Data Collection

Qualitative data collection:

Interviews,

Focus Groups

Etnography (observations)

Quantitative data collection:

Surveys,

Experiments

Documents/Text/images collection can be used for both

Research model

Research question (problem) defines type of study you are committing to:
  e.g. what makes plants grow ?

If you have no expectations about the result then your research is 'exploratory' (Data driven).
  e.g. *no idea what makes plants grow, never had one*

But if you have in mind possible outcomes to your question than your research is 'explanatory' (hypotheses driven)
  e.g. *coffee should accelerate plants grow, will it?*
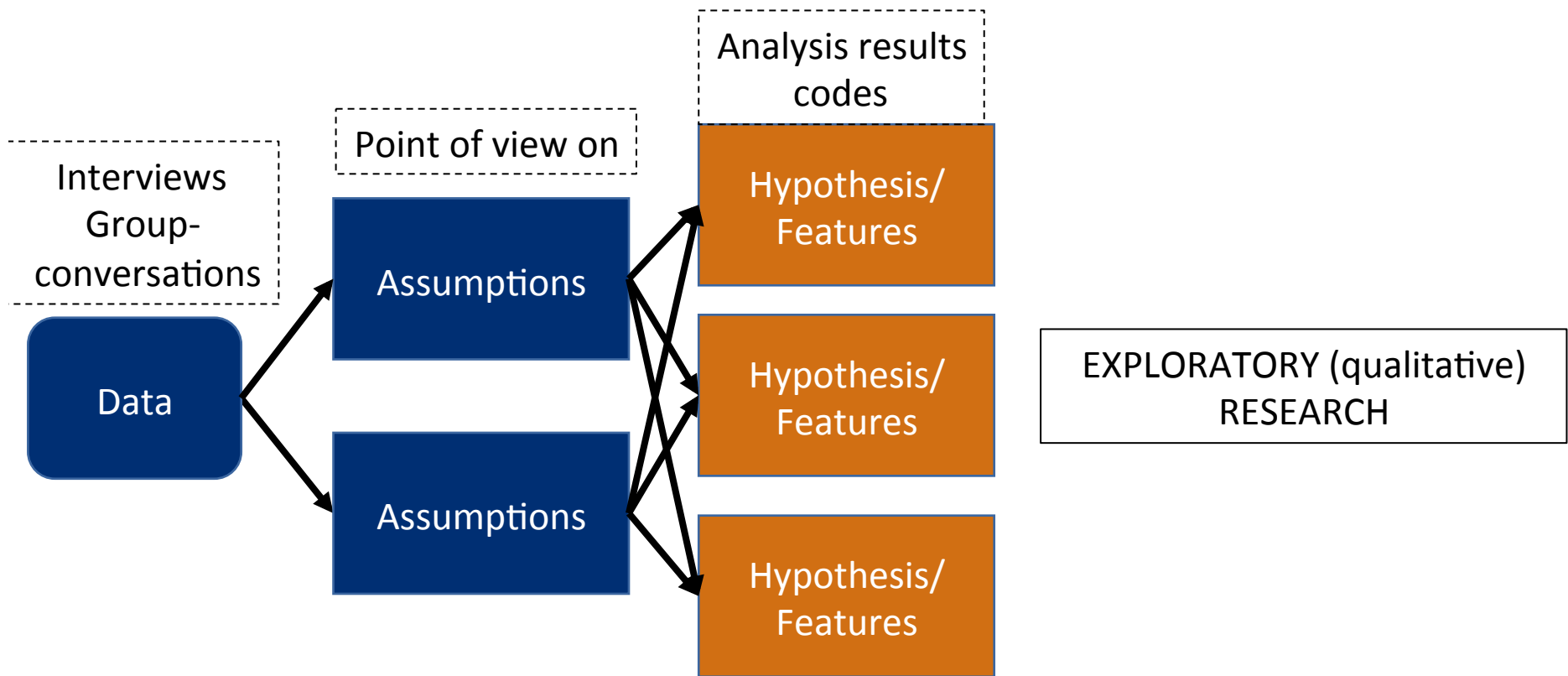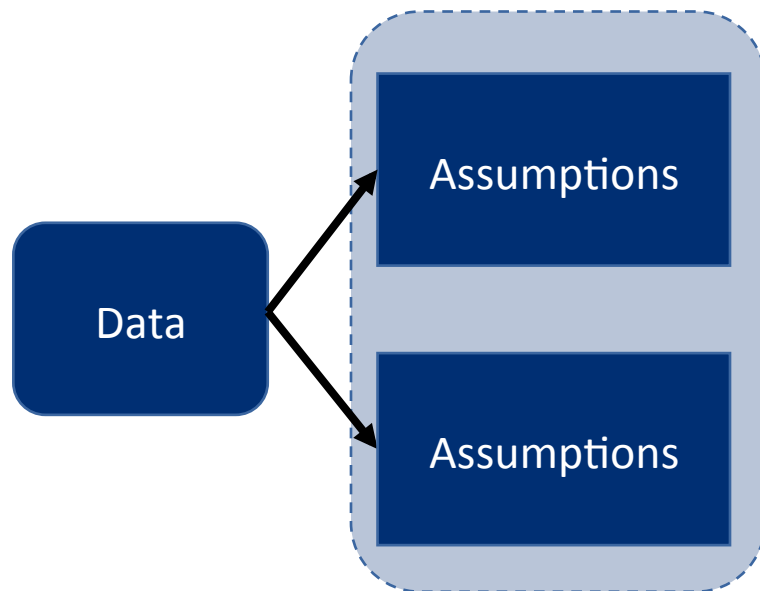
Tackle research problem –

What helps to solve a problem?

- Work individually: Take sticky papers and identify as much reasons/features/descriptions as possible (one per sticky paper)
- One person writes at least three

Tackle research problem –
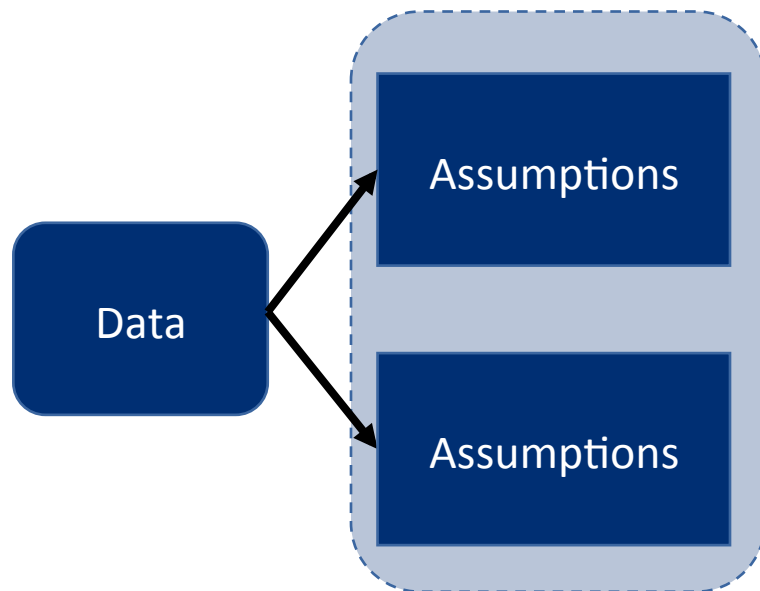
What helps to solve a problem?

- Work in groups: Put sticky papers on the board and group them
- Try not to remove any papers, rather find a place for them

Tackle research problem –

What helps to solve a problem?

- Work in groups: Give names to the groups you created

What is Hypothesis?

A formal prediction statement

(“something” will influence “something”)

Testing what an answer to the question about particular environment is

An educated guess about relationship between features

Components of hypotheses

Variables:

at least one Dependent and at least one independent

Can be also variables moderators or mediators

Measurements:

Ability to test hypotheses in a subjective manner

Variables creation

1. Identifying
2. Naming
3. Measuring

Variables

aspects of people, situations, language etc. Cases that can take on different values or levels

Research questions: statements about variables, and interrelationships among them
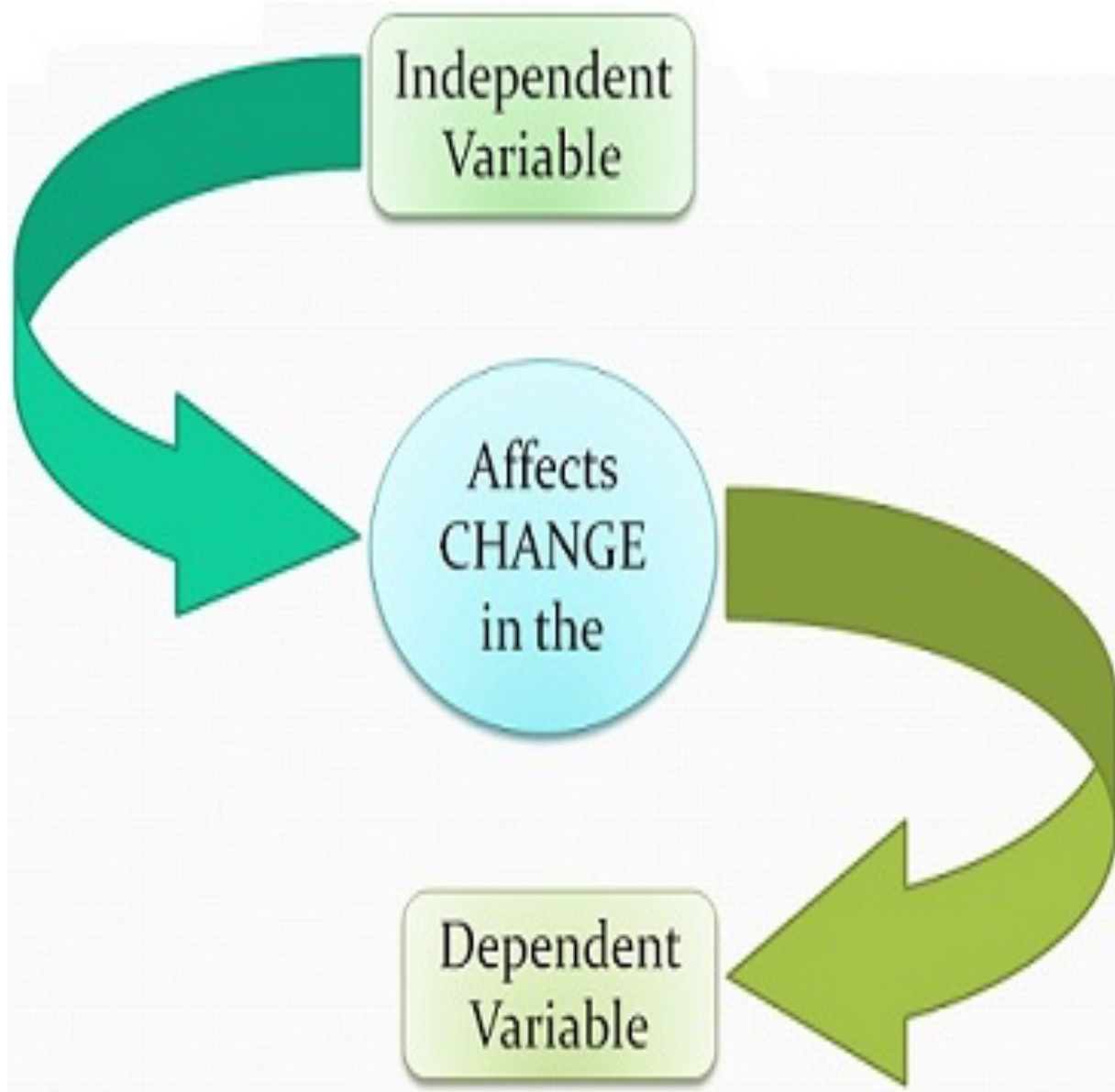
Types of variables:
- Independent
- Dependent
- Mediator
- Moderator

Independent variable

- Manipulated variable – you can change or manipulate this variable or decide what it will be.

- Stands alone

- The one that causes something

Dependent variable

- Depends on something else…
- Variable that you cannot control or choose its value directly
- The one that's being affected

How much **money** you **spend** in the shop

Depends on what you **buy**

Things purchased - independent variable

Money spend - dependent variable

We cannot control prices per ice cream, but we can control how many ice creams we purchase

How quick **plant grows**

Depends on how much **water** and **sun** it gets

Amount of water and sun - independent variable

Growth - dependent variable

- -

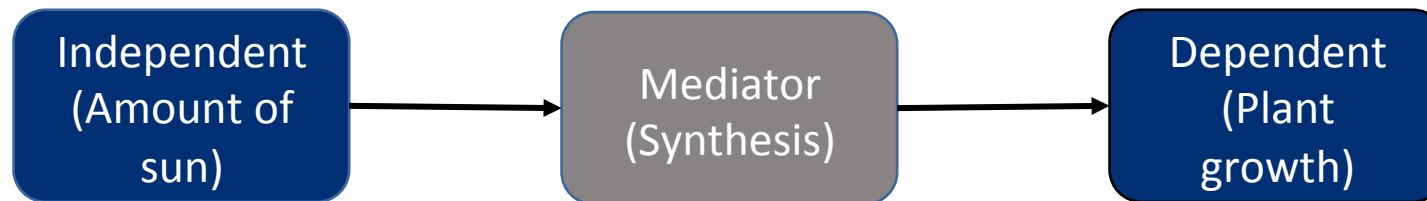Dependent variable depends on independent variable

Tackle research problem –
What helps to solve a problem?

Work in groups: Identify which groups are dependent and which are independent variables (features)

Mediator (Mediating variable)

A variable that is responsible between one variable and another

Independent (Amount of sun)	→	Mediator (Synthesis)	→	Dependent (Plant growth)

Complimenting customer affects his **attitude** which leads to **intention** to **purchase**

Compliment- independent variable

Attitude - mediating variable

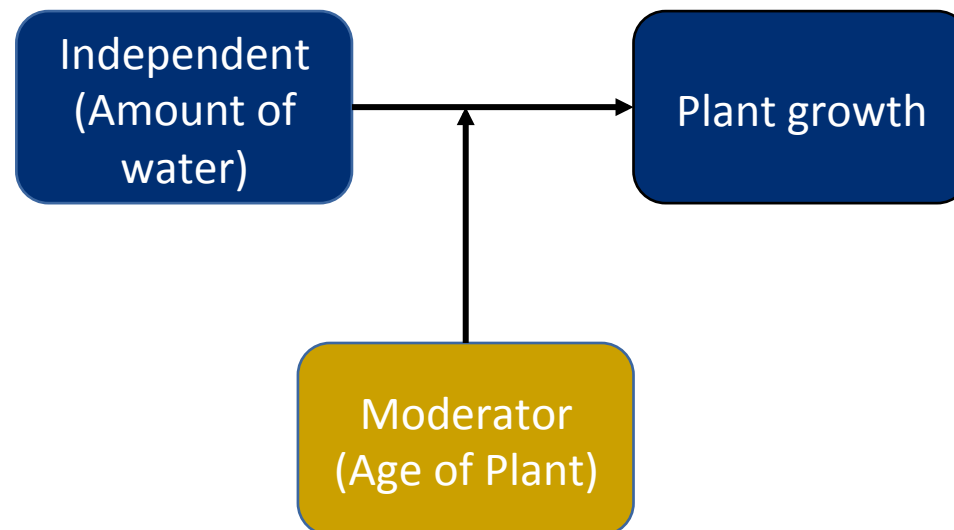**Intention to purchase**- dependent variable

Moderator (Moderating variable)

A variable that influence relationship between dependent and independent variable

It can increase, decrease or reverse relationship

Some feature that has class values, limited amount of values

e.g. Demographics (Gender, age ranges, continent)

H1: If I feed my plants with water they will grow faster

H2: If I feed my plants with energy drinks they will grow faster

H3a: If I cover my plants from the sun it will grow faster
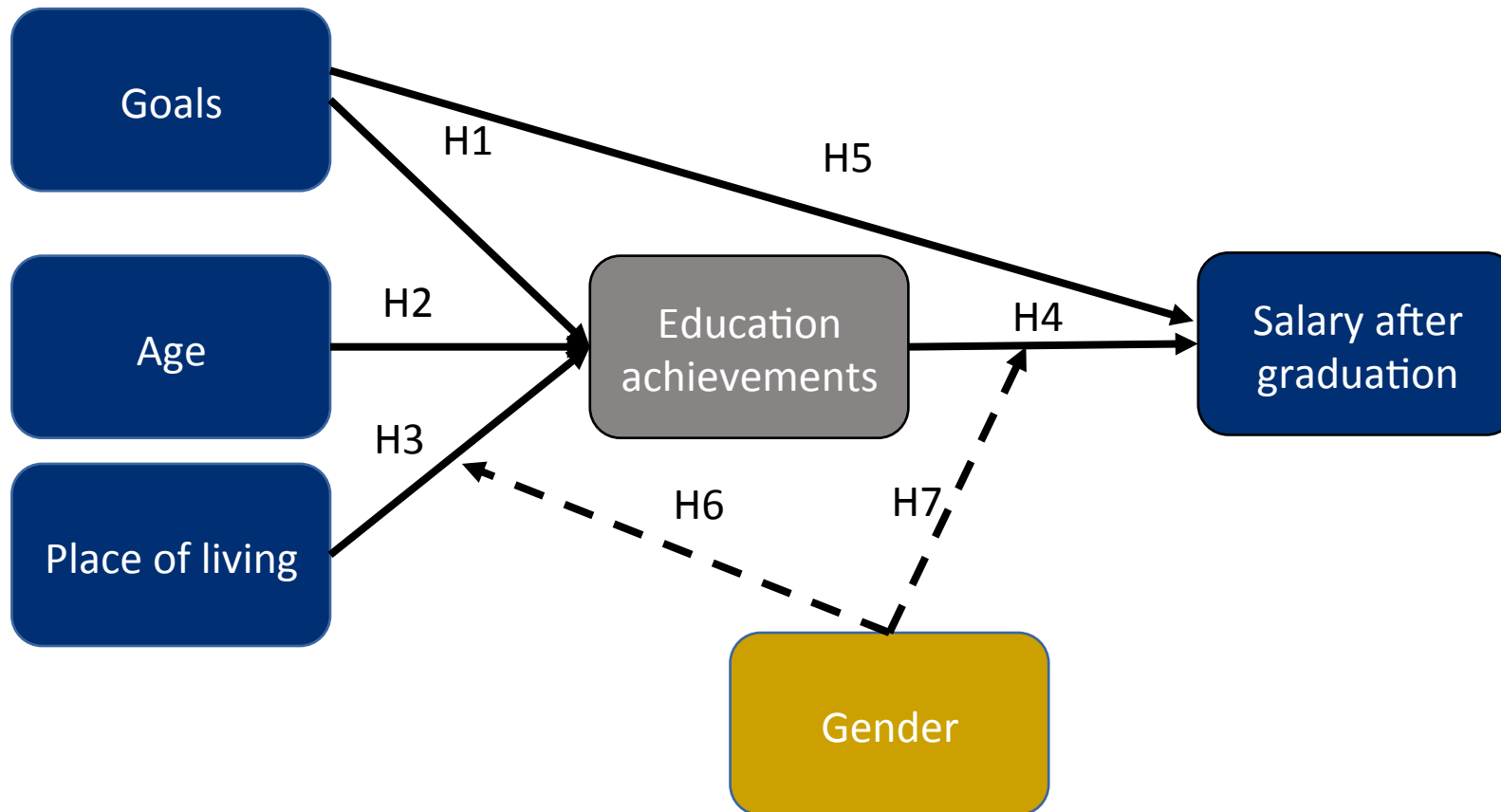
H3b: If I keep my plants in the sun it will grow faster

Sum-up

A hypothesis is a prediction statement that includes variables and measurable or testable scenario

Statistical Model

A set of variables and relationships among them

Tackle research problem –

What helps to solve a problem?

Work in groups: Create relationships among groups (features, variables)
Find the reason why one variable should affect another directly,
through mediation, or moderations

EXPLORATORY (qualitative) RESEARCH

EXPLANATORY (confirmatory) RESEARCH
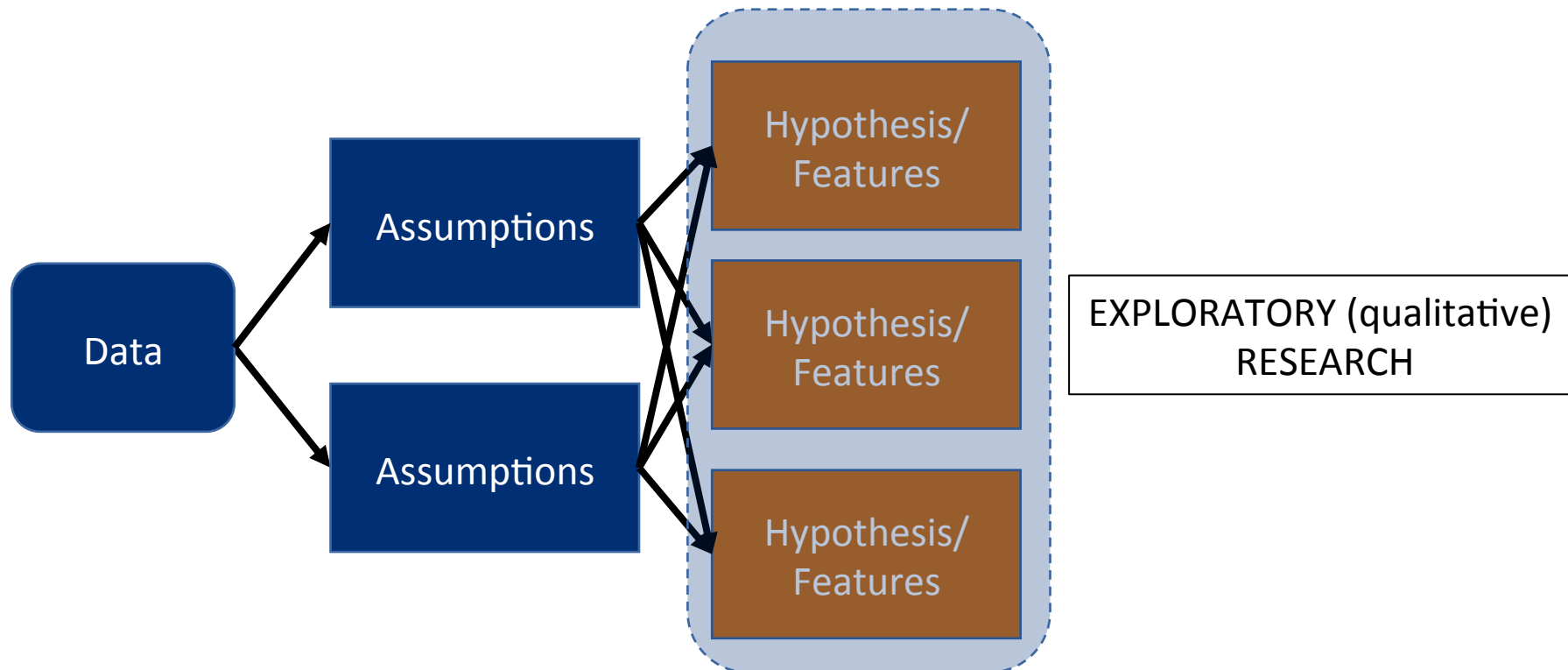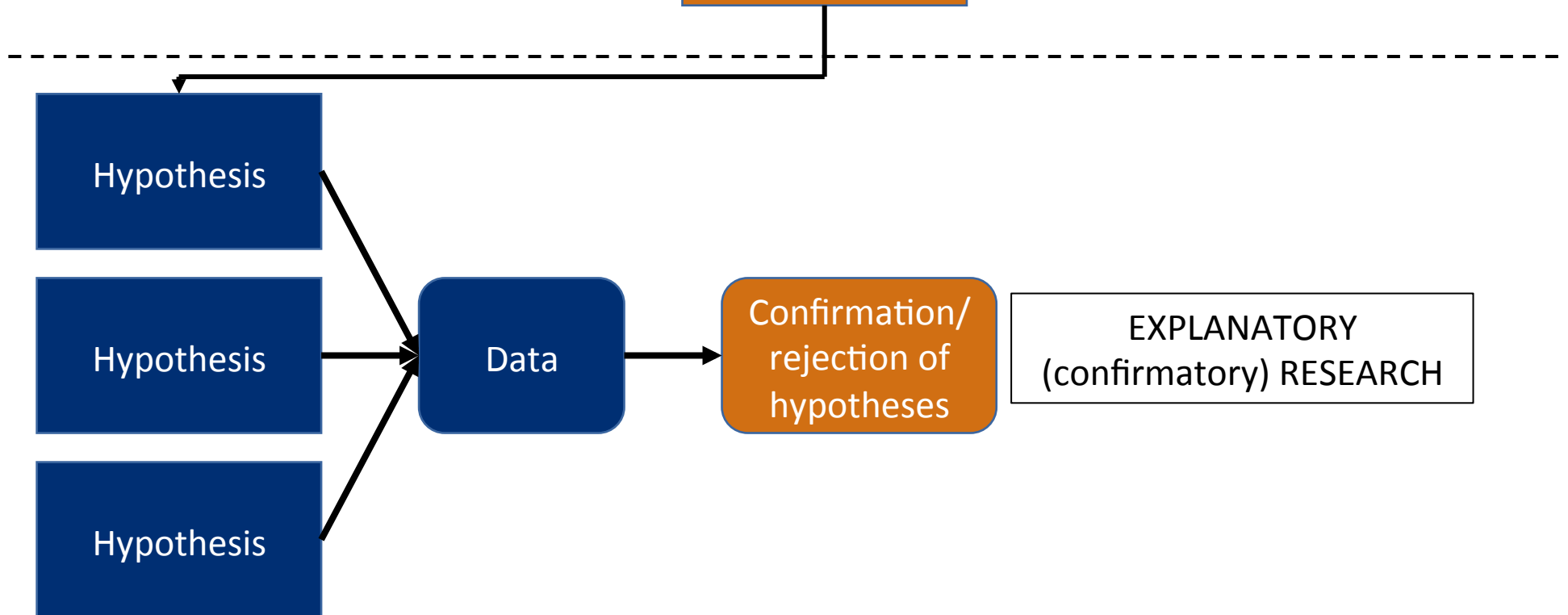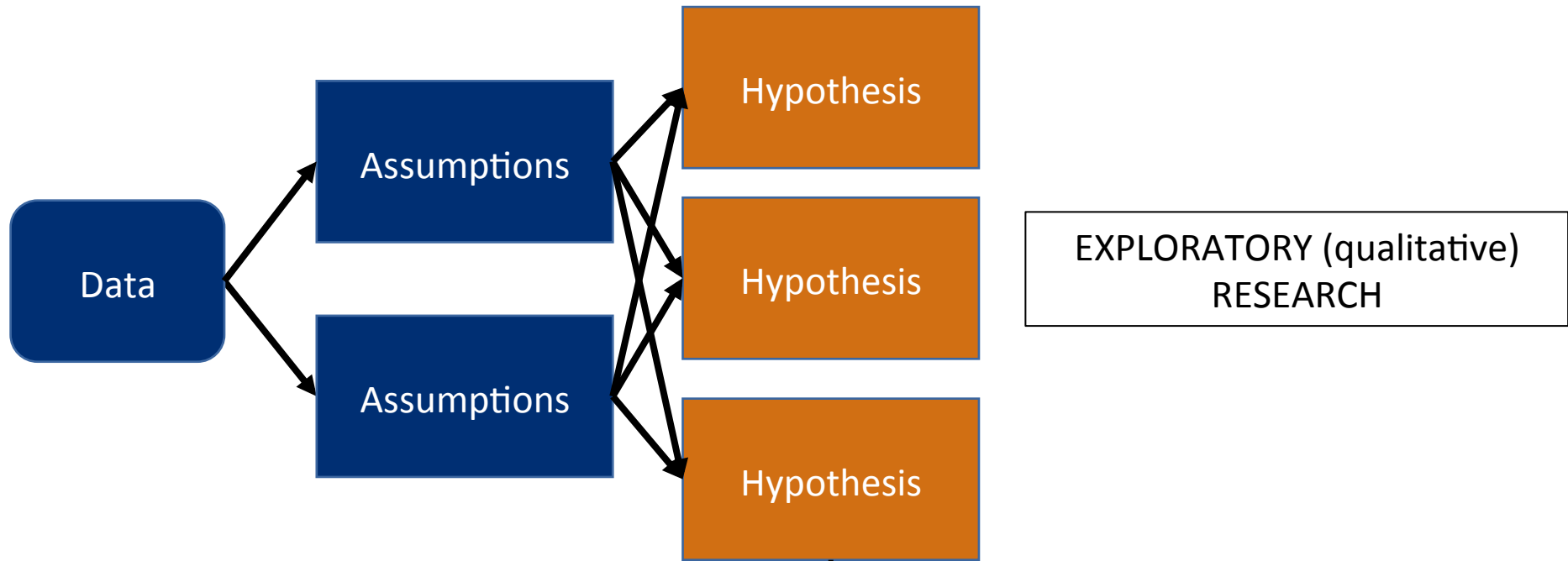
Further on hypotheses development

- http://privatewww.essex.ac.uk/~scholp/Hypotheses05.htm

Developing Questionnaires

Measuring variables

3-4 questions per variable

Questions should bring objective answer (Likert scale, numerical value)

Questions should be based on previously similar used questions if there are such

Surveys

Collection types	Distinctions	Examples
Through email, social media, mail, physical collection (shopping mall)	• Responses analyzed with quantitative methods • Faster collection and analysis • Straightforward results	• A satisfaction survey for customer • Needs analysis

How to measure validity of constructed model?

How to measure our identified variables?

Measuring speed

Measuring Distance
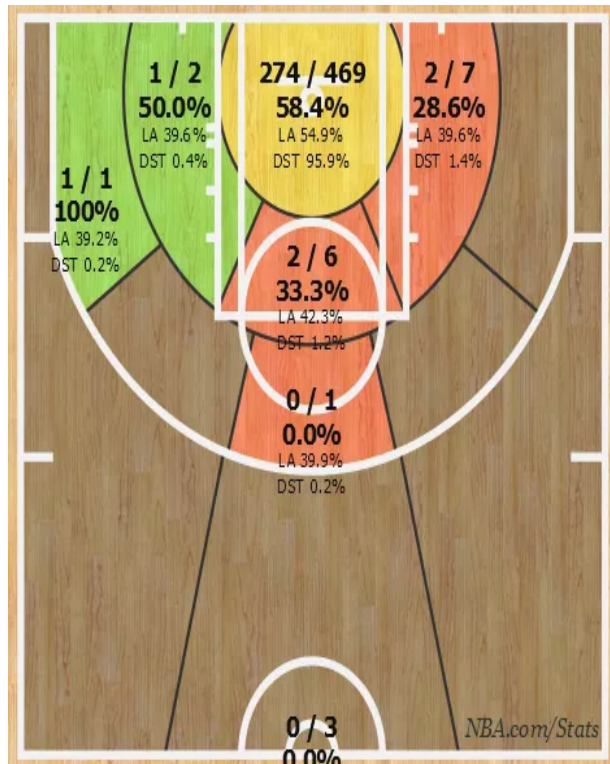
Accuracy of basketball shots

1 / 2
50.0%
LA 39.6%
DST 0.4%

274 / 469
58.4%
LA 54.9%
DST 95.9%

2 / 7
28.6%
LA 39.6%
DST 1.4%

1 / 1
100%
LA 39.2%
DST 0.2%

2 / 6
33.3%
LA 42.3%
DST 1.2%

0 / 1
0.0%
LA 39.9%
DST 0.2%

0 / 3
0.0%

NBA.com/Stats

Nominal measurements

- No natural order

- Categorical

- Simplest measurements

E.g.
GENDER
MARITAL STATUS
RELIGION
EXPERIMENT GROUP

Ordinal

- Ordered categories
- Unknown distances between rankings

LIKERT SCALES
STATUSES
SIZE
RANKINGS

Likert scale is used

- Agreement with statements

- Making judgements on research object (people, books, events..)

Likert Scale

Neutral response

[1-7]	1	2	3	4	5	6	7
[1-5]	1	2	3	4	5		

[1-6]	1	2	3	4	5	6
[1-4]	1	2	3	4		

Likert Scale

Extremely disagree 1   2   3   4   5   6   7 **Extremely Agree**

Extremes

Useful   1   2   3   4   5   6   7   **Not Useful**
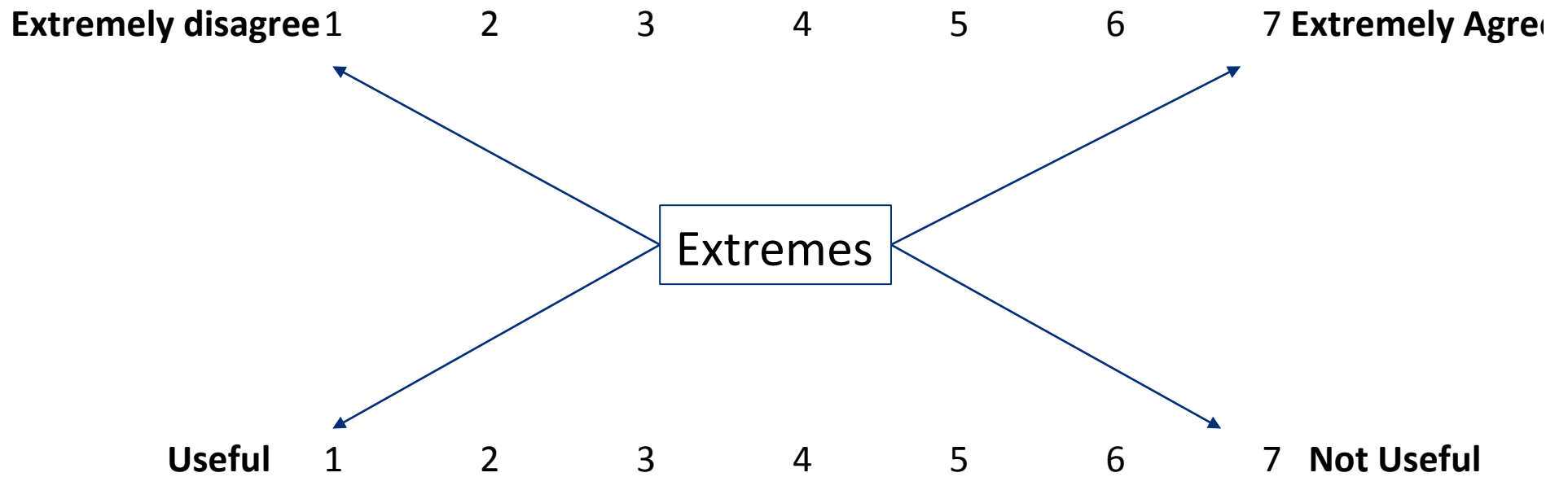
How many respondents for survey to be valid?

50+8*(m) where m is the number of predictors to be studied

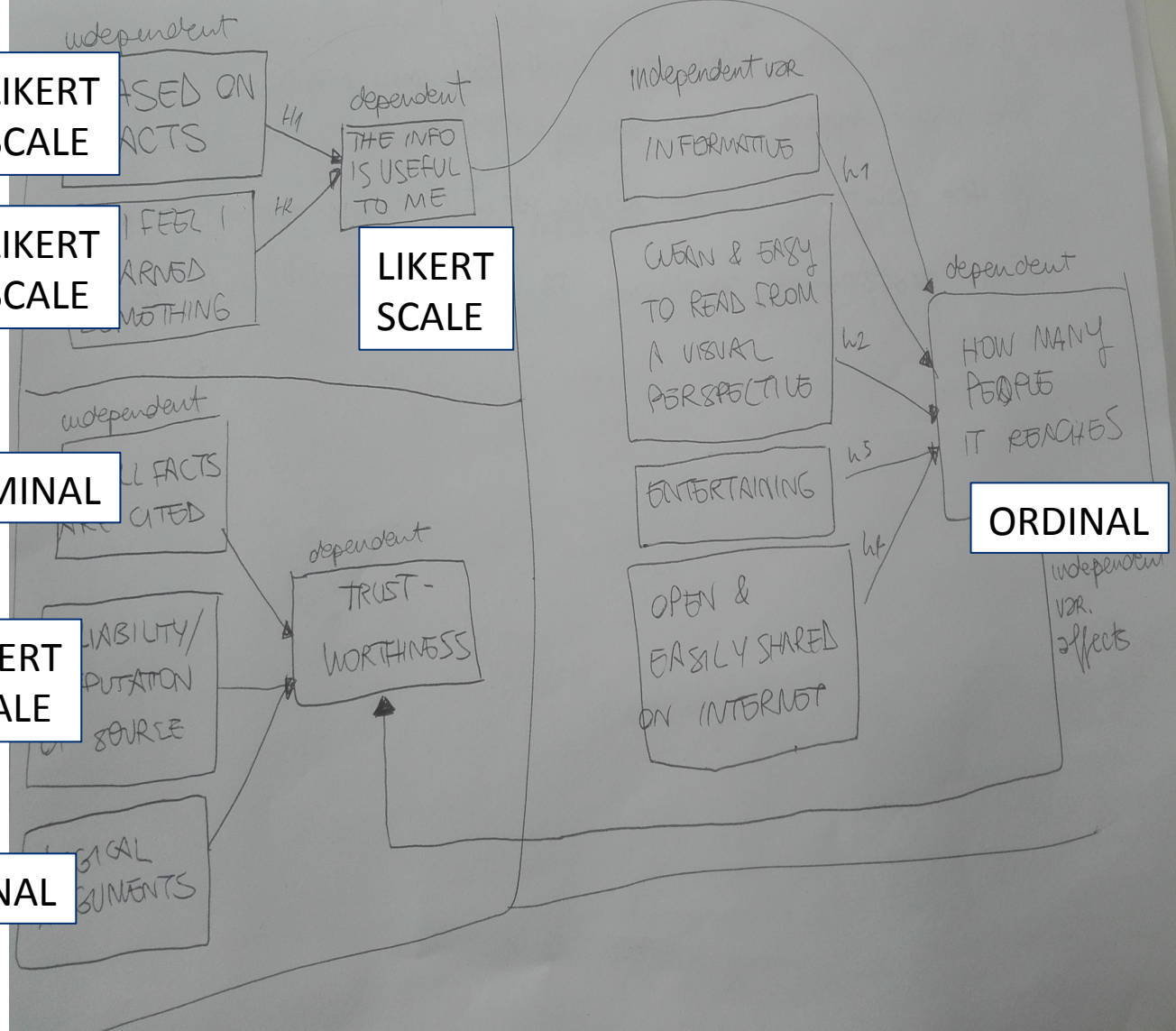if the number of predictors is 23, then the minimum sample size is = 50+8*(23) = 234

LIKERT SCALE

LIKERT SCALE

LIKERT SCALE

NOMINAL

LIKERT SCALE

NOMINAL

ORDINAL

independent
...ASED ON ...ACTS

dependent
THE INFO IS USEFUL TO ME

H1

H2

...I FEEL I ...ARNED ...OMETHING

independent var
INFORMATIVE

CLEAR & EASY TO READ FROM A VISUAL PERSPECTIVE

ENTERTAINING

OPEN & EASILY SHARED ON INTERNET

h1

h2

h3

h4

dependent
HOW MANY PEOPLE IT REACHES

independent var. affects

independent
...LL FACTS ...RE CITED

...IABILITY/ ...PUTATION ...SOURCE

dependent
TRUST- WORTHINESS

...GICAL ...GUMENTS

Tackle research problem –

What helps to solve a problem?

Work in groups: Create questions for each of your variable

Identify which type of measurement
(nominar/ordinal/coninious/Likert) each
variable will have

Reducing Bias and increasing validity

Checking for already used items (questions) and adopt them:

My performance is adversely affected by working with an inexperienced or lesscapable member of the **watchteam***.*

My performance is adversely affected by working with an inexperienced or lesscapable member of the **WHATEVER***.*

Few Sources to check for questionaires:

http://www.midss.org/tools/search

Http://scholar.google.com