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| **Student Learning Tasks:  Teacher Input** | **Student Activities: Possible and Expected Responses** | **Teacher’s Support and Actions** | **Checking Understanding** |
| * What words / ideas come to you when you see the word **statistics?** * Where does the information/data come from? * Were you ever asked to fill out a questionnaire? * Why were you asked? * Why were all classes asked? * Was it necessary to ask all classes? * Was it enough to ask all the classes? * Should we have gone to other schools in the town?   Task 1  Hand out questionnaire   * What information would we like to collect to create a profile of this class/Year Group? * Students fill out Questionnaire working in pairs for measurements. One measures and the other records. Give measurements correct to the nearest centimetre.   Task 2  Hand out Activity Sheet 1   * Do you notice that there are different data types? * Using original Questionnaires ,students will learn :  1. the different types of data using Activity Sheet 1   Task 3  Starting with Discrete Data  Hand out Tally Sheet   * students will use the collated **data** on **Age** to learn  1. How to tally   Task 4   * Teacher introduces the Frequency Table  1. how to present Discrete Data in a suitable form   Task 5  Use Graph Paper and do whichever you think is most suitable  Class conclusion (if possible) on which presentation/s best represent the data  Working with continuous data   * Using collated **data** on **Heights** students will learn how to  1. Tally   Task 6  **Is tallying the same for Continuous Data as for Discrete Data?**  Teacher asks how will we present continuous data in a suitable form?  Draw Histogram  **How does the Histogram differ from the Bar Chart?**  Task 7  **Discussion on Histogram**  What information do you get from this Histogram (assuming you did not have the frequency table)?  What information do you not get from this Histogram (assuming you did not have the frequency table)?  Teacher introduces Stem and Leaf diagram which will retain the individual raw data  Task 8  Using data on wrist measurements, students construct stemplot on graph paper  Examine your stem plot now and identify what other information you get from the stem plot.  Is this data typical of 15-17 year olds?  Are the heights of 15-17 year old girls in our group significantly different from the heights of 15-17 year old girls elsewhere?  Using downloaded data, teacher asks:  How do we compare your heights with those of a similar age group in Canada?  Task 9  Using data on heights, students construct back to back stemplot on graph paper  Is your data typical of 15-17 year olds?  Use the back to back to compare.  Is there a significant difference?  Which has the tallest girl?  Which has the smallest? | Bar chart, Pie Chart, Data  Questionnaires, Magazines, Vox Pop, Telephone, Door to Door, Tam Ratings, Blogs  Yes in school LCA/LCVP/Mini-company/CSPE  All classes got the questionnaire  To get information from other classes as well as their own  Yes/No  Yes/No  Yes/No  Ages, Heights, Pets, Eye Colour  etc  How do you measure foot size etc?  Types of data ?  Discussion/Debate on different types of data  How do you Tally?  What is a Frequency Table?  Students suggest Bar Chart, Pie Chart, Trend Graph, Pictogram    Problem with heights from 151 cm to 178 cm  Too many individual heights  Grouping suggested  Discussion on grouping  What size groups?  Bar Chart  Rectangles are side by side  Like a Bar chart  No difference  Another name for Bar Chart  Students suggest grouping  Discussion on height  Why not draw as given on table?  The number of students in each interval  Individual heights etc  What is a Stem and Leaf diagram (Stemplot)?  Yes/No  Students suggest that they should enter their data to compare  Stemplot  Discussion  Alike/different  Yes/No  What does that mean?  Tallest in Irish, Smallest in Canadian  What is that? | Words listed on Board  Words listed on Board  Issue of **Sample Size** arises  Explain the significance of size  Refer to National Polls/Tam Ratings  1000/600 to represent the population  The questionnaire supplied is distributed. Each student uses his/her own ID number so questionnaire can be returned  Metre sticks, strings, measuring strips etc supplied  Teacher demonstrates  Teacher will present and explain the data types  Categorical: nominal, ordinal  Numeric: discrete, continuous  Using Activity Sheet 1 and original Questionnaire students categorise the original data  Teacher explains the method of tallying used, using Activity sheet  Working in pairs, one counts and one records  Teacher explains how to proceed from the completed Tally Sheet to **Frequency Table**  Which is the most suitable?  Revise calculation and measurement of angles for Pie Chart. Explain the significance of spaces between bars for presenting Discrete Data  Using agreed equal **class intervals**  Eg 150 – 155 etc  Students devise and complete a Tally sheet   * Teacher asks for volunteer answers   Teacher explains that this Bar Chart is called a Histogram   * Dealing with continuous data as against discrete data * Importance of scale and label along horizontal axis. Scale vertical axis and label “Frequency” * Total frequency is represented by area of rectangle not height.   Having observed progress  Teacher uses IT to demonstrate  Teacher emphasises again the  Importance of scale and label along horizontal axis. Scale vertical axis and label this time is not “Frequency” but “Frequency Density”  Teacher demonstrates how to construct a stem plot   * Ordering data * Stem-vertical contains first digit/s * Leaf –horizontal contains last digit **only** * Sample size * title * Key/legend   Can be used for continuous and discrete data  Median, dispersion/spread/range clustered, outliers,  Using some or all of above words, students are asked to describe the class profile  This information can be accessed through ***Censusatschool.***  Teacher arranges to bring the class to computer room to complete their entries  Teacher downloads relevant data for comparison  Teacher introduces the idea of a ***back to back stemplot*** demonstrating using IT  Working in pairs the write the profiles and compare the data | All students are encouraged to participate  All contributions are valued  Anonymity ensures a **fair test**  Fifth Year cohort, because of larger Sample Size , gives a more reliable profile  15 to 20 minutes allocated for this activity  Questionnaires are collected so raw data can be collated for next class  All groups are engaging with the task, and active debating contributes to each students’ learning  All students are actively participating in the activity as Teacher moves about class, checking on work in progress  All students are actively participating in the activity as Teacher moves about class, checking on work in progress  And helping/encouraging where necessary  All students are actively participating in the activity as Teacher moves about class, checking on work in progress  Teacher moves about the room and observes the students at work, all the time checking their work.  Is this important point now understood by all students?  All contributions are valued  All contributions are valued  Teacher moves about the room and observes the students at work, all the time checking their work.  All students enter relevant data online. |

**Activity Sheet 1**

Using Original Questionnaire and Collated Data categorise the data collected into various types of data.

|  |  |  |  |
| --- | --- | --- | --- |
| Numerical | | Categorical | |
| Discrete | Continuous | Ordinal | Nominal |
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**Tally Sheet**

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| --- | --- | --- | --- |
| Age/Years | 15 | 16 | 17 |
| Tally |  |  |  |
| Count/Frequency |  |  |  |

**Tally Sheet for Continuous Data Equal Class Intervals**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Height cm | 150 – 155 | 155 – 160 | 160- 165 | 165 – 170 | 170 – 175 | 175 – 180 | 180 - 185 |
| Tally |  |  |  |  |  |  |  |
| Frequency |  |  |  |  |  |  |  |

Key 150

Frequency Table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Height cm | 150 – 155 | 155 – 160 | 160- 165 | 165 – 170 | 170 – 175 | 175 – 180 | 180 - 185 |
| Frequency |  |  |  |  |  |  |  |

**Word Bank**

|  |  |  |  |
| --- | --- | --- | --- |
| Statistics | Data categories | Histogram | Range |
| Data | Numeric discrete | Frequency density | Dispersion |
| Sample space | Numeric continuous | Stemplot/ stem & leaf diagram | Clusters |
| Questionnaire | Categorical nominal | Significant/ Levels of significance | outliers |
| Fair test | Categorical ordinal |  | median |
| Tally/Frequency | Class interval |  |  |

**Stats Questionnaire Data Collection**

Personal:

1. Your age: 15 16 17 18

2. Height, without shoes: cm

3. Arm span cm

4. Right foot, without shoe cm

5. Right forearm, elbow to wrist cm

6. Wrist circumference mm

7. Colour of your eyes: Blue Brown Green Other

8. Your shoe size: 34 36 38 40 other

9. **Month** born

10 What **date** in that month?

11.Your favourite colour

Family:

1. How many people live in your house Males

Females

2. How many pets in the house cat dog fish bird other

3. How many rooms in your house

4: Is your house: a bungalow 2 storeys other

5. In your house, how many: bicycles cars

Vans 4x4 other

School:

1. How do you travel to school: walk car bus bike other
2. How far is your house from the school km
3. What time do you leave home for school
4. What time do you return home from school
5. For lunch, do you: bring a packed lunch

Buy a hot lunch down town

Buy a cold lunch down town

Buy a lunch at school

Other

Pocket Money

1. How often do you get money from home: Every day Once a week

When I need it Other

1. How much money do you get

1. Each week how much do you spend on : Lunch Mobile phone credit

other

1. Do you own a Digital camera? Phone camera. IPod Play station Xbox

Time at Home

How much time do you spend Watching soaps Watching sports

Current affairs homework

Exercising/ training other hobbies