683207 Research Seminar, 4 op

Risto Hotulainen
OKL/Helsingin yliopisto
Risto.Hotulainen@Helsinki.fi

Goals of Research Plan Seminar

Objective

After completing this study unit, students

- understand the nature of phenomena in Education and its challenges as a research focus, and they are able to distinguish the relations between the theories and practices of educational sciences
- know the epistemological foundations, research approaches and core concepts of educational research
- can justify an investigative approach in teacher's work and act as a critical educational professional who researches and develops one's own work
- can design a research or project proposal, implement it, and prepare a report of the completed work
- are able to engage in communal construction of knowledge by participating in scientific discussions about the other students' studies and pedagogical products
- have received preparedness to carry out a thesis for the Advanced Studies of Education

Foreign languages

Borg, S. (2006). *Teacher Cognition and Language Education: Research and Practice*. London: Continuum. Selected Chapters.

Hildén, R. (2009). Transforming language curricula through a research and development project: A case from Finland. In T. Autio & E. Ropo (Eds.), *International Conversations on Curriculum Studies* (pp. 235–256). Rotterdam, the Netherlands: Sense Publishers.

Hinkel, E. (Ed.) (2005). *Handbook of Research in Second Language Teaching and Learning*. Mahwah, NJ: Erlbaum. (Selected chapters.)

Additional literature

Selected chapters from the following as suggested by the lecturers:

Dörnyei, Z. (2007). Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies. Oxford, UK: Oxford University Press.

OR

Paltridge, B. & Phatiki, A. (Eds.) (2015). *Research Methods in Applied Linguistics. A Practical Resource*. Oxford : Oxford University Press.

SCIENCE SUBJECTS

Chemistry, Mathematics and Physics

Creswell, J.W. (2005/2008). *Educational research: Planning, conducting and evaluating quantitative and qualitative research.* 2nd or 3rd Edition. Upper Saddle River, NJ: Merrill/Pearson. Chapters 1, 2, 6–9.

Other literature based on the research topic

Timetable and how to proceed...

Group 2	DATE		TIME	LOCATION	THEME
Period 3					
	Tuesday	31.01.	10.15-11.45	Aurora, 117	Baseline
	Thursday	02.02.	16.15-17.45	Aurora, 117	Literature hunt
	Tuesday	07.02.	10.15-13.45	Aurora 117	IND. TUTORING 4 x 30min
	Thursday	09.02.	10.15-13.45	Aurora 117	IND. TUTORING 4 x 30min
	Tuesday	14.02.	10.15-13.45	Aurora 117	Meeting
	Thursday	16.02.	16.15-17.45	Aurora 117	Writing Res-plan
	Tuesday	21.02	16.15-17.45	Aurora 117 (meeting)	Commenting R-plans
		28.02			
	Thursday	02.03	10.15-12.15	Aurora 117	Research plan presentations

Timetable and how to proceed...

Group 2	DATE		TIME	LOCATION	THEME
Period 3					
	Tuesday	04.04.	10.15-13.45	Aurora, 117	Meeting
	Monday	10.04.	16.15-17.45	Aurora, 117	Meeting
	Monday	24.04.	16.15-17.45	Aurora 117	Meeting
	Thursday	04.05.	14.30-17.45	Minerva K222.1	Presentations
	Thursday	11.05.	10.15-15.45	Minverva K.114	

Introduction to classroom research

Problem definition (example)

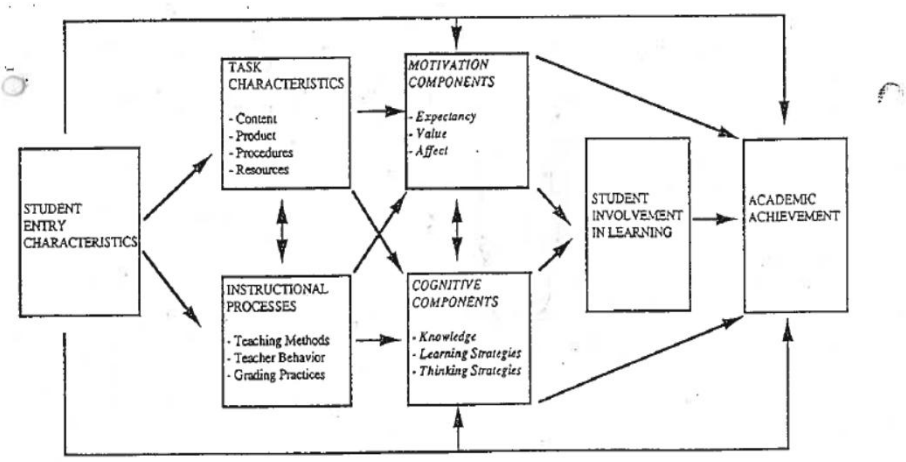


FIG. 7.1 Conceptual framework for motivation and cognition in the classroom context.

Problem definition is related to methodological approach

Epistemology is the nature of how knowledge is generated, and it serves as the foundation of educational research design.

<u>A) Quantitative research</u> (objectivist epistemology) is conducted from an, which à assumption that knowledge exists in the world independent of people and is waiting to be "discovered".

à hypotheses about connections

The major assumptions of objectivism are:

(1)There is a real world consisting of entities structured according to their properties and relations. Categorization of these entities is based on their properties.

(2)The real world is fully and correctly structured so that it can be modeled.

(3)Symbols are representations of reality and can only be meaningful to the degree that they correspond to reality.

(4)The human mind processes abstract symbols in a computer-like fashion so that it mirrors nature.

(5)Human thought is symbol-manipulation and it is independent of the human organism.

(6)The meaning of the world exists objectively, independent of the human mind and it is external to the knower (Jonassen, 1992a; Lakoff, 1987).

Quantitative problems

Predictors	Outcomes
Family SES	Motivation - Expectancies - Emotions - Values
Gender	
Attention	
Support needs	School achievement

Two basic question formats:

1) Is there assossociation (=correlation) between students' attention and values of schooling?

Hypothesis: There is no association between atteen values of schooling.

2) To what extend school achievement is dependent of gender.

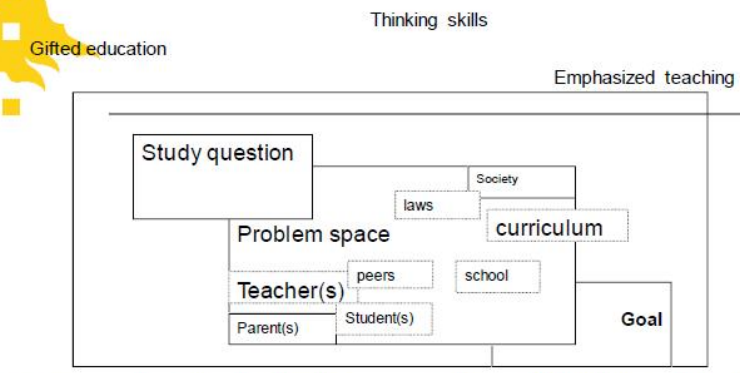
Hypothesis: There are no differences between genders

B) Qualitative researchers generally operate from different epistemological perspectives:

à E.g., constructionism which assumes that knowledge is created by interaction between people and their world (working hypotheses)

à Interaction is described and accordingly analyzed and interpreted

Gifted education



How lower secondary chemistry teachers perceive giftedness? How lower secondary chemistry teachers differentiate teaching for their gifted learners?

- General problem: too broad study questions
- Especially in qualitative research it is necessary to frame clearly study question(s).
  → Focus reserach questions facilitate theory selection and data gathering.

Some guidelines for the research plan

1. Background
2. Procedure
3. Timetable
4. Mehtodology
5. Ethical issues
6. Dissemination

1. Background

Why is this research important?
What other studies have there been in this area?
How will this research add to knowledge in this area?

What do you want to find out?

What is the main question you wish to answer?

What are the specific questions you will ask to address the main question?

2. Procedure

Will you be doing this research on your own or with others?
Who are you targeting in this research?
How many people (questionnaires/case files) do you intend to have?
Where will the research take place?
Will participants be clearly and fully informed of the purpose of the research study (How you ensure this?)
How will participants be clear about the expectations of the researcher?
Do you have an information sheet and a consent form for participants?
Supervisory arrangements - how do you intend your research to be supervised and monitored and by whom?

3. Timetable

When will your research start and finish?

Are there particular stages to the research - e.g. piloting, then main research?

If so, what are they?

Is the timetable realistic?

Is it influenced by external constraints or deadlines?

If so, how you can be prepared for the obstacles?

4. Methodology

- What sort of data will you be collecting, for example, numbers, talk to people directly, texts or a mixture of these?
- What is the main analyses you will use to carry out the research (statistical or , qualitative ones)?
- How will you select your sample?
- How will you recruit your sample?
- How will you collect your data?

5. Ethical issues

- Is there any potential risk or harm to participants or yourself? If yes à , what are the potential risks and what do you intend to do to reduce them?
- How will you obtain informed consent?
- How will participants be given the opportunity to complain? Will you be insured against professional negligence claims?
- How will you deal with complaints made against you by participants?

6. Dissemination

Have you considered in what form will your findings be presented and to whom (not only participants of the STEP)?

How will you ensure anonymity of the participants in publications?

To whom does the research belong after its publication?

Content of the research plan

1. Introduction

1.1 About phenomenon in question and importance of the study
1.2 Previous studies about phenomenon (in brief)
1.3 Study goal

2. Theorethical frame

3. Method

4. Timetable

5. References

About designing of questionnaires for survey research.

The basic process of survey research:

1. define your research aims
2. identify the population and sample
3. decide how to collect replies
4. design your questionnaire
5. run a pilot survey
6. carry out the main survey
7. analyse the data

About designing of questionnaires for survey research.

The most important part of good survey concerns making sure that the questionnaire design (questions) addresses the needs of the research. To put this another way; somehow we need to ensure that the questions asked are the right ones.

To move from the research aims (1) to deciding what are the right questions to put on a questionnaire (4) is a key aspect that needs to be addressed by the researcher.

1. Start your survey by setting down the aims for the survey.

To define the aims for research you will need to review the relevant literature and you may need to do some preliminary research amongst your target subjects. Fulfilling these aims should then drive the design of your questionnaire and help select questions that are relevant, concise and efficient.

Quite often researchers make the mistake of asking too many questions. This often arises from an incomplete analysis of how to meet the survey aims à poor response rate.

Clear and concise questionnaires can help get the best response.

2. Target population and sample

The population is simply all the members of the group that you are interested in.
A sample is a sub-set of the population that is usually chosen because to access all population members is impossible.

A key issue in choosing the sample relates to whether the members you have chosen are representative of the population. Often the sample is chosen randomly from a list that contains all the members of the population; such a list is called a sampling frame.

To determine the sample size it is usual to work back from how many responses (completed questionnaires) are required for the analysis. Rule of thumb is to look for about 20-30 responses in each of the major sub-categories of the sample. For example, if a key aspect of your research is to compare male and female then you should look for about 30 males and 30 females in your responses.

3. Decide How to Collect Replies

Decide whether the survey is to be completed by the respondent directly or through an interviewer, and design the questionnaire, and any other documents, accordingly à response rate.

Provide a letter that explains what the questionnaire is about and why its completion is of value.

If possible, try to get a 'foot in the door' by asking each potential subject to complete a very short pro-forma confirming a few essential details, including *name and address (remember younger respondents).* You will get a higher response from this first approach; this could be done by telephone and then followed up with a full questionnaire by post.

Introductory letters, reply paid envelopes and follow-up telephone calls also help to raise the response rate for self-administered questionnaires.

a post, e-mail attachments or via publishing on a web site etc.

3. Questionnaire Design

Design of the questionnaire can be split in to three elements:

a) determine the questions to be asked,
b) select the question type for each question and specify the wording, and
c) design the question sequence and overall questionnaire layout.

Determine the Questions to be Asked and questions can be determined through a combined process of exploring the literature and thinking creatively. A simple illustration of the outcome of such a process is given below.

Survey aims: to explore the factors that might explain the reasons that UH student candidates give for undertaking a STEP programme:

Issue:	Question focus:
What reasons might candidates give for undertaking STEP?	Is the candidate looking for: a. career change b. career advancement c. teacher qualification etc. d.
Could past experience affect the reasons?	How many years work experience does candidate have?
Could gender differences affect the reasons?	Is the candidate male or female?
Could educational background and attainment affect the reasons?	What is highest educational qualification obtained? What subject area(s) is this qualification in?
….etc.	…etc.

Question formats

Different types of questions can be used, e.g. open vs. closed, single vs. multiple responses, ranking, and rating.

Open vs. Closed Questions

Many advise against using open-ended questions and advocate using closed questions. However, open questions can be useful. For example, the open question:

What do you think are the reasons for decline of general intelligence in OECD countries?

This would elicit a whole range of replies of varying length and articulation.
In case you are interested in making very precise judgements of each individual respondent this may well be useful.

If, however, you are concerned, as most surveys are, in summarising replies to produce a picture of your population, a better approach may be …

Do you think decline of general intelligence in the OECD countries is caused by: (tick if appropriate)

Increased technology use
Old definition of intelligence
Youth unemployment
Poor schooling
Increased screen-time
Cultural change
Changed attitudes towards intelligence measures
Ohter (please specify)

Try to plan your categories exhaustive, i.e. covering all possibilities, by making fairly broad suggestions that will still satisfy your objectives

Single vs. Multiple Response

When designing questions make sure you have thought through whether you want the respondent to give a single or a multiple response.

Consider which is better for your research?

Which of the following means do you use to travel to university?

What is your most usual means of travelling to university?

Bus
Car
Bike

Avoid to use the following structure:

Select up to three of the options below and enter in the boxes opposite

Option A Option B Option C Option D Option E Option F

Ranked Responses

Sometimes it is useful for the respondent to rank a set of options by numbering them in order from 1 to the maximum number you are interested in. For example, to a question like: Place in order of importance to you the following features of a travelling to university (Indicate by numbering from 1-4 in order where 4 is the most usual way)

Bus	
Walk	
Bike	
Car	

Rated Responses

A popular approach in the social sciences is to use Likert scales such as the example below: (Circle the number under the initials that applies.
5=Very important;
4=Important;
3=Neutral;
4=Unimportant;
1=Very Unimportant).

Indicate your view of the following aspects of studying in STEP programme?

a. career change
b. career advancement
c. teacher qualification etc.

Avoid double questions

Sometimes questions hide a dual question, for example:

Do you think the STEP students should work less and study more? instead ask: (Please circle relevant number) Yes No

	yes/no
Do you think the STEP students should work less	1 2
Do you think the STEP students should exercise more	1 2

Avoid questions Involving Negatives Don't confuse the respondent by language like this: (Please circle relevant number) Yes No

	yes/no
Are you against a ban on smoking	1 2

If you want generalize your findings ask the same topic with multiple questions and use available questionnaires: *Example (Pintrich & De Groot, 1992)*

Suppose you decided to study Physics. Now you attend your first seminar in physics. There will be a final examinination at the end of the semester:

1 = not at all true of me ... 7 = very true of me

Motivational Beliefs

Self Efficacy

2. Compared with other students in this class I expect to do well.	1 - 2 - 3 - 4 - 5 - 6 - 7
7. I'm certain I can understand the ideas taught in this course.	1 - 2 - 3 - 4 - 5 - 6 - 7
10. I expect to do very well in this class.	1 - 2 - 3 - 4 - 5 - 6 - 7
11. Compared with others in this class, I think I'm a good student.	1 - 2 - 3 - 4 - 5 - 6 - 7
13. I am sure I can do an excellent job on the problems and tasks assigned for this class	1 - 2 - 3 - 4 - 5 - 6 - 7
15. I think I will receive a good grade in this class.	1 - 2 - 3 - 4 - 5 - 6 - 7
about the subject.	1 - 2 - 3 - 4 - 5 - 6 - 7
23. I know that I will be able to learn the material for this class.	1 - 2 - 3 - 4 - 5 - 6 - 7

Intrinsic Value

1. I prefer class work that is challenging so I can learn new things.	1 - 2 - 3 - 4 - 5 - 6 - 7
5. It is important for me to learn what is being taught in this class.	1 - 2 - 3 - 4 - 5 - 6 - 7
6. I like what I am learning in this class.	1 - 2 - 3 - 4 - 5 - 6 - 7
9. I think I will be able to use what I learn in this class in other classes.	1 - 2 - 3 - 4 - 5 - 6 - 7
12. I often choose paper topics I will learn something from even if they require more work.	1 - 2 - 3 - 4 - 5 - 6 - 7
17. Even when I do poorly on a test I try to learn from my mistakes.	1 - 2 - 3 - 4 - 5 - 6 - 7
18. I think that what I am learning in this class is useful for me to know.	1 - 2 - 3 - 4 - 5 - 6 - 7
21. I think that what I am learning in this class is interesting.	1 - 2 - 3 - 4 - 5 - 6 - 7
25. Understanding this subject is important to me.	1 - 2 - 3 - 4 - 5 - 6 - 7

Test Anxiety

6 Run a Pilot Survey

Test the questionnaire on a small sample of your subjects first. If this is not possible, at least test it on some colleagues or friends. The aim here is to detect any flaws in your questioning and correct these prior to the main survey.

The piloting may enable you to convert an open-ended question in to a closed question by determining the range of possible answers.

You may also be able to perform a trial analysis on your pilot sample and hence test out all your analysis procedures.

Having done your pilot survey, you can make corrections that will help to maximise your response rate and minimise your error rate on answers.

8 Analyse the Data

A precursor to analysis is the coding, entry and checking of data. Some comments were made earlier about the statistical analysis packages that are available (e.g. SPSS). In all instances data can either be entered direct or imported from other packages such as Excel, provided the instructions for the receiving package are adhered to. In all cases a similar approach is used for coding and formatting data.