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Creating Physics Teachers: The Figured World of Finnish Physics Teacher Education

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Swedish Research Council Project

**Building a professional identity:
A comparative study of physics teacher
training in four countries.**

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Singapore, England, Finland and Sweden

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Project aim: Examine the different disciplinary values that are communicated to future physics teachers across the training environments they encounter and relate these to the professional identities trainees are able to enact.



Project Motivation

OECD TALIS (Teaching And Learning International Survey 2013)

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69%

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5%

Project research questions

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2. What are the potential affordances and constraints of these discourse models/figured worlds for the constitution of physics teacher professional identities?
3. In what ways do perceptions of the status assigned by society to the teaching profession potentially affect this professional identity building?

Data collection

Interviews with:



Data collection

Interviews with:

3 physics lecturers

Data collection

Interviews with:

3 physics lecturers
3 teacher trainers

Data collection

Interviews with:

- 3 physics lecturers
- 3 teacher trainers
- 3 school mentors

Data collection

Interviews with:

3 physics lecturers

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6 students

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The environments that
students meet

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The environments that
students meet

How students negotiate
these environments

Findings from the Swedish study

*Larsson, J., Airey, J., Danielsson, A, and Lundqvist E. (2018) A fragmented training environment:
Discourse models in the talk of physics teacher educators.
Research in Science Education, <https://doi.org/10.1007/s11165-018-9793-9>*

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Four discourse models

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Physics expert dominant

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Each model unintentionally devalues the others

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Research questions for the Finnish study

1. What attributes of a 'good' physics teacher do Finnish teacher educators say are important for trainee physics teachers to develop?
2. To what extent do teacher educators across different educational settings mention similar attributes, that is, to what extent do they appear to share the same figured world?

Data collection

Semi- structured interviews circa 60 mins with 11 educators

- 3 physics lecturers at the dept of Physics, Åbo
- 5 teacher trainers
 - 3 from the dept of Mathematics and Science Education, Vasa
 - 2 from the dept of General pedagogy, Vasa
- 3 school mentors at the Special training school, Vasa

Interview questions

- 1) *“What constitutes a ‘good’ physics teacher?”*

- 2) *“How do you see your/your department’s role within the physics teacher education as a whole?”*

Theoretical framework

Figured worlds (Gee 2014, c f “discourse models”
Gee 2005; 2011)

“... simplified, often unconscious and taken-for-granted theories or stories / (pictures, images, constructs) / about how the world works ... guided, shaped and normed by (the interactions in) the social and cultural groups” in which they take place” (p 95).

Data analysis

Iterative process

- 1) Coding of attributes of “a good physics teacher” - and “a bad physics teacher” - in TRANSANA: sequences of different lengths encoded according to (multiple) codes/labels and curated into "collections“ of attributes
- 2) Attributes organised into categories of “a good physics teacher”

Subject matter expert

- Physics expert
- Passionate about physics
- Promotes students' interest in physics

Didactics expert

- Expert in physics education
- Passionate about physics education
- Promotes students' interest in physics education

Pedagogical expert

- Task oriented teaching

(Beijaard, D, Verloop, N & Vermunt, Jan D 2000)



ONE
COMMON
FIGURED
WORLD

3. Interpretation of categories into Figured world(s) .. ongoing

Following Gee (2014), the questions that guided our analysis included: “*What figured worlds are relevant here? What must I as an analyst, assume people feel, value, and believe, consciously or not, in order to talk ... this way? Are there differences here between the figured worlds that are affecting espoused beliefs and those that are affecting actual actions and practices? ... What Discourses ... are these figured worlds helping to reproduce, transform, or create?*” (p 115).

Preliminary findings

- Q: In which setting, mainly, would you say the following 30 competencies are developed?

“There is a dialogue and reflection concerning these different competencies, and it’s therefore not relevant to attribute them to any one of the settings more than to another” (GP2)

- The training school was seen as the place where all of the desired competencies are applied, reflected upon and brought together.

- *” The four environments form pieces of a jigsaw puzzle that need to be brought together. The different environments contribute in terms of diverse situational settings to the teacher student’s learning and development. This, in turn, presupposes a mutual knowledge about each other and each other’s emphasis , as well as a mutual accountability”*
(GP₂)

- Educators communicate the **same figured world**.
- Each contribute to a **shared vision** of what is needed to develop professional physics teacher identities.
- One lecturer (in physics) expresses dissenting values from the rest at one point but quickly suggests that this viewpoint is incorrect.

- Department of Mathematics and Science Education works closely together with the Training School (not with the physics dept.)
- There is **mutual trust** and respect among the teacher educators from the different departments, and a **shared responsibility**.
- Becoming a physicist or a physics teacher are **equally valued**.
- Compare this to Swedish results.

Major differences compared to Sweden

- Everyone communicates the same goal(s)
- The physics teacher vocation is a profession with **high status in society**
 - Important public service: building the country
 - Autonomy: towards the curriculum, trusted by students, parents, society and colleagues
 - Advisory board
- **Dedicated training school** where practicum mentors saw themselves as first and foremost teacher educators.

Future work

- Interviews with trainee teachers.
- Do they experience the education as communicating the same figured world?
- Do they mention the same attributes of a good physics teacher as the educators?
- Parallel studies in England and Singapore.

References

- Beijaard, D, Verloop, N & Jan D. Vermunt, Jan D (2000). Teachers' perceptions of professional identity: an exploratory study from a personal knowledge perspective. *Teaching and Teacher Education* 16, 749-764
- Gee, J. P. (2005). *An introduction to discourse analysis: Theory and method* (2nd ed.). New York: Routledge.
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Two “building blocks”:

Identity: *taking on, “pulling off” or attributing a certain identity or role to oneself or others*

Politics/distribution of social goods: “... a perspective on the nature of the distribution of social goods” (p 34). ... “something is ‘adequate,’ ‘normal,’ ‘good,’ or ‘acceptable’ (or the opposite) to some group in society,” (p 34)