



Science Process Skills Inventory (SPSI)

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Purpose and Use

The Science Process Skills Inventory (SPSI) was developed to measure the ability to practice the full cycle of steps in the scientific inquiry process. The inventory measures science process skills, not science content knowledge. Therefore, it is appropriate for measurement in programs that emphasize the process of science learning along with content. The inventory should not be used with programs that focused on science content only. The inventory is intended for use with youth ages 12 and over.

Psychometric Testing

1. Principle component analysis using a promax rotation indicated consistency with a single factor solution for the scale.
2. Cronbach's Alpha calculated pre-program/post-program with middle schools students attending a two-week residential summer science camp in 2007 and 2008 at Oregon State University (n = 106) revealed coefficients of .84 and .94 respectively. Split-half reliability (Spearman-Brown) was .93

Scoring

The inventory consists of eleven items, each representing a different skill in the science inquiry process. Youth are prompted to respond to each statement using a 4-point Likert scale indicating how often they practice each of the items when doing science: Never (1), sometimes (2), usually (3), and always (4). Recommended scoring of the SPSI is the *calculation of a composite* science process skills score. This is calculated by summing the individual ratings for each item. The score range for the composite score is 11-44.

Permission to Use

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Express permission must be given for use of the SPSI. Please contact Dr. Mary Arnold by e-mail to secure permission: mary.arnold@oregonstate.edu

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Bourdeau, V. D. & Arnold, M. E. (2009), *The Science Process Skills Inventory*. Corvallis, OR: 4-H Youth Development Education, Oregon State University.



My Science Skills

We'd like to know how good of a scientist you are!

Please fill in the circle that tells how much you currently can use each of the following skills when you work on a science investigation.

	Never	Sometimes	Usually	Always
1. I can use scientific knowledge to form a question	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I can ask a question that can be answered by collecting data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I can design a scientific procedure to answer a question	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I can communicate a scientific procedure to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I can record data accurately	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I can use data to create a graph for presentation to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I can create a display to communicate my data and observations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I can analyze the results of a scientific investigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I can use science terms to share my results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I can use models to explain my results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I can use the results of my investigation to answer the question that I asked	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>