Academic Thinking in the Context of Education

Educational research part 1

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Outline of the lecture

- Different methods, general principles
- Different levels of research
- Why different approaches to reasearch?
- Defining constructs
- Not only the method…
- Ethical questions
- Research permit
- Researcher's responsibility & loyalty
- Research "subject" / Participants
- Objectives
- Aims in general
- Research questions
- Procedures: data collection, analyses and publishing
- Your turn to be a researcher

Different methods, general principles

- Aiming to acquire knowledge
- Basic/fundamental research
- Applied research
- Purpose to make a change (directly or indirectly)
- Ethical considerations
- Same research subjects, different research levels
- Theory

Different levels of research 1

- Units of analysis
- **Quantitative research**
- Exampe: large-scale assessment data
  - Multi-level data: student – **class** – school – municipality
  - Sample sizes and sample methods
    - Representativeness
    - It must reflect the population
  - Representativeness of all subgroups (i.e. tier 3 students, students with immigrant background)
  - N > 30 for the statistical analyses
  - Number of variables (i.e. for controlling things)

Different levels of research 2

- **Qualititative research**
- Operates often on less units of analysis
- Person-centered research → few participants
- Generalibility is defined differently → focused on the general structure of the phenomenon, results are not ment to be generalized to large populations
- Abductive argumentation

Why different approaches to research?

- The **purpose** of the research
  - Determines the methodology and design of the research
- How the phenomenon is defined determines partly, how you can get information from it
- What kind of knowledge is pursued
- Creating theory or explaining a phenomenon
- Modelling different relations
- Differences in the nature of phenomenon

Defining constructs

- An essential feature of all research
- Constant content of defined constructs through the research
- Explicit relationship between central/pivotal constructs and theory
- In qualitative research crucial when studying human behaviour ← researcher's interpretations
- Conscious interpretations rely on precise/exact definitions of constructs
- Constructs are operationalized differently
- Functional constructs

Not only the method

- The method should not lead the research
  - Instrument for obtaining information
- The method must be in line with the aim of the research
- Considering the paradigmatic traditions in the research field
- **Mixed methods**: completing the research
  - research unity consist of methodologically different parts
  - highly differentiated methods
  - → specializing deeply in many different methods is demanding → shared/joint projects (←funding!)
- Example: the effects of class size
  - on learning, on student achievement, on student interaction, on classroom climate, on teachers' instructional practices → different methods of data acquisition

Ethical questions

- Relevant in any case/research but the perspectives differ/vary
- Withdrawal in any point of research (also in reporting phase)
- Consent
  - Under aged, disabled/incompetent persons
- No disadvantages or harm for the participants
- Privacy – i.e. how personal is the information being collected
- Anonymity – the researcher or another person cannot identify the participants
- Confidentiality – although researcher is able to identify participants from the given information, no connections are made publicly

Research permit

- Research permit, e.g. to enter the schools
  - A fair explanation of the procedures and the purpose of the research
  - Sources of financing and the announcement when the research results are published
  - Incl. attached research plan
- A consent from the participants – a right to refuse
  - The education department of the city, the school/s, parents, students
  - Example: large-scale data from lower secondary schools
    - The ethical approval for data collection obtained from the Ethical Committee of THL
    - The permission to enter the schools obtained from the educational authority of each municipality
    - Parents' active consents in two municipalities

Researcher's responsibility & loyalty

- The research group defines and documents
  - The status, rights, obligations and responsibilities of researchers, questions concerning the ownership of research results and the archiving of research materials
  - i.e. who has access to the data, is the data given to the third party
- The researcher takes to account of other researchers' work and achievements and cites their work appropriately
- Scientific responsibility and personal responsibility for participants
- **Scientific processes**
  - data gathering, plagiarism, methodological solutions, reporting results, interpreting results and drawing conclusions, giving guidelines, referencing and so on
- **Responsibility for participants**
  - clarifying the results to the participants
  - considering the effects of the research on participants lives (future)
  - interventions, videos

Researcher's role in qualitative research

- Researcher's role in qualitative research is often participatory →
  - personality of the researcher matters
  - question of objectivity / subjectivity
  - independence and responsibility of one researcher vs. many researchers
  - e.g. interpretations in behavioral video-based research or in conversation analysis
- The bridging of researcher's interpretations on data to the theory base is important

Research subjects, participants

- **In educational research**
  - Students, teachers, teaching, learning, attitudes, beliefs, social topics, educational organizations like schools and so on
  - Different perspectives to subjects
  - Basics: in statistical analyses more units (over 30), in qualitative research you can start even with one single student
- In qualitative research the detailed description of the participants is essential
- Remember the confidentiality!
- Example: large-scale assessment data
  - Student level data but aggregated to mainly to the class level

Aims in educational research in general

- **Qualitative research**
  - Describing phenomena
  - Interventions on practices → development
  - Learning and teaching
  - Applied research → clear connection between results and practice
  - Focus on certain individuals or groups
- **Quantitative research**
  - Describing and modelling the phenomena
  - Relations, causalities
  - Similarities and differences

Research questions

- Good research questions (Robson, 2002)
  - Clear: Easily understood
  - Specific: Sufficiently specific, so it is clear what constitutes answer
  - Answerable: It can be seen what data are needed to answer them and how the data is collected
  - Interconnected: The questions are related in some meaningful way, forming a coherent whole
  - Substantively relevant: They are worthwhile, non-trivial and worthy of the research effort to be expended
- The purpose if the research → research questions (Robson, 2002)

1. Exploratory

To find out what is happening, to seek new insights, to generate ideas for future research

2. Descriptive

To portray an accurate profile of persons, events or situations

3. Explanatory

To explain situations in the form of causal relationships, explain and identify patterns

Research questions in qualitative research

- Hypotheses?
- Clear research questions?
- Loose descriptions based on theoretic aspects?

Procedures: data collection, analyses and publishing 1

- Planning, conducting and reporting the research
- What resources are required for the research?
- Reporting and presenting the data
  - Who is it for, the possible audience?
  - What kind of language we use (i.e. statistical terms)?
  - For different audiences
  - Time frame of the research

Procedures: data collection, analyses and publishing 2

- **Qualitative research**
- phases of the research are often overlapped
- data gathering can take even years and the analysis is going along
- in qualitative it is common that first articles are published when the data gathering is going on (like in longitudinal studies)
- it is not always possible to stick into carefully planned timetables, when humans are included everything might go wrong or unexpectedly
- often only few researchers → human factors
- needed resources depend on the type of the research: computer programs, travelling, helpers, instruments…
- writing the manuscript could be a lonesome affair
- it is hard to find high impact journals for publishing qualitative reports

Procedures: data collection, analyses and publishing 3

- **Reporting the Qualitative research**
- Introduction, Method, Results and Discussion
- Descriptions, interpretations and explanations make reports long
- Interpretations are based and compared to the theory→ also theory must be explained carefully and precisely
- Reports include also representative examples on methodological solutions and analysis
- Most of these apply for the quantitative as well?

Qualitative analysis

Action observed	Function	Note
…Marvin snatches the picture that is first in the row and nearest to him.	to answer as quickly as possible	quasi-communication
Marvin stays looking at the teacher but glances[1] in Dick's direction when Dick says 'Noo-o!' [2] for the first time.	[1]seeking-behavior [2]comment-like	
[the teacher] then glances briefly at Marvin's face, but after that, she intentionally looks away	non-acting	
Dick continues to repeat 'No'. Marvin does not put the picture on the stickerboard	first preventing, then prompting	consequential prompt
[John] grabs the back of Marvin's neck and tries to take the picture of the weather	forces Marvin to react in some way	consequential prompt

Transcibed exerpt of video clip

The teacher looks at Marvin and says, 'Marvin. What kind a weather it is today?' Marvin takes a look to the teacher and stands up after hearing his name. He immediately begins to move towards the blackboard and, at the same time, reaches towards the shell containing pictures of various weather conditions with his hand. The teacher moves the shell a bit. When the shell is still, Marvin snatches the picture that is first in the row and nearest to him. When Marvin snatches the picture and gets up into an upright position, Rob begins to shake his head and repeats, 'Noo-o,noo-o, noo-o, noo-o. It is not okay. Wrong!' John shakes his head as well. Marvin stays looking at the teacher but glances in Rob's direction when Rob says 'Noo-o!' for the first time. The teacher first looks to Rob and then glances briefly toward Marvin's face, but after that, she intentionally looks away. Andrew calls out, 'NO!' Marvin tries to fit the picture of the prevailing weather onto the stickerboard while looking to the teacher, who looks at Marvin inexpressesively and does not say anything.

- Can you draw conclusions based on the research topic what methods have been used?
  - Or more generally, is the research qualitative or quantitative?
  - The search words were ‘classroom’ and ‘interaction’

Emotion Work and Affective Stance in the Mathematics Classroom: The Case of IRE Sequences in Finnish Classroom Interaction

Effects of Class Size and Attendance Policy on University Classroom Interaction in Taiwan

Classroom interaction strategies employed by English teachers at lower secondary schools

The medium of instruction and classroom interaction: Evidence from Hong Kong secondary schools

Classroom interaction: Potential or problem? The case of Karagwe

Teacher's Beliefs about Classroom Interaction and their Actual Practices: A Qualitative Case Study of a Native and a Non-native English Teacher's In-class Applications

Your turn to be a researcher

- If you were to investigate the previous video
  - What would you investigate?
    - Your topic, your research subject
  - What would be your approach?
  - Your research questions (i.e. Exploratory, Descriptive, Explanatory)
  - Methods (data acquisition)
  - What ethical and moral questions would you consider?

Thank You!