RESEARCH OBJECTIVES

BY

DR. JOHN M. WANJOHI

DEPARTMENT OF CHEMISTRY

SPS WORKSHOP ON THESIS WRITING

RESEARCH OBJECTIVES

Let us look at each of the words separately

What is research?

The term research has been defined in many ways but in simple terms it is the search for knowledge.

A voyage of discovery and a formal adherence to well defined systems in order to contribute to knowledge by either discovering new facts or correcting old ones

The systematic process of collecting and analysing information (data) in order to increase our understanding of the phenomenon with which we are concerned or interested.

ETC ETC ETC!!!!!!

Why do research?

Because you have no option

- As a student
- As a Don

Because there is a problem you have identified that cannot be solved otherwise

Let us now see the other word:

Objectives

What is an objective?

Thesaurus :

Objective is the goal intended to be attained (and which is believed to be attainable)

"the sole object of her trip was to see her children"

Objective is the state of affairs that a plan is intended to achieve and that (when achieved) terminates behavior intended to achieve it; "the ends justify the means"

Synonyms: aim, object, target, goal, end

Structurally, the objectives are seen as small particles which constitute the problem.

Why develop Research Objectives?

To Focus the study (narrowing it down to essentials);

To **Avoid** the collection of data which are not strictly necessary for understanding and solving the problem we have identified

To **Organize** the study in clearly defined parts or phases.

Properly formulated, specific objectives will facilitate the development of our research methodology and will help to orient the collection, analysis, interpretation and utilization of data.

Research objectives are a specification of the ultimate reason for carrying out research in the first place. They help in developing a specific list of information needs.

The research process

Since research is a systematic process, it has to have a laid down pattern.

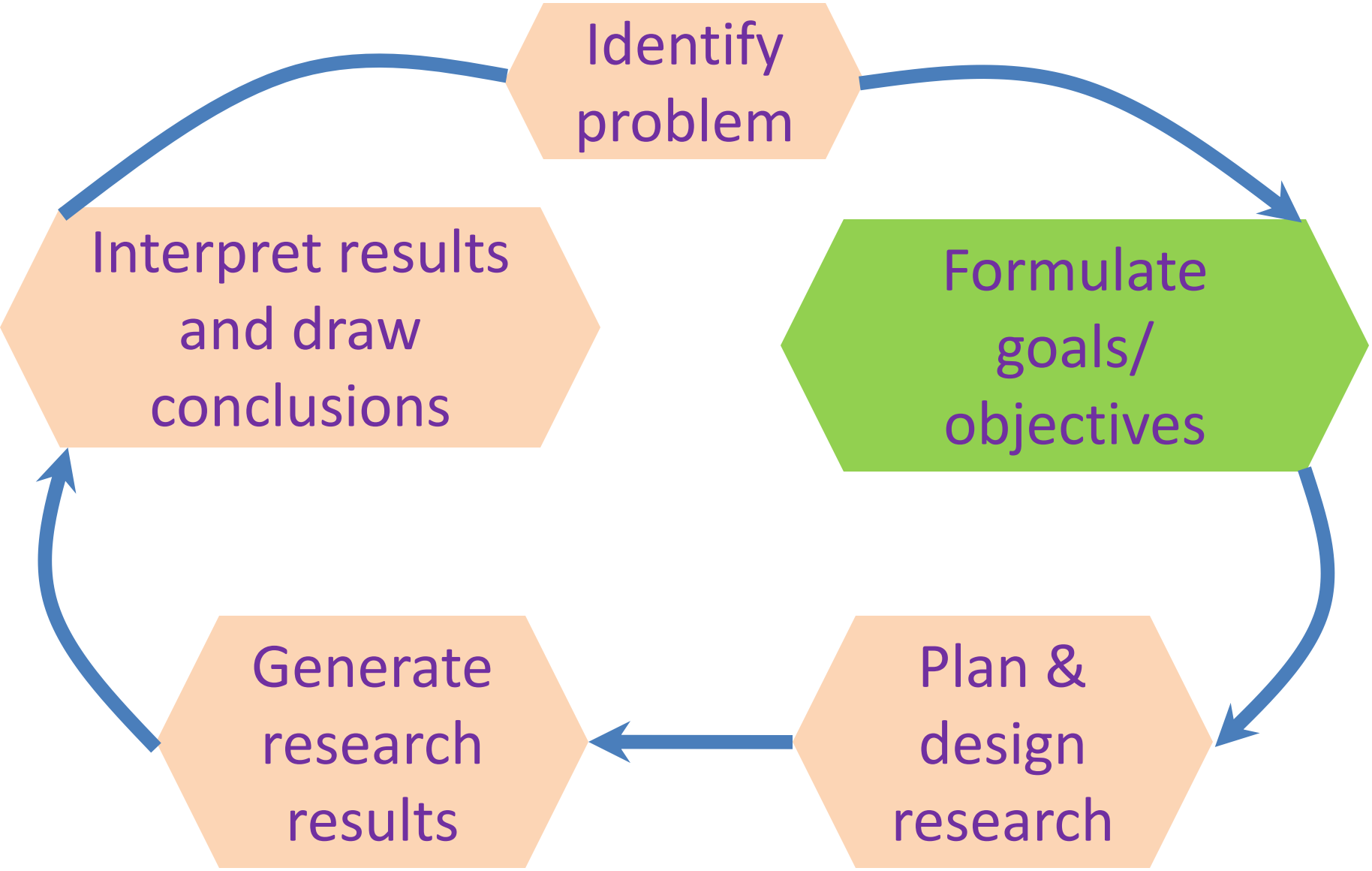
Research involves three main stages namely

Planning

Data collection

Analysis.

Schematically, the process can be summarized as follows:



In any research, objectives of the study can never be evaded

Identification of a research problem

When defining the research problem, it is important to be dealing with a topic or field of interest which the researcher is well versed with and has vast literature in.

The literature clearly shows need for a further study since the solution to the problem cannot be adequately gleaned from the existing literature.

The problem identified is then defined, stating the research problem explicitly.

As noted above, a researcher should choose a problem area that is of his/her interest and that suits ones capacity.

Purpose of the study

This a broad statement of what the study seeks to achieve.

It is derived from the statement of the problem.

The researcher states succinctly what the study proposes to investigate.

It is a declarative statement that uses a non-biased verb (e.g. to determine, to find out, to investigate, to examine, to explore, to test, to establish etc.) to describe the intended tasks.

Biased verbs include: show, illustrate; prove; indicate; demonstrate, validate

Research objectives

Research objectives are derived from the purpose. They set out what is to be achieved in a research study in specific terms.

They are crucial in any research since they determine the kind of questions and procedures to be used in data collection, and analysis.

In stating objectives, just like in purpose of the study, non-biased verbs should be used.

To determine, to find out, to investigate, to examine, to explore, to test, to establish, to differentiate, to inquire, to compare etc.

In formulating objectives, care must be taken specifically to:

1) State the objectives that are clear, well written and precise

2) Make objectives specific, significant, realistic, and achievable

3) Ensure that objectives flow logically from the statement of need and address the problem.

4) Make objectives fall within the range of results, which are expected to be achieved within the limit of time, money and human resources available

5) State the objectives as far as possible in terms, which allow measurements or at least observation of their achievement

6) Objectives should be hierarchical and/or chronological

Remember once more that the objectives of a research project summarize what is to be achieved by the study and they should be closely related to the statement of the problem.

In SPS, the format used in stating the objectives is:

General objective: states what researchers expect to achieve by the study in general terms.

Specific objectives: smaller, logically connected parts of general objective. They are the specific aspects of the topic that we want to study within the framework of our study

Specific objectives should systematically address the various aspects of the problem and the key factors that are assumed to influence or cause the problem. They should specify **what** we will do in our study, **where** and **for what purpose**.

Example 1

General Objective

To identify the anti-viral chemical constituents in *Mumbukura gitoniensis* flowers.

Specific Objectives

i) To carry out solvent extraction of dried flowers of *Mumbukura gitonyiensis*

ii) To isolate the constituents of the crude extract

iii) To determine the anti-viral activity of the crude extract and each of the isolated compounds

iv) To determine the structural formula for each of the active compounds

Example 2

General objective

To explore to what extent community home-based care (CHBC) projects in Kandakame County provide adequate, affordable and sustainable care of good quality to people with HIV/AIDS, and to identify ways in which these services can be improved.

Specific Objectives

i)To identify the full range of economic, psychosocial, health/nursing care and other needs of patients and their families affected by AIDS.

ii)To determine the extent to which formal and informal support systems address these needs from the viewpoint of service providers as well as patients

iii) To determine the economic costs of CHBC to the patient and family as well as to the formal CHBC programmes themselves

ii)To relate the calculated costs to the quality of care provided to the patient by the family and to the family/patient by the CHBC programme.

iii)To determine how improved CHBC and informal support networks can contribute to the needs of persons with AIDS and other chronically and terminally ill patients.

iv)To use the findings to make recommendations on the improvement of CHBC to home care providers, donors and other concerned organizations, including government.

You are reminded many times to ensure that the objectives of your study:

Cover the different aspects of the problem and its contributing factors in a coherent way and in a logical sequence

Are clearly phrased in operational terms, specifying exactly what you are going to do, where, and for what purpose

Are realistic considering local conditions; and

Use action verbs (such as to determine, to compare, to verify, to calculate, to describe, to establish) that are specific enough to be evaluated as earlier mentioned and avoid the use of vague non-action verbs (to appreciate, to understand, or to study)

Smart objectives

An objective is a clear statement of something that needs to be accomplished over a period of time.

SMART objectives are:

Specific: states exactly what you need to achieve

Measurable: includes a quality or quantity measure

Achievable/Agreeable between you and your Supervisor/Reviewer

Realistic/Relevant: can be challenging but must be achievable

Timebound: with a clear end date or timescale

Specific

Who is going to do **how much of what by when**

By 27th June 2014, all Master of Science Students in Chiromo will have participated in a Thesis writing guidelines workshop

Specifity means there is a description of a precise or specific behavior/outcome which is linked to a rate, number, percentage or frequency

You will know your objective is specific enough if:

An observable action is linked to a number, rate, percentage or frequency

Everyone who's involved knows that it includes them specifically

Everyone involved can understand it

Your objective is free from jargon

You've defined all your terms

You've used only appropriate language.

Objectives should clearly state what you are expected to achieve, using action verbs to describe what has to be done.

For example:

Not specific:

Encourage more people to join the Sports Centre

Specific:

Increase membership of the Sports Centre

Not specific:

Conduct research

Specific:

Formulate plans for research on topic X

Measurable

Is there something measurable to assess progress towards the objective?

By 1st August 2014, the organic chemistry Masters students will have established a group discussion forum that meets at least every other month during the study period.

Does your object of interest measure up to your standard of acceptability.

Answer the phone quickly versus Phone calls will be answered in three rings

Objectives should include a quality and/or quantity reference so that you can measure whether or not you have achieved them. For example:

Not measurable:

Increase membership of the Sports Centre

Measurable:

Increase membership of the Sports Centre by 10%

Not measurable:

Formulate plans for research on topic X

Measurable:

Formulate plans for research on topic X and submit grant application to X Research Council

Achievable

Achievable is linked to measurable. Usually, there's no point in starting a job you know you can't finish, or one where you can't tell if/when you've finished it.

To decide if an objetive is achievable, one need to:

Know it's measurable

Others have done it successfully (before you, or somewhere else)

It's theoretically possible (ie clearly not 'not achievable')

One has the necessary resources, or at least a realistic chance of getting them

One has assessed the limitations.

Objectives should be agreed between you and your Supervisor, relevant to your job and driven by University strategy and School/Institute/Section plans.

Your Supervisor will help ensure that your objectives are relevant and appropriate

Realistic/Relevant

These imply that the goal or target being set is important to the success of the project.

Objectives should be challenging but achievable i.e. they should not be unrealistic.

For example,

It might be realistic to plan to lose 10 pounds in weight but it would be unrealistic to plan to lose 10 pounds in one week.

Objectives should also take account of the skills, knowledge and resources needed to achieve them. You may need to consider whether you need any training or development (or other support) in order to achieve the objective.

Time based

In the objective somewhere there has to be a date when the task has to be started, if it's ongoing and/or completed

If there is a particularly long timescale involved, you may need to break your objective down, identify the steps you need to take to achieve your overall objective and work out how long each step is likely to take so that you can agree a target date

Research hypothesis is a prediction of some sort regarding the possible outcome of the study.

They are possible causes/reasons for the problem or assumptions or guesses drawn from reading or from experience about the problem.

They are propositions made indicating relationship between two or more variables.

Three main characteristics or elements of a research hypothesis

a) They are declarative statements: Suggesting no effort, no change, things remain the same or there is no relationship between them. Or, a positive one leaning on the direction of the basis of sample statistics and is called an alternate (alternative) hypothesis

b) They are predictive statements: hypotheses tend to be forward looking (futuristic) providing guiding principles to the case of the whole research.

c) They contain clear elements of testing and verification that can be measured empirically or quantitatively.

Types of hypothesis

Null hypothesis: This presumes a status quo, no significant change. This is a statistical hypothesis that the researcher seeks to reject.

Alternative hypothesis: This is the experimental hypothesis. It can either be directional or non-directional. It is the hypothesis that the researcher seeks to support

The null hypothesis always predicts that there will be no differences between the groups being studied.

By contrast, the alternate hypothesis predicts that there will be a difference between the groups.

Example

The null hypothesis would predict that the exercise group and the no-exercise group will not differ significantly on levels of cholesterol.

The alternate hypothesis would predict that the two groups will differ significantly on cholesterol levels

Directional hypothesis: Specifies the direction of the relationship between independent and dependent variables

Example: Cardiac patients who receive support from former patients have **less** anxiety and higher self-efficacy than other patients

Non-directional hypothesis: Shows the existence of a relationship between variables but no direction is specified

Example: There is **a difference** in anxiety and self-efficacy between cardiac patients who receive support from former patients and those who do not

Research hypothesis = scientific hypothesis
Statement about the expected relationship of the variables. It can be directional or non-directional

Statistical hypothesis = null hypothesis
States there is no relationship between the variables for example: Oxygen inhalation by nasal cannula of up to 6L/min does not affect oral temperature measurement taken with an electronic thermometer.

SUMMARY 

Steps in formulating a research problem

Suppose you intend to perform a study on alcoholism. In formulating your research problem, take the following steps

Step I Identify

Alcholism

Step II Dissect

1. Profile of alcoholics
2. The causes of alcoholism
3. The process of becoming an alcoholic
4. The effects of alcoholism on the family
5. Community attitudes towards alcoholism
6. The effectiveness of a treatment model

Step III Select

The effects of alcoholism on the family

Step IV Raise questions

1. What impact has alcoholism on marital relations?

2. How does it affect the various aspects of childrens' lives?

3. What are the effects on family finances?

Step V Formulate objectives

Main Objective

To find out the effects of alcoholism on the family

Specific objectives

1. To ascertain the impact of alcoholism on marital relations
2. To determine the ways in which alcoholism affects the different aspects of childrens' lives
3. To find out the effects of alcoholism on the financial situation of the family.

Step VI Make sure

Assess those three objectives in the light of

1. The work involved
2. The time available to you
3. The financial resources at your disposal
4. Your (and your research supervisor's) technical expertise in the area

Step VII Double check

1. That you are really interested in the study
2. That you agree with the objectives
3. That you have adequate resources
4. That you have the technical expertise to undertake the study

ARE YOU MORE LOST THAN BEFORE??

DO NOT WORRY

ALL YOU NEED TO DO IS READ THOROUGHLY!!!