

## WORKSHOPS 1

26 August 2018 11:00 - 17:00

Exploring lived experience GS3 (11:00-17:00), A Living Theory perspective 1S7 (14:30-17:00), Qualitative content analysis 1S7 (11:00-13:30), Design Research 1S3 (11:00-17:00), Envisioning methodologies GS1 (11:00-17:00)

Workshop

Assessment and Evaluation, Cognitive Science, Higher Education, Instructional Design, Lifelong Learning

### Workshops

**Keywords:** Action research, Activity theory, Case studies, Design based research, Dialogical theory, Digital learning, Doctoral education, Higher education, Interaction analysis, Lifelong learning, Mixed-method research, Multimodal data, Out-of-school learning, Qualitative methods, Quantitative methods, Secondary data analysis, Transactional perspective to learning

**Interest group:** SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

### Exploring lived experience in classroom situations: how to analyse second-person data?

**Keywords:** Activity theory, Multimodal data, Qualitative methods, Interaction analysis

**Presenting Author:** Gilles Dieumegard, Université de Montpellier, France

This workshop aims at offering insights and discussing learning research endorsing lived experience as a unit of analysis. Lived experience is delineated as an ongoing process of coupling which is lived “from within”, it emphasizes what “a singular subject is subjected to at any given time and place, that to which she/he has access in the first person” (Depraz, Varela, & Vermersch, 2003, p.2). Investigating it supposes to gather “second-person data” consisting in accounts that are relationally constituted, using interview methods helping interviewees to retrieve and evoke their past lived experience in ecological situations. In this workshop we will focus on the comprehensive analysis of a small but complete data corpus including such second person data. As methods exploring lived experience are currently being developed in neuroscience and psychology, it is worth looking at the potential of such methods for learning research.

### A Living Theory perspective in educational research on learning and education

**Keywords:** Action research, Dialogical theory, Higher education, Doctoral education

**Presenting Author:** Jack Whitehead, University of Cumbria, United Kingdom; **Co-Author:** Marie Huxtable, Learning Education and Development Research Centre, University of Cumbria, United Kingdom

The pre-conference workshop is aimed at providing an interactive context for an in-depth examination, discussion and elaboration of a Living Theory approach to educational research on learning and education. The discussion will focus on the idea that the embodied knowledges of learning and education of participants can be made public and recognised and accredited for masters and doctoral degrees in higher education. A clear distinction is drawn between embodied educational knowledge and the knowledge created by education researchers within the disciplines of education. The idea of Living Theory research is introduced with the idea that each participant can generate a valid explanation of their educational influences in their own learning, in the learning of others and in the learning of social formations. The web-archive of over 40 Living Theory doctorates accredited by Universities around the world is introduced to demonstrate the academic legitimacy of the perspective using digital visual data.

### Qualitative Content Analysis Program QCMap – an open access text analysis software

**Keywords:** Mixed-method research, Qualitative methods, Quantitative methods, Secondary data analysis

**Presenting Author:** Philipp Mayring, University of Klagenfurt, Germany

An open access web based software program is demonstrated which is directly based on techniques of Qualitative Content Analysis (Mayring 2014). Those techniques aim at a systematic, rule-guided and inter-subjective analysis of textual material (interview and group discussion transcripts, open questionnaire material, observation protocols and field notes, documents and files). The software program leads, as an interactive tool, through the several steps of inductive category development and deductive category assignment. It presents pre-structured templates following the several steps of analysis. It is combined with explicit descriptions of the procedures and their theoretical background. The program as well as the handbook is approachable in open access ([www.qcmap.com](http://www.qcmap.com)). Workshop participants are guided to analyse a one-page interview transcript using the software. Working with those techniques can lead to an integration of qualitative (category assignment to text passages) and quantitative (analysing category frequencies) procedures in the sense of mixed methods.

### Design research: Methodology and theoretical background

**Keywords:** Action research, Case studies, Design based research, Doctoral education

**Presenting Author:** Arthur Bakker, Utrecht University, Netherlands; **Presenting Author:** Richard Lehrer, Vanderbilt University, United States

Design research is not about how education was or is, but how it *could be*. When people want to improve education or achieve new learning goals, they often need to design and change existing practice in order to research it, often in collaboration with other stakeholders. This workshop aims to explain what design research is, why it is an important genre of research, how it can be conducted and made manageable for PhD students, and to provide insight into the challenges

and yields of engaging in design research. Participants are expected to hand in brief proposals or descriptions of their research if they consider doing design research, or questions if they only want to learn about it. Due to a balanced mixture of lectures, round tables, and personal consultation, this workshop promises to help participants become acquainted better with the theoretical and practical benefits and limits of design research.

### **Envisioning methodologies to examine expanding conceptualizations of learning**

**Keywords:** Lifelong learning, Digital learning, Transactional perspective to learning, Out-of-school learning

**Presenting Author:** Crina Damsa, University of Oslo, Norway; **Presenting Author:** Antti Rajala, University of Helsinki, Finland

This workshop contributes to shaping a research agenda that aims at expanding and consolidating conceptualizations of learning. It also intends to generate research designs and methods suited for empirical examinations of such learning. The expanded conceptualization of learning entails a number of cross-cutting themes that allow addressing this emerging notion more concretely. These themes are related to expanding: a) time-space contexts, b) agency of learners, and c) purposes and socio-political contexts of learning. This workshop invites researchers, designers and practitioners to advance these conceptualizations and to explore together related methodological questions, in order to concretize ideas for further elaboration and collaboration. The outcomes will be (1) a repertoire of consolidated conceptualizations of learning viewed from an expansive perspective, (2) a set of suggestions for methodological approaches, and (3) a research agenda and a consortium aiming at jointly engaging in empirical research on these topics.

### **KEYNOTE 1, ROOM GS4 1**

27 August 2018 09:30 - 10:30

GS4

SIG 17 - 25 Keynote Session

#### **Keynote 1**

**Keywords:** Design based research, Mixed-method research, Qualitative methods, Quantitative methods

**Interest group:**

**Chairperson:** Rupert Wegerif, University of Cambridge, England, United Kingdom

#### **Explaining education events and experiences: making the case for a fat versus flat ontology**

**Keywords:** Design based research, Mixed-method research, Qualitative methods, Quantitative methods

**Presenting Author:** Susan Robertson, University of Cambridge, United Kingdom

This keynote address makes a case for considering critical realism as a meta-theoretical social ontology in developing our explanations of education experiences. I suggest that there is much to be gained by this move. First, as a philosophy of the social, it does important 'under-labouring' work in enabling the education researcher to bring together different social theories and methodologies in turn making our explanations from different vantage points and standpoints more robust. Second, in arguing that social realities are stratified (a fat versus flat ontology), and that events and experiences are the outcomes of causal mechanisms activated under particular conditions, critical realists propose new methods for generating explanations of 'why' and 'how' things happen. In the lecture, and drawing upon my own research on governing education sectors and their actors at multiple scales, I explore the epistemic and moral gains to be had in working in this way.

### **PARALLEL SESSION 1 1**

27 August 2018 11:00 - 12:30

GS1

Single Paper

Culture, Morality, Religion and Education, Educational Policy and Systems, Learning and Social Interaction

#### **Session 1**

**Keywords:** Collaborative learning, Dialogical theory, Ethnography, Knowledge creation, Mixed-method research, Multicultural education, Out-of-school learning, Qualitative methods, Quantitative methods, Sociocultural theory/Cultural psychology

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Ana Marjanovic-Shane, United States

#### **The Ontological-Epistemological Frame of Value Learning and the Life Trajectory**

**Keywords:** Dialogical theory, Knowledge creation, Mixed-method research, Qualitative methods

**Presenting Author:** Liam Francis Gearon, University of Oxford, United Kingdom; **Co-Author:** Arniika Kuusisto, Stockholm University, Sweden

Our paper presents an account of the ontological-epistemological framing of our empirical studies using a synthesis of value learning theory and the life trajectory research methodology (Authors 2017). Theoretically we outline an approach that draws on (though not uncritically) the tradition of ontology from Heidegger (1978) and the philosophical hermeneutics

of Gadamer (1992; 2001; 2004; 2007; Hahn 1997; Wolin 2000). Briefly noting the ethical complications in these theorists' lives, we concur with Gadamer that knowledge of the 'sociohistorical world' derives from attempts 'to understand the phenomenon itself in its unique and historical concreteness' (Gadamer, 2007, 4). Methodologically, then, we draw (again not uncritically) from the tradition of life biography and narrative research (Goodson 2017a; 2017b; Goodson, Antikainen, Sikes & Andrews 2017). In presenting an ontological-epistemological framing for our empirical studies we examine the multi-layered and multi-disciplinary structures of value learning as ontological and epistemological processes – often fraught with ethical and moral tensions – in the context of the life biography, narrative or trajectory. We outline how we have applied this approach to a variety of educational contexts, from early learners to seasoned educational professionals. But here we want to present the possibility of extending our model of negotiated value learning in the life trajectory to other professional and life settings.

#### **Learning to be a "better" citizen? Towards pragmatist normativity in development research**

**Keywords:** Knowledge creation, Quantitative methods, Ethnography, Out-of-school learning

**Presenting Author:**Katariina Holma, University of Oulu, Finland; **Co-Author:**Tiina Kontinen, University of Jyväskylä, Finland

International development research is an openly normative field that is closely intertwined with development practice and policy. In parallel with its normative commitments, it constantly debates, in many ways, the prioritization between descriptive and prescriptive knowledge. We argue that these debates revolve around the basic philosophical distinction between normative and descriptive statements. Drawing from philosophical pragmatism, we suggest a notion of *pragmatist normativity* in order to better identify and reflect on how normativity manifests in different aspects of research. Motivated by the increased importance of both promoting and researching active citizenship in development, we illustrate how normativity evolves in design, funding, theoretical frameworks, fieldwork, and reporting of research. We draw examples on our ongoing research on growth into citizenship, where the central concepts - development, learning, and citizenship - all tend to be normatively defined by researchers and the practitioners alike.

#### **Dialogicity: a powerful framework for articulating learning in a multi-cultural learning society**

**Keywords:** Dialogical theory, Mixed-method research, Sociocultural theory/Cultural psychology, Collaborative learning

**Presenting Author:**Yifat Ben-David Kolikant, Hebrew University of Jerusalem, Israel; **Co-Author:**Sarah Pollack, The Hebrew University of Jerusalem, Israel

Today's schools should prepare students to fruitfully collaborate with others, including with people whose worldviews and ideas differ from or even conflict with their own. However, what does successful (collaborative) learning mean in these situations? What is the mutual interplay between group knowledge and the knowledge of the individual group members? We discuss the limited exploratory power of both the socio-cognitivist and socio-cultural approaches to effectively learn in these situations. We suggest that dialogical theory be used as a powerful framework because it views individual knowledge as a social entity, and meaning as existing within the boundaries of the speaker and the listener. Hence, fruitful collaborative learning means making changes in the ways we respond to the other's voice in various situations (or "measurements"). We draw on the analyses of discussions and essays of Israeli Jewish and Israeli Arab/Palestinian students who collaboratively e-investigated historical events in the Israeli-Palestinian conflict.

#### **Devising a conceptualisation of a dialogical Muslim-self and a dialogic theory of Islamic education**

**Keywords:** Dialogical theory, Multicultural education, Sociocultural theory/Cultural psychology, Collaborative learning

**Presenting Author:**Farah Ahmed, University of Cambridge, England, United Kingdom

This paper is a theoretical dialogue both within the classical Islamic educational tradition, and across Islamic and 'western' conceptualisations of dialogic education, namely neo-Vygotskian sociocultural theory and Bakhtinian Dialogism. It presents a developing theoretical framework that takes a neo-Ghazalian approach to develop a conceptualisation of *shakhsyah Islamiyah* as a dialogical Muslim-self imbued with agency. This conceptualisation is then used as a basis for developing a dialogic understanding of traditional Islamic terms for education namely *tarbiyah*, *ta'lim* and *ta'dib*. The pedagogical function of these terms is illustrated through the vehicle of dialogic *halaqah* (a traditional oral circle of learning). Relationships between thought, language and the development of the cognitive, affective and spiritual domains of the human personality, are investigated. The implications of this theoretical work for teacher authority and learner autonomy in Islamic educational practices in the twenty first century, and for Muslim engagement with the secular other, are explored.

## **PARALLEL SESSION 1 2**

27 August 2018 11:00 - 12:30

2S5

Single Paper

Learning and Instructional Technology, Learning and Social Interaction, Motivational, Social and Affective Processes

### **Session 3**

**Keywords:** Collaborative learning, Comparative studies, Content analysis, Discourse analysis, E-learning/Online learning, Learning analytics, Mixed-method research, Motivation and emotion, Multicultural education, Out-of-school learning, Quasi-experimental research, Secondary education, Survey research

**Interest group:** SIG 08 - Motivation and Emotion, SIG 17 - Methods in Learning Research

**Chairperson:** Ola Helenius, University of Gothenburg, Sweden

### **Secondary students' attitudes towards science-based technology - A pragmatic mixed-method study**

**Keywords:** Mixed-method research, Motivation and emotion, Out-of-school learning, Secondary education

**Presenting Author:**Robbert Smit, University of Teacher Education St.Gallen, Switzerland; **Co-Author:**Nicolas ROBIN, Fachdidaktik Naturwissenschaften, Switzerland; **Co-Author:**Christina De Toffol, University of Teacher Education St.Gallen, Switzerland

As part of an ongoing cooperation project between industry and secondary schools we try to find factors explaining the students' attitudes towards STEM with a special focus on science-based technology. We describe with the help of the teachers and the industry partners the development of the project. The data derives from a student questionnaire and interviews with teachers and workplace trainers. Hence, the aim is to let different kinds of evidence converge into a meaningful whole: ontological, epistemological, axiological, and methodological. Results from the quantitative part indicate that attitudes are rather low in general and as expected significantly lower for girls. Best motivational predictors for career interest in science related technology are enjoyment, personal value and a high self-concept in science-based technology. Based on the qualitative part it shows that technology is an integrated, but not very prominent part of science instruction in all participating schools.

### **Effective cooperative learning: Learner Behavior on Social Network**

**Keywords:** Content analysis, Learning analytics, Collaborative learning, E-learning/Online learning

**Presenting Author:**Mei-Shiu Chiu, National Chengchi University, Taiwan

This study aimed to identify students' effective cooperative learning behaviors on Facebook with group task performance as the criterion for effectiveness. The students registered in a course, using Facebook as part of the learning management system. The students' online behaviors were scraped from the online groups and analyzed using both educational and data science methods. The analysis results revealed that students had more likes than comments on the class Facebook group but more comments than likes on their student groups. The highest-performance group had more comments than the lowest-performance group. The highest-performance group had the pattern of effective cooperative learning behaviors as fully member involvement in decision making, positive attitudes to build group discipline, and intensive comments especially at the early stage of group process. This study contributes to the knowledge of effective cooperative learning by using a new form of educational data and data analysis methods.

### **How students' mindsets predict academic achievement? Comparing Chinese and Finnish students**

**Keywords:** Motivation and emotion, Multicultural education, Survey research, Comparative studies

**Presenting Author:**Junfeng Zhang, University of Helsinki, Finland; **Co-Author:**Elina Kuusisto, University of Helsinki, Finland; **Co-Author:**Kirsi Tirri, University of Helsinki, Finland

Mindsets are beliefs that individuals hold about their most basic qualities and abilities. To have a fixed mindset is to believe that human qualities such as intelligence and giftedness, are immutable; to have a growth mindset is the belief that basic qualities can be cultivated with effort. Previous study illustrates (Zhang, Kuusisto, & Tirri, 2017) students' mindsets can play roles of cause and mediator in academic achievement. Mindset can also be an outcome of students' academic achievement. However, some studies indicate that the relationship between mindset and achievement is non-correlational. This study aims to answer the following research questions (1) How do Chinese and Finnish students view the nature of intelligence and giftedness? (2) How do Chinese and Finnish students' mindsets predict their academic achievement? This investigation was conducted from one Chinese (N =705) and two Finnish middle schools (N = 495) with Dweck's and Weiner's instrument from 2017 to 2018. Participating students whose age varied from 11 to 17 are on grade 7-9. Academic achievement was operationalized with grades of math and mother tongue. Analysis indicates that Chinese middle school students do not differentiate the nature of intelligence and giftedness, but Finnish students do. Both Chinese and Finnish students are more likely to have a growth mindset, especially on the nature of intelligence. Both students' mindset have significant influence on their academic achievement. Theoretical and educational implications of the results are discussed and compared with previous studies.

### **Scaffolding agent and metacognition in reciprocal learning.**

**Keywords:** Quasi-experimental research, Discourse analysis, Collaborative learning, Secondary education

**Presenting Author:**Yutaka Fujita, Kumamoto University, Japan; **Co-Author:**Suzuka Nagata, Kumamoto University, Japan

In the present study, pseudo-experimental design was applied to investigate the effect of the timing of teacher instruction (expert scaffolding) in relation to the period (early, mid, late) of students' collaborative learning (reciprocal scaffolding). The high school second grade of 10 students (three to four students brought together in a group) participated in the literacy class taking the role of examination designer through which they completed university entrance examination question in the Japanese material of short story. The main results showed that there seemed to be better timing (during mid- to late-period) of the argument when teacher-led expert scaffolding could promote students' reciprocal learning (eg. elaboration, objection, concession, et al.), and verified Holton & Clarke's argument on the qualitative (metacognitive) change in the students' learning in accord with the transition of scaffolding agent from the expert to the reciprocal.

## **PARALLEL SESSION 1 3**

27 August 2018 11:00 - 12:30

2S4

Single Paper

Learning and Instructional Technology, Learning and Social Interaction

## Session 2

**Keywords:** Collaborative learning, Dialogical theory, Digital learning, Discourse analysis, Early childhood education, Ethnography, Higher education, Interaction analysis, Multimodal data, Primary education, Sociocultural theory/Cultural psychology

**Interest group:** SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

**Chairperson:** Alfredo Jornet Gil, University of Oslo, Norway

### **What mediates children's emerging knowledge? Insights from visual ethnographies**

**Keywords:** Multimodal data, Sociocultural theory/Cultural psychology, Ethnography, Early childhood education

**Presenting Author:** Robin Samuelsson, Södertörn University, Sweden

This presentation aims to consider how visual approaches in ethnography can be used to inform key questions in sociocultural theory. The presentation builds on two projects that have been informed by the 'visual turn' in ethnographical studies. These approaches have drawn the attention from the documentation of linguistic or easily noted behaviours to how these are only some of the constituent parts of embodied interaction. Examples are drawn from the interaction of newcomer, second-language speaking children and children developing conceptual understanding. The examples are used to show how children use various bodily means, in interaction with others, and artifacts in mediating activities. It is suggested that what counts as means of mediation in sociocultural research can be extended to include a whole range of bodily means that are used by children to mediate between them and their emerging understanding of the world.

### **Motive-demand dynamics in a novel educational making and design environment**

**Keywords:** Sociocultural theory/Cultural psychology, Interaction analysis, Digital learning, Primary education

**Presenting Author:** Antti Rajala, University of Helsinki, Finland; **Co-Author:** Kristiina Kumpulainen, University of Helsinki, Finland; **Co-Author:** Anu Kajamaa, University of Helsinki, Finland; **Co-Author:** Jasmiina Korhonen, University of Helsinki, Finland; **Co-Author:** Riikka Olkinuora, The University of Helsinki, Finland

Making and design environments have aroused recent educational interest. These typically account for spaces that support interest-driven engagement in hands-on creative activities with a range of digital artifacts. This study aims to contribute to current research knowledge on the educational potential of making and design environments in schools by investigating the motive-demand dynamics and emerging tensions in the social activity between students and teachers. The data stem from a Finnish school that has recently introduced a new design and making environment, the FUSE Studio. Our study illustrates how the students and teachers interaction included a tension-laden interplay between the motives and demands of their activity situated across personal, relational and institutional contexts. The findings make visible how the established ways of working and being at school interacted and came into tension with the students' and teachers' motive orientations, limiting and at times transforming the social context of learning and teaching.

### **The social dynamics of task interpretation: groups of students making sense of a collaborative task**

**Keywords:** Dialogical theory, Discourse analysis, Collaborative learning, Higher education

**Presenting Author:** Giuseppe Ritella, University of Helsinki, Finland; **Co-Author:** Fedela Feldia Loperfido, University of Bari, Italy

The reaching of a shared understanding of a collaborative task is an important process which might mediate the students' engagement in the task. This process might result in deviations from the teachers' intentions, potentially jeopardizing the learning process and outcomes. The research on task interpretation has uncovered many aspects of this process. Nevertheless, there is still a need to better understand the role that the social dynamics within the group can play for collaborative sensemaking. The aim of this paper is to discuss if and how the reaching of a shared understanding of a collaborative task is interconnected with the social dynamics taking place within the group. As a preliminary work we have identified paradigmatic excerpts where the students' discursive positioning show a connection between the interpretation of the task and the social dynamics under development within the group. Although the analysis is ongoing, the preliminary analysis indicate that the social dynamics within the group seem connected to the reaching of a shared understanding of the task. In particular, misunderstandings concerning the task seem to take place frequently between participants with different background, while students with similar background (e.g. tech experts sub-group) tend to work more together, to position themselves discursively as a subgroup and to reach a higher degree of reciprocal understanding concerning the task.

### **Lost in abstraction? Uses of epistemological metaphors in the teaching of computational thinking**

**Keywords:** Sociocultural theory/Cultural psychology, Digital learning, Higher education, Primary education

**Presenting Author:** Patrik Lilja, Halmstad University, Sweden; **Co-Author:** Thomas Hillman, University of Gothenburg, Sweden

This conceptual paper addresses the uses of epistemological metaphors (Thagard & Beam, 2004) in the emerging

educational domain of computational thinking, programming and data science. The point of departure of the analysis is descriptions of abstraction, widely considered to be a core aspect of computational thinking. Abstraction in this context is often described as the removal of 'irrelevant' details to make a problem accessible to algorithmic solutions. Some authors, most notably Stephen Wolfram, further claims that computational thinking makes the world and by extension content in different school subjects more transparent and easier to understand. This yields the impression that the result of abstraction is simply a better or more useful picture of the world or subject matter, not a picture from a very specific point of view. The use of visual metaphors by Wolfram are further analysed drawing on Robert Romanyshyn's (1989) study of the development of the linear perspective in art and its radical consequences for cultural understandings of the relationship between the world, humans and technology. The conceptual analysis also describes alternative metaphors grounded in empirical work in the field of data science, including Roth's (2013) analysis of scientists recontextualisation of abstracted data and Philip, Olivares-Pasillas and Rocha's (2016) study of racial aspects of visualizations that emphasizes dispute and antagonism. In response to these and Wolfram's approach, a reflexive pedagogy of computational thinking is considered that raises the question, can what is lost in abstraction become the figure?

#### **PARALLEL SESSION 1 4**

27 August 2018 11:00 - 12:30

1S3

Symposium

Higher Education, Lifelong Learning

#### **Analyzing knowledge transformation across contexts - ontological and epistemological issues**

**Keywords:** Case studies, Higher education, Knowledge creation, Lifelong learning, Phenomenography, Qualitative methods, Sociocultural theory/Cultural psychology, Workplace learning

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Jesper Jensen, Denmark

**Organiser:** Nina Bonderup Dohn, University of Southern Denmark, Denmark

**Discussant:** Rupert Wegerif, University of Cambridge, England, United Kingdom

This symposium aims to promote dialogue between ontological and epistemological issues concerning the concept of 'situated knowledge'. The outset is the acknowledgement that knowledge is learnt situatedly, yet contemporary society requires people to traverse many settings and to use knowledge, learned in one setting, in new contexts. This raises ontological questions about the nature of situatedly learned knowledge and its status of transience or persistence across contexts. How can 'situated knowledge' and 'transformation of situated knowledge' be conceptualized, and what – if anything – remains unchanged between contexts? It also raises epistemological questions concerning the empirical investigation of transformation and resituation of knowledge. From the practice perspective, a further epistemological issue emerges concerning how to learn to transform knowledge across educational and work practices. The four papers address these issues both specifically, investigating specific content knowledge, and generally, conceptualizing different learning designs and the nature of situated knowledge as such. Thus, the first paper investigates different ontological and epistemological explanations of an apparent lack of transfer of ethical content knowledge from a continuing professional development course to caregiver practice. The second paper addresses the ontology of conceptual understanding and its transformation across different subjects in science education. The third paper analyzes the epistemology of three different learning designs aimed at supporting students in transforming situated knowledge between work settings and education, and the ontology of the knowledge involved in each of them. The last paper presents a general analysis of situated knowledge and a framework for analyzing knowledge transformation across contexts.

#### **The ontology and epistemology of ethical knowledge: some empirical results**

**Presenting Author:** Stig Børsen Hansen, University of Southern Denmark, Denmark

This paper reflects on an empirical study of transfer of learning in the context of continuing professional education in ethics for caregivers at an assisted living facility. It sets out by offering a brief account of the content and method of instruction. The training is offered by a small, specialty consultancy that offers education in ethical reflection and reasoning. The instruction relies on a relatively formal introduction to three ethical theories in combination with dilemma training and game based learning. The theoretical concepts are comparable to what one would be expected to learn about at a university based first year course in ethics. Significantly less time is spent considering the relative merits of e.g. consequentialism and deontology, while more is spent deliberating dilemmas as they pertain to the everyday practice of caregiving. A preliminary analysis of the empirical material suggests that there is little transfer from instruction to the practice of the caregivers as well as their peer reflection on practice. The paper explores three possible explanations of this: Firstly, the research methodology of study, which relies on interviewing caregivers and observing instruction. Secondly, the selection of focusing phenomena during instruction. This is a way of thinking critically about the way general rules are introduced. Finally, the paper considers the possible situated nature of knowledge of ethics, and suggest that the empirical results throw light on a standing debate in metaethics between cognitivists and non-cognitivists.

#### **The ontology of conceptual understanding and its transformations in science education**

**Presenting Author:** Michael May, University of Southern Denmark, Denmark

Departing from the phenomenographic tradition and cognitive science discussions about the nature of student's recurrent "misconceptions" in science education, this talk will take the point of view of more recent approaches that focus on student's epistemic problems in establishing a coherent conceptual understanding within scientific domains. These epistemic problems are not seen as due to stable misconceptions, but rather as scientific literacy issues arising from the diverse forms of representation and practices that students are exposed to in higher education in scientific domains. Students struggle to integrate multiple and very diverse conceptualizations, perspectives and activities encountered in university level teaching into a coherent understanding of their domain of study. Often there is no direct support in teaching for articulating how these multiple representational forms are interlinked or how they relate to different domains and disciplinary discourses. The background of this talk is a 5-year study of introductory biochemistry teaching focusing on students' conceptual understanding. The talk will comment on the ontology of learning in this specific context.

### **Learning through practice: The epistemology of learning designs to support knowledge resituation**

**Presenting Author:**Jens Jørgen Hansen, University of Southern Denmark, Denmark; **Co-Author:**Nina Bonderup Dohn, University of Southern Denmark, Denmark

In this paper, we analyse the epistemology of three different learning designs aimed at supporting students in transforming situated knowledge between education and work settings. We point out the ontology of the knowledge involved in each of them and the epistemological premises which they embody about students' learning of this knowledge. The learning designs are 1) case-based learning, 2) design-based learning, and 3) simulation-based learning. These learning designs are all forms of 'learning through practice' because they engage practices outside the formal educational system as ways of developing curricular understanding and, reciprocally, as providing concretisation of curricular content through its enactment in practice. Case-based learning draws on the research approach of case studies and requires students to engage with phenomena as situated in their complex real-life work practice. Design-based learning takes its outset in design-based research and makes use of design experiments. The purpose of design-based learning is dually to innovate practice and to gain understanding of practice through the process of changing it. Simulation-based learning is learning through engagement with tasks within an educational setting which mimic tasks in the work setting. The epistemological relationships established through use of the learning designs are those of, respectively, inquiry aimed at hermeneutic understanding (case-based learning); "bricolage" aimed at understanding through changing (design-based learning); and imitation aimed at developing workplace skills and knowledge (simulation-based learning). Our analysis contributes to the development of a philosophy of science within education, focusing on the epistemology and ontology of different learning activities.

### **Conceptualizing the situated nature of knowledge and its transformation across contexts**

**Presenting Author:**Nina Bonderup Dohn, University of Southern Denmark, Denmark; **Co-Author:**Roland Hachmann, University of Southern Denmark, Denmark

This paper takes on the question of the ontology of knowledge and its transformation across contexts. It draws upon research within situated learning and practice theory according to which knowledge is learnt and exercised situatedly. An implication of this research is that transfer of knowledge between contexts appears problematic – at the very least, some transformation from the situated realization in the context of learning to the situated realization in a new context must take place. The paper will present an analysis of the ontological nature of knowledge as a unity of experiential, practical, and propositional aspects, realized concretely in relation to the situational demands, possibilities and restrictions (termed requirement characteristics) of the given context. A framework for analyzing requirement characteristics at five levels of generality will be presented. The claim will be that requirement characteristics at the different levels interact to form an integrated whole, in relation to which knowledge is actualized. Transformation of knowledge occurs in response to differences across contexts in integrated requirement characteristics. The framework and its usefulness in analyzing situated knowledge and its transformation will be illustrated with an empirical example of student teachers' engagement with theories of dramatic structure in two different contexts: 1) Learning the theories in a course and 2) Teaching the theories to children in a local public school. The presentation will end by explicitly addressing the relationship between the ontology of situated knowledge and the epistemology of its investigation, called for in the conference theme.

## **PARALLEL SESSION 2 1**

27 August 2018 13:30 - 15:00

2S4

Single Paper

Cognitive Science, Higher Education, Lifelong Learning

### **Session 4**

**Keywords:** Activity theory, Case studies, Content analysis, Descriptive statistics, Early childhood education, Ethnography, Higher education, Knowledge creation, Qualitative methods, Sociocultural theory/Cultural psychology, Workplace learning

**Interest group:** SIG 03 - Conceptual Change, SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

**Chairperson:** Nina Bonderup Dohn, University of Southern Denmark, Denmark

### **Moving from the abstract to the concrete:Opening up the object of activity with intermediary objects**

**Keywords:** Activity theory, Sociocultural theory/Cultural psychology, Ethnography, Workplace learning

**Presenting Author:** Sami Paavola, University of Helsinki, Finland; **Presenting Author:** Liubov Vetoshkina, University of Helsinki, Finland

One central concept in the activity theory is the “object of activity”. It provides motive and direction to activity. One challenge is to operationalize it. The object of activity is utilized with multiple functions pointing towards different time scales and layers, tensions and contradictions. The dynamic idea behind the object of activity is rarely applied in other research approaches. Nowadays, however, the significance of objects and artefacts is often emphasized. Vinck has analyzed designers’ collaboration with “intermediary objects”, inspired by actor-network theory. We interpret intermediary objects through the object of activity seeing them dynamically referring to co-developed, tangible and modifiable versions of the “object”. We present two research cases where intermediary objects have been used: 1) the use of building information modelling in designers’ collaboration in construction projects, and 2) the craft of historical wooden boat building in Russia and Finland. The paper is theoretically/methodologically oriented.

**Learning with knowledge objects: Pedagogical design and experiences of higher education students**

**Keywords:** Case studies, Knowledge creation, Descriptive statistics, Higher education

**Presenting Author:** Hanni Muukkonen, University of Oulu, Finland; **Co-Author:** Crina Damsa, University of Oslo, Norway

This paper elaborates on the notion of object-oriented collaborative learning with material from two empirical studies in higher education. Prior empirical findings show how knowledge objects are evolving entities, shaped by the interactions between participants, and how students learn from engaging in knowledge practice that involve different work forms with knowledge objects. In two case studies, we examine how learning designs in higher education support students’ learning through work on shared knowledge object and how students experience both these designs and the process itself. Through two complementary data sets from Finland and Norway, the learning design, collaboration processes, experiences, and competences learned are mapped and analyzed. The findings contribute to a better understanding of learning viewed and enacted as a process of knowledge creation, which takes place through interaction and through practices mediated by shared knowledge objects. These findings allow further discussion and generate research-based evidence for pedagogical practice.

**Death amongst social knowledge objects. Theoretical and ontological problems.**

**Keywords:** Content analysis, Qualitative methods, Sociocultural theory/Cultural psychology, Early childhood education

**Presenting Author:** Ramiro Tau, Archives Jean Piaget, University of Geneva, Switzerland

This work discusses the characterization of the development of the understanding of death –and its educational and clinical extensions- as an exclusively conceptual and increasing process. On the contrary and based on the data obtained in a basic empirical research study on children’s comprehension of death (Tau, 2016), I will try to show that : a) “death” as a knowledge object cannot be reduced to a virtual finish point of life; it covers the moments of “reasons of occurrence” and the “beyond” of the end of life; b) it entails the appropriation of belief, shared practices and values that do not show an increasing conceptual development; c) death and dying adopt the form of a *polyphasic zone of notions*, rather than a concept integrated by subconcepts. Finally, I will discuss the consequences of such an outlook on possible clinical and educational interventions when facing a situation of loss and grief.

## PARALLEL SESSION 2 2

27 August 2018 13:30 - 15:00

2S5

Single Paper

Higher Education, Teaching and Teacher Education

### Session 5

**Keywords:** Activity theory, Collaborative learning, Comparative studies, Higher education, Knowledge creation, Mixed-method research, Multimedia learning, Qualitative methods

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Robbert Smit, University of Teacher Education St.Gallen, Switzerland

**Epistemicide and Emancipation: Two approaches to professing higher educational research.**

**Keywords:** Knowledge creation, Multimedia learning, Collaborative learning, Higher education

**Presenting Author:** Jack Whitehead, University of Cumbria, United Kingdom

This paper focuses on two approaches to epistemology and ontology in understanding the relationship between the way in which we go about researching learning and education and how we understand the nature of learning and education, in higher education research. Epistemicide analyses how the logic and language of the dominant Western academic tradition is killing off the knowledges of indigenous researchers and practitioner-researchers. The emancipatory approach demonstrates how new and innovative lines of research, using digital visual data, are being generated with epistemological and ontological implications for theory and methodology in research on learning and education. The idea of a living-educational-theory is introduced as an individual’s explanation of their educational influences in learning. Some 40 publically available, Living Theory doctoral theses, legitimated in different Universities around the world between 1996-



2017, are offered as evidence to justify the claims about the emancipatory approach.

### **Promoting teacher agency and curriculum work through teacher education**

**Keywords:** Activity theory, Knowledge creation, Higher education, Comparative studies

**Presenting Author:** Leena Krokfors, University of Helsinki, Finland

Teacher agency is an emerging body of research in education and it is a common understanding that high-capacity teachers are essential for effective education systems. There is no one way to organize teacher education but evident is, that different approaches provide different teacher agencies.

Finnish educational policy relies on academic preparation of teachers. Research-based teacher education provide future teachers with knowledge and skills to operate as autonomous actors and the agency and ownership of curriculum development by teacher communities are emphasized. When renewing the national curriculum (2010-16), there were teachers who doubted the reform, hesitated its direction and asked why change. It seems that teachers' beliefs and values in relation to curriculum work affect to their agency. In a study reporting teachers' curriculum-related agency in developing new learning environments and pedagogical approaches, there were notable differences between teachers according to the amount of educational studies they had during their preparation.

### **Scientific thinking in university studies – what it is and how to study it?**

**Keywords:** Knowledge creation, Mixed-method research, Qualitative methods, Higher education

**Presenting Author:** Mari Murtonen, University of Turku, Finland

Development of higher order thinking skills is an important goal in university education. What these higher order thinking skills are has not been thoroughly elaborated in university settings. These questions have been studied, for example, under the concepts of scientific thinking, reasoning, critical thinking, and epistemological beliefs, but a broad theory combining these all has been missing. In this study, we asked the university teachers and students in various disciplines how they conceptualize higher order thinking skills. The results propose a new, wider theory of academic thinking that also includes research skills in addition to the traditional scientific and critical thinking factors.

## **PARALLEL SESSION 2 3**

27 August 2018 13:30 - 15:00

GS1

Research Design Forum

Lifelong Learning, Teaching and Teacher Education

### **Forum 1**

**Keywords:** Activity theory, Case studies, Ethnography, Knowledge creation, Qualitative methods, Vocational education

**Interest group:** SIG 17 - Methods in Learning Research

**Chairperson:** Giuseppe Ritella, University of Helsinki, Finland

### **Becoming a psychotherapist: exploring different temporalities of knowledge development**

**Keywords:** Knowledge creation, Qualitative methods, Ethnography, Vocational education

**Presenting Author:** Gilles Dieumegard, Université de Montpellier, France

We study lived experience of individuals in learning situations, and generally proceed with a fine grained analysis of understanding for time stretch lasting few tens of minutes. However, learning is not only a short term process. Therefore, we endeavour an empirical study in order to articulate two methods based on the same enactivist framework: the "course of action method" allowing to describe short-term dynamics, and the "life course of a practice method", investigating lived experience during longer time spans. We are carrying out a study in a two years professional training program in psychotherapy, consisting in monthly seminars. We investigate the experience of three participants of a nine-person group. Re-situative interviews, in which participants are asked to retrieve and evoke their experience during the different moments of the seminar, allow us to explore long-term dynamics of knowledge development. Video-recordings and self-confrontation interviews about some sessions of the seminars will enable us to undertake a fine-grained analysis of short-term process of understanding.

### **Thinking teaching situations that promote production of analogies to feed abstraction|concretization**

**Keywords:** Activity theory, Case studies, Knowledge creation, Qualitative methods

**Presenting Author:** David Piot, HEP-Vaud / University of Geneva, Switzerland; **Co-Author:** Nicolas Perrin, HEP-Vaud, Switzerland; **Co-Author:** Emmanuel Sander, University of Geneva, Switzerland

This thesis work considers abstract and concrete in a dialectical perspective. They are not separate elements. In the learning process, they are intimately linked in a double ascension abstraction | concretization (Roth & Hwang, 2006). The main hypothesis of this research is that the analogy (Hosftadter & Sander, 2013) is the engine that enables this double movement. The resulting research questions can be expressed as follows: How does the dual movement abstraction | concreteness evolve during a learning process? How does the generation of analogies influence this double movement? This work is part of the paradigm of enaction and raises the question of sense-making (De Jaegher & Di Paolo, 2007). The

protocol proposes to create teaching situations to encourage the double ascension abstraction | concreteness through the production of analogies. Learners' activity will be analysed using the methodological tools of the Cours d'Action (Theureau, 2010).

## **PARALLEL SESSION 2 4**

27 August 2018 13:30 - 15:00

1S3

Symposium

Learning and Social Interaction

### **Inferentialism goes educational: Session 1**

**Keywords:** Collaborative learning, Interaction analysis, Knowledge creation, Sociocultural theory/Cultural psychology, Vocational education

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Maike Schindler, Universität zu Köln/ University of Cologne, Germany

**Organiser:** Arthur Bakker, Utrecht University, Netherlands

**Discussant:** Rupert Wegerif, University of Cambridge, England, United Kingdom

Inferentialism is a relatively new semantic theory from philosophy, proposed by Robert Brandom. Educational researchers have come to acknowledge its power to address thorny issues in education. The route from educational theory to practice is a long and winding one, as the history of for example constructivism testifies. This symposium highlights some of the work carried out to shed light on how an inferentialist perspective can make a contribution to theoretical issues and next to more practical issues in education. We propose two sessions: the first with a theoretical focus and the second with a more practical focus. In this first session, Derry starts with an introduction to inferentialism and its value for education. She shows how inferentialism and Vygotsky's ideas are compatible and complementary. Bakker and colleagues argue how the mastering metaphor as grounded in inferentialism assists in bridging the acquisition and participation metaphors. They argue that the inferentialist ideas explained by Derry (scorekeeping, game of giving and asking for reasons) help to conceptualise mastering as both the acquisition of a skill and participation in a social practice. Heusdens and colleagues combine activity-theoretical and inferentialist ideas to conceptualise vocational knowledge. In this way, they overcome dichotomies (theory vs practice, general vs specific) that plague the thinking about the nature of vocational knowledge. Helenius and Ahl describe how inferentialism can provide a basis for extending work in the Piagetian tradition by Vergnaud to allow empirically grounded epistemological analyses in communicational settings. Last, Wegerif acts as a discussant.

#### **Introduction to inferentialism**

**Presenting Author:** Jan Derry, UCL Institute of Education, United Kingdom

The first presentation introduces the philosophical work of Robert Brandom on inferentialism and argues that it offers rich theoretical resources for reconsidering many of the challenges and issues that have arisen in education. In the presentation, Derry elaborates the technical terms in Brandom's account of meaning illustrating these to show how the inferential articulation of concepts, and thus their correct application, is made visible. The presentation highlights two points: The significance of privileging the inferential over the representational in any account of meaning and the educational implications of understanding concepts in their inferential relations to other concepts. Inferentialism fosters the possibility of overcoming some of the thorny old problems that have seen those on the side of facts and disciplines opposed to those whose primary concern is the meaning making of learners.

#### **The inferentialist mastering metaphor to bridge the acquisition and participation metaphors**

**Presenting Author:** Arthur Bakker, Utrecht University, Netherlands; **Co-Author:** Samuel Taylor, Heinrich-Heine-University of Düsseldorf, Germany; **Co-Author:** Ruben Noorloos, Central European University, Hungary

Sfard (1998) proposed that education research is caught between two metaphors for learning: the acquisition metaphor (AM) and the participation metaphor (PM). We augment the discussion on learning metaphors with the *mastering metaphor* (MM), as grounded in inferentialism. We submit that MM represents a novel and more explicit attempt to formulate a combined metaphorical perspective that can overcome the AM-PM dichotomy, one that we believe is viable given its grounding in the inferentialist concepts which prioritise neither the cognitive nor the social, but take both to be mutually complementary. We think that MM can help move the debate over the educational metaphors past its current deadlock (Taylor et al., 2017).

#### **Analyzing mathematical conceptualization – Expressive rationalism and the Piagetian tradition**

**Presenting Author:** Ola Helenius, University of Gothenburg, Sweden; **Presenting Author:** Linda Marie Ahl, Stockholm University, Sweden

Vergnaud's theory of conceptual fields, combine Piaget's work on schemes with a theory of semiotics and enable epistemological analysis of both operative and predicative forms of knowledge. We examine the possibility of combining Vergnaud's theory with Inferentialism as developed by Brandom, which is a pragmatic semantic philosophy language and meaning. We highlight important aspects of inferentialism which we claim enable interaction with Vergnaud's extension of Piaget's work: (i) the conceptual holism of inferentialism connects to Vergnaud's notion of conceptual fields, (ii) Vergnaud's

focus on knowledge constituted in action has its discursive counterpart in Brandom's focus on concept use in communication, (iii) the focus on adaption in the Piagetian has its discursive counterpart in the role of normativity in Brandom's work. By putting Brandom's philosophical account of how meaning making occurs in social settings to work, we extend the applicability of Vergnaud's theory into contexts that involve collaborative and communicative situations.

### **A conceptualisation of the nature of students' vocational knowledge informed by inferentialism**

**Presenting Author:**Wenja Heusdens, HU University of Applied Sciences Utrecht, Netherlands; **Co-Author:**Arthur Bakker, Utrecht University, Netherlands; **Co-Author:**Liesbeth Baartman, Utrecht University of Applied Sciences, Netherlands; **Co-Author:**Elly de Bruijn, Universiteit Utrecht / Hogeschool Utrecht, Unknown

In educational research, commonly used dichotomies (theory vs practice, general vs specific) plague the thinking about the nature of vocational knowledge. Vocational knowledge is more than putting bits of theoretical and practical knowledge together, and therefore, dichotomous ways of thinking do not do justice to the complex nature of vocational knowledge. In this contribution, activity-theoretical and inferentialist ideas are combined to conceptualise the nature of students' vocational knowledge. First, the idea of contextualising based on cultural-historical theory is introduced and highlights the crucial role activity plays in knowledge development. Secondly, to provide a useful way to focus on students' processes of knowing contextualising is supplemented with ideas borrowed from inferentialism, a philosophical semantic theory of meaning. To add inferentialism to the framework of contextualising provides an elaboration of existing theories of contextualising, and helps to better understand the sometimes-intimate relationships between knowledge and actions involved in vocational knowledge.

### **INVITED TALKS ON THEORY AND METHODS 1**

27 August 2018 15:30 - 16:15

GS4

Invited talks on Theory and Method

#### **SIG 25**

**Keywords:** Activity theory, Dialogical theory, Sociocultural theory/Cultural psychology, Sociomaterial perspectives

**Interest group:**

**Chairperson:** Antti Rajala, University of Helsinki, Finland

#### **The "untold Piaget": new light on the future of developmental psychology, education and epistemology**

**Keywords:** Activity theory, Dialogical theory, Sociocultural theory/Cultural psychology, Sociomaterial perspectives

**Presenting Author:**Anne-Nelly Perret-Clermont, University of Neuchâtel, Switzerland

Scientific advancement relies on a double movement from "theory construction" to "fact gathering" and vice-versa. Scientists are praised for their creativity in methodology, observations and explanations - with interesting cultural and disciplinary differences in the emphasis put on these three elements. But the dependence of these elements on technological development and their "situatedness" in on-going dialogues within often violent power games tends to be forgotten. The descriptions of their socio-material historical settings tend to be blurred. As a consequence, our editorial norms allow us to present empirical and theoretical results in psychology as if they were "universal" and in education as if they were stemming from some kind of soil-less and greenhouse agriculture. We suggest that this perspective prevents research from reaching a fine grained understanding of change in humans and thereby leaves the door open to heavily ideologically loaded biological explanations of evolution that tend to underestimate the complex interdigitating biological, material, and semiotic arrangements that are experienced, produced and imagined. As a contribution to this discussion, we will explore the growth of a young man, in his becoming the famous Jean Piaget, within the worries, debates and socio-material arrangements of his life and times.

### **INVITED TALKS ON THEORY AND METHODS 2**

27 August 2018 15:30 - 16:15

1S7

Invited talks on Theory and Method

#### **SIG 17**

**Keywords:** Learning analytics, Mixed-method research, Qualitative methods, Quantitative methods

**Interest group:**

**Chairperson:** Dominik E. Froehlich, University of Vienna, Austria

#### **Metaphors as analytic tools to dialogue between theory and methods**

**Keywords:** Learning analytics, Mixed-method research, Qualitative methods, Quantitative methods

**Presenting Author:**Andreas Gegenfurtner, Technische Hochschule Deggendorf, Germany

The theme of this conference is 'Dialogue between ontology and epistemology: New perspectives on theory and methodology in research on learning and education'. This invited talk argues that metaphors can facilitate this dialogue.

Metaphors are a useful tool for mirroring in simple terms the often complex paradigms underlying theory and applied research practice. An example of how metaphors are able to elicit complex, different, yet partly tacit, assumptions on a commonly studied phenomenon can be found in “learning as acquisition”, “learning as participation”, and “learning as knowledge creation” (Paavola, Lipponen, & Hakkarainen, 2002; Sfard, 1998). Grounded on the case of expertise research, this talk presents a comparative metaphorical mapping. Specifically, the talk presents the metaphors of activation, detection, inference, and practice and aligns these metaphors with measurement indicators, units of analysis, analytic time spans, and associated methodologies. It is a reflection on the methodological entailments behind seemingly different metaphors that can help raise awareness of each metaphor’s (epistemological and pragmatic) potentiality and contingency, and that can thus advance our research practice.

### **PARALLEL SESSION 3 1**

28 August 2018 09:00 - 10:30

2S4

Single Paper

Cognitive Science, Learning and Social Interaction, Lifelong Learning

#### **Session 7**

**Keywords:** Dialogical theory, Digital learning, Experimental studies, Knowledge creation, Lifelong learning, Qualitative methods, Quantitative methods, Sociocultural theory/Cultural psychology, Sociomaterial perspectives, Transactional perspective to learning, Visual analysis, Vocational education

**Interest group:** SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

**Chairperson:** Philipp Mayring, University of Klagenfurt, Germany

#### **Distributed nature of knowledge in the study of students lived experience**

**Keywords:** Knowledge creation, Qualitative methods, Sociomaterial perspectives, Vocational education

**Presenting Author:** Gilles Dieumegard, Université de Montpellier, France; **Co-Author:** Sandra Nogry, Université de Cergy, France

Lived experience of individuals constitutes our unit of analysis, and allows us to retrace learning processes as they are lived “from within”. In this enactivist perspective, knowledge is considered in relation with “distinctions”, that are familiar entities and relations that are experienced by individuals. We conducted an empirical study in a course about lesson planning. We used self-confrontation interviews providing us reports from which we could identify precisely these distinctions as they were successively experienced by students. As a matter of fact, knowledge structure did not appear through these descriptions. Nevertheless, it rather appears in students’ notes, that may be considered as material anchors for the moving flow of lived experience. Consequently, we posit studying knowledge construction in an enactive-experiential perspective entails to consider its *distribution* between 1) various successions of distinctions in the dynamics of lived experience; 2) inscriptions, and more broadly material instruments bearing a temporal continuity.

#### **What do we look at: Units of analysis in eye tracking research on teacher expertise**

**Keywords:** Experimental studies, Lifelong learning, Quantitative methods, Visual analysis

**Presenting Author:** Andreas Gegenfurtner, Technische Hochschule Deggendorf, Germany; **Co-Author:** Hans Gruber, University of Regensburg, Germany; **Co-Author:** Erno Lehtinen, University of Turku, Finland; **Co-Author:** Doris Lewalter, Technical University of Munich (TUM), Germany; **Co-Author:** Tetiana Khmelivska, Technical University of Munich (TUM), Germany; **Co-Author:** Kenneth Holmqvist, University of Regensburg, Germany; **Co-Author:** Jan Vermunt, University of Cambridge, United Kingdom

The aim of the study is to discuss the use of units of analysis in eye tracking research. Säljö (2009) defines a unit of analysis as “the choice of a conceptualization of a phenomenon that corresponds to a theoretical perspective or framework” (p. 206). To discuss how eye tracking research defines and operationalizes the conceptual notion of visual expertise, grounded in an information-processing perspective and actualized in the information-reduction hypothesis, the present study draws from an empirical example that contrasts eye movements from 25 student teachers, 25 in-service teachers, and 25 school principals/inspectors. Units of analysis are fixations, here further specified as number and durations of fixations; areas of interest; expertise level; and instructional situation.

#### **Using chronotope in educational research: Principles for the unit of analysis**

**Keywords:** Dialogical theory, Sociocultural theory/Cultural psychology, Sociomaterial perspectives, Digital learning

**Presenting Author:** Giuseppe Ritella, University of Helsinki, Finland; **Co-Author:** Antti Rajala, University of Helsinki, Finland; **Co-Author:** Peter David Renshaw, The University of Queensland, Australia

The aim of this paper is to examine how to specify units of analysis in research using the emergent concept of chronotope. In educational research, chronotope has been adopted to foreground the space-time dimensions of educational activity and analyse how privileged notions of knowledge, identity and values are produced in these activities. Chronotopes are defined as socially emergent configurations of space-time, where both discursive and material aspects of space-time relations are considered and seen as mutually interdependent. Rather than being considered as a unit of analysis in itself, chronotope is seen as a conceptual and analytical tool that allows one to reach a sociocultural and

dialogical understanding of human action and interaction in space-time. However, the literature lacks clear guidelines for chronotopic analysis. In this paper, we address this gap by discussing four principles that guide analyses based on the notion of chronotope: (i) chronotopic analysis privileges processual units of analysis; (ii) chronotopic analysis needs to address the dialogical nature of educational activities and learning practices; (iii) chronotopic analysis needs to encompass both the material organization and the discursive negotiation of space and time; and (iv) analysis needs to capture time and space as an interdependent unity. To illustrate our claims, we have identified in the research literature multiple ways that chronotopic analyses have been conducted, including examples taken from our own empirical investigations. In all, our paper contributes to the creation of methodological foundations for using the emergent concept of chronotope to research the contextual grounding of learning practices.

### **The unit of analysis from an ecological perspective**

**Keywords:** Qualitative methods, Sociocultural theory/Cultural psychology, Sociomaterial perspectives, Transactional perspective to learning

**Presenting Author:** Alfredo Jornet Gil, University of Oslo, Norway; **Co-Author:** Crina Damsa, University of Oslo, Norway

The unit of analysis is a central piece in any methodology—it determines the object of the inquiry, constituting thus a worldview on what we can and cannot discover about learning in any empirical study. An often overlooked aspect is, however, that unit of analysis not only constitutes a worldview or field of observation, but also a field of action. To address this gap, in this article, we take an *ecological* perspective that conceptualizes (scientific) observations as embodied and systemic socio-material *achievements* that involve both perception and action. We ground our discussion on ethnographic analyses derived from a one-year participant ethnography at an arts-based elementary school in Canada. The analyses allow us discussing how an ecological approach to unit of analysis makes visible these interconnections, and how this may enhance the researcher's as well as the participant's opportunities to expand their *agency* and *responsibility*.

## **PARALLEL SESSION 3 2**

28 August 2018 09:00 - 10:30

2S5

Single Paper

Learning and Social Interaction

### **Session 8**

**Keywords:** Activity theory, Collaborative learning, Conversation analysis, Dialogical theory, Discourse analysis, Higher education, Inquiry learning, Interaction analysis, Meta-analysis, Qualitative methods, Secondary education

**Interest group:** SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

**Chairperson:** Mei-Shiu Chiu, National Chengchi University, Taiwan

### **Considering teachers as dispute mediators? The design of dialogical spaces**

**Keywords:** Dialogical theory, Conversation analysis, Discourse analysis, Interaction analysis

**Presenting Author:** Sara Greco, USI - Università della Svizzera italiana, Switzerland

This paper introduces a conceptual proposal: it is argued that some of the instruments that have been considered typical of a dispute mediator from the viewpoint of management of the parties' dialogue can be applied to educational domains, in order to better understand the role of teachers. Dispute mediators are third parties who intervene in the disputants' discussion in order to help them to find a mutually satisfying solution to their conflict. Previous analyses of mediators' use of language, discourse and argumentation have revealed some typical discursive activities through which they open a dialogue space for the parties. In this paper, I argue that these features might equally be applied to the role of teachers as designers of the pupils' dialogue. The analogy of teachers and dispute mediation also opens a research path concerning how dialogue can move from *disputational* to *exploratory* talk (Mercer & Littleton 2013).

### **The multidimensionality of dialogic norms of classroom interaction**

**Keywords:** Activity theory, Conversation analysis, Discourse analysis, Secondary education

**Presenting Author:** Riikka Hofmann, University of Cambridge, United Kingdom; **Co-Author:** Kenneth Ruthven, University of Cambridge, United Kingdom

While research suggests that dialogic pedagogy can enhance learning, changing classroom practice at scale is challenging. The reasons for this remain poorly understood. This paper focuses on the normative aspect of classroom interactive practice which shapes participants' actions. Drawing on theories of social practice and interaction, we theorise norms as recurrent and socially obliging patterns of, and rationales for, behaviour. We then examine empirically how norms are manifested across a range of mathematics classrooms implementing a dialogic intervention. Our analysis finds a distinction between surface level norms and their underlying rationales. Moreover, while we identify a consistent set of explicit talk-related norms across the 12 classrooms, our deeper analysis finds these norms to be multi-dimensional: each 'surface' norm relating to talk can be understood and enunciated in different ways, differing in their levels of dialogicality. Our findings shed light on why dialogic interventions are sometimes implemented in superficial ways.

### **Considering classroom dialogue as oscillation: metamodern perspectives on exchanging ideas**

**Keywords:** Dialogical theory, Inquiry learning, Meta-analysis, Collaborative learning

**Presenting Author:** Laura Kerslake, University of Cambridge, UK, United Kingdom

Abstract Metamodernism seeks to reconcile modernism and postmodernism by proposing that both provide important ways of perceiving and being in the world. This reconciliation takes the form of an oscillation between both. Following Buber, I extend the concept of oscillation to classroom dialogue, theorising that successful classroom talk exhibits this, and that the 'dialogic moment' consists of an oscillation between, for example, speaking and listening, teacher-led and learner-led talk, agreeing and disagreeing. This approach considers that ideas can be tested, re-evaluated and reformed through the oscillation of dialogue. This theoretical argument is augmented by examples from observations of learners' interaction in my own research into children's collaborative work. I also aim to raise and explore questions in this paper - to what extent can the oscillation argument be extended? To what extent can it be theorised? I also consider the implications for both teaching practice and research into classroom dialogue.

### **Two analytical approaches in exploring pre-service teachers' co-creation of knowledge**

**Keywords:** Dialogical theory, Qualitative methods, Interaction analysis, Higher education

**Presenting Author:** Crina Damsa, University of Oslo, Norway; **Co-Author:** Alyson Simpson, University of Sydney, Australia;

**Co-Author:** Tingjia Wang, University of Sydney, Australia

Co-creation of knowledge and dialogical pedagogies provide context for developing critical thinking, which is a generic skill necessary in all domains in contemporary society but particularly apt in teacher education. In this paper, we examine how dialogue with knowledge objects contributes to pre-service teachers' *co-construction of knowledge*. We draw on empirical data from a study of pre-service teachers' interactions in literature circles and explore the potential of two analytic lenses. One analytical framework builds on Interaction Analysis techniques to identify patterns of interaction in verbal dialogue and manipulation of developing or finished objects. The other analytic framework uses Systemic Functional Linguistics (SFL) to assess linguistic patterns and dialogical approaches. The findings reveal the mediation of pedagogic activity through conceptual and material artifacts improves the impact of dialogic learning. The paper provides evidence of the productive benefit of using complimentary approaches and raises challenges regarding research design.

## **PARALLEL SESSION 3 3**

28 August 2018 09:00 - 10:30

GS1

Single Paper

Developmental Aspects of Instruction, Learning and Social Interaction, Teaching and Teacher Education

### **Session 6**

**Keywords:** Activity theory, Collaborative learning, Dialogical theory, Ethnography, Higher education, Interaction analysis, Knowledge creation, Mixed-method research, Multimodal data, Qualitative methods, Sociocultural theory/Cultural psychology

**Interest group:** SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

**Chairperson:** Antti Rajala, University of Helsinki, Finland

### **Developing a polyphonic research: an anti-methodology approach to Bakhtin inspired education**

**Keywords:** Dialogical theory, Mixed-method research, Qualitative methods, Ethnography

**Presenting Author:** Ana Marjanovic-Shane, Independent Scholar, United States

The presentation describes development of an anti-methodology approach to inquiry in teaching practices of Bakhtin inspired educators in a project of our upcoming book: "Dialogic pedagogy and Polyphonic Research: Bakhtin By and For Educators" (Matusov, Marjanovic-Shane, & Gradovski, 2018 in preparation). In our inquiry the voices of all the participants in the research are heard and treated as voices of the consciousnesses with equal rights (Bakhtin, 1999), rather than objects of investigation. We envisioned educational anti-methodology as creating opportunities for continued and extended reflexive and polyphonic engagement of diverse interested participants, in the educational events as told by the practitioners we interviewed. We focus on what pedagogical events may mean to the practitioners themselves and their students (emic points of view), and what they may mean to the other practitioners whom we involved in dialogues about these events, including ourselves as the authors of the study (etic points of view).

### **Unity formation or unity-in-difference: dialogical spaces of personal and professional discovery**

**Keywords:** Dialogical theory, Multimodal data, Qualitative methods, Higher education

**Presenting Author:** Josephine Moate, University of Jyväskylä, Finland; **Presenting Author:** Eva Vass, Western Sydney University, Australia

Dialogic encounters challenge educational participants and researchers to reorient to the 'space of the in between'. At the core of such dialogical opening is the knowledge and experience of the other: a collective journey towards complexity. A topical question is whether dialogic practices should remain essentially *instrumental* or whether an *ontological dialogic pedagogy* is preferable. Contributing to the discussion, the paper problematizes higher educational contexts as platforms for dialogic transformation. Building on constructivist discourse analysis and a dialogical approach to qualitative analysis, we explore two distinct teacher education contexts. Our data include video-recordings, creative products, extracts from

students' visual sketchbooks, students' written compositions and their self-reflective essays. The exploration of the 'puzzles' in our data reveals the necessity to distinguish between unity formation and unity in difference. We also investigate the relationship between personally and professionally transformative experiences and the implications this has for dialogic practices.

#### **Two models of dialogue: unpacking the significance of dialogic space**

**Keywords:** Dialogical theory, Sociocultural theory/Cultural psychology, Interaction analysis, Collaborative learning

**Presenting Author:**Rupert Wegerif, University of Cambridge, England, United Kingdom

This paper explicates the significance and nature of 'dialogic space' through a contrast between two possible models of dialogue. One model of dialogue is that it is a form of 'inter-subjectivity' in which two or more subjects, each of which is actively responsive to the other, exchange words or other signs in order to understand each other. It follows from this model that it is not possible for me to have a dialogue except with another subject that is situated as external to me. However, Buber, claims that it is in fact possible to have a dialogue with a non-human other such as a tree or an animal. In this paper I will apply ideas from Merleau-Ponty, Simondon and Barad to explain why dialogue with a non-human other is possible. This will involve elaborating a second model of dialogue based on the idea of dialogue as entering into a shared dialogic space.

#### **Towards dialogic metaphors of learning and development**

**Keywords:** Activity theory, Dialogical theory, Knowledge creation, Sociocultural theory/Cultural psychology

**Presenting Author:**Tina Kullenberg, Kristianstad University, Sweden; **Co-Author:**Roger Säljö, University of Gothenburg, Sweden

Learning and development generally cannot be observed *per se*. As scholars we have to draw conclusions about such central psychological processes by making inferences from indicators of some kind. This implies that metaphors play a central role when we make such phenomena into objects of analysis. Dominant conceptions view learning as a means of achieving a pre-given endpoint understood in terms of mastery of fixed skills. In sociocultural and pragmatist perspectives such an interpretation appears as reductionistic, due to its finalizing character and the assumption of a closure of epistemological meaning-making. As an alternative, education, learning and development may be conceptualized metaphorically as increasing capacities of cultural and dialogic participation. We discuss and exemplify a number of significant learning metaphors, suggesting alternative and competing conceptions of learning and development, which contribute to dialogic growth as an element of education and everyday practices.

### **PARALLEL SESSION 3 4**

28 August 2018 09:00 - 10:30

1S3

Symposium

Cognitive Science, Learning and Instructional Technology, Learning and Social Interaction

#### **How methodology and theory push each other forward**

**Keywords:** Case studies, Collaborative learning, Comparative studies, Digital learning, Experimental studies, Multimodal data, Problem-based learning, Qualitative methods, Quasi-experimental research, Secondary education

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Angelika Bikner-Ahsbahs, University of Bremen, Germany

**Discussant:** Richard Lehrer, Vanderbilt University, United States

The symposium aims at connecting the themes of two EARLI SIGs, theory and methodology, addressing epistemological as well as ontological aspects about the objects of research. In research, theory and methodology need to be aligned but their epistemological roles and their contributions to come to new knowledge may differ. These roles and contributions are explored in four presentations and discussions answering the question in what ways theories and methodologies may contribute to advance the scientific field. In some cases, theoretical insights, for example from embodied cognition, push researchers to use innovative methods such as in the case of embodiment: logging of hand movements, gaze movement, and gestures (Bakker, Abrahamson, Alberto's presentation). Vice versa, advances in methodological techniques such as dual eye-tracking may help advance theoretical development on embodiment (Schindler and Lilienthal's presentation). In a laboratory classroom run by Clarke and Chan, individual work, group work and classroom discussion can all be tracked in ways that used to be impossible without their current technological set-up. Their data collection facilities allow them to study how ideas travel through classrooms, shedding light on the relationship between individual and the collective. A challenge for theory and methodology may also originate in different cultures of an interdisciplinary project where technical and didactical innovation developing "smart" (Algebra) tangibles push theoretical insights forward (Bikner-Ahsbahs, Janßen and Doering's presentation). As a discussant, Lehrer will address the typical epistemological roles of theory and methodology leading to new insights, and will instigate discussion with the audience.

#### **The interplay of theory and methods in embodied design research**

**Presenting Author:**Arthur Bakker, Utrecht University, Netherlands; **Co-Author:**Dor Abrahamson, University of California Berkeley, United States; **Co-Author:**Rosa Alberto, Utrecht University, Netherlands

This presentation illustrates how a relatively new theoretical development, embodied cognition, led us to collect multimodal data (action, perception, verbal reasoning)—and consequently how we came to think of learning differently. This presentation thus speaks to the conference theme of the relationship between our epistemological and ontological ideas about learning as influenced by the interplay between theory and methods used in our research program on embodied design.

**Method and theory in their interplay: Using eye-tracking for investigating mathematical learning**

**Presenting Author:**Maike Schindler, Universität zu Köln/ University of Cologne, Germany; **Co-Author:**Achim J. Lilienthal, Örebro University, Sweden

In this presentation, we discuss the interplay between theory and one particular method of data collection: eye-tracking. Eye-tracking promises various opportunities for research, in particular for studying students' attention, strategies, and even collaboration in so-called dual eye-tracking (DUET), and has gained increased interest as a research method. Still, researchers acknowledge that eye-tracking data interpretation is difficult and ambiguous and often needs to be complemented with other sources. In this talk, we discuss two studies in which we aimed for a triangulation of eye-tracking with other research methods. In both studies, ontological and epistemological questions are intertwined.

**Theory and methodology: A question of mutual affordances**

**Presenting Author:**David Clarke, The University of Melbourne, Australia; **Co-Author:**Man Ching Esther Chan, The University of Melbourne, Australia

This paper addresses connections between theory and methodology and the concomitant implications for ontology and epistemology associated with conducting research in a laboratory classroom applying a multitheoretic research design. The laboratory classroom at The University of Melbourne was designed to allow continuous documentation of classroom interactions using multiple cameras and microphones. Our approach has been to generate a body of multimodal material amenable to a variety of analyses, each embodying a specific theoretical perspective (Chan & Clarke, 2017). The juxtaposed analyses support the examination of both the characteristics of the phenomenon of interest and also of the analytical affordances of the various theories. Employing this approach, the relationship between theory and methodology is not one of "prescription" in either direction, but rather of "affordance," both regarding the analyses afforded by the complex data set and the extent to which each theory affords consideration of specific constructs of relevance to the setting and the interactions recorded there.

**Challenging theories and methodologies in an interdisciplinary research and development project**

**Presenting Author:**Angelika Bikner-Ahsbähs, University of Bremen, Germany; **Co-Author:**Thomas Janßen, University of Bremen, Germany, Germany; **Co-Author:**Tanja Doering, University of Bremen, Germany

In our presentation, we reflect on the methodological and theoretical challenges and the identification of new insights that arise when researchers from different disciplines engage in a common research project. As an example serves the MAL project\*, where researchers in human-computer interaction (HCI) and mathematics education collaborate to develop "smart" algebra tiles as part of a digital system for teaching and learning elementary algebra in a multimodal way (the MAL system) (Janßen et al., 2017). Together, we engage in a double design process: While smart tiles are being developed technically, tasks for in-depth algebra learning with the MAL system are designed. To do so, the specificities of the different (explicit and implicit) theories about HCI and technical engineering on the one side and about learning and mathematics on the other are brought together in a pragmatic theory framework that delimits a common understanding of boundary objects (Akkerman & Bakker, 2011). In addition to the theoretical work around boundary objects, both groups' cultures in research, their different epistemological and ontological views on learning, are mutually challenging and in the course of the project influencing each other regarding methods and methodology.

**KEYNOTE 2, ROOM GS4 1**

28 August 2018 11:00 - 12:00

GS4

SIG 17 - 25 Keynote Session

**Keynote 2**

**Keywords:** Comparative studies, Mixed-method research, Qualitative methods, Quantitative methods

**Interest group:**

**Chairperson:** Crina Damsa, University of Oslo, Norway

**Time to get off the paradigm merry-go-round? Devaluing newness, creativity, openness, and diversity**

**Keywords:** Mixed-method research, Qualitative methods, Quantitative methods, Comparative studies

**Presenting Author:**Martyn Hammersley, UK Open University, United Kingdom

I want to raise questions here about several assumptions that are prevalent in discussions of methodology today, not just in the field of research on learning but more generally. One concerns the value of newness, creativity, openness, and diversity. A second problem is the conflation of methodology with philosophy, as represented by 'paradigms' or approaches that are defined in epistemological, ontological, and/or political terms. Over the past fifty years, there



has been a significant change in the character of methodological discussion: from being concerned with research techniques, their assumptions and limits, towards becoming (in effect) a bazaar in which diverse approaches are promoted. Paradigm pitches often appeal to the ideas of particular philosophers, extracted from the wider context of philosophical discussion. I will argue that this is not a healthy state of affairs, and that it reflects the weak boundaries around educational, psychological and social research today.

## **PARALLEL SESSION 4 1**

28 August 2018 13:00 - 14:30

2S5

Single Paper

Assessment and Evaluation, Higher Education, Teaching and Teacher Education

### **Session 11**

**Keywords:** Collaborative learning, Content analysis, Digital learning, Experimental studies, Higher education, Knowledge creation, Learning analytics, Mixed-method research, Qualitative methods, Quantitative methods, Survey research, Visual analysis

**Interest group:** SIG 17 - Methods in Learning Research

**Chairperson:** Sami Paavola, University of Helsinki, Finland

### **Leading in the classroom: Applying a mixed instrument validation and construct validation process.**

**Keywords:** Mixed-method research, Qualitative methods, Quantitative methods, Survey research

**Presenting Author:** Dominik E. Froehlich, University of Vienna, Austria; **Co-Author:** Judith Schoonenboom, University of Vienna, Austria; **Co-Author:** Johanna Kittler, University of Vienna, Austria; **Co-Author:** Daniel Bauer, University of Vienna, Austria

In this presentation, we report a mixed instrument development and construct validation study to develop a scale measuring teachers' classroom leadership skills (from the perspective of the pupils). More than 1,000 pupils participated in this validation process. Next to informing how to refine this process of mixed-method scale development, the developed scale is helpful in providing teachers accurate feedback that is easy to administer (the scale is now being used by an educational NGO to help in teacher training). In sum, the presentation contributes to the literature of teacher training and teacher development, as well as the more methodological literature on scale development and mixed-methods variants of this process.

### **Eye movement patterns in source code review - An eye tracking study**

**Keywords:** Experimental studies, Visual analysis, Digital learning, Higher education

**Presenting Author:** Florian Hauser, Regensburg University of Applied Sciences, Germany; **Co-Author:** Andreas Gegenfurtner, Technische Hochschule Deggendorf, Germany; **Co-Author:** Ivonne Hutzler, Regensburg University of Applied Sciences, Germany; **Co-Author:** Rebecca Reuter, Regensburg University of Applied Sciences, Germany; **Co-Author:** Hans Gruber, University of Regensburg, Germany; **Co-Author:** Kenneth Holmqvist, University of Regensburg, Germany; **Co-Author:** Jürgen Mottok, Regensburg University of Applied Sciences, Germany

The aim of this eye tracking study is to identify programmers' eye movements in source code reviews. It is investigated in-how-far programmers with different levels of expertise show different eye movement patterns. The study replicates and extends prior research which was limited in its scope due to technical limitations of earlier eye tracking systems and a small sample size. In the current study, 20 expert programmers and 20 novice programmers had to detect errors in six different programming codes. Both eye movement data and retrospective interview data were collected. Preliminary results show that experts and novices scan the code in different ways, with a particular three-phase procedure applied by experts.

### **New methodological framework in research on learning: The pedagogical quality of learning tasks**

**Keywords:** Content analysis, Learning analytics, Qualitative methods, Quantitative methods

**Presenting Author:** Irit Sasson, Tel-Hai College, Shamir Research Institute, Israel

Structured content analysis of learning tasks can provide information about learning opportunities and therefore, it has the potential to refine the field of research in learning. The goal of this study was to describe and demonstrate a methodological framework for evaluating the quality of learning tasks based on innovative developments in the field of education. The methodological framework includes three dimensions: educational principles and practices, high-order thinking skills, and psychological approaches of learning. The methodology was tested in several learning contexts and pedagogical differences were characterized. The tool makes several theoretical and practical contributions: It can serve researchers in pedagogical characterization processes; it can advance teachers' professional development with a focus on the development of the 'new teacher' as a designer of effective learning environments; and it can be used to mediate between theory and practice.

### **Examining generic collaborative competence development in higher education courses**

**Keywords:** Knowledge creation, Quantitative methods, Collaborative learning, Higher education

**Presenting Author:** Hanni Muukkonen, University of Oulu, Finland; **Co-Author:** Minna Lakkala, University of Helsinki, Finland; **Co-Author:** Pekka Lahti-Nuutila, University of Helsinki, Finland; **Co-Author:** Liisa Ilomäki, University of Helsinki,

Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland

Generic competences in knowledge work and knowledge creation are operationalized in this study with the theoretical frame of the knowledge creation metaphor of learning and object-bound collaboration (Paavola & Hakkarainen, 2005). The aim was to examine the relationship of course learning outcomes (measured with the Collaborative Knowledge Practices questionnaire) with pre and post course measures of engagement, self-efficacy beliefs and knowledge work competences. Further, the study aims to model competence development through pre and post course evaluations, background variable (age, gender, work experience) and course pedagogical design indicators. The data included student responses (N = 493) from eleven courses in Life Sciences, Education, and Law programs. Competence learning varied between the examined courses. Further, especially learning interdisciplinary collaboration competences showed smallest correlations with engagement and self-efficacy, suggesting that we need to examine the role of pedagogical practices supporting the development of these competences.

## **PARALLEL SESSION 4 2**

28 August 2018 13:00 - 14:30

GS1

Single Paper

Learning and Social Interaction, Teaching and Teacher Education

### **Session 9**

**Keywords:** Activity theory, Collaborative learning, Discourse analysis, Early childhood education, Ethnography, Knowledge creation, Qualitative methods, Sociomaterial perspectives, Visual analysis, Workplace learning

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 25 - Educational Theory

**Chairperson:** Cristian Simoni, University of Padua, Italy

### **Power relations in educational scientific communication: a CDA of the 'learning styles' debate**

**Keywords:** Knowledge creation, Qualitative methods, Discourse analysis, Visual analysis

**Presenting Author:**Wouter Smets, Karel de Grote University college, Belgium; **Co-Author:**Katrien Struyven, Vrije Universiteit Brussel, Belgium

Learning styles theory is being fiercely criticized. Yet, many educationalists keep on using learning style typologies. It is argued in this study why a hermeneutical perspective in the learning styles debate is needed. A critical discourse analysis is presented on four critical texts that aim to discourage the use of learning styles for educational purposes. Therefore three steps are taken: (1) textual analysis involving argumentation style, focus on epistemology and discursive practices, (2) processing analysis: interpretation, and (3) social analysis: relating results to power structures in education. CDA demonstrates how discourse on learning styles as seen in these texts, results in unbalanced relationships between educational researchers and their readership. Discourse as analyzed in these texts leaves little space for professional decision making. Researchers impose themselves as experts-to-be-trusted. A more appropriate articulation of discourse on learning styles could help reducing misunderstandings in the field of learning styles.

### **Early childhood education in Denmark: The contested issue of quality in children's everyday lives**

**Keywords:** Activity theory, Qualitative methods, Ethnography, Early childhood education

**Presenting Author:**Pernille Juhl, Department for People & Technology, Denmark

In Denmark the child care system is anchored in a historical tradition emphasizing the informal and mutual relation between children and adults, the children's rights to influence their everyday life and their right to "free-play". However, these years childcare is increasingly considered a central arena for supporting young children enhancing their personal competences. Due to this, former traditions seem to be challenged by a current focus on professional methods and concepts in relations to enhancing quality, learning and preventive interventions in early childhood education. In the paper I focus on the meanings of these policy-movements and how they tend to reveal themselves as contradictory conditions in the everyday childcare practice for both children and professionals. Based on theoretical analysis of empirical data derived from participant observations in early childhood education and care contexts I will show how children's ways of participating in a complex everyday life is linked to child development.

### **Toward transformative-activist research collaborations: co-exploration of young children's wellbeing**

**Keywords:** Activity theory, Qualitative methods, Sociomaterial perspectives, Collaborative learning

**Presenting Author:**Sofie Pedersen, Roskilde University, Denmark; **Presenting Author:**Niklas Alexander Chimirri, Roskilde University, Denmark

The paper explores emancipatory co-research ideals engrained in *Psychology from the Standpoint of the Subject*(PSS) and the cultural-historical *Transformative Activist Stance* (TAS), and discusses their implications for developing a methodology for learning together with and thereby about very young children's wellbeing. While both approaches build on dialectical materialist notions of the human being as both constitutive *of* and constituted *by* the world, they draw different conclusions as to how this has consequences for conducting research projects with fellow human beings: PSS practice research produces knowledge from within institutional contexts, for instance daycare centers, so as to diversify the

knowledge base upon which professionals arrange and act in practice; TAS seeks to actively transform practice together with the participants throughout the research project. The paper proposes combining the two to develop an everyday life methodology that enables very young children to actively engage in research as mutual learning processes.

### **Theorising and analysing markers of sustained change in professional dialogues in interventions**

**Keywords:** Activity theory, Qualitative methods, Discourse analysis, Workplace learning

**Presenting Author:**Riikka Hofmann, University of Cambridge, United Kingdom; **Co-Author:**Anna Pauliina Rainio, University of Helsinki, Finland

Teachers' professional dialogues are seen as an important potential mechanism of professional learning and change. But what is the relationship, theoretically, between dialogue, thinking and professional practice, and how can we methodologically examine professional learning and change in and through talk? Located at the interface of cultural-historical activity theory, particularly developmental work research, and discursive psychology, our paper takes the approach of examining collective dialogue in organisational settings as a form of professional thinking and practice - not just a way of communicating individual thinking. Through our empirical analysis we illustrate the discursive devices that are used in professional dialogue to maintain, as well as challenge, established shared ways of conceptualising collective institutional practice; and how these discursive devices may hinder or enable (sustained) changes in the collective pedagogical dialogue. The theoretical and methodological implications of our findings for studying the role of dialogue in professional change will be discussed.

### **PARALLEL SESSION 4 3**

28 August 2018 13:00 - 14:30

2S4

Single Paper

Learning and Social Interaction, Motivational, Social and Affective Processes, Teaching and Teacher Education

#### **Session 10**

**Keywords:** Activity theory, E-learning/Online learning, Ethnography, Experimental studies, Motivation and emotion, Qualitative methods, Sociocultural theory/Cultural psychology, Workplace learning

**Interest group:** SIG 03 - Conceptual Change, SIG 08 - Motivation and Emotion, SIG 25 - Educational Theory

**Chairperson:** Maike Schindler, Universität zu Köln/ University of Cologne, Germany

#### **Anchoring craft: The object as an intercultural and intertemporal unifying factor**

**Keywords:** Activity theory, Qualitative methods, Ethnography, Workplace learning

**Presenting Author:**Liubov Vetoshkina, University of Helsinki, Finland

This paper is based on a thesis work, which addresses two opposing trends in the conceptualization of craft: the elimination of the object from skill-focused analyses of crafts and elimination of the cultural and historical role of the object in craft. Drawing on the approaches of cultural-historical activity theory (CHAT), actor-network theory and the epistemic approach of Karin Knorr Cetina, this study aims at anchoring crafts - going beyond general interpretations behind the craft revival by analyzing the potential of object in craftwork as an intercultural and intertemporal unifying factor. The study utilized the ethnographical data from three wooden shipyards in Finland, Russia, and India. The potential of the object in craft was that the object of activity in craft, through its specific cultural and historical features, accumulated across time and space, provides a possibility to compress human efforts, and through this to expand activities across time and space.

#### **Understanding and exploring 'perezhivanie' in teacher thinking and activity**

**Keywords:** Motivation and emotion, Qualitative methods, Sociocultural theory/Cultural psychology, E-learning/Online learning

**Presenting Author:**Lada Smirnova, The University of Manchester, United Kingdom

In this talk I will investigate how teachers' responses to the push towards greater technology use in a Russian Higher Education context can be understood through the Russian concept of *perezhivanie*. I argue that *perezhivanie* works as a heuristic tool, and assists the teachers' thinking and activity to overcome challenges they face. *Perezhivanie* is close to reflection, but more related to the teacher's feelings and emotions. It unites cognitive, emotional and contextual factors, is employed by Vygotsky (1934) to understand human experience and development, and in his latest work is suggested as a unit of consciousness (Zavershneva and Van der Veer, 2018). However, to make the ontological reality of *perezhivanie* available for analysis is an epistemological challenge. The paper looks at the potential of a narrative critical incident analysis to explore one teacher's *perezhivanie* when facing a challenge related to the integration of technology in her practice.

#### **Cultural transgression - Enabling aesthetic transformation**

**Keywords:** Activity theory, Experimental studies, Qualitative methods, Ethnography

**Presenting Author:**Signe Møller, University of Helsinki, Finland

I take a critical perspective on the conceptions of transmission, development and knowledge production suggesting that we tend to reduce the way an individual structures his/her thinking to the perspective of a given institutional practice and hence

fail to capture what exploration animate. We tend to view robots as science fiction derived from our own imagination and in this process we reduce imagination to something ephemeral. If this object is taken to contain the future it may be included in cultural production of today. In a cultural-historical reading when approaching culture, the unit of analysis is constituted by the materially-based word-meaning (Vygotsky 1987). Co-creating robots is both explorative imaginative and co-creation of culture. Drawing on two robotics workshops transgressive acts are addressed to underline how transition and transmission become problematic metaphors for learning. Enabling the aesthetic transformations with imagination understood as the creative process of aesthetic word-meaning.

#### **PARALLEL SESSION 4 4**

28 August 2018 13:00 - 14:30

1S3

Symposium

Culture, Morality, Religion and Education

#### **Rethorizing care and compassion in education**

**Keywords:** Activity theory, Case studies, Dialogical theory, Discourse analysis, Ethnography, Interaction analysis, Motivation and emotion, Multicultural education, Primary education, Qualitative methods, Sociocultural theory/Cultural psychology

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Rupert Wegerif, University of Cambridge, England, United Kingdom

**Organiser:** Antti Rajala, University of Helsinki, Finland

**Organiser:** Jenny Martin, Australian Catholic University, Australia

**Discussant:** Andrew Peterson, Canterbury Christ Church University, United Kingdom

This theoretical symposium draws together researchers from the UK, Finland and Australia to problematize and expand the conceptualizations of compassion and care in education. The symposium responds to Hoffman's (2009) call for redirecting research on socioemotional aspects of education from the dominant focus on measurement and remediation of individual deficits toward the relational contexts of education. Paper 1 provides an overarching critical commentary and philosophical grounding on the topic. It draws upon postcolonial theory to critically interrogate assumptions of power relations that often cloud interactions in the guise of empathy-building in education. Papers 2 and 3 continue to theorize the social construction of care in the contexts of primary science education and kindergarten respectively. These papers develop theoretical approaches for conceptualizing care and compassion as a situated, relational achievement of social actors, whose powers to act are enabled and constrained by institutional practices. Paper 4 expands the focus of inquiry to the broader geographies of care where children are embedded in and across settings. By analyzing care practices of and around unaccompanied migrant children, the paper illuminates the importance the children place on care they receive from their peers. The paper also discusses how and why adult professionals tend to disregard this important care practice. Together these papers and the discussant's contribution bring together new implications and possibilities for thinking about care and compassion in education. References Hoffman, D. (2009). Reflecting on social emotional learning: A critical perspective on trends in the United States. *Review of Educational Research*, 79, 533-556.

#### **From empathy to compassion – decolonising peace education**

**Presenting Author:** Hilary Cremin, Cambridge University, United Kingdom; **Co-Author:** Toshiyasu Tsuruhara, University of Cambridge, Japan

Education for empathy-building seems to be 'de rigueur' in efforts to build peace and global citizenship (e.g. UNESCO, 1995, DfES, 2007), and yet there are growing concerns about the unproblematised application of this concept. Some of these concerns will be discussed here, alongside some suggestions for how education for compassion might prove to be a more useful alternative. Three interrelated critiques of education for empathy-building will be put forward, namely: that it serves to further increase the emotional capital of those who benefit most from unequal global relations; that it favours bonding over bridging; and that it leads to the objectification of the Other.

#### **Equity and Care: an ontological constructionist approach**

**Presenting Author:** Jenny Martin, Australian Catholic University, Australia; **Co-Author:** Carolina Rodrigues, Australian Catholic University, Australia; **Co-Author:** Lyn Carter, Australian Catholic University, Australia

This presentation discusses a formative intervention study designed as a local, radical approach to addressing the problem of underrepresentation in science from children from low socioeconomic areas. The intervention was a collaboration between academics, the school principal and a team of 9 primary teachers. The Theory of Care as proposed by Nel Noddings (2005) was introduced as a stimulus for reforging the aims of the science teaching practices. Framed using ontological constructionism, the analytical approach is shown to be useful in the interrogation of the concept of care in the practices of the participating teachers. The theoretical approach is shown to enable care to be understood as a situated, relational achievement of social actors, whose powers to act are enabled and constrained by societal structures and practices. This perspective brings new implications and possibilities for thinking about equity and care.

### **Researching compassion in educational interactions of a kindergarten**

**Presenting Author:**Antti Rajala, University of Helsinki, Finland; **Co-Author:**Jaakko Hilppö, University of Helsinki, Finland; **Co-Author:**Lasse Lipponen, University of Helsinki, Finland; **Co-Author:**Maiju Paananen, University of Tampere, Finland

This paper explores a novel conceptual approach for investigating learning and education of compassion in the social interactions of institutional early childhood education. The existing research has mainly conceptualized compassion as an emotional state of an individual, or as an individual skill or trait, and thus failed to address how compassion is both constituted in and constitutive of social practices. This study broadens the theoretical scope of the existing research. It focuses on the foundations the social interaction and activity of a community create for its capacity for compassion. The empirical data comprise video records of social interactions in a Finnish kindergarten and ethnographic participant observation. The findings illuminate a variety of situations in and through which compassion was performed by the children and the educators in the everyday life of the kindergarten. Moreover, the findings shed light on the institutional constraints and prerequisites of compassion in a kindergarten.

### **Theorising about the care of separated child migrants: Examining professionals' perspectives**

**Presenting Author:**Sarah Crafter, Open University, United Kingdom; **Co-Author:**Rachel Rosen, University College London, United Kingdom; **Co-Author:**Veena Meeto, University College London, United Kingdom

The care of separated or unaccompanied migrant children is emblematic of tensions within (neo)liberal capitalist democracies. On the one hand, there is a concern over children's welfare and the protection of those identified as vulnerable, regardless of country of origin. On the other hand, immigration policies support fortification of borders for the nominal protection of host citizens. This paper will explore the theorisation of 'care' in the context of non-normative care relationships of separated migrant children. To do so, we draw on semi-structured interviews with a range of professionals from England, who are involved in the care of separated child migrants in some capacity (social work, law, foster care, police and immigration and border control). We argue that separated children's caring practices assume an absent presence in the discourses mobilised by these actors: either difficult to articulate or represented in negative and morally-laden terms.

## **PARALLEL SESSION 5 1**

28 August 2018 15:00 - 16:30

GS1

Research Design Forum

### **Forum 2**

**Keywords:** Mixed-method research, Multicultural education, Qualitative methods, Quantitative methods, Secondary education, Social network analysis, Sociocultural theory/Cultural psychology

**Interest group:** SIG 17 - Methods in Learning Research

**Chairperson:** Laura Kerslake, University of Cambridge, UK, United Kingdom

### **Exploring social relationships in "a mixed way": Mixed Structural Analysis**

**Keywords:** Mixed-method research, Qualitative methods, Quantitative methods, Social network analysis

**Presenting Author:**Dominik E. Froehlich, University of Vienna, Austria

In this methodological presentation, I will show how Mixed Structural Analysis (MSA), a newly developed mixed variant of Qualitative Structural Analysis (QSA), can be applied to investigate social relationships in quantitative and qualitative terms. Next to theorizing about the advantages and applicability of MSA, I will present empirical data to demonstrate how MSA works. For this purpose, I will use primary quantitative and qualitative data that has been collected in 2017 from new teachers and public speakers to inquire how embeddedness in social networks influences their learning. In sum, MSA is presented as a new method within the frameworks of multiple and mixed methods and social network research.

### **Do pedagogical differences contribute to reading attitudes across cultures?**

**Keywords:** Mixed-method research, Multicultural education, Sociocultural theory/Cultural psychology, Secondary education

**Presenting Author:**Claudia Pik-Ki Chu, University of Cambridge, Hong Kong

It is well-established that the pedagogies in the United Kingdom (UK) and Hong Kong (HK) are different to a certain extent, but little is known about the association between pedagogical differences and reading attitudes across cultures. The proposed study attempts to bridge this gap by examining the pedagogical differences and reading attitudes in 12-to-15-year-olds from public and private schools in the UK, and local and international schools in HK respectively. Data will be collected using classroom observations, students' self-report and teachers' ratings. This proposed study seeks to understand how pedagogy may be related to various reading attitudes across different cultures, and the results will inform future classroom practices and pedagogical policies in motivating students to read.

## **PARALLEL SESSION 5 2**

28 August 2018 15:00 - 16:30

**Session 12**

**Keywords:** Case studies, Collaborative learning, Dialogical theory, Ethnography, Higher education, Interaction analysis, Knowledge creation, Lifelong learning, Multicultural education, Qualitative methods, Secondary education, Sociocultural theory/Cultural psychology, Sociomaterial perspectives, Transactional perspective to learning

**Interest group:** SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

**Chairperson:** Niklas Alexander Chimirri, Denmark

**Master students crossing boundaries: a study on extended socio-material environment**

**Keywords:** Sociocultural theory/Cultural psychology, Sociomaterial perspectives, Collaborative learning, Higher education

**Presenting Author:**Elisa Cattaruzza, Institute of Psychology & Education, University of Neuchâtel, Switzerland;

**Presenting Author:**Antonio Iannaccone, Institut de Psychologie et Education, Switzerland; **Presenting Author:**Laure Kloetzer, Institute Of Psychology & Education, Switzerland

Building on sociocultural psychology, activity theory (Vygotsky 1978) and lifelong learning, this paper discusses engagement in a learning process and boundary-crossing within a sociomaterial framework. We present an innovative learning project in a masters-level class of the University of Neuchâtel in which students, under the supervision of the teaching team, collaborate with a cultural association to design and run a makerspace for children. Our study combined observations, focus groups and interviews in order to gain a deeper insight into participants' experiences. Boundary crossings, considered as processes for the negotiation of meaning between actors, are mobilized as resources for learning (Akkerman & Bakker, 2011; Erstad et al., 2016). A sociomaterial perspective offers a fine-grained analysis of these processes (Fenwick et al., 2011). Our preliminary analysis highlights the articulation between an artefact-mediated system of activity and the participant's perspectives. We will discuss the theoretical and methodological implications of this approach in research on learning and education

**The expanding ecology of relations in education**

**Keywords:** Dialogical theory, Knowledge creation, Qualitative methods, Ethnography

**Presenting Author:**Alex Young Pedersen, Faculty of Arts, Aarhus University, Denmark

This theory-developing paper argues that an ontology of education is essentially one of relations. These relations are multiple, hybrid, far-reaching and intertwined in complex ways. Seen as a whole they constitute an ever-expanding ecology. Two interconnected processes of expansion are proposed and discussed. One process concerns an ontological dimension of the real and potential relations in the world primarily through digital and non-digital technologies and the second process concerns an epistemological dimension of the multiple ways in which we come to know about the world through inquiry in the field of education. These processes are discussed in relation to the field of education. The paper further argues that the field of education itself both in practice and theory evolves and expands interrelated with these two dimensions and that education in the broadest possible sense comes to rely on a dialogic pedagogy to encompass this expansion.

**A multiple case study exploring the role of Pasifika parents in their children's achievement**

**Keywords:** Case studies, Multicultural education, Qualitative methods, Secondary education

**Presenting Author:**Emma Cunningham, The University of Auckland, New Zealand

In New Zealand, there has been a plethora of research about Pasifika student underachievement (Wylie & Hodgen, 2007; Ministry of Education, 2009). Pasifika is an umbrella term used within education to describe people originating from various Pacific nations (Samu, 2016). A range of interventions have been implemented by the Ministry of Education and schools in varying attempts to address reported disparities in achievement. These many interventions appear to focus on solving this issue. In contrast, my work does not seek to rectify or intervene; it aims to identify socialisation strategies employed by parents of successful Year 8 Pasifika students. The study's purpose is to determine how academic socialisation occurs within a Pasifika cultural context across the transition to high school. Academic socialisation is described as "parental beliefs and behaviours that influence children's school-related development". Taylor, Clayton and Rowley (2004, p. 163). When viewed from an ecological systems perspective academic socialisation strategies enacted by parents develop as a result of interactions and experiences from micro to macro-system levels, differentiated according to parents' socioeconomic, ideological and cultural influences (Bronfenbrenner, 1977; Taylor, Clayton & Rowley, 2004). During analysis, and utilising a multiple case study methodology, I use ecological systems theory to demonstrate how this phenomena develops; leading to a deeper understanding of how multiple influences shape academic socialisation within Pasifika families. Essentially, this study serves to highlight the role that Pasifika parents play in the academic success of their children.

**On learning contexts and learning lives: Studying (dis)continuities in creative media production**

**Keywords:** Lifelong learning, Interaction analysis, Ethnography, Transactional perspective to learning

**Presenting Author:**Alfredo Jornet Gil, University of Oslo, Norway; **Co-Author:**Ola Erstad, University of Oslo, Norway

As digital technologies continue transforming the time and space boundaries that traditionally have been ascribed to different educational settings, the very notion of learning *context* is being challenged in educational research literature. In

this article, we contribute to this debate by offering an empirically grounded discussion on the contrast between customary notions of context—which emphasize self-containment—and the emerging notion of *learning lives*—which aims to capture the ever-growing, dialectical and fluid relation between continuity and transformation that characterizes life. To do so, we draw on empirical materials from a variety of our own research projects on technology-supported learning in which creative media production plays an important role in connecting formal and informal learning activities during primary and upper secondary education age. Our analyses allow discussing analytical categories that emphasize fluidity and growth over the solid- and object-oriented ontology that tends to dominate our discourse for describing unbounded learning.

### PARALLEL SESSION 5 3

28 August 2018 15:00 - 16:30

2S4

Single Paper

Cognitive Science, Culture, Morality, Religion and Education, Learning and Social Interaction

#### Session 13

**Keywords:** Activity theory, Case studies, Collaborative learning, Comparative studies, Dialogical theory, Higher education, Interaction analysis, Knowledge creation, Multicultural education, Out-of-school learning, Social network analysis, Sociocultural theory/Cultural psychology

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Liam Francis Gearon, University of Oxford, United Kingdom

#### Unravelling the ontological and epistemological complexity weaved in learning community studies

**Keywords:** Social network analysis, Sociocultural theory/Cultural psychology, Collaborative learning, Higher education

**Presenting Author:** Filitsa Dingyloudi, University of Groningen, Netherlands; **Presenting Author:** Jasperina Brouwer, University of Groningen, Netherlands; **Co-Author:** Jan-Willem Strijbos, University of Groningen, Netherlands

This paper serves as a springboard for reflections on the diversity of ontological perspectives on learning communities, as expressed in learning community studies—with a focus on higher education settings—and link this diversity to issues of epistemological complexity epitomized in the different research perspectives adopted to investigate learning communities in higher education. The reported reflections are based on an empirical study conducted by the authors to investigate the extent to which two different learning community types in higher education differed in terms of their social network structures. With this paper, we would like to underscore the dynamic interplay between ontological and epistemological perspectives in shaping researchers' conceptualizations of learning communities as well as research design decisions. This paper aims to contribute to an open dialogue between ontology and epistemology by exemplifying the complex relationship between the two in learning community studies in higher education.

#### Guardini's polar opposition as epistemological framework for educational action

**Keywords:** Activity theory, Dialogical theory, Knowledge creation, Interaction analysis

**Presenting Author:** Cristian Simoni, University of Padua, Italy

How is it possible to deeply know and explain something so aleatory as a concrete educational action? Can we say something about a piece of 'lived life' that is not a simple narration of what is happening but an epistemological-ontological inquiry? The answer could be 'yes, of course' only if we introduce an epistemological perspective based on a '*et...et*' logical scheme, instead of an '*aut...aut*' way of reasoning. Therefore, we need a framework capable to overcome the common theoretical attitude of accepting one thing that automatically excludes something else. Hence, I'd like to propose that, in conceiving a reality as the educational action and its obvious 'objects'—that is the agent of the action (the educator) and the patient of the action (the pupil)—, a double-sided way in seeing reality is needed. This could be offered by the concept, both epistemological and ontological, of the polar opposition.

#### Educational self-transformation: Epistemology, social ontology and the problem of progress

**Keywords:** Dialogical theory, Knowledge creation, Multicultural education, Sociocultural theory/Cultural psychology

**Presenting Author:** Johannes Drerup, University of Koblenz-Landau, Germany

Many contemporary and classical approaches to philosophy of education and educational theory tend to oscillate between three interrelated claims: First, the epistemological claim that 'education' and 'educational practices' are first and foremost (normative) theoretical constructions or models which do not represent objective social reality as it is in a 1-to-1 fashion. Second, an ontological claim according to which certain norms and values are inherent in the structure of educational practices and processes as truly and genuinely educational practices and processes (e.g., universalist conceptions of educational self-formation or *Bildung*). Third, the normative claim that either a (normative) concept of education or the ontological structure of education (or both) provide the normative authority to justify distinctions between 'good' and 'bad' realizations and developments of educational practices and processes in terms of an evaluative or normative regress or progress. My contribution discusses the plausibility of these three claims with reference to the debate about one of the core problems of postmodernist theories of educational self-formation/*Bildung*.

#### Three metaphysics and how to choose one

**Keywords:** Case studies, Knowledge creation, Out-of-school learning, Comparative studies

**Presenting Author:** Stig Børsen Hansen, University of Southern Denmark, Denmark

This paper highlights the relevance of analytical metaphysics for theories of learning. In order to do this, a salient question for theories of learning is identified: that of learning transfer. After a brief exposition of three kinds of metaphysics, I show how existing theories - situated learning and structure mapping theory – in different ways draw on metaphysics (process theory and structuralism). I argue that appeals to process metaphysics in the treatments of transfer offered by Jean Lave and Martin Packer mainly serve as expository aids, and further, that the appeal to process metaphysics fail to express their stance on learning transfer. In contrast, I make a case for actively drawing on the discipline of metaphysics in theory construction. Supplementing an existing framework for working with metaphysics in learning theory offered by Thompson (2011), I suggest alignment between learning content and metaphysics as a guide to choosing metaphysical framework.

#### **PARALLEL SESSION 5 4**

28 August 2018 15:00 - 16:30

1S3

Symposium

Learning and Instructional Technology, Learning and Social Interaction, Learning and Special Education, Teaching and Teacher Education

#### **Inferentialism goes educational: Session 2**

**Keywords:** Action research, Case studies, Design based research, E-learning/Online learning, Knowledge creation, Primary education, Qualitative methods, Secondary education

**Interest group:** SIG 25 - Educational Theory

**Chairperson:** Arthur Bakker, Utrecht University, Netherlands

**Organiser:** Maike Schindler, Universität zu Köln/ University of Cologne, Germany

**Discussant:** Taro Fujita, Exeter University, United Kingdom

Inferentialism is a relatively new semantic theory from philosophy, proposed by Robert Brandom. Educational researchers have come to acknowledge its power to address thorny issues in education. The route from educational theory to practice is a long and winding one, as the history of for example constructivism testifies. This symposium highlights some of the work carried out to shed light on how an inferentialist perspective can make a contribution to theoretical issues and next to more practical issues in education. We propose two sessions: the first with a theoretical focus and the second with a more practical focus. In this second session, inferentialism is applied in different disciplinary domains: history, geography, and mathematics. The presentations also cover a range of topics: curriculum, pedagogy, teaching, textbooks, and special education. McCrory argues how inferentialism may help overcome particular unhelpful dichotomies in history education, such as curriculum versus pedagogy but also knowledge versus skills. Firth investigated the effect of using an inferentialism to inform the instructional decision-making of preservice teachers when planning and teaching the subject of geography in secondary schools. Schindler elaborates on epistemological considerations as inspired by inferentialism and highlights why such are especially beneficial for teaching and understanding children with special needs in mathematics. Schacht examines the way in which students use digital textbooks in the mathematics classroom. The inferentialist perspective is used here to reconstruct individual student argumentation. Last, Fujita acts as a discussant to reflect on what inferentialism may have to offer in educational research and practice.

#### **What can educationalists learn from inferentialism about meaning and how is this relevant?**

**Presenting Author:** Catherine McCrory, University College London, Institute of Education, United Kingdom

An absence of semantic theory leaves disciplines and learners, knowledge and skills, curriculum and pedagogy in unhappy union, however, as the examples of instructional design in this paper exemplify, divisions dissolve in interesting ways if the nature of meaning is considered as an inferentially articulated, holistic and normative 'doing' rather than a direct matching of concept to world (Brandom, 2000). To play with the notion of 'powerful knowledge', perhaps 'impotent knowledge' relates to whether educators risk pre-empting the healthy development of pupils' historical knowledge by attempting to give them more representations than they can become inferentially 'aware of' at that moment. From the examples chosen, it will be argued that Inferentialism can help educators understand when and how particular pedagogical choices detract from pupils' knowledge development and the ways in which, compelled by the ontology of knowledge and meaning, the pedagogical 'doing' is the knowledge development.

#### **'Mapping-out' the inferential relations of the subject content of lessons: A planning intervention**

**Presenting Author:** Roger Firth, University of Oxford, United Kingdom

A small-scale intervention research study investigated the effect of using an inferentialist epistemology and concept mapping to inform the instructional decision-making of preservice teachers when planning and teaching geography in secondary schools. This paper uses this intervention study as well as examples from the PGCE course to illustrate the theoretical and practical issues that pre-service teachers face and the extent of the pedagogic challenge entailed in attempting to give students epistemic access to the discipline of geography. In particular it is concerned with Maton's (2014) classification of the humanities and social sciences and the basis on which knowledge practices are legitimated, and with Brandom's (2000) analysis of inferential reasoning, which it is argued are key to mastering ways of engaging with



geography.

### **An inferentialist perspective on the use of digital textbooks in the mathematics classroom**

**Presenting Author:** Florian Schacht, University of Duisburg-Essen, Germany

For studying student argumentation processes in the mathematics classroom, the background-theoretical conceptualization and the methods used need to be highly interrelated. While common terminologies (such as Toulmin scheme) offer transdisciplinary tools for analyzing such processes, they seem to be limited in complex conceptual situations. This is especially relevant in the context of digital textbooks. Such textbooks offer features to give immediate response to students actions and this response influences their argumentation processes, as empirical results show. The analysis shows in which way the students acknowledge and attribute commitments in the game of giving and asking for reasons. The inferential analysis not only shows the way in which inferentialism serves as an applicable but advanced theory for better understanding complex argumentation processes but also as a framework that offers a methodological tool to reconstruct such processes.

### **Epistemological considerations inspired by inferentialism with respect to learning difficulties**

**Presenting Author:** Maike Schindler, Universität zu Köln/ University of Cologne, Germany

Inferentialism is a detailed, precise, yet complex theory of conceptual content and use. Where well-known theories in education often seem to be sufficient for tracing students' conceptual development, more sophisticated theories are especially beneficial when the problematic is complex. This presentation focuses on special education. The talk argues that inferentialism is a theory especially useful for teaching and understanding students with mathematical difficulties, where many seemingly small reasoning steps can go wrong and students may interpret tasks in quite another way than teachers do. It furthermore points out how a pedagogy inspired by inferentialism can contribute to an increased participation of students with special needs in the mathematics classroom.