**Titel og emne**

Naturfagslæreres deltagelse i efteruddannelse og udviklingsarbejde
- En ærtehalm af erfaringer og kompetencer

**Projektdeltagere**

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**Formål og forskningsspørgsmål**

Hypotese: både baggrund og forgrund påvirker læreres aktuelle deltagelse i udviklingsarbejde og efteruddannelse.

**Baggrund for projektet.**

Life history research has established how science teachers experience with teaching, nature and science has significance for their teaching practice as well as their motivation for participation in continued professional development. The retrospective approach that founds life history research leaves out a future perspective in understanding science teachers’ present teaching practice and career considerations. Science teachers’ current expectations of their future – their foregrounds – are likely to have significance for their commitment in actual professional development. There is however a lack of studies that are dedicated to qualify our understanding of the significance of experiences as well as foregrounds for science teachers’ participation in science teaching related in-service training.
Relevans


Endvidere vil sådan forskningsbaseret viden også kunne anvendes i grunduddannelse af naturfagslærere idet lærerstuderende også vil have personlige baggrunde og forgrunde som vil danne forventninger og motivation for deres deltagelse i læreruddannelse.

Teoretiske og empiriske forankringer

Lived experience and foreground as a conceptual framework

Lived experience

A recurring theme in much life history research literature is the importance of understanding lived experience (Day & Gu, 2010; Goodson & Sikes, 2001; Müller et al., 2011). Experiences are often deduced from the stories that life history researchers hear from their research participants. But the relation between the actual life, the lived experience and the stories told about these experiences is not straightforward. Feelings, emotions, desires, thoughts, etc. influence the way the experience relates to what actually happens and what has happened and how it is retold (Plattner & Bruner, 1984). This calls for reflections on what experience is and how it can contribute to an understanding of the relation between present life and work.

Daugbjerg et al. (2014) start by referring to Roth about how teacher experience is always acquired through presence in “this classroom at this time and with these students” (Roth, 2002, p. 21 italics in original). They see that this indicates that teacher experiences are gained in specific teaching situations. Personal experiences can be characterised by temporal, situational and interactional principles (Dewey, 1938), principles that can be aligned along inward, outward, backward and forward directions of experience (Clandinin & Connelly, 1994, p. 417).

The inward direction relates to feelings and moral dispositions. The outward direction relates to the social environment. The backward and forward directions relate to time. Clandinin and Connelly (1994) condense these 4 directions to 2 dimensions, one dealing with inward-outward and one dealing with backward-forward, then they add a third dimension space, which deals with the landscape of inquiry. Based on the work of Clandinin and Connelly, we redefine Dewey’s principles of experience as three dimensions. We see one dimension dealing with the temporal continuity of actions and experiences, another one dealing with the educational settings of the actions and experiences and a third dealing with the social, material and personal relations of the actions and experiences. The three dimensions provide our overall analytical framework for the interpretation of teachers’ lived experiences and their living bodies in the classroom. (Daugbjerg, et al., under review)

Humans’ power to act knowledgeably in their familiar world and settings is inseparably intertwined with their everyday experiences (Hwang & Roth, 2011, p. 2). The fundamental conditions of teacher experiences arise from an irreducible unit of being in the world and everyday knowing (Roth, 2002).

Relations are experienced most intensively in the present, in the immediate now of communicating with a person, or sensing an emotion, or enjoying a landscape, or participating in an event. All these moments of presence in relations and settings are somehow continuously seasoned into general ex-
experiences that can be activated when a similar relation or setting is encountered (Daugbjerg, et al., under review).

Teachers’ experiences are contextualised to the teachers’ living bodies based on their bodily engagement in managing classrooms, illustrating scientific principles, setting up experiments or investigations, guiding field trips, dealing with emotional relations, hunting, fishing, picking berries, gardening, bringing up their own children, feeding their own pets, etc. It is this entanglement of feelings, actions, knowledge and experiences that the teacher uses when (s)he teaches the subject matter of biology or other science subjects to the pupils (Daugbjerg, et al., under review).

**Foreground**

Within mathematics teaching it has been empirically established that pupils’ dispositions for engaging in learning and teaching originate from a dynamic relation between their lived experience and their expectations to the future (Skovsmose, 1994). When pupils decide to learn e.g. subject matter concepts, this happens in relation to their individual previous experience and in relation to their individual considerations and interpretations of options for actions in future situations and relations (Daugbjerg, Svejgaard, & Valero, 2014). This significance of expectations of future use and benefit of actual learning is described as foreground by Alrø, Skovsmose and Valero (2009). Learning is not seen as only a prescribed activity but also as a present understanding of a possible future (Daugbjerg et al, in press).

Within adult education the significance of participants interpretation of the intention of ongoing teaching is well established (Düsterdich, 2009). Adult learning is thus also connected to the participants’ expectations to the future benefit of the ongoing educational activity. Conceptualizing this participant interpretation as foreground in professional teacher development offers a coherent operationalization of the teachers lived experience and their future expectations. The participating teachers’ perspective on past, present and future forms the pivotal point of the analysis.

**Methodology**

A basic principle in narrative research is that each participant must be understood and treated on his or her own terms. This enables a deeper analysis of, among other things, hidden emotional experiences, experiences that hold central turning points and dilemmas of a human life story (Antoft & Thomsen, 2002). Much information on the significance of told events and experiences can be learned from the pace and density of a narrative (Antoft & Thomsen, 2002). Slow pace is often associated with dense description of experiences and events of great importance to the life storyteller. Narrative conventions of specific societies, as in my case the teaching profession, contextualise a given narrative. Interpretation of the narratives and the experiences behind them is performed in an existing culture where text, manuscript and genre are given cultural resources (Antoft & Thomsen, 2002). The given narratives can be combined to create many different versions of the person’s valid life story, but always representing the person as a subject in a text (Antoft & Thomsen, 2002). So in order to contextualise the participating science teachers’ narratives in the teacher profession and add a perspective on science teaching to their narratives, I had to do more than interview them. Traianou emphasises the importance of studying teachers’ actual teaching practice:

> [...] the assessment of an individual’s knowledge should be based on how this person performs, and not on what this person says about his/her own performance or what he/she can and cannot do in artificial situations. (2007, p.40)

She can be read as though she finds the use of interviews misleading or even unnecessary. Rather she puts her finger on the need to study teachers as closely as you can get to real situations. Thus, rather than simply recounting verbatim the teachers’ own accounts of their practice, nor confining
one’s study to their performance in teaching situations, you should apply a research method that brings together diverse observational data and presents teachers in all their complexity. This is important to saturate our insight in the teacher’s actual practice and his or her background for interpreting participation in in-service training.

**Method**

In order to have a rich account of a teacher’s professional life I have included interviews, observations and some contextual data regarding the school and local area where they live and work. Such a method has been tried out by Norrie and Goodson (2011) and Brickhouse and Bodner (1992). Norrie and Goodson focused on “educational restructuring and the work lives and professional knowledge of primary teachers in England” (2011, p.11). Their analysis of work life narratives was based on: “two life-history interviews and observations (of two to three days)... First interviews were unstructured and second interviews explored emerging themes.” Furthermore the participating teachers were observed and videotaped to saturate their interview description of their science teaching practice.

**Research context**

In Denmark the pupils follow the same cohort of peers from year 0 (kindergarten class) until year 9. During these 10 years of schooling the pupils meet 4 different science subjects. From year 1 to 6 they have a primary science subject called ‘Natur/teknik’ (Nature/Technique) and from year 7 to 9 they have Biology, Geography and Physics/Chemistry as three independent science subjects. For biology in lower secondary school in Denmark the purpose in force is to give the pupils knowledge on organisms, nature, environment and health. Emphasis is on biological concepts, relations and applications. In teacher education the stated identity of biology in force is the teacher students’ use of knowledge on living organisms and their surrounding environment in order to teach biology and develop biology teaching.

A science teacher in Denmark can teach one or several of the science subjects depending on the local school organisation and his/her pre-service and in-service education. In Denmark teachers’ teach different subjects and different years. This study has focused on biology teachers, but includes also teachers in other science subjects in the Danish public school.

**Arbejdsplan**

Interviewene og observationerne er gennemført, det der udestår er udvikling af et operationelt analyse apparat.

.. Seven science teachers participated in interviews regarding their life history, their experience as science teacher and their reasons for participating in continued professional development.

SAMT en samtænkning med Martin S. forskning om det organisatoriske niveau

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Science teachers’ current expectations of their future – their foregrounds – are likely to have significance for their commitment in actual professional development. There is however a lack of studies that are dedicated to qualify our understanding of the significance of experiences as well as foregrounds for science teachers’ participation in science teaching related continued professional development. Seven Danish science teachers participated in interviews regarding their life history, their experience as science teacher and their reasons for participating in continued professional development. Furthermore their teaching was observed and videotaped to saturate their interview description of their science teaching practice.