



How Happy are You and Your Family with the Electricity Bill?

Assessment

This guide to assessment strategies is put forward from different perspectives. In part A the assessment is based on the skill to be developed in the student. Part B is based on the assessment strategies to use in each lesson, whereas part C illustrates the assessment by the 3 different approaches which a teacher may use for formative assessment – observation, by oral communication, or by marking of written work. Summative assessment strategies are not shown, but these could relate to viva type oral communication and/or to the marking of written tests/examination questions.

Part A Assessment based on Skills Attained

Able to award a social values grade (objective 1).

Teachers listens to the discussions within the groups and the presentations to the class

- x Not able to contribute to the discussion in a meaningful way
- √ Participates in the discussion and is able to record the decision and the justification for this
- √√ Not only participates in the discussion and puts forward a point of view but is able to do this with persuasion and can offer counter-arguments to points made by others.

Able to award a science method grade (objective 2).

The teacher marks the student questionnaires before the students to collect data for the community

- x Not able to suggest appropriate items for the questionnaire.
- √ Able to suggest items for the questionnaire and to put these into a useful sequence. Able to use the questionnaire to collect relevant data.
- √√ Able to suggest key items for the questionnaire which are suitable and relevant for the community and is able to put forward a sampling plan that reflects the need for sampling of the community for a fair result.

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Able to award a personal skills grade (objectives 3 and 4).

Teacher observes the students during the group work

- x Does not cooperate with others during the group discussions and activities.
- √ Participates in group work meaningfully, in the discussions and in the devising of questionnaires and recording of work in written form.
- √√ Not only participates in the group work and in the discussions and written work, but takes on a leadership role helping others to participate.

Able to award a science concept grade (objectives 5, and 6).

- x Not able to explain the meaning of power, the relationship between power and energy and the mechanism for calculating electricity used in the home
- √ Able to explain the meaning of power and the relationship between power and energy with the help of the teacher. Able to read an electricity bill and determine the energy used.
- √√ Able to fully understand and record in a meaningful way, the meaning of power and its links to energy. Able to read the electricity bill. Can deduce appliances that have been in great use.

Part B Assessed by Lesson

Lesson 1

| | Dimension | Criteria for evaluation The student: | Mark/grade given (x,√,√√) |
|---|-------------------------------|---|---------------------------|
| 1 | Creates a questionnaire | Puts forward appropriate questions for a questionnaire to find out what appliances are used in the home and how much electricity is used per month. | |
| | | Creates an appropriate questionnaire to the level of detail required by the teacher. | |
| | | Develops an appropriate procedure to collect data using their questionnaire | |
| 2 | Interpret an electricity bill | Looks at an electricity bill and able to understand the data given in the various columns | |
| | | Draws appropriate conclusions related to the electricity used | |

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Lesson 2

| | Dimension | Criteria for evaluation The student: | Mark/grade given (x,√,√√) |
|---|---|---|---------------------------|
| 1 | Interpret or calculate from data collected and making conclusions | Interprets data collected in a justifiable manner including the use of appropriate graphs, tables and symbols. | |
| | | Draws appropriate conclusions related to appliances using the most electricity. | |
| | | Draws appropriate conclusions related to the appliances used most frequently. | |
| 2 | Answers questions | Provides correct written answers to questions asked by the teacher on their manner of interpretation and drawing conclusions. | |
| 3 | Draws charts/tables. | Able to present findings in an appropriate graphical representation. | |
| | | Able to present graphical representations in suitable detail. | |
| | | Able to provide full and appropriate headings for charts, tables. | |

Lesson 3

| | Dimension | Criteria for evaluation The student: | Mark/grade given (x,√,√√) |
|---|--|--|---------------------------|
| 1 | Explanations | Able to explain the meaning of power and the units used. | |
| | | Able to explain the meaning of energy and the units used. | |
| 2 | Interpret from data collected and drawing conclusions. | Interprets from the data collected those appliances which use much power compared with other appliances. | |
| | | Draws appropriate conclusions related to the use of such appliances. | |

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Lesson 4

| | Dimension | Criteria for evaluation The student: | Mark/grade given (x,√,√√) |
|---|--|---|---------------------------|
| 1 | Scientific or socio-scientific reasoning | Able to work cooperative with others in the group and consider the data obtained and other factors. | |
| | | Gives a justified socio-scientific decision based on efficiency and other factors whether families should be happy with their electricity bill. | |

Part C Assessment based on Teacher Strategy

Assessment Tool based on the Teacher's Marking of Written Material

| | Dimension | Criteria for evaluation The student: | Mark/grade given (x,√,√√) |
|---|---|--|---------------------------|
| 1 | Writes a plan or report of an investigation | Puts forward an appropriate research/ scientific question and/or knows the purpose of the investigation/experiment | |
| | | Creates an appropriate investigation or experimental plan to the level of detail required by the teacher | |
| | | Puts forward an appropriate prediction/hypotheses | |
| | | Develops an appropriate procedure (including apparatus/chemicals required and safety procedures required) and indicates variables to control | |
| 2 | Record experimental data collected | Makes and Records observations/data collected appropriately (in terms of numbers of observations deemed acceptable/accuracy recorded/errors given) | |
| 3 | Interpret or calculate from data collected and making conclusions | Interprets data collected in a justifiable manner including the use of appropriate graphs, tables and symbols | |
| | | Draws appropriate conclusions related to the research/scientific question | |

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| 4 | Answers questions | Provides correct written answers to questions given orally or in written format | |
| | | Provides answers in sufficient detail especially when called upon to give an opinion or decision | |
| 5 | Draws charts/ diagrams/tables/ models/symbolic representations. | Able to provide graphical representation as required | |
| | | Able to present graphical representations of a suitable size and in suitable detail | |
| | | Able to provide full and appropriate headings for diagrams, figures, tables | |
| 6 | Scientific or socio-scientific reasoning | Illustrates creative thinking/procedures in solving problems | |
| | | Gives a justified socio-scientific decision to an issue or concern, correctly highlighting the scientific component | |

Assessment Tool based on the Teacher's Observations

| | Dimension | Criteria for evaluation The student: | Mark/grade given (x,√,√√) |
|---|---|--|---------------------------|
| 1 | Functioning in the group during experimentation or discussion | Contributes to the group discussion during the inquiry phases (raising questions, planning investigation/experiment, putting forward hypotheses/predictions, analyzing data, drawing conclusions, making justified decisions). | |
| | | Cooperates with others in a group and fully participates in the work of the group. | |
| | | Illustrates leadership skills – guiding the group by thinking creatively and helping those needing assistance (cognitive or psychomotor); summarising outcomes. | |
| | | Shows tolerance with, and gives encouragement to, the group members. | |
| 2 | Performing the investigation or experiment | Understands the objectives of the investigation/experimental work and knows which tests and measurements to perform. | |

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| | | Performs the investigation/experiment according to the instructions/plan created. | |
| | | Uses lab tools and the measurement equipment in a safe and appropriate manner. | |
| | | Behaves in a safe manner with respect to him/herself and to others. | |
| | | Maintains an orderly and clean work table. | |
| 3 | Presenting the investigation or experiment orally | Presents the activity in a clear and practical manner with justified decisions. | |
| | | Presents by illustrating knowledge and understanding of the subject. | |
| | | Uses precise and appropriate scientific terms and language. | |
| | | Presents with clarity and confidence using an audible voice. | |

Assessment Tool based on the Teacher's Oral Questioning

| | Dimension | Criteria for evaluation The student: | Mark/grade given (x, √, √√) |
|---|---|---|-----------------------------|
| 1 | Questions to individuals in a Whole Class setting | Answers questions at an appropriate cognitive level using appropriate scientific language | |
| | | Shows interest and a willingness to answer | |
| | | Willing and able to challenge/support answers by others, as appropriate | |
| 2 | Questions to the group | Able to explain the work of the group and the actions undertaken by each member | |
| | | Understands and can explain the science involved using appropriate language | |
| | | Willing to support other members in the group in giving answers when required | |
| | | Thinks in a creative manner, exhibits vision and can make justified decisions | |
| 3 | Questions to individuals in the group | Able to explain the work of the group and actions taken by each member | |

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| | | Understands the purpose of the work and shows knowledge and understanding of the subject using appropriate scientific language | |
| | | Can exhibit non-verbal activity (demonstrate) in response to the teacher's questions, as appropriate | |

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