# SCE102.2: Methods of Science & Mathematics Education Research

Syllabus for the Qualitative research methods section

Homi Bhabha Center for Science Education (HBCSE) V.N. Purav Marg, Mankhurd, Mumbai 400088.

### **Course Admin Information**

Credits: 2 Credits

Duration: 29th August, 2022 - 9th December, 2022

#### Time and Location:

- The course will meet in Room 217, HBCSE Main Building once a week for two hours
- For individual or group consultations, please reach out to us at the emails given below.

Contact hours: 28 hrs, 14 sessions, 14 weeks

Note: This syllabus was prepared keeping in mind the requirements for a 4-credit course. Only some parts of the syllabus will be covered.

#### Instructors:

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# **Course Learning Objectives**

- Engage in critical reflection about paradigms and tools in qualitative research as caring researchers and people.
- Learning to see and resist hegemonic academic norms (such as enacting/performing cultural capital)
- Practice feminist tools of discourse (such as listening, enacting care, collective sense-making and decision-making, contributing labour towards collective goals)

- Learn to see connections between purpose, values, and methods in research
- Get a broad sense of the landscape of research methods, with a deeper understanding of some approaches.
- Get a feel for some of the tensions and contradictions that arise in doing qualitative research.
- Develop a research community

# **Course Description**

The objective of the course is to develop an understanding of what it means to study a social phenomenon and various qualitative tools/techniques researchers use to study social phenomena. We will explore topics related to the ontological and epistemological assumptions underlying various methodological paradigms, ethical questions related to positionality of the researchers, their relationality with the field and specific tools and methods that researchers can use to study it. The course is intended to introduce students to some of the major methodological approaches in qualitative research relevant to STEM education research. The course also incorporates various practicum mini-projects that are intended to support students in "getting a feel for" these research tools. By the end of the course participants are expected to gain a hands-on understanding of various research methods and approaches and develop critical, reflective and caring dispositions towards research.

# Assignments

- **Readings**: Every week a course participant will be expected to read 1-2 book chapters or papers. It is important to finish readings before coming to class, so that we can have a productive discussion
- **Discussion forum:** The course will have an online discussion forum. Every week one of the participants would be responsible for initiating the discussion based on the assigned readings, classroom discussion, or mini-project experiences. Everyone will be responsible for making meaningful contributions to the weekly discussion.
- *Methods and Methodology:* Mini-projects for practical experience with research methods
  - Interview: design, conducting, data collection, transcription
  - Ethnography: Making ethnographic observations (field notes and photo essays)
  - Writing analytical and reflective memos on analysis and methods

# Grading

50%	Contributing to collective learning.
	This includes coming to class prepared with readings, contributing to collective
	sense-making and decision-making, meaningful engagement with the online
	discussion forum.
25%	Interview mini-project (design, data collection, analysis, memos). Grading based
	on good faith effort and quality of work.
25%	Ethnography mini-project (design, data collection, analysis, memos) Grading
	based on good faith effort and quality of work.

#### **Technology Needs**

You will need access to a laptop for course readings, assignments, and online discussions. For synchronous meetings, we will meet in person. In case of disruptions to in-person meetings due to pandemic or other reasons, we will rely on the BigBlueButton (webinar.hbcse.tifr.res.in) platform. We might additionally require you to join a course management platform such as Moodle (details TBD).

#### Expectations

We expect you to attend the in person course meetings. Please let us know if you are unable to attend a class due to any reasonable cause.

We expect you to do assignments on time. If you need an extension, please send us an email explaining (1) your reason for delay (2) an expected date of submission.

We expect that you would be spending roughly 5-6 hours of work per week outside of the class periods. In good faith, we expect that you will be taking responsibility over your own learning, contributing to collective learning of the classroom community. Please talk to us in case you feel that the course is not fulfilling your expectations, or is not supporting you in learning.

#### **Course Outline**

Time and Topic	Readings*	Assignments
Week 1: Introduction to Research Methods	Core Texts (Introductory Chapter)	<ul> <li>Setting personal learning goals and expectations</li> <li>Setting up the infrastructure for your own learning</li> </ul>
Week 2-5:	Core Texts (Relevant	- Discussion Forum

Paradigms in Qualitative Research: Investigative, Interpretive, Critical, Decolonial and feminist, Interventist	Chapters); Wertz(2011); Charmaz (2017) Guttierez & Jurow (2016); Bang et al. (2016); Carspecken (2013); Denzin& Lincoln (2011)	- Critical reading of a text/article
Week 6-8: Tools and Methods: Interviews, Ethnographic observations, fieldnotes	Core Texts (Relevant Chapters) Bhattacharya (2017) Gubrium & Holstein (1997) Emerson et al. (2011) Kvale (2007)	<ul> <li>Designing and conducting an interview</li> <li>Doing Ethnographic Observations</li> <li>Writing Field Notes</li> </ul>
Week 9-11: Ethics and Relationality	Core Texts (Relevant Chapters) Vossoughi & Escudé (2016) Rose (1997) Tallbear (2014) Xaxa (2016)	- Preliminary Analysis - Iterate Data Collection
Week 12-14: Doing Analysis	Revisit core texts	<ul> <li>Writing a memo reflecting on methods</li> <li>Writing a memo on the analysis</li> </ul>

• Readings might be supplemented or revised as the course continues to better tailor to your learning needs.

#### Acknowledgements

We thank Arati Kade (University of Amsterdam, Netherlands) and Susan Jurow (University of Colorado, Boulder, USA) for sharing reading suggestions with us in the preparation of this syllabus.

#### References

[Core texts]

Bhattacharya, K. (2017). *Fundamentals of qualitative research: A practical guide*. Routledge.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. Sage.

Kvale, S. (2007). Doing interviews. Sage: London.

Maxwell, J. A. (2012). *Qualitative research design: An interactive approach*. Sage publications. [Use the 2nd or 3rd edition.]

Rose, G. (1997). Situating knowledges: positionality, reflexivities and other tactics. Progress in Human Geography, 21(3), 305–320. https://doi.org/10.1191/030913297673302122

Smith, L. T. (2021). *Decolonizing methodologies: Research and indigenous peoples*. Bloomsbury Publishing. [You can use the earlier editions of this book.]

TallBear, K. (2014). Standing with and speaking as faith: A feminist-indigenous approach to inquiry. *Journal of Research Practice*, *10*(2), N17-N17.

Vossoughi, S., & Escudé, M. (2016). What does the camera communicate? An inquiry into the politics and possibilities of video research on learning. *Anthropology & Education Quarterly*, *47*(1), 42-58.

Wertz, F. J. (2011). Five ways of doing qualitative analysis: Phenomenological psychology, grounded theory, discourse analysis, narrative research, and intuitive inquiry. Guilford Press.

Xaxa, A. (2016, January). I am not your data. <u>ttp://adivasiresurgence.com/2016/01/13/i-am-not-your-data/</u>

#### [Additional readings]

Bang, M., Faber, L., Gurneau, J., Marin, A., & Soto, C. (2016). Community-based design research: Learning across generations and strategic transformations of institutional relations toward axiological innovations. Mind, Culture, and Activity, 23(1), 28-41.

Carlarne, J. (2011). Multi-context engaged learning and ethnographic fieldwork: some notes from the middle of the edge. *International Journal of Social Research Methodology*, *14*(2), 135-152.

Carspecken, F. P. (2013). *Critical ethnography in educational research: A theoretical and practical guide*. Routledge.

Charmaz, K. (2017). Constructivist grounded theory. *The Journal of Positive Psychology*, *12*(3), 299–300. https://doi.org/10.1080/17439760.2016.1262612

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes*. University of Chicago press.

Glenn, C. (2000). Truth, lies, and method: Revisiting feminist historiography. *College English*, *62*(3), 387-389.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, *2*(163-194), 105.

Gubrium, J., & Holstein, J. A. (1997). Active interviewing. *Qualitative research: theory, method and practice, second edition. London: Sage.* 

Gutiérrez, K. D., & Jurow, A. S. (2016). Social design experiments: Toward equity by design. *Journal of the Learning Sciences*, *25*(4), 565-598.

Guru, G., & Sarukkai, S. (2018). *The cracked mirror: An Indian debate on experience and theory*. Oxford University Press.