
Factors of Scientific Literacy Developed in Middle Level Science

These checklists may be used in a variety of ways. Teachers may wish to use them to determine which factors have been covered throughout the entire year to ensure that adequate coverage has been provided for them. The checklists could also be used when covering a particular topic. Once factors which have not been emphasized in that topic have been identified, teachers can then use that information in their planning of subsequent topics to ensure that all of the factors have been given sufficient coverage by the end of the course. Columns for core and optional units are shown.

Dimension A Nature of Science

Factors								
1. public/private								
2. historic								
3. holistic								
4. replicable								
5. empirical								
6. probabilistic								
7. unique								
8. tentative								
9. human/culture related								

Dimension B Key Science Concepts

Factors								
1. change								
2. interaction								
3. orderliness								
4. organism								
5. perception								
6. symmetry								
7. force								
8. quantification								
9. reproducibility of results								
10. cause-effect								
11. predictability								
12. conservation								
13. energy-matter								
14. cycle								
15. model								
16. system								
17. field								
18. population								
19. probability								
20. theory								
21. accuracy								
22. fundamental entities								
23. invariance								
24. scale								
25. time-space								
26. evolution								
27. amplification								
28. equilibrium								
29. gradient								
30. resonance								
31. significance								
32. validation								

Dimension C Processes of Science

Factors								
1. classifying								
2. communicating								
3. observing and describing								
4. working cooperatively								
5. measuring								
6. questioning								
7. using numbers								
8. hypothesizing								
9. inferring								
10. predicting								
11. controlling variables								
12. interpreting data								
13. formulating models								
14. problem solving								
15. analyzing								
16. designing experiments								
17. using mathematics								
18. using time-space relationships								
19. consensus making								
20. defining operationally								

Dimension D Science-Technology-Society-Environment Interrelationships

Factors								
1. science and technology								
2. scientists and technologists are human								
3. impact of science and technology								
4. science, technology, and the environment								
5. public understanding gap								
6. resources for science and technology								
7. variable positions								
8. limitations of science and technology								
9. social influence on science and technology								
10. technology controlled by society								
11. science, technology, and other realms								

Dimension E Scientific and Technical Skills

Factors								
1. using magnifying instruments								
2. using natural environments								
3. using equipment safely								
4. using audiovisual aids								
5. computer interaction								
6. measuring distance								
7. manipulative ability								
8. measuring time								
9. measuring volume								
10. measuring temperature								
11. measuring mass								
12. using electronic instruments								
13. using quantitative relationships								

Dimension F Values that Underlie Science

Factors								
1. longing to know and understand								
2. questioning								
3. search for data and their meaning								
4. valuing natural environments								
5. respect for logic								
6. consideration of consequence								
7. demand for verification								
8. consideration of premise								

Dimension G Science-Related Interests and Attitudes

Factors								
1. interest								
2. confidence								
3. continuous learner								
4. media preference								
5. avocation								
6. response preference								
7. vocation								
8. explanation preference								
9. valuing contributors								