

## Tree Diagram

A Simple Visual Tool for Identifying Required Specific Tasks for Problem Solving

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**A Hypothetical Case:** One Students' Quality Circle (SQC) team of a secondary school in Bhaktapur wanted to solve their problem of eating unhygienic foods by schoolmates. The team conducted several brainstorming sessions, observed keenly its phenomenon and identified magnitude of the problem of unhygienic junk foods usually eaten by students at schools and at home. The team even identified major causes and root causes of this problem but they were having difficulties in identifying specific tasks they have to perform to reduce the junk food intakes by students. They already used check-sheets, Pareto diagram and cause-and-effect diagram up to this level and they were searching some QC tools which can assist them to identify the specific tasks. They learned about one tool called "Tree Diagram", which is a simple visual tool for identifying required specific tasks for eradicating the root causes and solving the problem. They could identify four major root causes of taking excessive unhygienic foods by students. These were (1) availability of unhygienic junk foods at school canteen, (2) bringing unhygienic junk foods as tiffin from home, (3) absence of strict monitoring system at school, and (4) Lack of awareness among parents, administration and students (PAS) regarding bad effects on students' health. The SQC team brainstormed with the help of "Tree diagram" to identify hierarchical objective-strategies-activities-tasks diagram which helped them to prepare a master plan for countermeasure to reduce junk foods intake by students. The outcome of the brainstorming through Tree diagram is shown in the figure show next page.

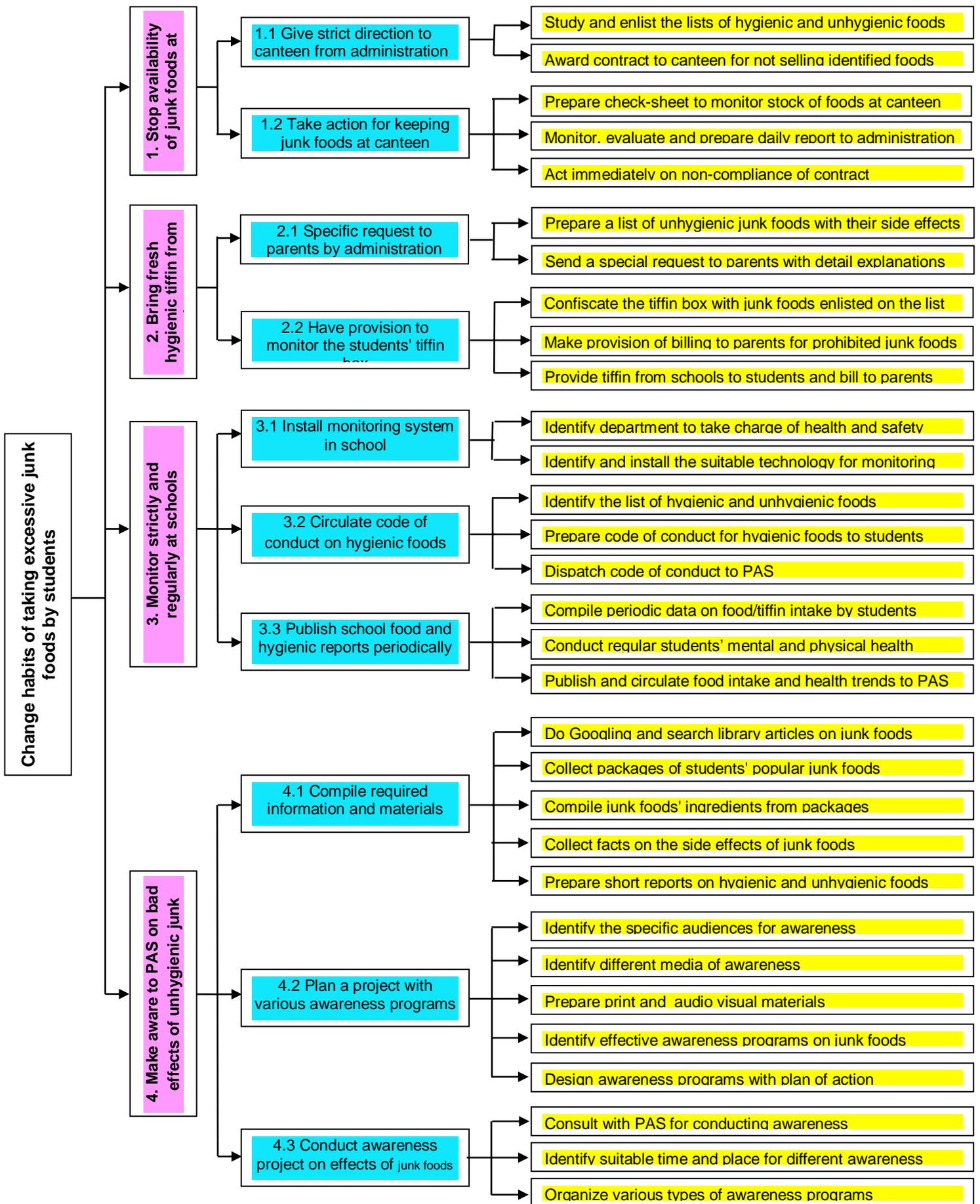
The SQC team members thus, could identify 31 different specific tasks ( refer the blue cards in fourth columns in the figure) necessary to be acted upon to reduce the four major root causes of the problem in hand, i.e. the hygienic junk foods intake by students. Then, the team tried to develop an action plan with the help of 5W & 1H method to develop a master plan of action to reduce the junk foods intake and make all students healthy and safe from bad effects of unhealthy foods.

**Introduction:** The Tree Diagram is also called Systematic diagram, tree analysis, analytical tree or hierarchy diagram which helps to break down broad categories of activities into finer and finer levels of detail. Developing the tree diagram helps to move our thinking step by step from generalities to specifics. It is also one of the new 7 QC tools adopted by JUSE for QC circle activities and is also categorized as one of the management and planning tools. It looks just like a tree branch starting from one big branch to several sub branches hence is popularized with the name of Tree Diagram.

**Purpose:** The purpose of the Tree Diagram is to create a visual presentation of the brainstorming exercise done to identify strategies and specific tasks to be performed to achieve some objectives. In SQC activities case it is to solve problems. The cause analysis is the prerequisite activities for using this tool and analyzing for thinking deeper and deeper into details and extracting specific tasks for developing plan of action. The diagram provides a clear understanding of different levels of objectives and its means to achieve this objective by asking the same question several times "How to achieve this objective?"

**Construct:** Materials needed- Post-its, sticky notes or cards of different colors (White, pink, blue and yellow), marking pens, large writing work surface- chart paper or flipchart pages, or even white boards will do.

1. First, write a statement defining the objective (problem) that the relations diagram will explore. Write it on a white card or sticky note and paste it at the far left centre of the writing work surface.
2. Brainstorm among the SQC team for generating ideas asking questions (1<sup>st</sup> How?) "How this objective can be achieved?"- or, "How can this be accomplished?". This is also called strategies. The strategies are written in pink cards on the basis of the root causes already identified. Draw arrows pointing from the objective card to strategies cards. These cards are also called primary means. *[Refer four strategies of the objective written in pink paper for the hypothetical case]*
3. Now consider each of the primary means or strategies (pink cards) as the objective for the second stage of brainstorming. Brainstorm among team members again by asking questions (2<sup>nd</sup> How?) "How this can be accomplished?, or what are the means to achieve this particular objective?" Write the secondary means generated in blue cards and paste them adjacent to particular primary strategy. Draw arrows from the strategy cards (pink cards) pointing to their respective secondary means cards (blue cards). *[Refer pink cards (primary means) connected with their respective blue cards (secondary means) for the hypothetical case]*



**Tree Diagram**  
**Identification of specific tasks to change habits of taking excessive junk foods by students**

4. Now consider each of the secondary means (blue cards) as the objective for third exercise. Brainstorm among team members again by asking questions (3<sup>rd</sup> How?) "How can this be accomplished?" or, what are the specific strategies or specific activities that fulfills the objectives set as secondary means? Brainstorm turn by turn to each of the secondary means identified in previous brainstorming. These ideas generated as specific activities are called the tertiary means which are generated after 3<sup>rd</sup> How? Write the tertiary means in yellow cards and paste on the side of the secondary means (blue cards). Draw arrows from the secondary means cards (blue cards) pointing towards the respective tertiary means (yellow cards).
5. Observe closely by the SQC team to all cards pasted in the Tree Diagram and the respective lines joining them. Have consensus on the drawn Tree Diagram.

The Tree Diagram of hypothetical case shown above seems complicated in the first sight. However, if the team members move slowly asking several "How?" from identifying primary means, writing on pink color cards and pasting those cards in working surface, and again moving forward to secondary means, writing in blue cards and pasting in working surface, and again repeating the same procedure till they identify the specific tasks they have to take up, write in yellow cards and paste it in working surface, it will be an exciting exercise to the team members. Students will love to use it. They can develop their master plan with these specific tasks to solve their problems.

There are several variations of Tree Diagram and the steps explained above are the best for students as a tool in Students' Quality Circle exercise. Once students identify root causes through Cause and Effect Diagram or Relations diagram, they may use this tool to go deeper to identify specific tasks they have to perform using this Tree Diagram.

Very simple and interesting isn't it? Students! You try it next time.

3. Do a “necessary and sufficient” check. Are all the items at this level necessary for the one on the level above? If all the items at this level were present or accomplished, would they be sufficient for the one on the level above?
4. Each of the new idea statements now becomes the subject: a goal, objective or problem statement. For each one, ask the question again to uncover the next level of detail. Create another tier of statements and show the relationships to the previous tier of ideas with arrows. Do a “necessary and sufficient check” for each set of items.
5. Continue to turn each new idea into a subject statement and ask the question. Do not stop until you reach fundamental elements: specific actions that can be carried out, components that are not divisible, root causes.
6. Do a “necessary and sufficient” check of the entire diagram. Are all the items necessary for the objective? If all the items were present or accomplished, would they be sufficient for the objective?