no “right” or “wrong” answers. Your opinion is what is wanted.

For each statement, draw a circle around the specific numeric value corresponding to how you feel about each statement. **Please circle only ONE value per statement.**

Rating Scale:
1 = Strongly Disagree (SD)
2 = Disagree (D)
3 = Uncertain (U)
4 = Agree (A)
5 = Strongly Agree (SA)

Items:
1. Science lessons are fun.
2. I dislike science lessons.(R)
3. School should have more science lessons each week.
4. Science lessons bore me.(R)
5. Science is one of the most interesting school subjects.
6. Science lessons are a waste of time.(R)
7. I really enjoy going to science lessons.
8. The material covered in science lessons is uninteresting.(R)
10. I would enjoy school more if there were no science lessons.(R)

Scoring:
- Reverse scoring (5=strongly disagree to 1=strongly agree) for items indicated with a (R).
- Omitted items are given a score of 3.
- Sum all item ratings together and subtract by 10. Range of scores= 0 to 40.
- Higher scores indicate greater enjoyment of science.