



TIWI Inquiry-Based Learning activities self-assessment questionnaire for Students

Welcome to the TIWI self-assessment questionnaire for students

Dear student,

This self-assessment questionnaire is designed to provide you with a quick and tailored feedback on important aspects that you might need to pay attention to prior to and after your involvement in ICT Inquiry-Based learning activities.

It contains a series of items arranged in different scales: responses for all items in the scales are required for you to have a valid feedback.

Fill in the self-assessment questionnaire **before** your involvement in one or more ICT Inquiry-Based learning activities, and measure their impact on your learning by comparing the results obtained **after** the experience.

Please note that your entries are anonymous and will not be stored anywhere.

To carry on Inquiry-Based learning activities you might use resources from [Go-Lab](#).

Thank you for your participation!



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* 1. A class is studying the speed of objects as they fall to the earth. They design an investigation where bags of gravel weighing different amounts will be dropped from the same height. In their investigation, which of the following is the hypothesis they would test about the speed of objects falling to earth?

- a) An object will fall faster when it is dropped further.
- b) The higher an object is in the air the faster it will fall.
- c) The larger the pieces of gravel in a bag the faster it will fall.
- d) The heavier an object the faster it will fall to the ground.

* 2. A police chief is concerned about reducing the speed of autos. He thinks several factors may affect automobile speed. Which of the following is a hypothesis he could test about how fast people drive?

- a) The younger the drivers, the faster they are likely to drive.
- b) The larger the autos involved in an accident, the less likely people are to get hurt.
- c) The more policemen on patrol, the fewer the number of auto accidents.
- d) The older the autos, the more accidents they are likely to be in.

* 3. A farmer wonders how he can increase the amount of corn he grows. He plans to study factors that affect the amount of corn produced. Which of these hypotheses could he test?

- a) The greater the amount of fertilizer the larger the amount of corn produced.
- b) The greater the amount of corn, the larger the profits for the year.
- c) As the amount of rainfall increases, the more effective the fertilizer.
- d) As the amount of corn produced increases, the cost of production increases.

* 4. Marie wondered if the earth and oceans are heated equally by sunlight. She decided to conduct an investigation. She filled a bucket with dirt and another bucket of the same size with water. She placed them so each bucket received the same amount of sunlight. The temperature in each was measured every hour from 8:00 a.m. to 6:00 p.m.

Which hypothesis was being tested?

- a) The greater the amount of sunlight, the warmer the soil and water become.
- b) The longer the soil and water are in the sun, the warmer they become.
- c) Different types of material are warmed differently by the sun.
- d) Different amounts of sunlight are received at different times of the day.

* 5. Susan is studying food production in bean plants. She measures food production by the amount of starch produced. She notes that she can change the amount of light, the amount of carbon dioxide, and the amount of water that plants receive. What is a testable hypothesis that Susan could study in this investigation?

- a) The more carbon dioxide a bean plant gets the more starch it produces.
- b) The more starch a bean plant produces the more light it needs.
- c) The more water a bean plant gets the more carbon dioxide it needs.
- d) The more light a bean plant receives the more carbon dioxide it will produce.

* 6. Joe wanted to find out if the temperature of water affected the amount of sugar that would dissolve in it. He put 50 ml of water into each of four identical jars. He changed the temperatures of the jars of water until he had one at 0°C, one at 50°C, one at 75°C, and one at 95°C. He then dissolved as much sugar as he could in each jar by stirring.

What is the hypothesis being tested?

- a) The greater the amount of stirring, the greater the amount of sugar dissolved.
- b) The greater the amount of sugar dissolved, the sweeter the liquid.
- c) The higher the temperature, the greater the amount of sugar dissolved.
- d) The greater the amount of water used, the higher the temperature.

* 7. Some students are considering variables that might affect the time it takes for sugar to dissolve in water. They identify the temperature of the water, the amount of sugar and the amount of water as variables to consider. What is a hypothesis the students could test about the time it takes for sugar to dissolve in water?

- a) The larger the amount of sugar the more water required to dissolve it.
- b) The colder the water the faster it has to be stirred to dissolve.
- c) The warmer the water the more sugar -that will dissolve.
- d) The warmer the water the more time it takes the sugar to dissolve.

* 8. A study was done to see if leaves added to soil had an effect on tomato production. Tomato plants were grown in four large tubs. Each tub had the same kind and amount of soil. One tub had 15 kg of rotten leaves mixed in the soil and a second had 10 kg. A third tub had 5 kg and the fourth had no leaves added. Each tub was kept in the sun and watered the same amount. The number of kilograms of tomatoes produced in each tub was recorded.

What is the hypothesis being tested?

- a) The greater the amount of sunshine the greater the amount of tomatoes produced.
- b) The larger the tub, the greater the amount of leaves added.
- c) The greater the amount of water added, the faster the leaves rotted in the tubs.
- d) The greater the amount of leaves added, the greater the amount of tomatoes produced.

* 9. Ann has an aquarium in which she keeps goldfish. She notices that the fish are very active sometimes but not at others. She wonders what affects the activity of the fish. What is a hypothesis she could test about factors that affect the activity of the fish?

- a) The more you feed fish, the larger the fish become.
- b) The more active the fish, the more food they need.
- c) The more oxygen in the water, the larger the fish become.
- d) The more light on the aquarium, the more active the fish.

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* 10. Future participation in science

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I would like to study more science in the future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to study science at university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to have a job working with science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to become a scientist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Kind, P., Jones, K., & Barmby, P. (2007). Developing attitudes towards Science Measures. *International Journal of Science Education*, 29, 871-893.

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* 11. Meaningfulness of programming

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Programming is useful to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Programming will help me achieve my goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to become good at programming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Programming is important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 12. Impact of programming

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I want to use programming to help solve problems in the world	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to use programming to make people's lives better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can use programming to make daily life easier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 13. Creative self-efficacy in programming**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I would like to design things using programming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Computer programmers are creative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to be creative when you are programming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 14. Programming self-efficacy**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I can learn how to program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at programming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of myself as someone who can program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the skills to program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have confidence in my ability to program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Kong, S.-C., Chiu, M. M., & Lai, M. (2018). A study of primary school students' interest, collaboration attitude, and programming empowerment in computational thinking education. *Computers & Education*, 127, 178-189.



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All done!

Thank you for your participation in this survey!

Your entries will help us guide you in the computer-supported learning environments offered by TIWI.

If you are interested, you can already check out the [TIWI website](#).

Many thanks again!