Development and Validation of the Energy-Issue Attitude Questionnaire: Relations with Energy Knowledge, Affect, and Behavior

Mei-Shiu, C., Jan, D., & Clarkson University, Potsdam, NY, USA. (2018). Development and Validation of the Energy-Issue Attitude Questionnaire: Relations with Energy Knowledge, Affect, and Behavior. Journal of Advances in Education Research, 3(1). https://doi.org/10.22606/jaer.2018.31003

Questionnaires Used in the Study

The study utilized two main questionnaires along with demographic data collection:

1. **The Energy-Issue Attitude Questionnaire (EIAQ):** Developed for this study based on Chiu (2013).
2. **The Energy Literacy Questionnaire (ELQ):** Adapted from DeWaters & Powers (2011).
3. **Demographic Questions:** Based on PISA 2009.

1. Energy-Issue Attitude Questionnaire (EIAQ)

This questionnaire was developed for the study and focuses on student attitudes toward energy issues, organized into ten constructs presented as five pairs with inherent tension.

- **Response Scale:** 5-point Likert-type scale ranging from 5 (Agree strongly) to 1 (Disagree strongly).
- **Source for Items:** Table 1 in the paper.

Constructs and Items:

a. Energy-Saving Knowledge 1. Earth's resources are limited and will be used up one day. 2. Human activities spend a lot of energy, which is the main reason why Earth's resources are running out. 3. Humans conserving energy can prevent Earth's resources from being used up so fast. 4. Using less electricity can conserve energy.

b. Carbon-Reducing Knowledge 5. Earth's temperature keeps rising, which causes climatic anomaly. 6. Greenhouse gas produced by humans (e.g., CO2) is the main reason why Earth's temperature keeps rising. 7. Reducing greenhouse gas produced by humans can slow down Earth's increase in temperature. 8. Using less electricity can reduce the release of greenhouse gas.

c. Having Lifestyle 9. Making lots of money is important. 10. If I were rich, I would choose to live in a mansion. 11. Having a car (especially expensive cars) is very important. 12. Being able to shop often is important.

d. Being Lifestyle 13. Being able to lead a simple life is bliss. 14. Living in a healthy, energy-conserving home is important. 15. Use personal cars only when it's necessary. 16. I only buy what I really need.

e. Questioning Authorities 17. Powerful countries need to use more resources. (Reversed) 18. The government needs to use more energy than the common public. (Reversed) 19. Major industries need to use more energy. (Reversed) 20. Rich and powerful people need to use more resources. (Reversed)

f. Conforming to Authorities 21. Powerful countries should lead everyone to reduce carbon emissions. 22. If the government introduces good energy-conservation/carbon-reduction policies, I'd be pleased to follow them. 23. If powerful people (e.g., the president, school principals, business owners, and major industries) take part in energy-conservation/carbon-reduction, I would follow their action. 24. Religious people will follow energy-conservation/carbon-reduction campaigns led by religious leaders.

g. Technology Approaches 25. Complete switch to renewable energy can promote energy-conservation/carbon-reduction. 26. Inventing energy-conserving electronics and vehicles can promote energy-conservation/carbon-reduction. 27. Choosing eco-friendly, energy-conserving materials to build houses can promote energy-conservation/carbon-reduction. 28. Reinforcing eco-friendly and energy-conservation-related industries can promote energy-conservation/carbon-reduction.

h. Nature Approaches 29. Planting trees and protecting forests can promote energy-conservation/carbon-reduction. 30. Back-to-nature farming can promote energy-conservation/carbon-reduction. 31. Buying natural, eco-friendly merchandises can promote energy-conservation/carbon-reduction. 32. Reinforcing local production of goods can promote energy-conservation/carbon-reduction.

i. Future Goals 33. Energy-conservation/carbon-reduction is to allow our future generations to have a better life. 34. Energy-conservation/carbon-reduction is to prevent humans' liveable environment from early obliteration. 35. Energy-conservation/carbon-reduction is to allow humans to thrive for a long time.

j. Present Goals 36. Energy-conservation/carbon-reduction has a direct relationship with my current life. 37. Energy-conservation/carbon-reduction is to prevent natural disasters. 38. Energy-conservation/carbon-reduction is to allow us to lead a better life at the present.

2. Energy Literacy Questionnaire (ELQ)

This questionnaire was adapted from the DeWaters & Powers (2011) ELQ for the Taiwanese context. The paper describes the sections and adaptations but does not list all the items used.

Sections:

- **a. Energy Knowledge:**
  - Adapted from the original high-school version (38 items).
  - 12 items were slightly changed (e.g., country names, answers based on local context like oil imports).
  - 5 items were deleted due to difficulty obtaining single correct answers in the Taiwanese context.
  - **Resulting items in this study:** 33 items.
  - **Format:** Multiple choice (one correct answer from five choices).
  - *(Note: The specific 33 items are not listed in the paper).*
- **b. Energy Affect:**
  - Adapted from the original ELQ (17 items).
  - All 17 items were kept, with only country names changed where necessary.
  - **Resulting items in this study:** 17 items.
  - **Format:** 5-point Likert-type scale (5 = strongly agree to 1 = strongly disagree).

  - **Sample Item:** ‘Saving energy is important’.
  - *(Note: The specific 17 items are not listed in the paper).*
- **c. Energy Behavior:**
  - Adapted from the original ELQ (10 items).
  - 2 items (heater/air-conditioner usage) were excluded as not fitting the Taiwan context well.
  - 1 item text was adapted slightly for context (‘I turn off electronics (such as televisions and computers)…’ assuming not all students had computers).
  - **Resulting items in this study:** 8 items.
  - **Format:** 5-point Likert-type scale (5 = almost always or always to 1 = hardly ever or never).
  - **Sample Item:** ‘I turn off electronics (such as televisions and computers) when they are not being used’.
  - *(Note: The specific 8 items are not listed in the paper).*

3. Demographic Information

Participants were asked about: * Gender * Grade (school year) * Parents’ vocations * Quantities of nine cultural household possessions (e.g., desk, internet link, classic literature) * Quantities of five material household possessions (e.g., cell phones, televisions, cars)

These items were taken from the PISA 2009 student questionnaire (OECD, 2012). *(Note: The specific phrasing of the demographic questions is not provided in the paper).*