

Course title: Foundational course in education research methods

Type of course: Core course (4 credits)

Course Description: The foundational course in research methods is designed to introduce researchers to the philosophical groundings of research methodologies in education research. Throughout the course, researchers will engage in discussions of major notions, issues, and methods of qualitative and quantitative research (with their theoretical underpinnings) in education research to understand what kinds of method/s are useful for exploring certain kinds of information from students/teachers/educational settings.

The course includes a series of workshops/ activities where one can practice and develop the observation, interviewing, and data analysis skills (from field notes, class observations, to thematizing data) that form the core of qualitative research. Similarly, the quantitative part will introduce students with basic statistical tools and analysis techniques to provide insights of educational data. We will discuss quantitative analysis techniques applied in the analysis of surveys and concept inventories administered through the prior research activities at HBCSE.

In this course, researchers will also have extended opportunities to interact with their senior cohort about decision-making associated with research methods and techniques. In the previous year, we had 8 research colleagues who presented their research summaries and discussed their journeys of research methodology choice. Such interactive sessions introduced as an experiment in the coursework has now become a central spot of the foundational course. Lastly, this course also builds a base for an advanced course in methods of education research offered in the following semester.

Course time and day: Wednesday and Friday 11 AM- 1.00 PM

Mode: Online

Facilitator: Dr. Deepa Chari and Prof. Aniket Sule

If you are interested in joining the course, please contact Dr. Deepa Chari at deepa@hbcse.tifr.res.in and Prof. Aniket Sule at anikets@hbcse.tifr.res.in

Note: The course begins on Friday, 12 February 2021.

Suggested readings and activities:

Week 1	<ul style="list-style-type: none">• Introduction and setting up the norms• Discussion of quotes “What is qualitative research?” (Activity)• Scope and types of observations in education research- stills, videos, dialogue reflection (Activity)• Building a primary record; P. Carspeken. Book chapter (No 3)- Critical ethnography in educational research book (Reading)
Week 2	Field notes <ul style="list-style-type: none">• Components and features of field notes: Video reflection (Activity)• Critiquing field notes: reflect on a written field note (Activity)• Practicing field note making skills (Activity)• First impressions of row data (Activity)

Week 3	<p>Methodology, paradigms, and subjectivity</p> <ul style="list-style-type: none"> • Introduction to Qualitative research; S. Marriam Book chapter (No 1) (Reading) • Matrix for method: Review of similarities, differences of methods comparison charts (Activity) • In Search of Subjectivity—One's Own (Alan Peshkin, Educational researcher, 1988) (Reading) • Observer paradox, Hawthorn effect, critical reflexivity- reflection • What do you observe additionally after the discusssions: 1st grade English reading (Activity)
Week 4	<p>Interviews and focus groups</p> <ul style="list-style-type: none"> • Interviews: An introduction to Qualitative research interviewing; Kvale S. Book chapter No 7 (Reading) • Personalized interviews reflection (Activity) • Focus group interviews reflection (Activity) • Interview practice session and feedback (Activity)
Week 5	<p>Design and technology studies</p> <ul style="list-style-type: none"> • Design-without-make: challenging the conventional approach to teaching and learning in a design and technology classroom; Barlex and Trebell, Int J Technol Des Educ (2008) 18:119–138 (Reading) • Design Experiments in Educational Research (2003); Paul Cobb et al., Educational Researcher, 32(1) Theme Issue: The Role of Design in Educational Research, pp. 9-13 (Reading) • Using survey questions to identify and learn more about those who exhibit design thinking traits. (2015) Blizzard, Klotz, Potvin, Hazari, Cribbs, and Godwin; Design Studies, 38: 92 – 110 (Reading). • Interaction with D&T research staff & know the resources (Activity)
Week 6	<p>Mixed method approaches</p> <ul style="list-style-type: none"> • Mixed-Methods Design in Biology Education Research: Approach and Uses (2016) Abdi-Rizak M. Warfa, CBE—Life Sciences Education, pp 1-11(Reading) • Mixed method video discussion: Explanatory & exploratory sequential design (Activity) • Interactions with senior researchers • Catching up
Week 7	<p>Case studies</p> <ul style="list-style-type: none"> • “Pushing and Pulling Sara: A Case Study of the Contrasting Influences of High School and University Experiences on Engineering Agency, Identity, and Participation” (2017) Godwin and Potvin, J Res Sci Teach 54: 439–462, 2017 (Reading) • Learning in the making a comparative case studies of three makerspaces (2014) Sheridan et al.; Harvard Educational Review 84(4):505-531 (Reading)

	<ul style="list-style-type: none"> • Interaction with senior researchers
Week 8	Theory cum methodology <ul style="list-style-type: none"> • Attending to Student Epistemological Framing in a Science Classroom (2009) Hutchison and Hammer, Science education (Reading) • Truth, success, and faith: Novice teachers’ perceptions of what's at risk in responsive teaching in science; Robertson and Elliott (2020); Science education Vol 104(4), pp 736-761 (Reading). • Interaction with senior researchers
Week 9	Grounded theory <ul style="list-style-type: none"> • The Use of Grounded Theory to Investigate the Role of Teacher Education on STEM Teachers’ Career Paths in High-Need Schools (2011); Kirchoff and Lowrentz, Journal of Teacher Education, 62(3) 246–259 (Reading) • The Development of Constructivist Grounded Theory (2006); Mills, Bonner and Francis; International Journal of Qualitative Methods 2006, 5(1) (Reading) • Reflection on “The Power and Potential of Grounded Theory” talk (Activity)
Week 10	Phenomenology and phenomenography <ul style="list-style-type: none"> • Hermeneutic phenomenology and phenomenology: A comparison of historical and methodological considerations. (2003) Laverty S. M. International Journal of Qualitative Methods, 2(3). (Reading) • Workshop on similarities and differences in phenomenographical and phenomenological approaches (Activity)
Week 11	Quantitative methods: <ul style="list-style-type: none"> • Variables and representations • Inferential Statistics (Hypothesis testing, giving meaning to score, reliability and validity, significance) • Difference tests (t test, chi-square, effect size) • Correlation and linear regression analysis • Multiple regression • Comparing groups: Analysis of variance (ANOVA)
Week 12	
Week 13	
Week 14	Ethics in science education research <ul style="list-style-type: none"> • Conducting Research with the Disability Community: A Rights-Based Approach (2011); Kelly M. Munger and Donna M. Mertens; New Directions for Adult and Continuing Education • Preparing the institutional review board application for research proposal • Discussion of cases, situations, and dilemmas (Activity)