RESEARCHING THE IDENTITIES OF SPECIALIST MATHEMATICS TEACHERS IN ENGLAND THROUGH GRAPHICAL AND NARRATIVE INTERVIEW APPROACHES

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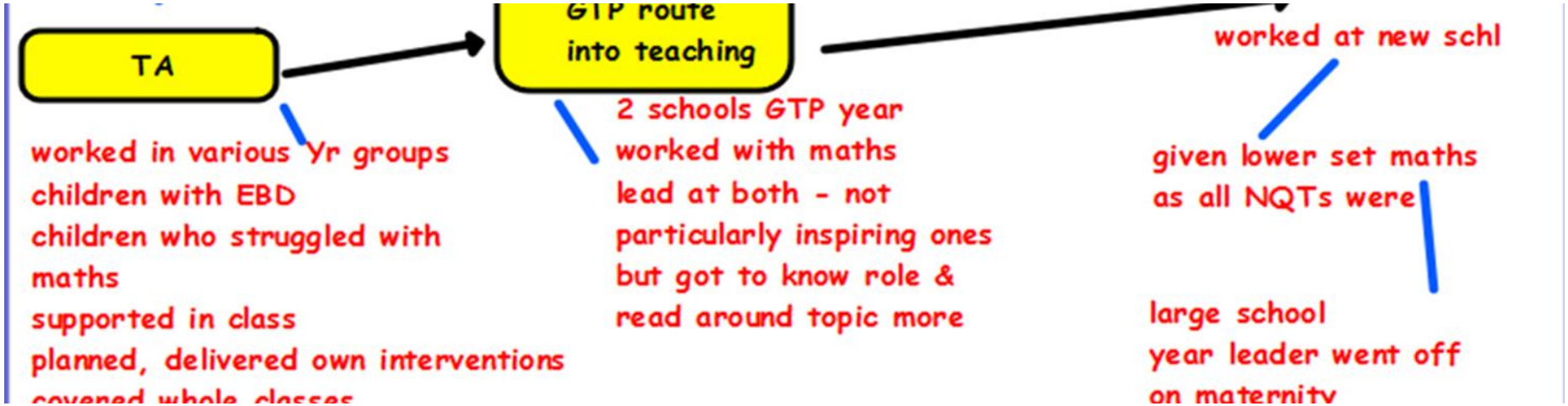

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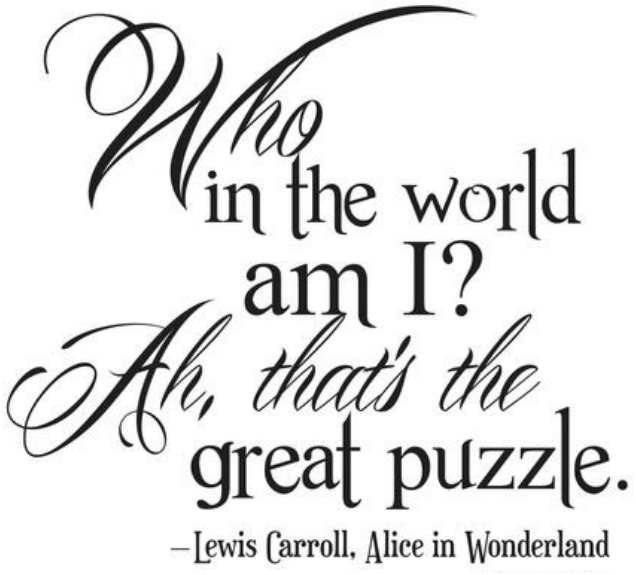
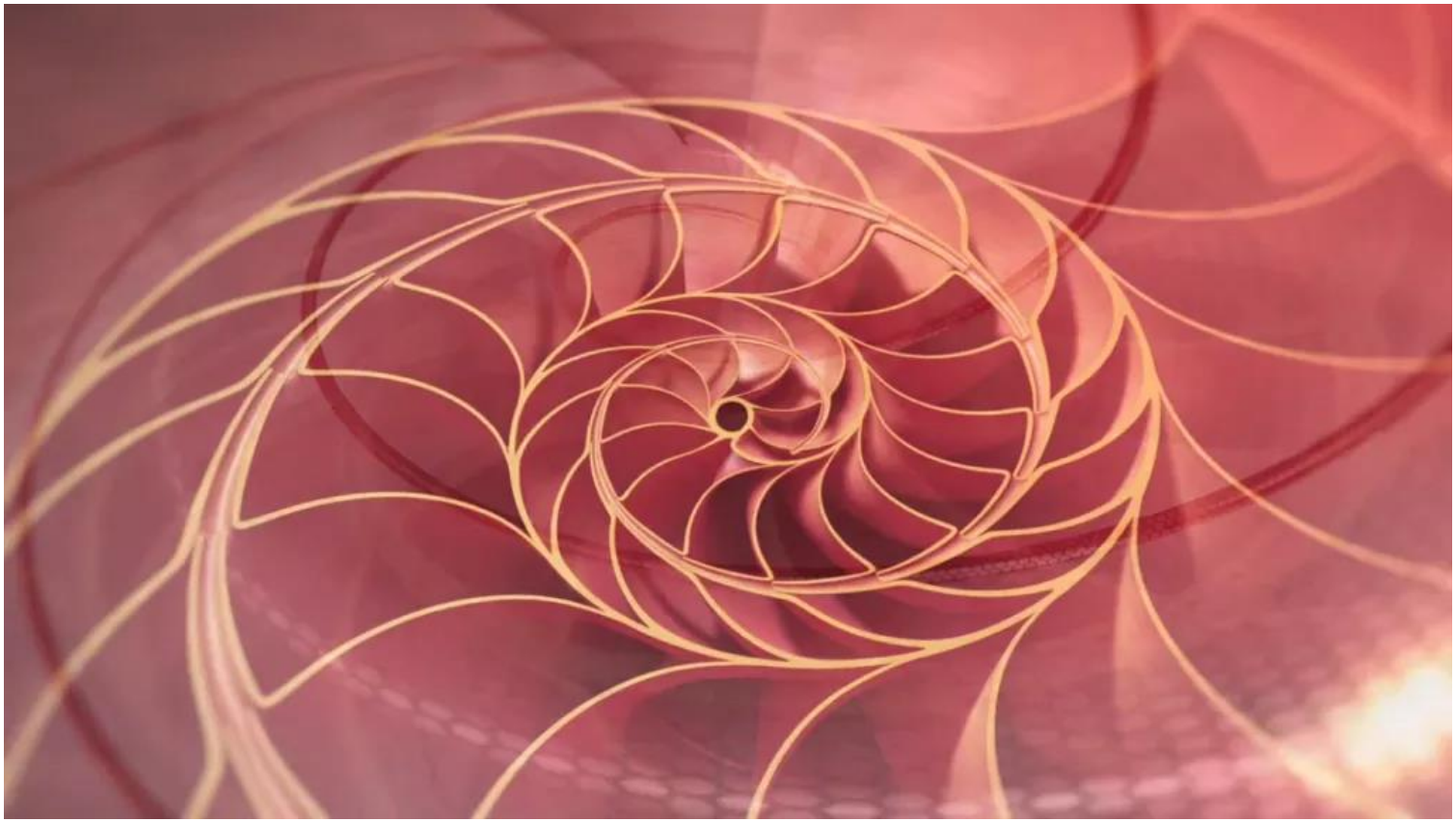
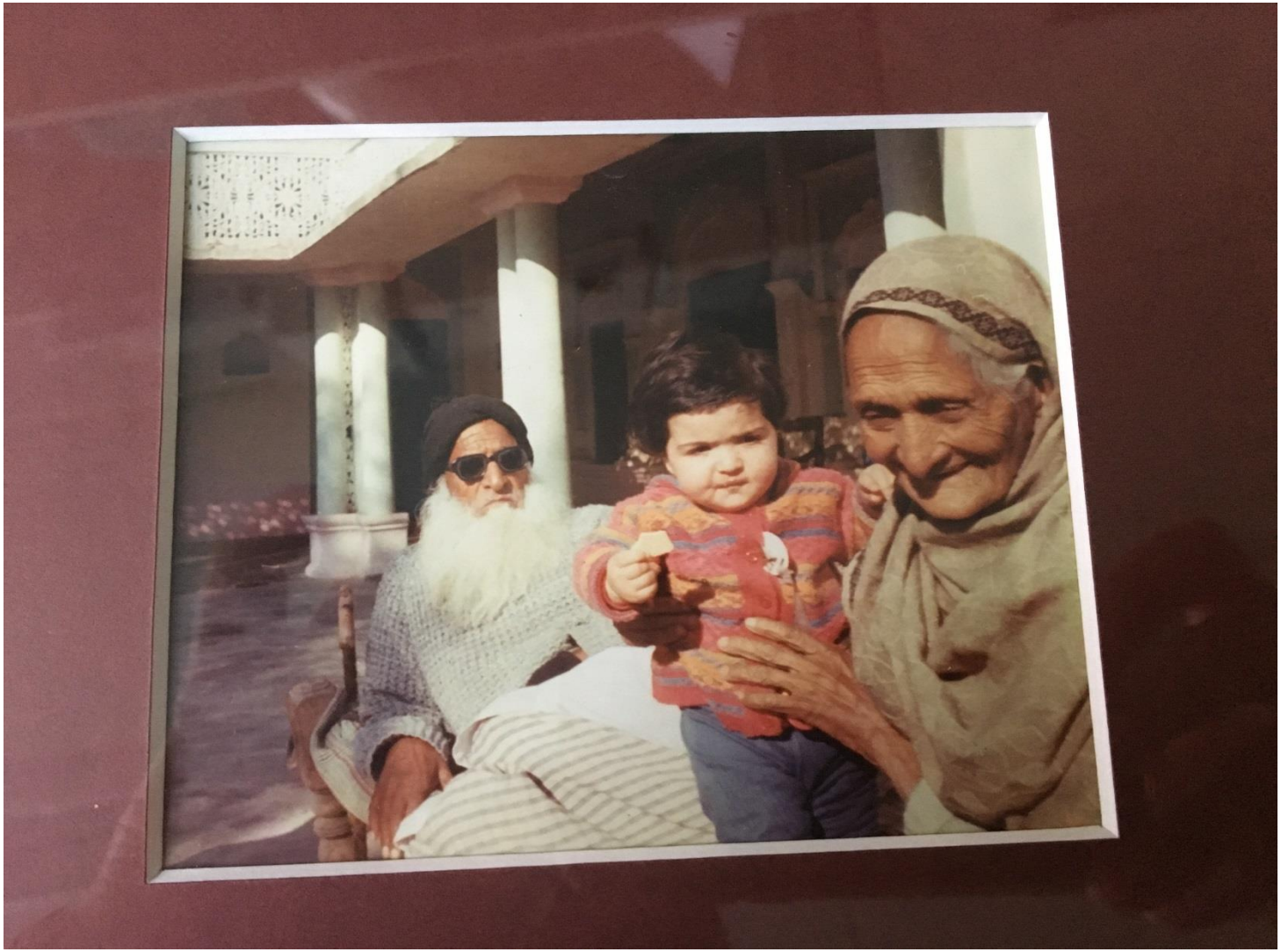
STARTING POINT



MATHEMATICS



WHY?



What did I research?

RESEARCH QUESTIONS

Main research question:

How do biographical processes and experiences shape identity development and career trajectories of Primary Teachers who become PMaSTs?

Sub- questions:

SQ1: What are the professional and personal circumstances that lead to primary teachers becoming PMaSTs? (Beginning)

SQ2: How do primary teachers describe and understand their experience in the role of a PMaST? (Being)

SQ3: How do PMaSTs' professional identity developments reshape values, practice and future career goals? (Future)

LITERATURE

Policy- range of reports and data sets e.g. **Cockcroft(1982), Williams, 2008, Vorderman (2011), ACME (2012),** range of reports on the **TIMMS comparative data sets…**

Primary Teacher and the professional space- CPD

Very limited literature on Primary Teachers in England becoming PMaSTs. This was a gap-

-**McCulloch, Marshall,DeCuir-Gunby and Caldwell (2013)-**study in USA but with group of kindergarten teachers on their mathematical autobiographies- article provided a lot of food for thought. Discusses intervention that worked in developing teacher expertise.

LITERATURE

Identity literature- A comprehensive review of mathematics learner identity literature has been conducted from **Darragh, 2015 and Radovic, Black, Williams, & Salas, 2018-** main argument is that although literature exists around mathematics Learner Identity and Mathematics Identity, there is a lack of conceptual coherence.

They discuss three ways the literature conceptualises identity in mathematics:

- Social/ subjective- self/ constructivist/
- Enacted/ representational
- Change/ stability

LITERATURE

Career trajectories- literature reasonably sparse that provides a context for primary teachers, careers and PMaSTs career trajectories.

- **Chen (1998)** discusses career as follows:
  - Career as a Life process
  - Career as individual agency
  - Career as meaning making.

- **Draper, Fraser & Taylor (1998)-** work with range of primary and secondary teacher developing leadership roles and their career aspirations.

- **Ibarra (1999a, 1999b, 2004,)-** substantive body of work looking at careers as a continuum as opposed to static. Linked to CPD and life long development.

- **McCormack, Gore and Thomas (2006)** provide some evidence for early career teachers valuing a sustained process of professional learning opportunities.

- Recent government statement on developing early career opportunities to develop Chartered Teacher Status, is a positive step in sustaining this.

GAPS

Research into Primary mathematics specialists in England and broadly across significant comparable countries.

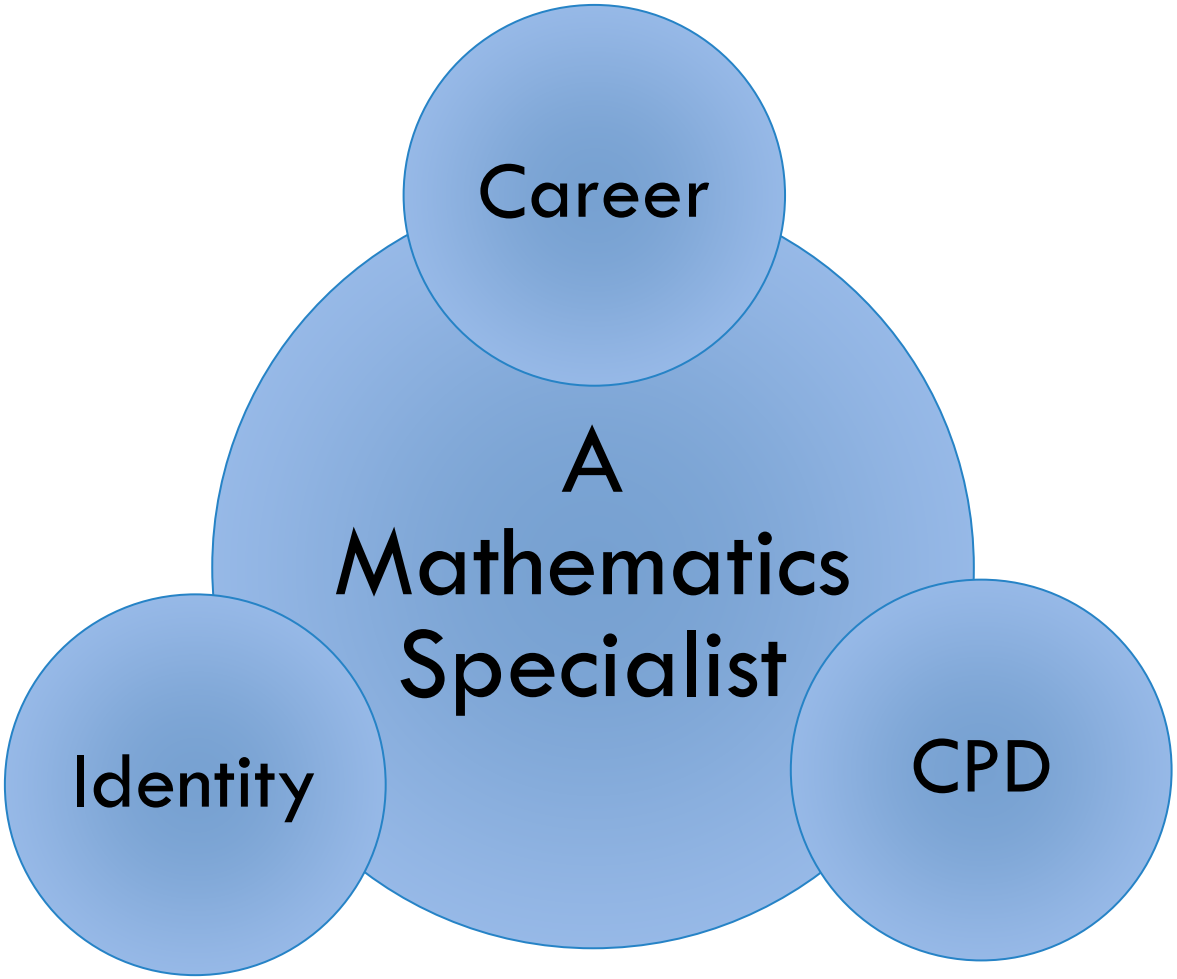
Data sets missing in the number of maths specialists in primary schools, sporadic and not factored into the annual data census.

Identity literature gaps in primary teachers developing as PMaSTs… how they build this identity and agency as PMaSTs.

Teacher career trajectories and decision making into subject leadership roles such as PMaST and how these build over time.

Theoretical suggestions around a mathematics identity are not asserted by researchers, therefore, there remains a gap in theorising and framing a primary teachers' mathematics identity and how this develops over time.

Developing a Framework for my ideas.


Career
A Mathematics Specialist
Identity
CPD

THEORIES I HAVE DRAWN UPON

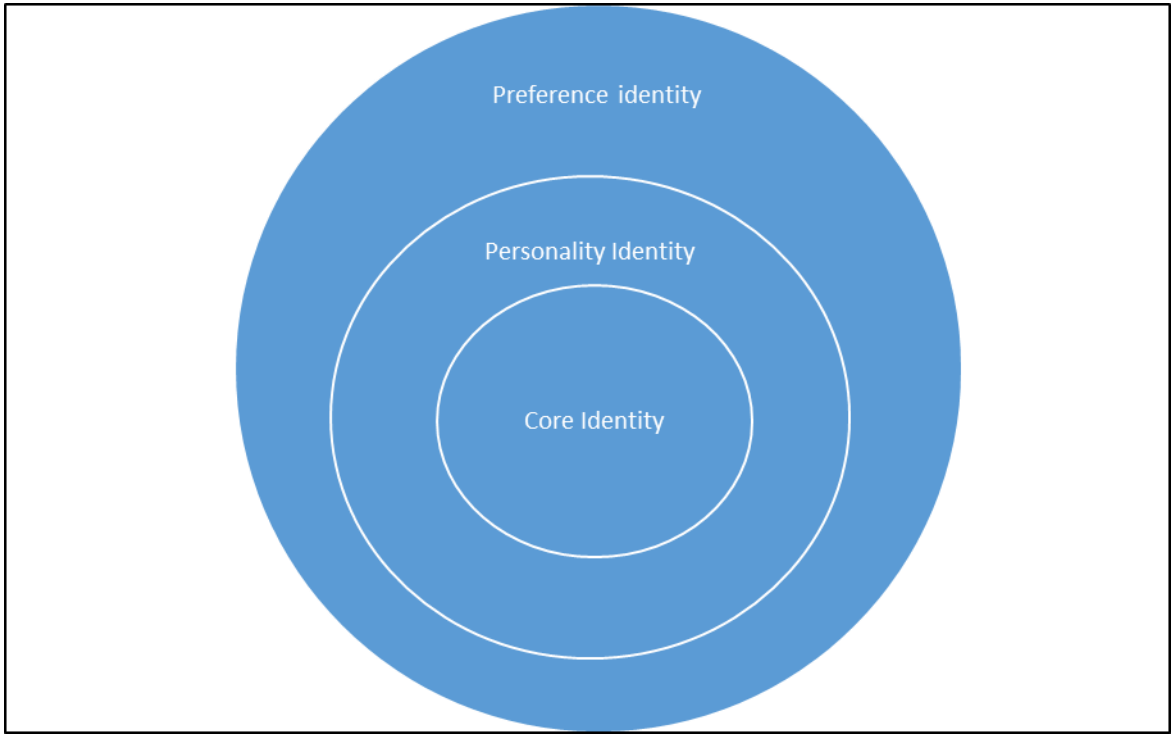
Lave and Wenger (1998)- **Situated learning and Communities of Practice**

Illeris (2014)- **Identity constructs-core, personality and preference**

Ibarra, H. (2004). **Working identity: Unconventional strategies for reinventing your career**: Harvard Business Press.

Berger and Luckmann (1966) – **social construction of reality and identity-** instituliasation plays a key role in construction of an identity within a school context.

IN PARTICULAR, I DREW HEAVILY ON THE WORK OF ILLERIS (2014) AND HIS IDENTITY WORK



THE NARRATIVE/ LIFE HISTORY APPROACH

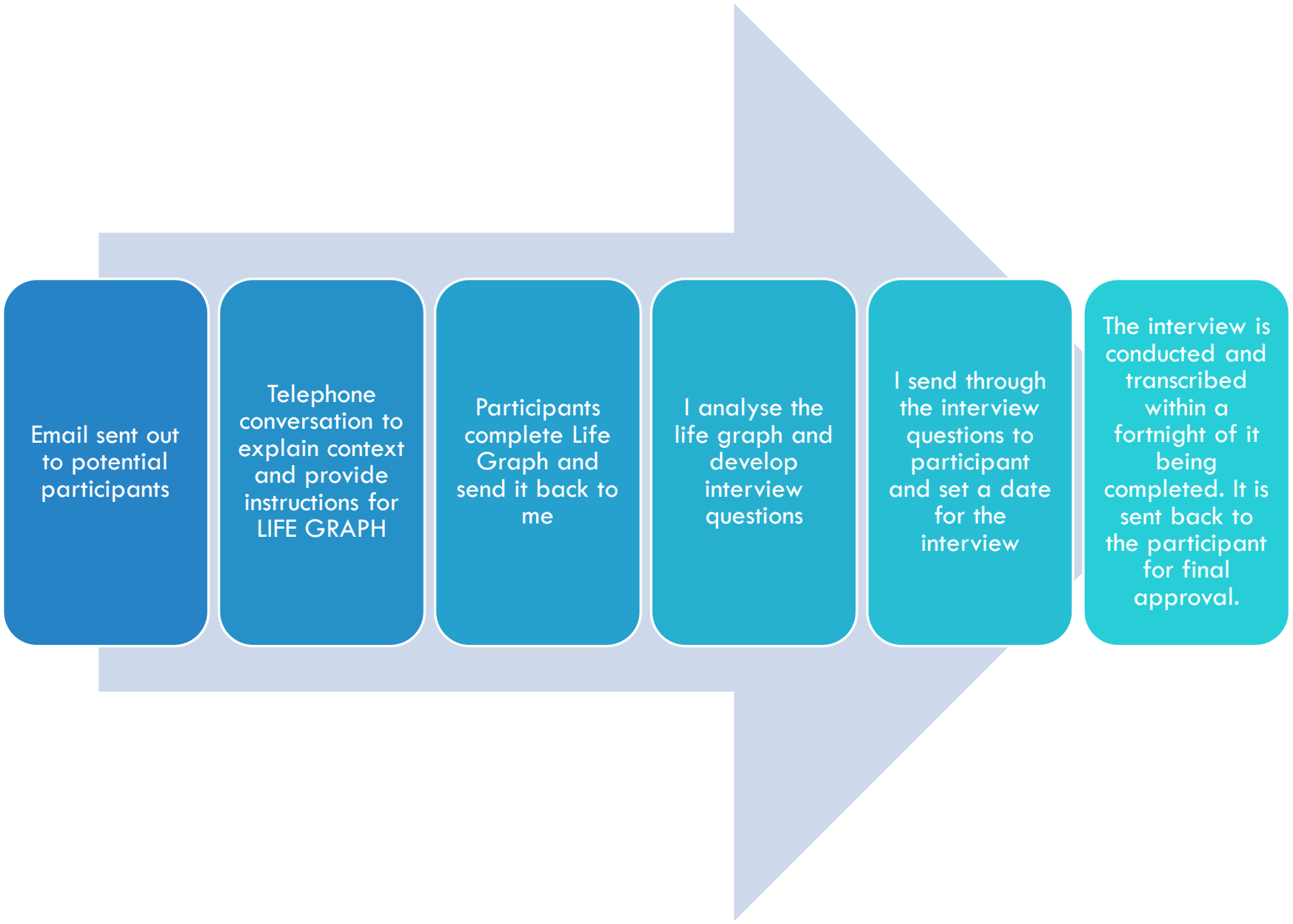
How PMaSTs negotiate their **self-identities,** including their identities as **mathematics learners** and **mathematics educators.**

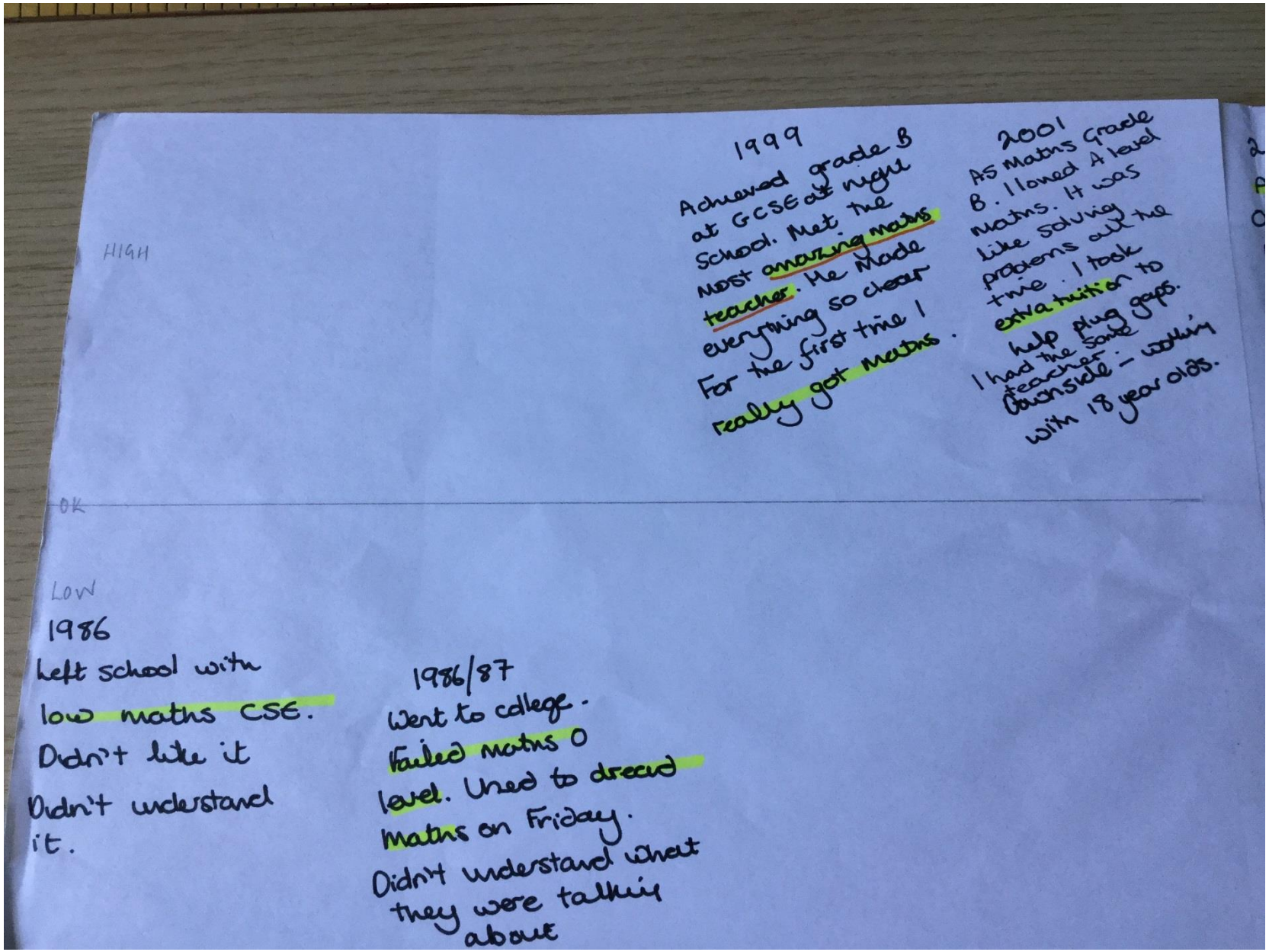
How PMaSTs experience, create and make sense of their career development and the significant moments which or people who enable/hinder their career development.

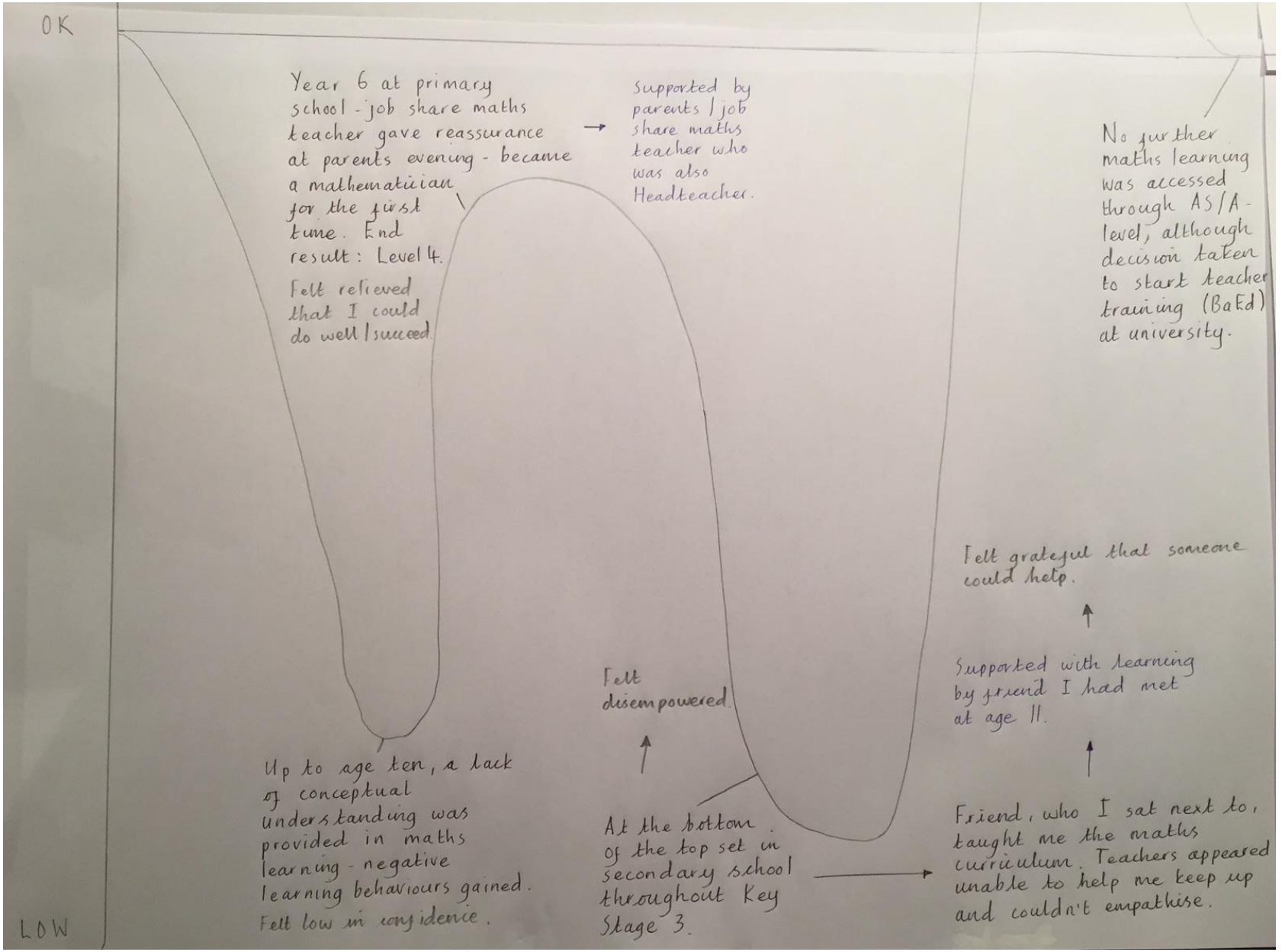
How these PMaSTs build their agency as experts and inform their career paths as a result of developing these complex identities.

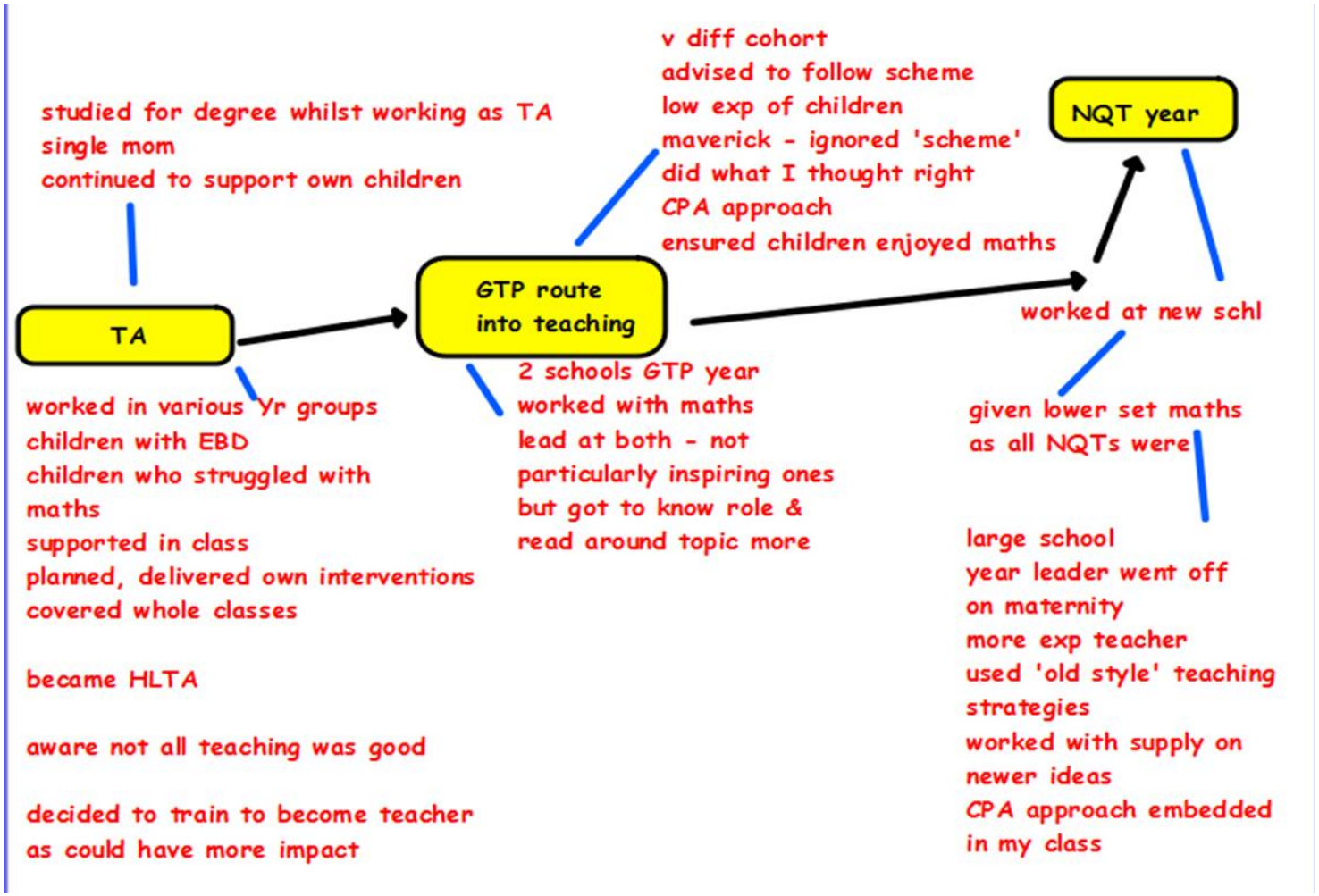
(Goodson and Sikes 2001).

My Data collection process and methods used


Email sent out to potential participants
Telephone conversation to explain context and provide instructions for LIFE GRAPH
Participants complete Life Graph and send it back to me
I analyse the life graph and develop interview questions
I send through the interview questions to participant and set a date for the interview
The interview is conducted and transcribed within a fortnight of it being completed. It is sent back to the participant for final approval.


HIGH
1999
Achieved grade B at GCSE at night School. Met the most amazing maths teacher. He made everything so clear For the first time I really got Maths.
2001
AS Maths Grade B. I loved A level maths. It was like solving problems all the time. I took extra tuition to help plug gaps. I had the same teacher Chronicle - working with 18 year olds.
OK
LOW
1986
left school with low maths CSE. Didn't like it Didn't understand it.
1986/87
Went to college. Failed maths O level. Used to dread Maths on Friday. Didn't understand what they were talking about


OK
LOW
Year 6 at primary school - job share maths teacher gave reassurance at parents evening - became a mathematician for the first time. End result: Level 4.
Felt relieved that I could do well / succeed.
Supported by parents / job share maths teacher who was also Headteacher.
No further maths learning was accessed through AS/A-level, although decision taken to start teacher training (BaEd) at university.
Felt grateful that someone could help.
Supported with learning by friend I had met at age 11.
Friend, who I sat next to, taught me the maths curriculum. Teachers appeared unable to help me keep up and couldn't empathise.
At the bottom of the top set in secondary school throughout Key Stage 3.
Felt disempowered.
Up to age ten, a lack of conceptual understanding was provided in maths learning - negative learning behaviours gained.
Felt low in confidence.


studied for degree whilst working as TA
single mom
continued to support own children
TA
worked in various Yr groups
children with EBD
children who struggled with maths
supported in class
planned, delivered own interventions
covered whole classes
became HLTA
aware not all teaching was good
decided to train to become teacher as could have more impact
GTP route into teaching
v diff cohort
advised to follow scheme
low exp of children
maverick - ignored 'scheme'
did what I thought right
CPA approach
ensured children enjoyed maths
2 schools GTP year
worked with maths lead at both - not particularly inspiring ones but got to know role & read around topic more
NQT year
worked at new schl
given lower set maths as all NQTs were
large school
year leader went off on maternity
more exp teacher
used 'old style' teaching strategies
worked with supply on newer ideas
CPA approach embedded in my class

NARRATIVE INTERVIEW EXTRACTS

"so emm and I can remember being at secondary school and it was just like someone was talking Japanese to me, I couldn't understand it didn't, I just didn't know anything about it at all and I left secondary school really failing in it and I went onto college for a year and I took maths and it was on a Friday and in the end I just bunked off because I just hated it …" (Reece)

NARRATIVE INTERVIEW EXTRACTS

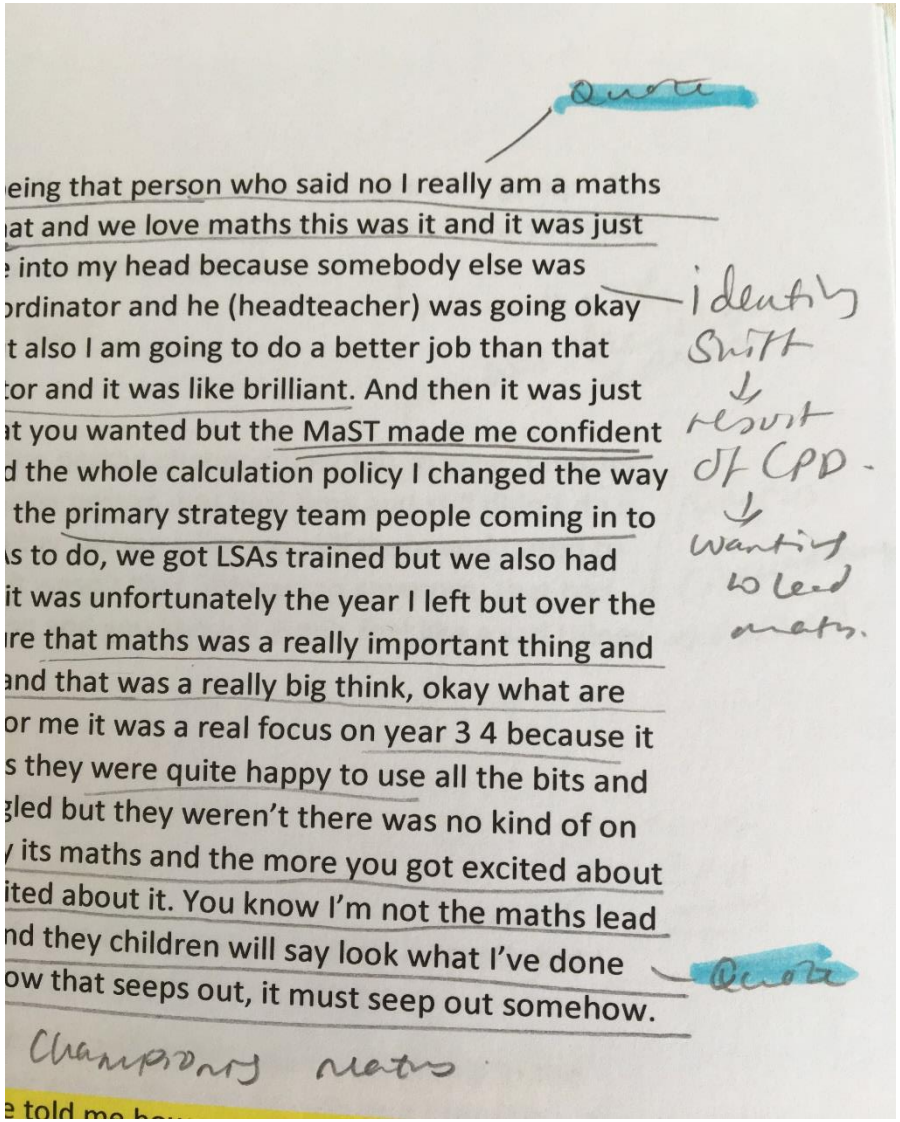
"and it was only really in when I got to year 6 that I found a teacher who had some belief in me as a mathematician …I recall a parents evening in year 6 where it was verbally fed back to my parents whilst I was present that I had made some steps forward. I guess the very final memory from primary school was being the very first year of the KS2 SATs testing …I was predicted a level 3 …I did attain the level 4 on the test which I find quite ironic looking back." (Gregory)

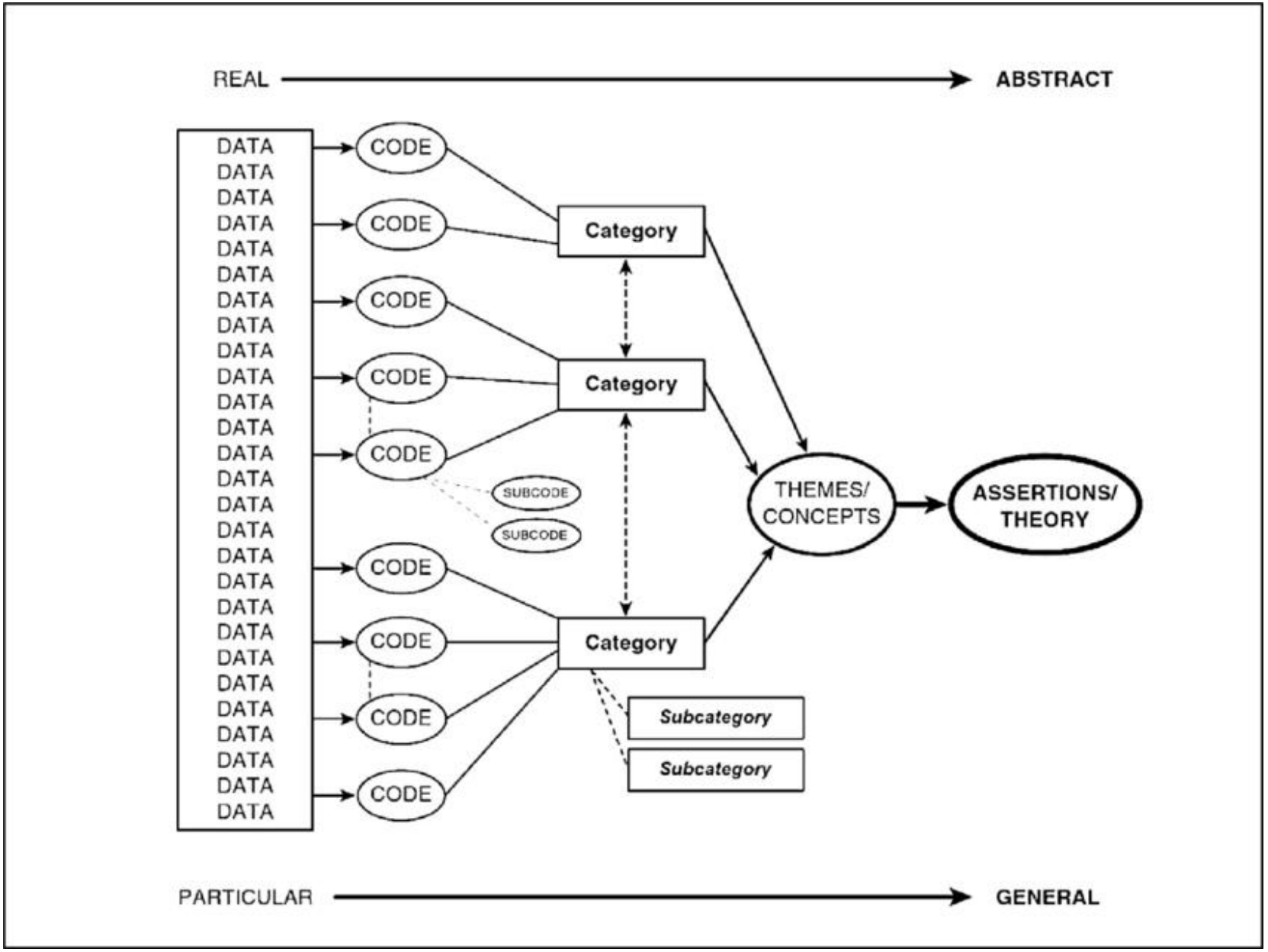
NARRATIVE INTERVIEW EXTRACTS

and at that moment I was like, okay I am not used to publically being good at maths… I think at Primary school I was just, I quietly felt achievement because I was further ahead with the book (scheme book) but nobody else knew that emm, and then so that was my very first maths lesson in secondary school, emm and I got teased a little bit for it and that set me feeling well actually no you don't do that again you can quietly do your stuff but you don't show anybody that you have done your stuff." (Belinda)

Data Analysis

Initial reading through of the data





Saldana (2016)

Illustrating examples of themes emerging from one extract of the coding process.

Structural coding/ open coding (first cycle)	Axil coding/ linking/ analysing data into themes (second cycle)	Selective coding- linking the themes to the literature and the conceptual framework.
Enjoying mathematics at primary school	Love for mathematics	
Gifted mathematician	Developing mathematics resilience through developing independence in mathematics	Identity as a learner of mathematics
Self-motivation		The core layer of identity
Teacher believing in potential	Being influenced by teachers (Positive and negative)	Identity as building confidence in the learning of mathematics
Teacher lack of confidence to work with confident mathematician		
Teaching approaches led to negative attitudes towards mathematics		Personality layer of identity
Interactive, practical mathematics teaching at school, enjoyed learning		
uninspiring teachers and 'bland' mathematics lessons		
Placed in a low set for mathematics		
Working with family on homework	Home and personal influenced positive and negative	Identity core layer with elements of personality layer
Parents playing a positive role in mathematics development		
Seeing parents gain mathematics qualifications- positive role models		
Could not relate to mathematics- like a foreign language	Anxiety about learning mathematics	Identity as a preference layer- influenced by learning experiences
lacked confidence in learning mathematics at grammar school		
Being picked upon to answer questions in class		
Mathematics tests in class		
Left to learn mathematics via a textbook		
Peer group influence		

FINDINGS- BEGINNINGS OF A PMAST

Becoming- From experience of learning mathematics at school and at home to becoming a Primary Teacher and a PMaST

- Family
- Friends/ peers
- Community- school, university, workspace
- Interactions between

FINDINGS- BEING A PMAST

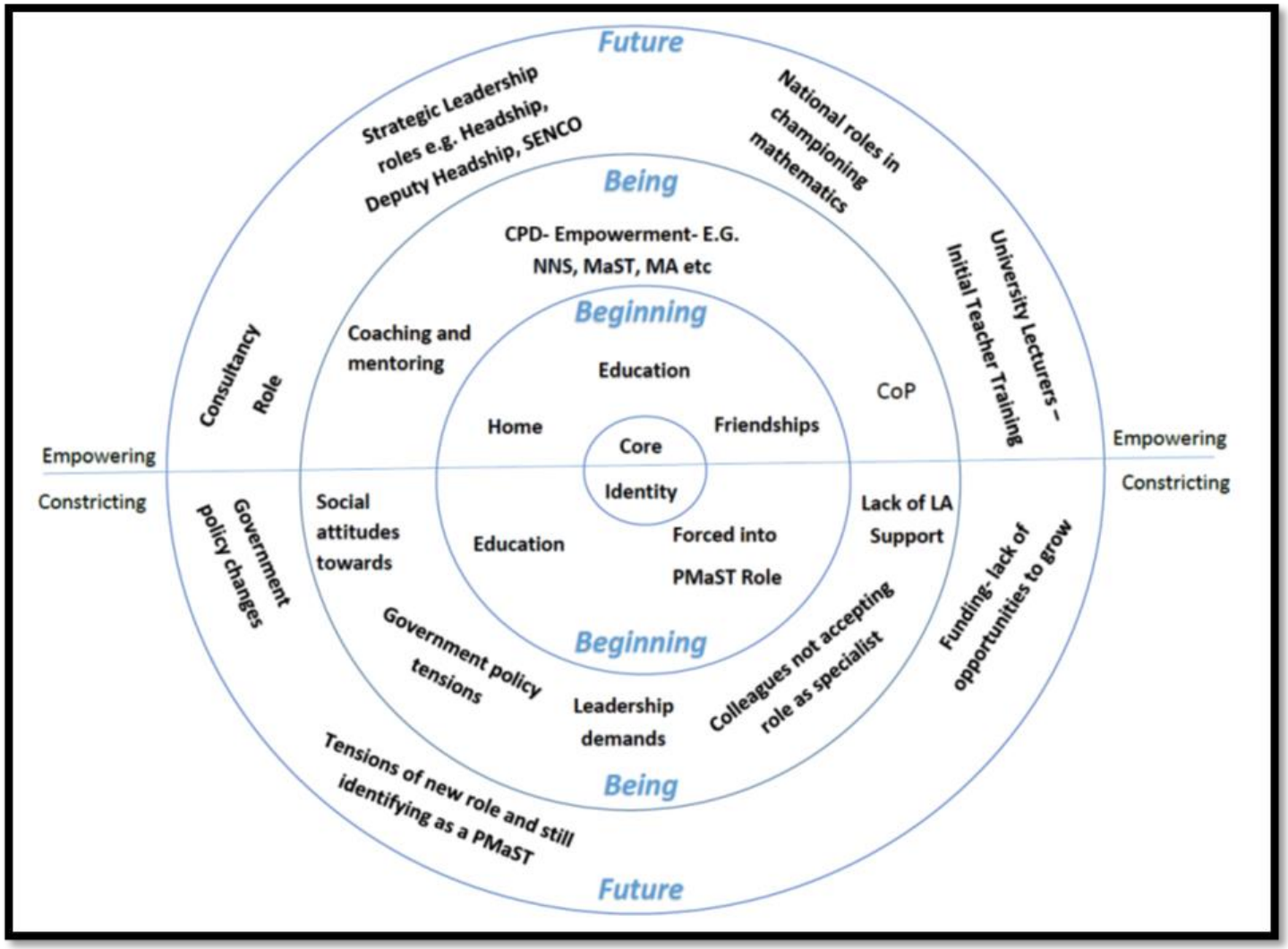
Being- From experience of learning mathematics at school and at home to becoming a Primary Teacher and a PMaST

- Stumbled into role
- Spotted by leadership in school or Local Authorities
- Anxious as did not see themselves as champions of mathematics
- Enablers for developing into PMaSTs-
  - mentoring and coaching,
  - professional learning (nationally funded courses)- structured and sustained over time
  - Support from leadership
  - Professional networks
  - Empowering process


transformational
provoking
deepening
reigniting
worthwhile
inspiring
thought
reassuring
invaluable
exciting
engaging
mind
useful
interesting
fantastic
positive
insightful
empowering
challenging
brilliant
fun
expanding
enlightenment
inspirational
knowledge
practical

FINDINGS- FUTURE- CHAMPIONING MATHEMATICS

THEORETICAL CONTRIBUTION



CONCLUSIONS-

All participants became PMaSTs when they had no intentions to purposefully pursue this pathway for their careers. This was facilitated and constructed through significant people both in their personal and professional lives who enabled them to develop their identities as PMaSTs- **linked to Illeris (2014) identity constructs and layers of identity,**

Becoming a PMaSTs was and continues to be a transformative experience into leadership, opening more doors to career opportunities- this built their careers- links to **Ibara (2004) working identity**

All participants demonstrated and shared experiences of learning and facilitating learning in mathematics that provided to be transformative in enabling them to develop a PMaST identity- **Lava & Wenger (1988) situated learning and Communities of Practice).**

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