EDUCATIONAL RESEARCH

Topic Objective:

At the end of this topic student would be able to:

- Describe the scientific method and explain why it is so valuable in answering questions about education;
- Outline the process by which educational research is conducted; and
- Identify the legal, ethical, philosophical, and procedural operating rules for conducting research in education.

Definition/Overview:

Educational Research: Educational research is research conducted to investigate behavioral patterns in pupils, students, teachers and other participants in schools and other educational institutions. Such research is often conducted by examining work products such as documents and standardized test results.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Methods of Educational Research**

The methods of educational research are derived chiefly from the social sciences, and in particular from psychology.

In educational research it may be necessary to assess the performance of schools teaching reading by one method against schools teaching reading by a different method. It would be a mistake to analyze the data as though the pupils were simple random samples from the population of pupils taught by a particular method. Pupils are taught in classes, which are in schools. The performance of pupils within the same class will be correlated, as will the performance of pupils within the same school. These correlations must be represented in the analysis for correct inference to be drawn from the experiment.

Other Names for Multilevel Modeling (MLM)

- Hierarchical linear modeling (HLM)

- Random effects models
- Mixed effects models
- Random coefficient regression models
- Covariance components models

   The Need for Multilevel Models

- Individual-level variables are often nested within group-level variables (e.g., students within classrooms within schools).
- Multilevel modeling (MLM) is needed to separate the effects of variables operating at different levels.

   <!--[if !supportLists]-->**2.** <!--[endif]-->**Multilevel Level**

   Multilevel models (also hierarchical linear models, generalized linear mixed models, nested models, mixed models, random coefficient, random-effects models, random parameter models, or split-plot designs) are statistical models of parameters that vary at more than one level. These models can be seen as generalizations of linear models, although they can also extend non-linear models. Although not a new idea, they have been much more popular following the growth of computing power and availability of software. For example, in educational research it may be necessary to assess the performance of schools teaching reading by one method against schools teaching reading by a different method. It would be a mistake to analyse the data as though the pupils were simple random samples from the population of pupils taught by a particular method. Pupils are taught in classes, which are in schools. The performance of pupils within the same class will be correlated, as will the performance of pupils within the same school. These correlations must be represented in the analysis for correct inference to be drawn from the experiment.

   <!--[if !supportLists]-->**3.** <!--[endif]-->**Level**

   The concept of level is the keystone of this approach. In an educational research example, the levels might be:

- pupil
- class

- school
- district

The researcher must establish for each variable the level at which it was measured. In this example "test score" might be measured at pupil level, "teacher experience" at class level, "school funding" at school level, and "urban" at district level.

<!--[if !supportLists]-->**4.** <!--[endif]-->**Uses of multilevel models**

Multilevel models have been used in education, to estimate separately the variance between pupils within the same school, and the variance between schools. In psychological applications, the multiple levels are comprised of items in an instrument, individuals, and families. Different co-variables may be relevant on different levels. They can be used for longitudinal studies, as with growth studies, to separate changes within one individual and differences between individuals.

<!--[if !supportLists]-->**5.** <!--[endif]-->**Applications to longitudinal (repeated measures) data**

Multilevel models can be used to model change over time in a variable of interest. An overall change function is fit to the whole sample and parameters can be allowed to vary. For example, in a study looking at income growth with age, individuals might be assumed to show linear improvement over time. The exact intercept and slope could be allowed to vary across individuals. The simplest models assume that the effect of time is linear. Polynomial models can be specified to allow for quadratic or cubic effects of time. Models that are nonlinear in their parameters may also be fit in some software. Nonlinear models may be more appropriate in representing various growth functions where there may be various asymptotes that limit the range of possible values. Models may also incorporate time constant or time varying covariates as predictors.

Topic : Types Of Educational Research And Corresponding Sources Of Data

Topic Objective:

At the end of this topic student would be able to:

- Classify research into two types based on practicality;
- Classify research into four types based on research methodology employed;
- Classify research into eight types based on the type of research question addressed; and
- Distinguish between and classify the various types of variables present in research studies

Definition/Overview:

Types of Educational Research: The methods of educational research are derived chiefly from the social sciences, and in particular from psychology

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Types of educational research**

Three commonly used research types or designs are quantitative, qualitative, and mixed research:

- **Quantitative research** follows a deductive research process and involves the collection and analysis of quantitative (i.e., numerical) data to identify statistical relations of variables. Common quantitative research methods include: content (relational) analysis, experiments, observations (scaled ratings, checklists), and surveys (closed-ended, validated scales)
- **Qualitative research** follows an inductive research process and involves the collection and analysis of qualitative (i.e., non-numerical) data to search for patterns, themes, and holistic features. Common qualitative research methods include: content (conceptual) analysis, focus groups, observations (narrative, comments), interviews, and surveys (open-ended).
- **Mixed research** combines or mixes quantitative and qualitative research techniques in a single study. Two sub-types of mixed research includes mixed method research using qualitative and quantitative approaches for different phases of the study and mixed model research using quantitative and qualitative approaches within or across phases of the study.

	Purpose	Examples
Qualitative	To provide rich narrative descriptions with words of phenomena that enhance understanding.	Observations of school renewal teams to understand the role of parents.

Quantitative	To describe phenomena numerically to answer specific questions or hypotheses.	The relationship between amount of homework and student achievement.
Basic	To increase knowledge and understanding of phenomena.	Understand how feedback affects motivation or leraning styles of adolescents.
Applied	To solve practical educational problems.	Determine best approach to train teachers to use portfolios for assessment.
Evaluation	To make a decision about a program or activity.	Decide whether to keep or phase out a prekindergarten program.
Action	To improve practice in a school or classroom.	Determine which grouping procedure results in the highest achievement for all students.
Non-Experimental	To describe and predict phenomena without manipulating factors that influence the phenomena.	Determine the relationship between socioeconomic status and attitudes.
Experimental	To determine the causal relationship between two or more phenomena by direct manipulation of factors that influence student performance or behavior.	Determine which of two approaches to teaching science results in the highest student achievement.

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Topic : Selecting, Refining, And Proposing A Topic For Research

Topic Objective:

At the end of this topic student would be able to:

- Identify, select, and refine a topic for research;
- State the research problem in a way that sufficiently describes the purpose of the study;
- Phrase appropriate research questions and hypotheses; and

- Organize and present a research proposal.

Definition/Overview:

Educational Research: Educational research is research conducted to investigate behavioral patterns in pupils, students, teachers and other participants in schools and other educational institutions. Such research is often conducted by examining work products such as documents and standardized test results.

Key Points:

<!--[if !supportLists]-->1. <!--[endif]-->**Selecting, Refining, and Proposing a Topic for Research.**

When you apply for a research degree at NewcastleUniversity you will be asked to supply a short summary of research topic. The University needs to know in outline form what you are proposing to research so it can decide whether it is able to offer you the high-quality research supervision and the resources that are needed to support you. The research proposal also helps the University to assess application and to ensure the research you are proposing is appropriate and realistic.

<!--[if !supportLists]-->2. <!--[endif]-->**Things to do**

A short statement of the topic you would like to investigate. Describe briefly what you would propose to do in the research. Explain why you think it is important to conduct this particular research project. Set out a brief statement of what other research you know has been done in this area with a short bibliography of the key works. It is also possible to draw on previous work that you have done (e.g. a Masters dissertation) in the research proposal. Outline any academics or research groups at NewcastleUniversity that you feel are relevant to research. Briefly outline the data you need and the sources you will use indicating whether the data comes from published sources or field work. Say how you would go about doing the research in terms of the methods that you would use for example to collect data and analyseit. Say why you think it is appropriate to use these methods. Briefly summarise experience in using these techniques and identify any areas where you think that you would benefit from further training. Think of any problems that you might encounter during the research project and how you might go about overcoming

them. Indicate roughly how you would allocate the time for doing the research project over the duration of studies. Say how, if research is successful, it might contribute to knowledge and understanding of the subject. A brief bibliography should demonstrate familiarity with literature in the field you wish research. You should note that in the first few months at NewcastleUniversity you will have an opportunity to refine and revise research proposal, and you will be given advice from supervisor and training from a Faculty Research Training Programme to help you do this.

In Section 2 of this course you will cover these topics:
' Locating Published Research.
' Interpreting And Summarizing Published Research.
' Designing A Research Project

Topic : Locating Published Research.

Topic Objective:

At the end of this topic student would be able to:

- Identify and access secondary sources of library information related to a given topic.
- Identify and access primary sources of library information related to a given topic.

Definition/Overview:

Research: research is study conducted to investigate behavioral patterns in pupils, students, teachers and other participants in schools and other educational institutions. Such research is often conducted by examining work products such as documents and standardized test results.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Research Process**

Much of the coursework will involve using articles (brief compositions) published in periodicals (journals, newspapers, magazines, etc.) because they provide more current information than books. Also, original research is usually published in periodicals

(primarily in scholarly journals) and may not be available in books. So determining the most efficient ways to locate articles relevant to topic is an important part of successful research.

The library offers periodicals in a variety of media: print, electronic, and microform. However, browsing through any of these media to find useful articles would be time-consuming, even though browsing can sometimes be productive. Therefore, to help you locate articles for research, the library offers the following "finding tools":

- periodical databases (online indexes with citations and some full-text articles)
- periodical indexes (print listings of citations)
- periodical abstracts (print listings of citations and abstracts)

Depending on the database or print publication, information about articles can take three forms:

- the complete article plus citation (publication information),
- a citation, or
- a citation plus an abstract, which is a brief summary

<!--[if !supportLists]-->**2.** <!--[endif]-->**Periodicals**

Periodicals include publications of many types. Being able to distinguish between the different periodical types is an important skill when selecting the best sources for research. The Periodical Types: Telling the Difference page offers criteria to help you distinguish between some major periodical types: scholarly journals, trade journals, popular magazines, and general interest magazines. Periodical databases are online indexes that can be searched to locate complete full-text articles, article citations (publication information), or article citations and abstracts. Some databases are general and cover many subjects, while others are subject specific. The Guide to Online Databases page offers brief summaries of the Tarleton libraries' databases to help you choose the ones most suited to research. Databases are most useful for finding current information because only a few databases contain information prior to the mid-1980s or early 1990s. However, the library does offer some databases that contain earlier articles and citations. For example, JSTOR offers some articles from as early as the 1600s, and

PsycINFO offers articles and citations beginning in the 1800's. Also, some databases do not offer articles from the most recent issues of selected periodicals due to restrictions from the publisher (called an embargo). Also, some articles may be missing from issues due to writers not relinquishing their copyrights to the periodical publishers and due to vendor error or inclusion policies. Therefore, print "finding tools" may still be necessary for current materials. If you're searching in a database that does not cover the years you need, do not give up. The libraries' periodical indexes and periodical abstracts, which are discussed in the next sections, should provide adequate coverage for the time periods not included in the databases. In addition, the library offers a number of services to help you obtain items from other libraries. Most databases allow users to use keyword, subject, title, and author searches. Also, some databases offer more sophisticated searching capabilities such as restricting results to scholarly journals and limiting searches by date, type, and language.

Topic : Interpreting And Summarizing Published Research.

Topic Objective:

At the end of this topic student would be able to:

- Effectively skim published research reports;
- Interpret the contents of published reports; and
- Make efficient notes for future bibliographic use.

Definition/Overview:

Research Process: research process involves to investigate behavioral patterns in pupils, students, teachers and other participants in schools and other educational institutions. Such research is often conducted by examining work products such as documents and standardized test results.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Periodical indexes**

Periodical indexes are print publications that provide citations (publication information) for articles published in periodicals within a given year. Also, some periodical indexes give citations for parts of books, book reviews, dissertations, conference proceedings, pamphlets, and government documents. Each periodical index will have an introduction or preface that explains usage techniques, how the entries are arranged, and what information the entries contain. Reading the introduction/preface can save you lots of valuable time when using the indexes. Some periodical indexes are general and cover many subjects, while others are subject specific. The Guide to Periodical Indexes page offers brief summaries of the Tarletonlibraries' periodical indexes to help you choose indexes most suited to research needs. The coverage in indexes extends further back than databases because they are an older "finding tool" than databases. In many ways, periodical indexes are like printed databases without the electronic searching mechanisms and full-text capabilities. Locating older material (often before the 1990s) will most often require the use of print indexes because many databases do not include material prior to the mid-1980s or early 1990s. However, some databases do provide earlier materials, as explained in the "Periodical Databases" section above.

Example/Case Study:

Example Citation: To illustrate what a citation looks like, the following example was taken from the 1997 Readers' Guide to Periodical Literature:

> **Empty Bottle Fest draws seldom-seens to Midwest [Chicago]**
> **<!--[if !vml]-->   <!--[endif]-->A. I. Cohen. il *Down Beat* v64 p66 Ag '97**

[Table 2]

Here's what the pieces of this citation mean:

article title =	"Empty Bottle Fest Draws Seldom-seens to Midwest"
added note =	[Chicago] to say where in the Midwest the festival was held
author =	A. I. Cohen
il =	the article has illustrations (pictures, graphs, etc.)
periodical title =	*Down Beat* Sometimes the periodical title will be abbreviated, but the

	index will have a key that shows the abbreviations used for periodical titles to help you determine the full title.
publishing info =	v64 p66 Ag '97 the periodical's volume number, the article's page number, and the publication date Usually the date is abbreviated, but the index will have a key that shows the abbreviations used to help you determine what they are.

[Table 2]

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Topic : Designing A Research Project

Topic Objective:

At the end of this topic student would be able to:

- State a topic, problem, and questions/hypotheses for a research study;
- Outline the library search for related information;
- Identify the needed data and probable sources;
- List the steps to be carried out in the study;
- Specify the procedures and tools necessary for collecting data;
- Foresee how the data can best be analyzed; and
- Anticipate the appropriate report format.

Definition/Overview:

Educational Research: Educational research is research conducted to investigate behavioral patterns in pupils, students, teachers and other participants in schools and other educational institutions. Such research is often conducted by examining work products such as documents and standardized test results.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**The purpose of research project design**

<!--[if !supportLists]-->**1.1.** <!--[endif]-->**To enable you to work more efficiently**

A good research design is the basis for you to plan and organize time and work to best advantage. It is not, of course, a formula that predetermines everything you do as part of the project. It is rather a framework within which you make decisions and can evaluate previously unanticipated options and opportunities as they arise.

<!--[if !supportLists]-->**1.2.** <!--[endif]-->**To enable you to assess progress**

Whether you are in receipt of an external research grant or not, time spent on research is costing somebody effort and money, and assessment and accountability are now constant features of research projects.

<!--[if !supportLists]-->**2.** <!--[endif]-->**Research project design: the principle elements**

There are two fundamental elements to any research project: the topic and the perspective. The topic could also be called the field of research: it is the data or the subject being investigated. This cannot just be a mass of raw, inert data, but will inevitably be associated with its own set of scholarly problems, questions and issues of debate that make the topic a pertinent one for further research. The explicit prospect of getting closer to answers to such questions is essential for any meaningful research plan. It is these scholarly questions that bridge the topic and the perspective. The perspective is informed primarily by the particular angle that the research project (or individual researcher) takes towards these questions: the methods that are to be employed to produce greater information and advance understanding of the subject. It is very common for new researchers, especially those looking to embark on PhD research, to have in mind only that they would like to do something on [some favouritetopic] x. For their research proposals to be taken seriously, as something substantial, it is essential that they be more fully developed in the terms indicated here. But it is not appropriate for the anticipated results and planned methodology to be overelaborate and over theorized: a manifestly practical framework leading from beginning to end is what is wanted.

<!--[if !supportLists]-->**3.** <!--[endif]-->**A research project schedule: five key stages**

<!--[if !supportLists]-->**3.1.** <!--[endif]-->**Project planning**

This involves not only defining the topic and perspective of the research project but also making an explicit assessment of the material and intellectual resources

available for the pursuit of the project. For instance, what is the size of the body of data to be researched, and are there any problems of accessibility? What, likewise, is the scope and availability of the relevant secondary literature? Is enough material available to allow the project to make a genuine and sufficient addition to what has already been done? Can you realistically assign the time and financial resources that you have available for the project to achieve objectives?

<!--[if !supportLists]-->**3.2.** <!--[endif]-->**Preliminary work: garnering material**

Detailed and substantial work on establishing a bibliography; making notes on the material and work on it; forming, articulating and evaluating ones own ideas; the production of initial written work in draft.

<!--[if !supportLists]-->**3.3.** <!--[endif]-->**Assessment of potential**

A revision of the objectives of the research project in the light of (b) and further review (which is likely to involve extension in some directions and a narrowing of focus in others) of the relevant resources.The production of a final plan for the research project

<!--[if !supportLists]-->**3.4.** <!--[endif]-->**Analysis and report**

The heart of the individual research work, examining and analysing the material; its writing up

<!--[if !supportLists]-->**3.5.** <!--[endif]-->**Production**

Bringing everything together to produce the final report, such as a doctoral thesis: Few research students appreciate how substantial and lengthy a job this is even when all the work appears to have been done.

It is not suggested that any individual research project is likely to be able to follow as neat and simple a schedule as this. Once again, this is a useful framework within which to work, and the sequence of elements as presented here is intended rather to give an idea of the interdependency and appropriate priorities between them, not to impose a rigid timetable. It is vitally important not to defer the

writing of draft studies or chapters any longer than necessary. Elements (b), (c) and (d) in particular can be expected to overlap considerably, and to have to be repeated time and time again. In this way especially, the formulation and re-assessment of a research project design can be thought of as a continuous process, and is all the better for that. That, however, will be done most effectively if it starts from a clearly defined basis. There is no excuse or justification for neglecting proper planning and the definition of objectives from the very beginning.

<!--[if !supportLists]-->**4.** <!--[endif]-->**Making a research application**

The forms on which research applications are made vary and change endlessly, but the essential questions asked usually ask you to state the anticipated topic of research, the methods, the procedure and/or schedule of work, and the anticipated results. All too often these give the impression that the whole research project through to the finished product (thesis; report) is somehow supposed to exist already in some disembodied, immanent form rather than being created by the research work. Resist the temptation to play along with that illusion, but be practical both in giving answers where questions have been asked and in making it clear that those answers reflect a realistic grasp of what a research project involves.

Any attempt to lay out how one can design and conduct a research project is always going to be highly idealistic. As anyone with experience will tell you, researchers are always flying by the seat of their pants, as it were. It is hoped, however, that some of the grief can be taken out of the enterprise by following the guidelines given here.

<!--[if !vml]--> <!--[endif]-->

In Section 3 of this course you will cover these topics:
' Procedures And Tools For Gathering Data
' Analyzing Research Data And Presenting Findings.
' Preparing A Research Report

Topic : Procedures And Tools For Gathering Data

Topic Objective:

At the end of this topic student would be able to:

- Specify the data needed to answer the research questions and/or address the hypotheses;
- Identify the sources from which the data can be obtained;
- Identify the method of selecting a sample (if necessary);
- Select appropriate procedures for collecting data;
- Identify the most appropriate tools to be used for data collection; and
- Specify the form in which the collected data will appear.

Definition/Overview:

Data Gathering: Gathering data is a frequent part of solving problems and satisfying curiosity.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Data Gathering**

Data Gathering is a crucial stage of dissertation and in many respects can be the most difficult. Important aspects to consider include:

- **Research Design:** Good sources of data are usually scarce, and it is difficult to go back to them if you get it wrong first time. Developing a carefully thought out research design is therefore an important first step. It is crucial that you have a clear idea of what your research question is, in order to know what data you need to gather to answer it!
- **Pilot Research:** For most people this is likely to be their first real attempt at such research, trying things out on a pilot basis helps to identify mistakes in a fairly low risk environment. Validity of what you are testing, asking or measuring is important. You should always get advice, or try things out before doing it for real. So for example, if you are using a questionnaire, how do you know that respondents will interpret your questions in the same way that you meant them? If you are intending to carry out in-depth interviews, how will you deal with an interviewee that answers in monosyllables? You should not only practice the data gathering, but also briefly how you will analyse the data when you receive it. Very often students gather the data, then realise that the response is in a format that doesn't allow them to produce the analysis they intended, or aren't sure what to do with it at all.

- **Sampling:** In the majority of cases there are too many possible people, partners, departments, or business units (whatever the unit of analysis is), to carry out a census, in other words, to gather data from them all. Therefore, if you are going to research a smaller, more manageable number, it is important that you specify:

    o whether you intend to generaliseyour findings to the wider population

    o how you have chosen your sample

    o how you intend to handle issues such as, representativeness, bias and replicability

- **Access:** Gaining access to data, especially primary data, can be difficult, time consuming and ultimately not very successful. Many organizations suffer from 'questionnaire fatigue', with large numbers of students, and increasingly pupils from secondary and even primary schools requesting data from large well known organizations. Be aware of this from an early stage. If, for example, you are thinking of carrying out data gathering in the multiple grocer sector, or the car industry, first pause and think how many requests for data, organizations like Tesco or Rover receive. Many have a policy of not responding to such requests; some pass them through their Public Relations Department, where standard, fairly superficial information is handed out. Some thought should be given at an early stage to the sector, size and type of organization which you wish to find out about. Also bear in mind that just because something is urgent for you, doesn't mean it will be imporatnt for your respondents. Managers will often have a three week lead time between you contacting them and them being able to see you. Plan meetings, questionnaires etc. well in advance.

    2. **Data Gathering Methods**

    It is important to consider the variety of methods of gathering data, in order to answer your research question, and choose the one which will best suit your research. The main methods of gathering data are:

- Questionnaires
- Interviews
- Observation

- Focus Groups

- Archive or Documentary Material

<!--[if !supportLists]-->**3.** <!--[endif]-->**Response Rate**

In a similar way to the section on 'access', it is often helpful to anticipate the reactions or feelings of the recipient of your questionnaire, or request for interview. Often they are busy people with many demands on their time, it is therefore important:

- to briefly explain who you are, and what you are trying to achieve

- to be clear about what exactly you wish them to do

- to estimate how long their commitment will take

- to emphasise that confidentiality will be respected if that is their wish

Topic : Analyzing Research Data And Presenting Findings

Topic Objective:

At the end of this topic student would be able to:

- Describe the purpose of data analysis in research;

- Describe the general approach to analyzing qualitative data;

- Describe the general approach to analyzing quantitative data;

- Identify the relationships between populations/parameters and samples/statistics;

- Compare and contrast descriptive and inferential statistics; and

- Describe the conceptual meaning of significance in statistical analysis.

Definition/Overview:

Analyzing and Interpreting Information: Analyzing quantitative and qualitative data is often the topic of advanced research and evaluation methods courses. However, there are certain basics which can help to make sense of reams of data.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Data Analysis**

When analyzing data (whether from questionnaires, interviews, focus groups, or whatever), always start from review of your research goals, i.e., the reason you undertook the research in the first place. This will help you organize your data and focus your analysis. For example, if you wanted to improve a program by identifying its strengths and weaknesses, you can organize data into program strengths, weaknesses and suggestions to improve the program. If you wanted to fully understand how your program works, you could organize data in the chronological order in which customers or clients go through your program. If you are conducting a performance improvement study, you can categorize data according to each measure associated with each overall performance result, e.g., employee learning, productivity and results.

<!--[if !supportLists]-->**2.** <!--[endif]-->**Basic analysis of "quantitative" information**

(for information other than commentary, e.g., ratings, rankings, yes's, no's, etc.):

- Make copies of your data and store the master copy away. Use the copy for making edits, cutting and pasting, etc.
- Tabulate the information, i.e., add up the number of ratings, rankings, yes's, no's for each question.
- For ratings and rankings, consider computing a mean, or average, for each question. For example, "For question #1, the average ranking was 2.4". This is more meaningful than indicating, e.g., how many respondents ranked 1, 2, or 3.
- Consider conveying the range of answers, e.g., 20 people ranked "1", 30 ranked "2", and 20 people ranked "3".

<!--[if !supportLists]-->**3.** <!--[endif]-->**Basic analysis of "qualitative" information**

(respondents' verbal answers in interviews, focus groups, or written commentary on questionnaires):

- Read through all the data.
- Organize comments into similar categories, e.g., concerns, suggestions, strengths, weaknesses, similar experiences, program inputs, recommendations, outputs, outcome indicators, etc.
- Label the categories or themes, e.g., concerns, suggestions, etc.

- Attempt to identify patterns, or associations and causal relationships in the themes, e.g., all people who attended programs in the evening had similar concerns, most people came from the same geographic area, most people were in the same salary range, what processes or events respondents experience during the program, etc.
- Keep all commentary for several years after completion in case needed for future reference.

<!--[if !supportLists]-->**4.** <!--[endif]-->**Interpreting information**

Attempt to put the information in perspective, e.g., compare results to what you expected, promised results; management or program staff; any common standards for your products or services; original goals (especially if you're conducting a program evaluation); indications or measures of accomplishing outcomes or results (especially if you're conducting an outcomes or performance evaluation); description of the program's experiences, strengths, weaknesses, etc. (especially if you're conducting a process evaluation). Consider recommendations to help employees improve the program, product or service; conclusions about program operations or meeting goals, etc. Record conclusions and recommendations in a report, and associate interpretations to justify your conclusions or recommendations.

<!--[if !supportLists]-->**5.** <!--[endif]-->**Reporting Results**

The level and scope of content depends on to whom the report is intended, e.g., to funders / bankers, employees, clients, customers, the public, etc. Be sure employees have a chance to carefully review and discuss the report. Translate recommendations to action plans, including who is going to do what about the research results and by when. Funders/ bankers will likely require a report that includes an executive summary (this is a summary of conclusions and recommendations, not a listing of what sections of information are in the report that's a table of contents); description of the organization and the program, product, service, etc., under evaluation; explanation of the research goals, methods, and analysis procedures; listing of conclusions and recommendations; and any relevant attachments, e.g., inclusion of research questionnaires, interview guides, etc. The fundermay want the report to be delivered as a presentation, accompanied by an overview of the report. Or, the funder may want to review the report alone. Be sure to record the research plans and activities in a research plan which can be referenced when a similar research effort is needed in the future.

Example/Case Study:

Contents of a Research Report: An Example

Ensure your research plan is documented so that you can regularly and efficiently carry out your research activities. In your plan, record enough information so that someone outside of the organization can understand what you're researching and how. For example, consider the following format:

- Title Page (name of the organization that is being, or has a product/service/program that is being,researched; date)
- Table of Contents
- Executive Summary (one-page, concise overview of findings and recommendations)
- Purpose of the Report (what type of research was conducted, what decisions are being aided by the findings of the research, who is making the decision, etc.)
- Background About Organization and Product/Service/Program that is being researched

    <!--[if !supportLists]-->o <!--[endif]-->Organization Description/History

    <!--[if !supportLists]-->o <!--[endif]-->Product/Service/Program Description (that is being researched)

- Problem Statement (in the case of nonprofits, description of the community need that is being met by the product/service/program)
- Overall Goal(s) of Product/Service/Program
- Outcomes (or client/customer impacts) and Performance Measures (that can be measured as indicators toward the outcomes)
- Activities/Technologies of the Product/Service/Program (general description of how the product/service/program is developed and delivered)

- Staffing (description of the number of personnel and roles in the organization that are relevant to developing and delivering the product/service/program)
- Overall Evaluation Goals (eg, what questions are being answered by the research)
- Methodology

  o Types of data/information that were collected

  o How data/information werecollected (what instruments were used, etc.)

  o How data/information were analyzed

  o Limitations of the evaluation (eg, cautions about findings/conclusions and how to use the findings/conclusions, etc.)

- Interpretations and Conclusions (from analysis of the data/information)
- Recommendations (regarding the decisions that must be made about the product/service/program)
- Appendices: content of the appendices depends on the goals of the research report, eg.:

  o Instruments used to collect data/information

  o Data, eg, in tabular format, etc.

  o Testimonials, comments made by users of the product/service/program

  o Case studies of users of the product/service/program

  o Any related literature

Topic : Preparing A Research Report

Topic Objective:

At the end of this topic student would be able to:

- Understand and apply standard conventions of style regarding person, voice, tense, and consistency;
- Identify the six sections included in a typical research report; and
- List the items which comprise front and back material of a report.

Definition/Overview:

Guidelines ForPreparing A Research Report: Research experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty advisor. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation. Ideally, undergraduate research should focus on a well-defined project that stands a reasonable chance of completion in the time available. A literature survey alone is not a satisfactory research project. Neither is repetition of established procedures.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Research Report**

Research experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty advisor. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation. Ideally, undergraduate research should focus on a well-defined project that stands a reasonable chance of completion in the time available. A literature survey alone is not a satisfactory research project. Neither is repetition of established procedures.

Research is genuine exploration of the unknown that leads to new knowledge which often warrants publication. But whether or not the results of a research project are publishable, the project should be communicated in the form of a research report written by the student. It is important to realize that science depends on precise transmission of facts and ideas. Preparation of a comprehensive written research report is an essential part of a valid research experience, and the student should be aware of this requirement at the outset of the project. Interim reports may also be required, usually at the termination of

the quarter or semester. Sufficient time should be allowed for satisfactory completion of reports, taking into account that initial drafts should be critiqued by the faculty advisor and corrected by the student at each stage. Guidelines on how to prepare a professional-style research report are not routinely available. For this reason, the following information on report writing and format is provided to be helpful to undergraduate researchers and to faculty advisors.

<!--[if !supportLists]-->**2.** <!--[endif]-->**Organization of the Research Report**

Most scientific research reports, irrespective of the field, parallel the method of scientific reasoning. That is: the problem is defined, a hypothesis is created, experiments are devised to test the hypothesis, experiments are conducted, and conclusions are drawn. This framework is consistent with the following organization of a research report:

- Title
- Abstract
- Introduction
- Experimental Details or Theoretical Analysis
- Results
- Discussion
- Conclusions and Summary
- References

<!--[if !supportLists]-->**3.** <!--[endif]-->**Title and Title Page**

The title should reflect the content and emphasis of the project described in the report. It should be as short as possible and include essential key words. The author's name (e.g., Mary B. Chung) should follow the title on a separate line, followed by the author's affiliation (e.g., Department of Chemistry and Biochemistry, University of South Carolina,Columbia, SC29208), the date, and possibly the origin of the report. All of the above could appear on a single cover page. Acknowledgments and a table of contents can be added as preface pages if desired.

<!--[if !supportLists]-->**4.** <!--[endif]-->**Abstract**

The abstract should, in the briefest terms possible, describe the topic, the scope, the principal findings, and the conclusions. It should be written last to reflect accurately the content of the report. The lengths of abstracts vary, but seldom exceed 200-300 words. A primary objective of an abstract is to communicate to the reader the essence of the paper. The reader will then be the judge of whether to read the full report or not. Were the report to appear in the primary literature, the abstract would serve as a key source of indexing terms and key words to be used in information retrieval. Author abstracts are often published verbatim in Chemical Abstracts.

<!--[if !supportLists]-->**5.** <!--[endif]-->**Experimental Details or Theoretical Analysis**

This section should describe what was actually done. It is a succinct exposition of the laboratory notebook, describing procedures, techniques, instrumentation, special precautions, and so on. It should be sufficiently detailed that other experienced researchers would be able to repeat the work and obtain comparable results. In theoretical reports, this section would include sufficient theoretical or mathematical analysis to enable derivations and numerical results to be checked. Computer programs from the public domain should be cited. New computer programs should be described in outline form. If the experimental section is lengthy and detailed, as in synthetic work, it can be placed at the end of the report or as an appendix so that it does not interrupt the conceptual flow of the report. Its placement will depend on the nature of the project and the discretion of the writer.

<!--[if !supportLists]-->**6.** <!--[endif]-->**Results**

In this section, relevant data, observations, and findings are summarized. Tabulation of data, equations, charts, and figures can be used effectively to present results clearly and concisely.

<!--[if !supportLists]-->**7.** <!--[endif]-->**Discussion**

The crux of the report is the analysis and interpretation of the results. What do the results mean? How do they relate to the objectives of the project? To what extent have they resolved the problem? Because the "Results" and "Discussion" sections are interrelated, they can often be combined as one section.

<!--[if !supportLists]-->**8.** <!--[endif]-->**Conclusions and Summary**

A separate section outlining the main conclusions of the project is appropriate if conclusions have not already been stated in the 'Discussion' section. Directions for future work are also suitably expressed here. A lengthy report, or one in which the findings are complex, usually benefits from a paragraph summarizing the main features of the reportthe objectives, the findings, and the conclusions. The last paragraph of text in manuscripts prepared for publication is customarily dedicated to acknowledgments. However, there is no rule about this, and research reports or senior theses frequently place acknowledgments following the title page.

In Section 4 of this course you will cover these topics:
- Qualitative Research Methods
- Survey Research
- Nonexperimental Quantitative Research

Topic : Qualitative Research Methods

Topic Objective:

At the end of this topic student would be able to:

- State the main purpose of ethnographic research;
- Identify distinctive characteristics of ethnographic research;
- Explain the role played by research questions and hypotheses in ethnographic research;
- List the main data sources for and main procedures used in ethnographic research;
- Describe how data are analyzed in ethnographic research; and
- Describe how findings are reported in ethnographic studies.

Definition/Overview:

Qualitative research: Qualitative research is a field of inquiry that crosscuts disciplines and subject matters. Qualitative researchers aim to gather an in-depth understanding of human behavior and the reasons that govern such behavior. The discipline investigates the why and how of decision making, not just what, where, when. Hence, smaller but focused samples are more often needed rather than large random samples.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**History**

Qualitative research was one of the first forms of social studies (conducted e.g. by Bronisław Malinowski or Elton Mayo), but in the 1950s and 1960s - as quantitative science reached its peak of popularity - it was diminished in importance and began to regain recognition only in the 1970s. The phrase 'qualitative research' was until then restricted as a discipline of anthropology or sociology, and terms like ethnography, fieldwork, participant observation and Chicago school (sociology) were used instead. During the 1970s and 1980s qualitative research began to be used in other disciplines, and became a significant type of research in the fields of education studies, social work studies, women's studies, disability studies, information studies, management studies, nursing service studies, human service studies, psychology, communication studies, and other. Some qualitative research occurred in the consumer products industry during this period: researchers most interested in investigating consumer new product and product positioning opportunities worked with a handful of the earliest consumer research pioneers including Gene Reilly of The Gene Reilly Group in Darien, CT, Jerry Schoenfeld of Gerald Schoenfeld& Partners in Tarrytown, NY and Martin Calle of Calle & Company, Greenwich, CT. In the late 1980s and 1990s after a spate of criticisms from the quantitative side, paralleling a slowdown in traditional media spending for the decade, new methods of qualitative research evolved, to address the perceived problems with reliability and imprecise modes of data analysis. In the last thirty years the acceptance of qualitative research by journal publishers and editors has been growing. Prior to that time many mainstream journals were prone to publish research articles based upon the natural sciences and which featured quantitative analysis.

<!--[if !supportLists]-->**2.** <!--[endif]-->**Distinctions from quantitative research**

The term qualitative research is most often used in the social sciences in contrast to quantitative research. It differs from quantitative research in many ways. First, sampling is typically not random but is purposive. That is, cases are chosen based on the way that they typify or do not typify certain characteristics or participate in a certain class. Secondly, the role of the researcher is the key role. Researchers must reflect on their role in the research process and make this clear in the analysis. Thirdly, data analysis differs

considerably. Researchers must carefully code data and discern themes in a consistent and reliable way.

One way of differentiating qualitative research from quantitative research is that largely qualitative research is exploratory (i.e., hypothesis-generating), while quantitative research is more focused and aims to test hypotheses. However it may be argued that each reflects a particular discourse; neither being definitively more conclusive or 'true' than the other. In addition, qualitative research speaks to content validity -- do measures measure what a researcher thinks they measure? Quantitative data are of the kind that may lead to measurement or other kinds of analysis involving applied mathematics, while qualitative data cannot always be put into a context that can be graphed or displayed as a mathematical term. However, qualitative data may be useful to explain puzzling quantitative results, or may be used to generate additional variables to include in an analysis. Qualitative research is also highly useful in policy and evaluation research, where understanding why and how certain outcomes were achieved is as important as establishing what those outcomes were. A specialized form of qualitative research is cognitive testing, used to develop survey items. Survey items are piloted on study participants to see what reactions they elicit. Another specialized method is focus groups, often used in market research but also in other contexts where a range of responses from a target group is useful (eg, a group of nurses might give their reactions to new work requirements).

<!--[if !supportLists]-->**3.** <!--[endif]-->**Data Collection**

Qualitative research categorizes data into patterns as the primary basis for organizing and reporting results. Qualitative researchers, typically rely on four methods for gathering information:

- participation in the setting,
- direct observation,
- in depth interviews, and
- analysis of documents and materials

The ways of participating and observing can vary widely from setting to setting. Participant observation is used by researchers who become members of a culture, group,

or setting, and adopt roles to conform to that setting. By doing this, researchers gain a closer insight into the culture's motivations and emotions. Observing without participating may inhibit the researchers' ability to understand the experiences of the culture. Participant observation is a strategy of reflexive learning, not a single method of observing. Some distinctive methods are the use of focus groups and key informant interviews.

Qualitative researchers may use different approaches in collecting data, such as the grounded theory practice, narratology, storytelling, classical ethnography, or shadowing. Qualitative methods are also loosely present in other methodological approaches, such as action research or actor-network theory. Forms of the data collected include text, pictures, etc.

<!--[if !supportLists]-->**4.** <!--[endif]-->**Data Analysis**

The most common analysis of qualitative data is observer impression. That is, expert or layman observers examine the data, form an impression, and report their impression in a structured, many times, quantitative form. These impressions can be the final conclusion of the analysis, or some quantitative characteristics of the data to be further analyzed using some quantitative methods. An example of quantitative characteristics is word frequencies in textual data. Contemporary qualitative studies are sometimes supported by computer programs, such as SPSS and NVivo. The benefits of these types of programs are mostly limited to storing and segregating data, rather than in processing or analyzing them.

<div align="center">**Topic : Survey Research**</div>

Topic Objective:

At the end of this topic student would be able to:

- State the value of conducting action research;
- Describe the main characteristics of action research;
- List the procedures used to conduct action research;
- State the value of conducting evaluation research;
- Describe the main characteristics of evaluation research; and

- List the procedures used to conduct evaluation research

Definition/Overview:

Survey research: Survey research is one of the most important areas of measurement in applied social research. The broad area of survey research encompasses any measurement procedures that involve asking questions of respondents. A "survey" can be anything forms a short paper-and-pencil feedback form to an intensive one-on-one in-depth interview.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Types of Surveys**

Surveys come in a wide range of forms and can be distributed using a variety of media. Following are the types of surveys

- Written Surveys
- Oral Surveys
- Electronic Surveys
- An Example Survey

<!--[if !supportLists]-->**2.** <!--[endif]-->**Oral Surveys**

Oral surveys are considered more personal forms of survey than the written or electronic methods. Oral surveys are generally used to get thorough opinions and impressions from the respondents. Oral surveys can be administered in several different ways. For instance, in a group interview, as opposed to a group administered written survey, each respondent is not given an instrument (an individual questionnaire). Instead, the respondents work in groups to answer the questions together while one person takes notes for the whole group. Another more familiar form of oral survey is the phone survey. Phone surveys can be used to get short one word answers (yes/no), as well as longer answers.

<!--[if !supportLists]-->**3.** <!--[endif]-->**Electronic Surveys**

With the growth of the Internet (and in particular the World Wide Web) and the expanded use of electronic mail for business communication, the electronic survey is becoming a more widely used survey method. Electronic surveys can take many forms. They can be

distributed as electronic mail messages sent to potential respondents. They can be posted as World Wide Web forms on the Internet. And they can be distributed via publicly available computers in high-traffic areas such as libraries and shopping malls. In many cases, electronic surveys are placed on laptops and respondents fill out a survey on a laptop computer rather than on paper.

<div align="center">

Topic : Nonexperimental Quantitative Research

</div>

Topic Objective:

At the end of this topic student would be able to:

- Describe the general research approach used in descriptive and historical research;
- Compare and contrast descriptive and historical research; and
- Describe similarities and differences between case study research and general descriptive/historical research.

Definition/Overview:

Quantitative research: Quantitative research is commonly used to investigate research questions. There is a potentially infinite array of possible quantitative research designs, and in the human sciences particularly, it can be difficult to do pure, experimental research. Thus a great many adaptations of experimental designs, called quasi-experimental and non-experimental designs have been developed. It is important to consider a range of possible quantitative research designs and their strengths and weaknesses, before adopting any particular design.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Quantitative research**

Quantitative research is generally made using scientific methods, which include:

- The generation of models, theories and hypotheses
- The development of instruments and methods for measurement
- Experimental control and manipulation of variables
- Collection of empirical data

- Modeling and analysis of data
- Evaluation of results

Quantitative research is often an iterative process whereby evidence is evaluated, theories and hypothieses are refined, technical advances are made, and so on. Virtually all research in physics is quantitative whereas research in other scientific disciplines, such as taxonomy and anatomy, may involve a combination of quantitative and other analytic approaches and methods.

In the social sciences particularly, quantitative research is often contrasted with qualitative research which is the examination, analysis and interpretation of observations for the purpose of discovering underlying meanings and patterns of relationships, including classifications of types of phenomena and entities, in a manner that does not involve mathematical models. Approaches to quantitative psychology were first modelled on quantitative approaches in the physical sciences by Gustav Fechner in his work on psychophysics, which built on the work of Ernst Heinrich Weber. Although a distinction is commonly drawn between qualitative and quantitative aspects of scientific investigation, it has been argued that the two go hand in hand. For example, based on analysis of the history of science, Kuhn (1961, p. 162) concludes that large amounts of qualitative work have usually been prerequisite to fruitful quantification in the physical sciences. Qualitative research is often used to gain a general sense of phenomena and to form theories that can be tested using further quantitative research. For instance, in the social sciences qualitative research methods are often used to gain better understanding of such things as intentionality (from the speech response of the researchee) and meaning (why did this person/group say something and what did it mean to them?). Although quantitative investigation of the world has existed since people first began to record events or objects that had been counted, the modern idea of quantitative processes have their roots in Auguste Comte's positivist framework.

<!--[if !supportLists]-->**2.** <!--[endif]-->**Statistics in quantitative research**

Statistics is the most widely used branch of mathematics in quantitative research outside of the physical sciences, and also finds applications within the physical sciences, such as in statistical mechanics. Statistical methods are used extensively within fields such as economics, social sciences and biology. Quantitative research using statistical methods

typically begins with the collection of data based on a theory or hypothesis, followed by the application of descriptive or inferential statistical methods. Typically, a very large volume of data is collected, which requires validating, verifying and recoding before analysis. Software packages such as PSPP and R are typically used for this purpose. Causal relationships are studied by manipulating factors thought to influence the phenomena of interest while controlling other variables relevant to the experimental outcomes. In the field of health, for example, researchers might measure and study the relationship between dietary intake and measurable physiological effects such as weight loss, controlling for other key variables such as exercise. Quantitatively based opinion surveys are widely used in the media, with statistics such as the proportion of respondents in favor of a position commonly reported. In opinion surveys, respondents are asked a set of structured questions and their responses are tabulated. In the field of climate science, researchers compile and compare statistics such as temperature or atmospheric concentrations of carbon dioxide.

Empirical relationships and associations are also frequently studied by using some form of General linear model, non-linear model, or by using factor analysis. A fundamental principle in quantitative research is that correlation does not imply causation. This principle follows from the fact that it is always possible a spurious relationship exists for variables between which covariance is found in some degree. Associations may be examined between any combination of continuous and categorical variables using methods of statistics.

In Section 5 of this course you will cover these topics:
' Experimental, Quasi-Experimental, And Single-Subject Research
' Mixed-Methods Research Designs
' Action And Evaluation Research

<div align="center">**Topic : Experimental, Quasi-Experimental, And Single-Subject Research**</div>

Topic Objective:

At the end of this topic student would be able to:

- State the features of experimental research that set it apart from other types of research;
- Describe the difference between experimental and quasi-experimental research;

- Name and describe typical research designs used in experimental research;
- Name and describe typical research designs used in quasi-experimental research;
- Identify and describe the main threats to internal and external validity in experimental and quasi-experimental research studies;
- Compare and contrast experimental and causal-comparative research;
- Identify the principal sources of data in experimental, quasi-experimental, and causal-comparative research; and
- Identify the most commonly used data analysis techniques used in experimental, quasi-experimental, and causal-comparative research.

Definition/Overview:

Quasi-Experimental Design: A quasi-experimental design is one that looks a bit like an experimental design but lacks the key ingredient -- random assignment. My mentor, Don Campbell, often referred to them as "queasy" experiments because they give the experimental purists a queasy feeling. With respect to internal validity, they often appear to be inferior to randomized experiments. But there is something compelling about these designs; taken as a group, they are easily more frequently implemented than their randomized cousins.

Key Points:

<!--[if !supportLists]-->1. <!--[endif]-->**Design**

The first part of creating a quasi-experimental design is to identify the variables. The quasi-independent variable will be the x-variable. This is the variable that is manipulated in order to affect the outcome. X is generally a grouping variable with different levels. Grouping means two or more groups such as a treatment group and a placebo group. The predicted outcome is the dependent variable which is the y-variable. In a time series analysis, the dependent variable is observed over time for any changes that may take place. Once the variables have been identified and defined, a procedure should then be implemented and group differences should be examined.

<!--[if !supportLists]-->2. <!--[endif]-->**Advantages**

Since quasi-experimental designs are used when randomization is impossible and/or impractical, they are typically easier to set up than true experimental designs; it takes

much less effort to study and compare subjects or groups of subjects that are already naturally organized than to have to conduct random assignment of subjects. Additionally, utilizing quasi-experimental designs minimizes threats to external validity. Since quasi-experiments are natural experiments, findings in one may be applied to other subjects and settings, allowing for some generalizations to be made about population. Also, this experimentation method is efficient in longitudinal research that involves longer time periods which can be followed up in different environments.

<!--[if !supportLists]-->**3.** <!--[endif]-->**Disadvantages**

The control allowed through the manipulation of the x-variable can lead to unnatural circumstances. Also, the lack of random assignment in the quasi-experimental design method may allow studies to be more feasible, but this also poses many challenges for the investigator. This deficient in randomization makes it harder to rule out confounds and introduces new threats to internal validity. Because randomization is absent, some knowledge about the data can be approximated, but cause-effect conclusions are difficult to determine. Moreover, even if these threats to internal validity are assessed, causation still cannot be fully established because the experimenter does not have total control over variables.

Topic : Mixed-Methods Research Designs

Topic Objective:

At the end of this topic student would be able to:

- Define the
- Describe the
- Discuss the

Definition/Overview:

Mixed Research Design: A mixed research design is a general type of research that includes quantitative and qualitative research data, techniques and methods. All these paradigm characteristics are mixed in one case study.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Mixed Research Design**

A mixed research design involves research that uses mixed data (numbers and text) and additional means (statistics and text analysis). A mixed method uses both deductive and inductive scientific method, has multiple forms of data collecting and produces eclectic and pragmatic reports. Two main types of a mixed method are: mixed method and mixed model research. A mixed research method is a research in which you use quantitative data for one stage of a research study and qualitative data for a second stage of a research. A mixed model design is a research in which you use both quantitative and qualitative data in one or two stages of the research process. The mixing of quantitative and qualitative approaches happens in every stage of a research.

In a research it is important to use a mixed research method for the conducting of a detailed research. The advantages of a mixed research are:

- The strength of the research;
- Use of multiple methods in a research helps to research a process or a problem from all sides;
- Usage of different approaches helps to focus on a single process and confirms the data accuracy. A mixed research complements a result from one type of research with another one. This research does not miss any available data.

A quantitative component of a mixed research assumes the usage of deductive scientific method while qualitative component assumes inductive scientific method. Moreover, a quantitative approach collects quantitative data based on exact measurement applying structured as well as validated information collection. For instance, rating scales closed-ended items and responses. This approach produces statistical report with correlations. A qualitative component uses qualitative information. For instance, interview, field notes, open-ended questions etc. This approach considers a researcher to be the major means of information collection. At the end of a research this approach supposes a narrative report with context description, quotations taken from research material. It is important to stress that there are many ways of research performing. Quantitative and qualitative methods have their advantages and disadvantages in a research. However, you may summarize the advantages of both methods and have accurate information on implementation, findings

and conclusions of your research project. Qualitative and quantitative research methods have different strengths, weaknesses and requirements that affect researchers project accuracy. The aim of a mixed method design is to summarize positive aspects of two approaches and produce a highly accurate data. When you use several methods in your research process, then you can use the strength of every type of information collection and minimize the weak points of every of both approaches. A mixed method approach of gathering and evaluation can increase the validity and accuracy of the information. The article briefly analyzes a mixed method research design including the major components: quantitative and qualitative approach for the design of a research. The article proves the effectiveness of a mixed method design.

Topic : Action And Evaluation Research

Topic Objective:

At the end of this topic student would be able to:

- Define the term action research
- Describe the role of action research in a project
- Discuss the importance of action research

Definition/Overview:

Action research: Action research is both an approach to research and a move towards change or continuous improvement in organizations. It can also be used as an evaluation method. In the Stronger Families Fund, the focus is on using action research for project evaluation, to help projects with continuous improvement. At the same time, it is also about gathering and sharing the information about what works and doesn't work for early intervention and prevention projects so others can learn from it.

There are many different ways of doing action research evaluations. This article outlines how action research evaluations will be used by projects in the Stronger Families Fund. It is intended to serve as an introduction for Stronger Families Fund (SFF) projects, but also to be of interest to others working in the field of early intervention and prevention.

Key Points:

<!--[if !supportLists]-->**1.** <!--[endif]-->**Evaluating projects**

Evaluating projects is a useful way to find out whether they are working or not. It is an important component of most community programs and projects. It may be a new activity for some groups starting out on their first project, or it may be a familiar concept for those who have more experience. Wherever project teams are coming from, it is important to note that the components of an action research evaluation might not necessarily be completely new for a program or project team. In many cases what happens in an action research evaluation builds on what already happens in projects and uses people's existing skills, for example local knowledge, noticing, describing, listening, planning, involving participants or clients in activities or services, responding to local needs and circumstances, explaining, making decisions, networking with community services and other organizations, documenting, reporting and improving as you go along. In these cases, doing an action research evaluation gives a focus to the things people would be doing anyway. It also gives permission for the project team to take time out from their work to reflect and write down their observations. This can help busy project teams to get back in touch with the bigger picture of what they are trying to do and why. It can help keep projects alive and vibrant, especially when teams come together to share what is important to them, their observations, insights, values and passions.

<!--[if !supportLists]-->**2.** <!--[endif]-->**Key features of an action research evaluation**

Action research can best be explained by looking at the two words in its title: it is about action or change, and it is about research, a word that means 'to find out'. Put simply, it is about research that informs action or change in a project or program. The two go together. When used as an evaluation method, it encourages people to look at and think about how projects are going as they going along, instead of just evaluating them at the end.

<!--[if !supportLists]-->**3.** <!--[endif]-->**Purpose of an action research evaluation**

Action research evaluations are most often used because of their focus on action or change, or continuous improvement. Building action research into a project is useful because it can help the project, the organisation and in some cases, whole communities to be more responsive to feedback and insights gained, and to change as they go along. Doing action research gives project teams the opportunity to look at the meaning and

context of their work, document their strategies, then to test and refine them over time. It allows and requires project teams to build records of their development and to justify their practices. Projects have much more scope to be flexible over the funding period, because of the scope to implement changes quickly based on a reasonable research base. Additionally, when the research findings are reported outside the project, they can help build knowledge about what works and what doesn't work in particular places or contexts, which is useful for other projects to learn from. Research reports can also inform Government policy and other research.

<!--[if !supportLists]-->**4.** <!--[endif]-->**Who is involved in an action research evaluation?**

An action research evaluation usually involves everybody who has a stake (it is participatory and collaborative). Previous studies have found that when a participatory action research evaluation is part of a project, it can help projects to be more sensitive to the variety of needs of diverse communities. The ongoing evaluation can inform activities and programs so they are more likely to work better in particular locations and with particular groups of people. It is an approach that helps build partnerships between stakeholders, and bring in others, such as local businesses that can make a contribution. Involving everybody who has a stake, in a spirit of partnership, can help people have a sense of ownership of a project. Participation helps to create change because, 'among other reasons, change is usually easier to achieve when those affected by the change are involved'. In addition, people affected by projects often have the best insights into their situation. Anne Garrow(2001) suggests project teams need to affirm and acknowledge participants as experts in their own lives, support community control and participation, and stand alongside participants rather than taking a one-up position.

Involving everybody asking them for their ideas and suggestions about what is happening, what should happen and what it means not only generates more valid and reliable information, but it can create connections between people and groups, and can empower participants and communities and even workers to act to change their situations. Projects that use this approach have been shown to work better and have greater long-term effects, sometimes carrying on in some way after the official project finishes. In other words, doing an action research evaluation, and projects acting on results as they go along, helps promote project sustainability. Consequently, it is seen that SFF project teams will greatly benefit if they can find ways to involve and value the contributions of

participants and their families, workers, local agency managements, community members, local services, government and non-governmental organisations.

<!--[if !supportLists]-->**5.** <!--[endif]-->**How to involve people in an SFF project: Setting up a reference group**

If the project does not already have one, setting up a reference group or groups is a great opportunity to involve participants and/or clients in both the project and the evaluation to see how the project is going. A reference group may have a different role in different communities. At least half, or in some cases, all of those in the group should be those who the project is trying to serve - the people 'who-it's-all-for' (Wadsworth 1997a) to make sure they have their say into both the content and the process of the evaluation. Other participants can be people from local health and welfare agencies, community groups, community leaders and community members. It can start small and grow as the project progresses. This group may need to be flexible and informal and fit in with local ways of doing things. It may need to take account of people's busy lives, and in some cases, project teams may need to offer transport assistance or pay people, especially unwaged people, for their time. Gaining trust and credibility, especially with some participants and clients, or other agencies the project team may have competed against for funding, may take time.

In some communities and projects, groups may include opposing stakeholders, and there are opportunities for constructive conflict to lead to positive solutions. In others, there may need to be more than one group to take account of conflicting views or to look at different activities. Being able to discuss inevitable differences and conflicts can make the evaluation results richer and better-rounded. In fact, if everyone in the group agrees on everything, it is a good idea to seek out opposing views to ensure your evaluation embraces diversity. People invited by project teams to join reference groups might ask: 'What's in it for me?' Phil Crane and Leanne Richardson (2000) offer some possible answers based on another government project that uses participatory action research as an evaluation method, the Reconnect early intervention program on youth homelessness. They suggest project teams can offer participants and clients the opportunity to contribute to project development, a say in what the issues are and an opportunity to talk about their own experiences. They can offer members of the local service network a chance to have input into the exploration of local solutions to local problems. Being involved can

establish and enhance relationships and allow for more opportunity for collaborative strategies within the community. Community involvement allows communities a way to develop responses to issues and allows members to understand more about the problems some people face. It ensures the approach suits local circumstances and ensures community 'ownership' and involvement in developing strategies.

Apart from members of the reference group, there are other people who may be sources of help in the evaluation process. These might include individual people who have a story to tell, and co-researchers or peer researchers - people project teams employ to find out the views of specific communities they want to involve and work with, for example, local indigenous people or people from culturally and linguistically diverse backgrounds.

<!--[if !supportLists]-->**6.** <!--[endif]-->**What is the action research cycle?**

An action research evaluation is often talked about as a dynamic process: cycles of planning, acting, observing and reflecting, then planning again for a new action. The accompanying figure gives a picture of how these cycles might happen.

The cycles start with small questions, and when the planning stage comes around again, project teams can take account of what has been learned in previous cycles. The aim is for understanding about the local situation to increase over time. These cycles work best if they are tied to natural project cycles, but as a guide, they might go around every six months or so. Sometimes the stages may overlap or happen in a slightly different order, but an indication of how a cycle might evolve in a project can be gained from the following overview.

<!--[if !supportLists]-->**6.1.** <!--[endif]-->**Plan**

<!--[if !supportLists]-->o <!--[endif]-->The project team and reference group members come together to talk about evaluating a project, and discuss why the evaluation is important.

<!--[if !supportLists]-->o <!--[endif]-->The group gathers baseline data (information about the situation the project wants to improve).

<!--[if !supportLists]-->o <!--[endif]-->The group defines an idea or assumption they want to test, or an issue or problem or question they want to find out more about that will help the project to improve, starting with small, specific questions and building up to bigger ones as confidence increases. A simple way to get started could be to ask 'what could we do better?'

<!--[if !supportLists]-->o <!--[endif]-->The group decides how they want to carry out the evaluation and the level of involvement of reference group members.

<!--[if !supportLists]-->**6.2.** <!--[endif]-->**Act**

The group starts the first planned activity or program of activities.

<!--[if !supportLists]-->**6.3.** <!--[endif]-->**Observe**

The group looks at, listens to and thinks about what is going on, asks questions of all those involved about how it is going, and gathers this information, focusing on the questions raised in the planning stages but also being open to other feedback.

<!--[if !supportLists]-->**6.4.** <!--[endif]-->**Reflect**

The group thinks about what the information means for what they are doing (or not doing), and whether what they are doing can be improved. This includes thinking about whether and how the results help in understanding issues and problems (a critical analysis of the situation). The information and knowledge gained is recorded. Then the cycle begins again, with more planning, this time having a fresh look at the project and taking account of what has been learned to see if any changes might be made. At this stage, the group also plans the next cycle of evaluation, either to deepen understanding of issues from the last cycle, or to research a new idea, assumption, issue, problem or question. This is followed by more action, observation and reflection, and so on. As the process becomes more familiar and comfortable, bigger questions can be asked and more people are likely to become involved. As the project progresses, as well as at the end of the project, the group can revisit the baseline data and assess how the situation has improved.

<!--[if !supportLists]-->**7.** <!--[endif]-->**Research methods: How can evidence be gathered?**

For groups that have done program evaluations before, an action research evaluation can be thought of predominantly as a process evaluation (that is, determining the extent to which a program is operating as intended and target populations are being served). However, an action research evaluation is also likely to incorporate an assessment of the impact of the programs on participants (an outcome evaluation). What is different about an action research evaluation, however, is that it happens in cycles, it involves participants, the methods are varied to suit the program and the results are used to improve the program as it goes along. Typically, an action research evaluation is also mainly qualitative, which means the focus is on gathering stories rather than statistics (which is not to say that statistics, or quantitative data, cannot be gathered).

Quality information (data) can be produced by using a range of different ways of gathering this information (research methods). This is known as a 'multiple methods' or 'triangulation' approach. Information gathered from a range of participants (for example children, their parents, grandparents and community members) and using a range of methods gives groups a better chance to develop a good picture of what is happening. Information gathered can range from individual stories to statistical data on any or all aspects of the project.

In broad terms, some of the ways of gathering this information could include:

- descriptions of programs and services: this can include documentation of the process of developing the project, records and reflections from project workers, other staff , volunteers and management about what project teams are doing, and why and how they are doing it, using for example meeting minutes and a journal or log book to keep track of insights, observations, anecdotes and questions, and reflections on the research process itself;
- photographic and video documentation;
- paintings, drawings, music and songs;
- counting the numbers of people who participated in activities/programs, and information about those people (for example who they are, where they come from, why they came, how many sessions they attended);
- participant information, referral sheets, work log books and other agency paperwork;

- participant feedback sheets or documentation of verbal feedback;

- group brainstorming, talking circles or discussion groups with participants and/or other stakeholders (for example, other services in the area, local community groups);

- suggestion boxes, comments books, email and/or websites where people can leave comments and ask questions;

- larger forums or conferences involving a range of stakeholders;

- in-depth individual, family or group interviews, using open-ended questions which allow diverse experiences and perspectives to emerge;

- statistics and surveys;

- naturalistic observation;

- case studies; and

- comparing participants' knowledge/skills/ views/behaviour before participation in a program and after participation to see if it made a difference (the traditional evaluation method of pre-test post-test analysis, but adapted to suit the project); a wide variety of methods could be used for this

> The ways of finding out information and gathering evidence can be diverse. Any and every method can be used depending on what needs to be found out and the people involved. For more information about research methods, see YolandWadsworth's (1997b) excellent introduction for community groups, Do It Yourself Social Research.

Example/Case Study:

An example of gathering evidence: Baseline data

A project group's first gathering of evidence in their evaluation work will be gathering baseline data. This activity is undertaken because is important to have a clear idea of why the project is significant. This may already have been written into the grant application or project workplan. In most cases, project teams and reference groups need to start with gathering more descriptions, problems, questions, statistics, previous research and community-identified priorities that help paint a picture of the situation that the project grant wants to improve. This information is called baseline data.

The information will be different in every community and is most useful if it focuses on things that might change as a result of the project. Local government statistics, available from

local councils, may be useful if the project falls into a local government area. They may not be so useful if the project crosses these areas, or takes place in a specific community where local issues are 'swallowed up' by statistics for a larger area. In these cases very specific local information is helpful, if it is available. As the project progresses, it may be possible to look back at this information and assess how the situation has changed or improved.

Research ethics: Protecting the privacy of the people who tell their stories

Research with people, including research where people tell their stories, needs to be done ethically, that is, it needs to respect participants' individuality, freedom and right to privacy. This is usually done in a number of ways, described below under the two broad headings of informed consent and privacy and confidentiality.

Informed consent

All of the people who might have a story to tell in an interview or discussion group need to have the research project explained to them and be invited to join in. They should have their rights explained and be told that if they do not want to join in they will not be disadvantaged, and that they can change their mind at any time and their story will not be used. Potential participants should sign an informed consent form saying that they understand the project and their rights. This form should be kept separately from their story in a locked filing cabinet.

Privacy and confidentiality

If people give details about themselves, these details should be confidential (kept in a safe place where no one except the project worker can have access to them). No information about individuals should be used that could identify them: summaries of information only should be used, or stories and case notes should have some details changed so that no one will know who the story is about.

In some communities, doing ethical research might also include:

- involving participants in discussions about what is going to be researched, endorsing it and controlling the analysis and distribution of findings, usually using a reference group or community meetings
- interpretation or translation of the findings; and

- finding a way to feed back research results to the research participants. This can be done either during the research process to understand what has been said (which gives a good opportunity to deepen understanding by stimulating further dialogue), or by offering a summary of the final results.

Challenges Or Potential Problems

The cyclical approach of an action research evaluation gives groups the chance to progressively look at and think about whether the project is doing what it set out to do and if there is anything that could be done better, and to report on this regularly enough to justify changes if they are needed. If the organisation is already geared to continuous improvement, incorporating the cycles of an action research evaluation and writing up what happens may only be a small change to the way things are done. However if it is a new approach, it may take longer to get used to. Because an action research evaluation is participatory and happens in repeated cycles while the project is happening, it often takes longer than other kinds of evaluations.

In some communities, the hardest and longest part may be getting people to join in, especially when people are busy, are geographically separated, from different cultural backgrounds or may not have ever been asked their opinions before and do not trust who is asking. In other communities, getting people involved may be easy but the methods chosen, for example interviews, may mean there is a lot of information to take in and analyse. Whatever the challenges in particular situations, the Stronger Families Learning Exchange can provide support to projects that will help them address these issues and gain maximum value from their action research evaluations.