

Unit 2 discussion big ideas in science

[Literature](#), [Russian Literature](#)



Big Ideas in Science al Affiliation Big Ideas in Science Part I •What do you measure, how do you measure it (what tool or device do you use, and what are the measurement units)?

As a student going to and from school, one measures the time to reach one's destination given the expected traffic and walking time between rides. As an individual, one regularly measures the time spent to undertake various activities: compliance with academic requirements, household chores, eating, sleeping, and hygiene; as well as intermittent time to do weekly errands and activities (going to the grocery to shop, exercising, and recreation). Aside from time, which is measured in seconds, minutes, and hours; one also measures money or funds earned and spent; calories consumed in food; number of glasses of water (or other fluids) drank per day; number of hours spent to rest and sleep; weight decreased (or maintained) through exercise; and pages of books that were read; among others. As such, the measurement units include: seconds, minutes and hours (time); cups (fluids); calories (food); units (hygiene – bar of soap, gram of toothpaste); pounds (weight); dollars (money) and kilometers (distance travelled).

How is this measurement important or necessary within your daily life?

Measurement is crucial within one's daily life to ensure conformity to schedules and to adhere to appropriate units or volume of resources spent or consumed within a budget. It is necessary to avoid exceeding the use of resources or spending beyond what one can control.

•What would the consequences be if your measurements were inconsistent or incorrect?

If measurements were inconsistent, there would be deviations from plans and it would prove to be costly in the long run. For instance, if time and distance to travel is not appropriately measured, one would be perennially late and would take a toll in academic performance.

In science and in your daily life, what are the advantages of precise and accurate measurement?

The advantages of precise and accurate measurement include: (1) adhering to plans and goals; (2) efficient use of resources; (3) avoiding wastes; and (4) observing budgets and schedules.

- Are there ways in which technology could help you to perform this measurement differently and perhaps with more accuracy or precision?

Yes, technology could help perform this measurement differently and with greater accuracy and precision. For instance, one of the wearable gadgets (Nakashima, 2014) could now measure more effectively calories burned after regular exercise. Before, the weighing scale would be used to measure weight before and after exercise and physical fitness activities.

- Do other people use the same system of measurement as you?

Most of the traditional and manual systems of measurement are still being used by majority of people; especially those who do not have access and resources to avail of the latest gadgets.

If not, how else do they make this measurement?

In rural or third world countries, other crude tools of measurement could still be used. For instance, time and distance could be measured by observing the sun and counting trees or lamp posts, as needed.

Part II: (Respond to these questions after you have completed Part I)

- Compare your measurement to something used within scientific research.

Use the assigned reading for this unit and publisher resources to provide a specific example for comparison, or feel free to share examples from another source. What type of device is used, what does it measure, and why is it an essential tool for measurement?

In an article entitled “ Reconsidering the Effectiveness of Scientific Tools for Negotiating Local Solutions to Conflicts between Recreation and Conservation with Stakeholders” (Pouwels, Opdam, & Jochem, 2011), it was revealed that the device used “ the biodiversity tool LARCH that we used in the PROGRESS project was simple compared with the recreation tool MASOOR” (Pouwels, Opdam, & Jochem: Complexity of the model, 2011, par. 3). It measures the relationship between biodiversity and recreation. These are tools which were explained to be needed specifically for this purpose to ensure accuracy and reliability of the results.

- Think back to this week’s reading, including the section on Units and Numbers. How could standardized measurement improve your own measurement practices?

Standardized measurement would improve one’s own measurement practices in such a way that they contain precise and accurate units to ensure that results are consistent, reliable, and dependable (Trefil & Hazen, 2011).

Why is standardized measurement important within specific fields of science?

Standardized measurement is important within specific fields of science to provide consistency in findings and to ensure that the results are reliable and

valid.

Try to focus on one field (medicine, environmental science, geology, etc.) and provide an example of how standardized measurement allows for scientists to both clearly communicate their results as well as record their observations.

Standardized measurement in the field of medicine, for instance, which uses results of a blood test allows scientists and health care practitioners to understand and interpret the results, despite differences in factors exemplified by patients. Through the standardized measurement, all variable factors have been duly accounted for and the units that need to be measured are clearly understood, are deemed to be consistent and reliable; as such, classified as unquestionable and valid by medical practitioners across the sciences field.

References

Nakashima, R. (2014, January 5). Wave of Wearable Gadgets Expected at CES Event. Retrieved from ABC News: <http://abcnews.go.com/Technology/wireStory/wave-wearable-gadgets-expected-ces-event-21426052>

Pouwels, R., Opdam, P., & Jochem, R. (2011). Reconsidering the Effectiveness of Scientific Tools for Negotiating Local Solutions to Conflicts between Recreation and Conservation with Stakeholders. Retrieved from Ecology and Society: <http://www.ecologyandsociety.org/vol16/iss4/art17/#COMPLEXITY>

Trefil, J., & Hazen, R. (2011). The Sciences: An integrated approach.

Hoboken, NJ: John Wiley & Sons, Inc.