

The Spatial Turn and Its Implications on (In)Formal Learning Contexts

International Conference // 08. – 09. March 2018

<http://informal-learning18.de>

Location: RUB Convention Centre at Ruhr-University Bochum (VZ
on Campus Map)



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GREETINGS



Dear participants of IFL 2018,

It is a great pleasure for me to receive you as guests of our international conference at the Ruhr-University in Bochum and to have the opportunity coming together in conversation and work with fellow researchers from around the world.

We are very glad to have a new research focus at our Faculty of Philosophy and Educational Sciences which deals with the effects and circumstances of non-formal and informal learning (spaces). I understand this congress as a starting point to make this research focus public to the national and international scientific community. By discussing very interesting keynotes, papers, short papers and posters which deal with „Spaces & Places“, „Skills development“, „Lifelong learning“ and „Technologies“ we will get new ideas about the relationship between the so called „Spatial Turn“ and its (In)Formal Learning Contexts.

The following key questions occupied us in compiling the conference program: How can (physical) (in)formal learning places deform and reform themselves? How can virtual and physical (in)formal learning spaces deform and reform themselves? How can lifelong learning programs be embedded into web 2.0 application projects and programs? Which premises have to be developed and abolished? Which skills can be defined and categorised in (in)formal learning spaces and places? How can skills and skills development be moulded and measured? How can the educational sciences see the acquisition of skills and the skills development from a challenging, critical and different perspective? Is it possible to connect the newest technology in its various forms to a new curriculum in higher education with multiple projects? In which forms does the curriculum have to change – does it even have to change? And so which technology can be used? Students, technologies and learning spaces are constantly changing – so how can these changes be used to create appealing settings for lifelong learning in informal learning settings?

The high-ranking art project „Thick Space“ invites us to take the perspectives of artists which were confronted with the very special architecture of Ruhr-University. Under the leadership of Prof. Karina Nimmerfall and Mirjam Thomann (both University of Cologne) the following concept emerged: Six renowned artists, whose work deals with spatial-theoretical, sociological and phenomenological issues in various ways and with such diverse media as drawing, video, photography, sculpture and text, have been invited to create artistic interventions for the conference center and / or to design the campus of Ruhr-Universität Bochum. From the presentation of videos to ephemeral architectural interventions, there are no limits to the artistic form.

I would like to give a warm welcome to our guests from different German federal states and from abroad. I hope you will enjoy your stay at Ruhr-University and the city of Bochum, which is a great example for a dynamic region – still in the transformation from a former coal mining city to a city which is characterised by services and knowledge-based industries. Informal and non-formal learning processes take an important role in this transformation.

I would also like to thank my colleagues who are engaged in the Scientific Board, my working group (especially Katharina Wrobel) and all the people who are curious about the relationship between spaces/places and processes of informal learning! Enjoy the conference!

Sandra Abmann

THE RUHR-UNIVERSITY BOCHUM



Welcome to the Ruhr-University Bochum

Located in the midst of the dynamic and hospitable metropolitan area of the Ruhr, in the heart of Europe, the Ruhr-Universität Bochum (RUB) with its 20 faculties, RUB's disciplinary institutional units, is home to 5,600 employees and over 41,000 students from 130 countries. It is a place where people from different countries come together, all of whom bring individual curricula vitae, heterogeneous study requirements and diverse objectives and expectations to the table.



The RUB is on its way to becoming one of the leading European universities of the 21st Century. All the scientific disciplines are united on one large and compact campus. Almost all courses are offered as Bachelor and Master degree programmes. The excellent programmes have made themselves an international name – e.g. The RUB Research School as an international college for structured doctoral research in the life sciences, natural sciences, engineering, the humanities and social sciences or interfaculty and interdisciplinary research departments, which are mutually, nationally and internationally networked, sharpen the profile of the RUB.

Research and teaching are inseparable at the RUB. Their close interconnection reflects the principle of *universitas*: the community of educators and the educated, the unbiased interaction of people beyond subject boundaries and hierarchies. It promotes and demands codetermination from everyone. The members of the *universitas* teach others and, at the same time, learn from each other – whether in science, studies, engineering, or management. The trio of values, humane – accomplished – open to the world, represent the cornerstones of the RUB environment. This space is more than just the sum of its individual elements: humane and open to the world means to respect diverse cultures and to give guests a home.

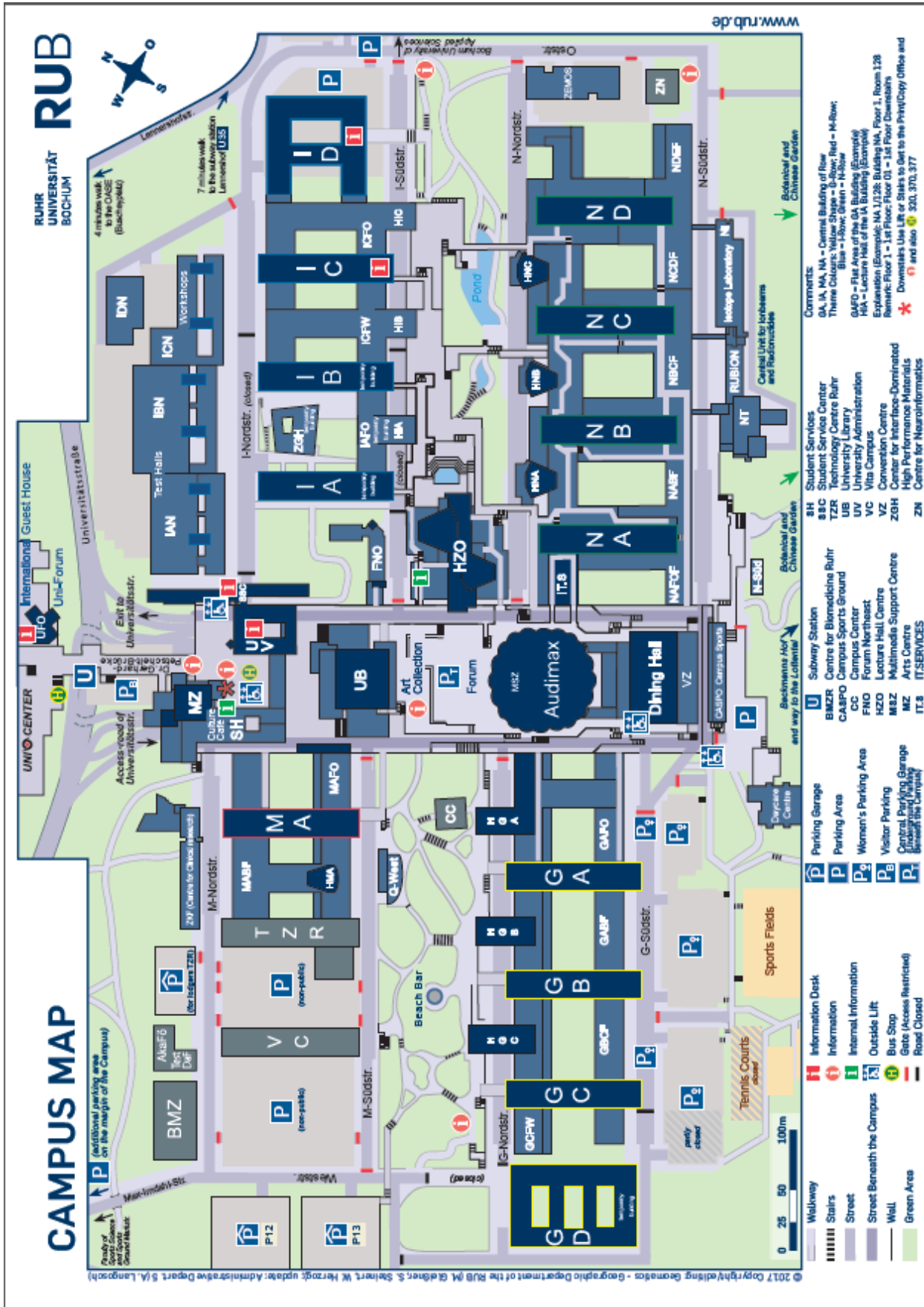
RUB's Convention Centre (VZ) is a modern venue, which offers an attractive view over the green Ruhr Valley due to its location on the southern edge of the campus. The light-filled rooms are situated on one level and provide ideal meeting conditions for up to 800 people.

The Convention Centre has four halls for 50 up to 430 people. All rooms have access to a spacious terrace. The largest hall can be divided by a built-in partition. The foyer is ideal for exhibitions and presentations, as well as catering or reception area.

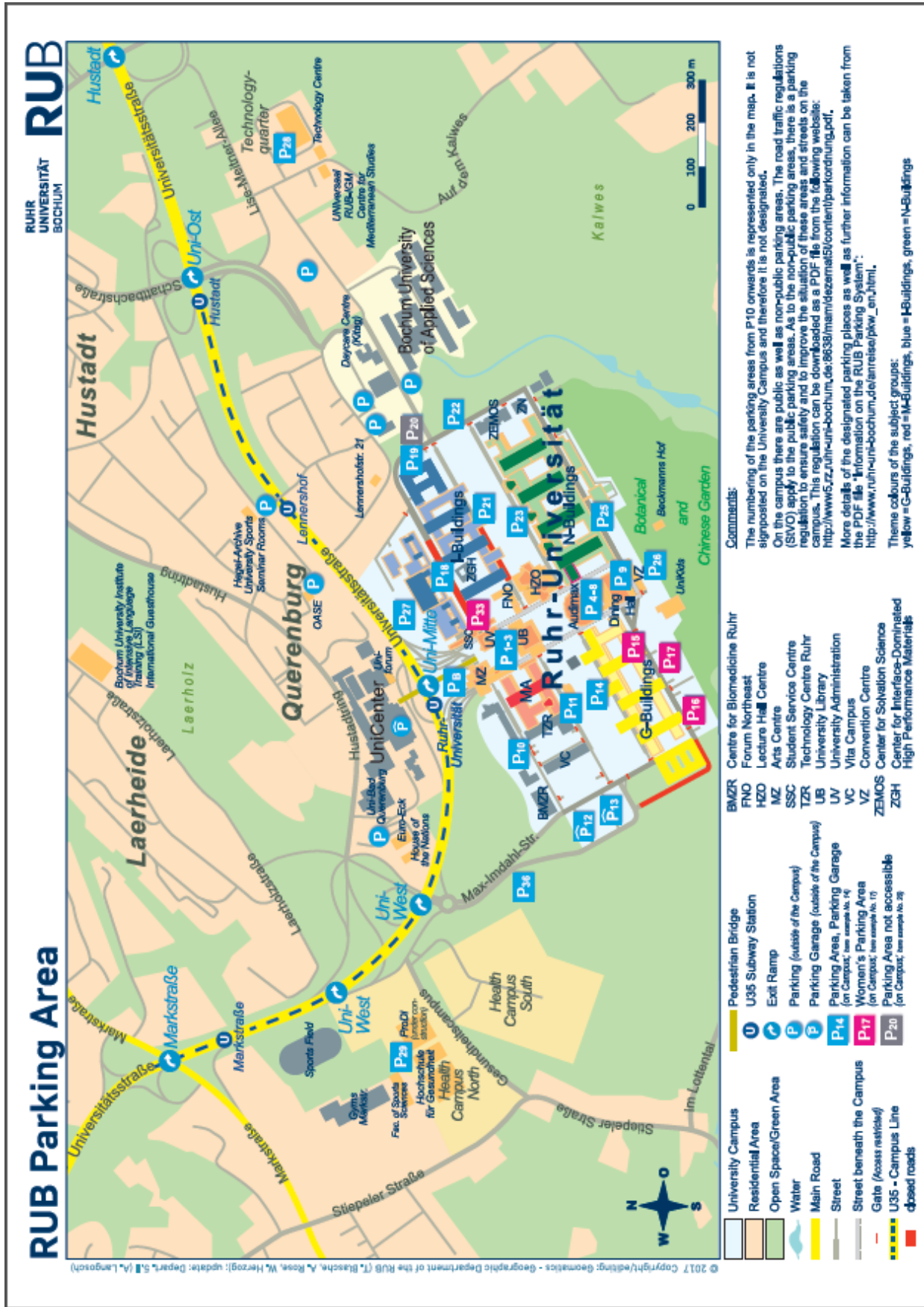
The technical equipment meets all requirements: Modern presentation tools, digital media management, and many more. On request, the Convention Centre provide various presentation tools such as poster boards or flip charts.

MAPS

MAP OF THE RUB



RUB PARKING AREA



HOW TO REACH US BY ...

... PLANE (& TRAIN TRAVEL)

Airport Düsseldorf International:

From Düsseldorf airport there is a direct train connection (Regionalexpress, RE) to Bochum main station. The RE runs every 30 minutes, direction Paderborn, Hamm or Minden. The train ride is around 35-40 minutes. From Düsseldorf to the RUB you can use a ticket ‚Preisstufe C‘ (approx. 8 €).

Airport Cologne/Bonn:

From Cologne/Bonn airport there is a regional train (S-Bahn) every ten minutes (line S13) direction Cologne main station. Get off the train at Köln Messe/Deutz and take the train (Regionalexpress RE) direction Hamm, which runs every hour and will take you to Bochum main station in approximately 1 hour. A ticket from Köln/Bonn airport to the Ruhr-Universität costs approx. 15 €.

Airport Dortmund:

From Dortmund airport the bus SB47 runs every hour to Dortmund main station, but only from monday to friday. You can take the train Regionalexpress direction Aachen (RE1) or Köln-Bonn (RE6) to Bochum main station, or the train S1, which runs every 20 minutes. From Dortmund airport to the RUB you can use a ticket ‚Preisstufe B‘ (approx. 6€).

Airport Frankfurt:

At Frankfurt airport, go to the train station for long distance trains (Frankfurt Flughafen (M) Fernbahnhof) where you can take an ICE train directly to Bochum (takes approx. 3 hours/ ticket approx. 70 €). Or you go to the regional train station (Flughafen (M) Regionalbahnhof) and take the train Regionalexpress (RE direction Koblenz) to Koblenz Hauptbahnhof. Then take the Regionalexpress (RE direction Emmerich) to Duisburg Hauptbahnhof. From there you can take various trains to Bochum (takes approx. 5 hours/ticket approx. 40 €).

Timetables are available on the website of the transportation company of the „[Deutsche Bahn](#)“.

... CAR

Motorists can reach the Ruhr-Universität easily via Germany's – and especially North Rhine-Westphalia's – dense motorway network. The fastest route is that via the motorway junction Bochum/Witten, where the motorways A43 and A44 meet.

A) Motorway (A43) junction Bochum/Witten, exit „Bochum-Querenburg / Ruhr-Universität“:

1. A 43 direction Wuppertal
2. At interchange Bochum/Witten take exit no. 19 „Bochum-Querenburg / Ruhr-Universität“
3. Take direction „Universität/Zentrum“ and follow „Universitätsstraße“ for about 3 km
4. Take the turnoff named „Ruhr-Universität-Mitte“ and exit the „Universitätsstraße“
5. Park your car either in the car park „Unicenter“ (which has to be paid and is quite expensive) or in the central parking garage (underground parking)
6. Once you have parked your car, exit the car park via the stairs leading to the campus.

B) from Münster/Recklinghausen:

1. A43 into direction Wuppertal
2. At interchange Bochum/Witten take exit no. 19 „Bochum-Querenburg/Universität“ and continue with **A-3.** above.

C) From Dortmund or Essen via A40/B1:

1. At interchange Bochum take A43 into direction Wuppertal and continue with **A-2.** above.

D) From Wuppertal via A43:

1. At interchange Bochum/Witten take exit 19 „Bochum-Querenburg/Ruhr-Universität“
2. Turn left into direction „Zentrum/Universität“ and continue with **A-3.** above.

E) From Frankfurt, Hagen and „Kamener Kreuz“ or „Kreuz Dortmund-Unna“:

1. Follow A45 from „Westhofener Kreuz“ into direction „Dortmund-Nordwest“ for 7 km
2. At interchange Dortmund-Witten take A44 into direction Bochum for 10 km
3. At interchange Bochum-Witten take A43 into direction Wuppertal for 300 m
4. Take exit „Bochum-Querenburg/Universität“
5. Turn left into direction „Zentrum/Universität“ and continue with **A-3.** above.

F) From Essen or Duisburg:

1. A40 until exit 32 „Bochum-Stahlhausen“
2. Turn right to „Bochum-Zentrum“
3. After 200 m turn right onto „Donezk-Ring“ (becoming Oviedo-Ring later) into direction „Ruhr-Universität“
4. Take exit „Bochum-Linden/Weitmar“ and turn left into „Wasserstraße“
5. Follow „Wasserstraße“ for approx. 2 km
6. Turn right into „Universitätsstraße“ and follow it for approx. 3 km.
7. Take the turnoff named „Ruhr-Universität-Mitte“ and exit the „Universitätsstraße“ and continue with **A-5.** above.

...PUBLIC TRANSPORT

Subway:

From „Bochum Hauptbahnhof“ (Bochum main station) you can continue your journey by public transport, taking the subway line U35 (on weekdays the trains leave every 5-10 minutes) in the direction of „Hustadt / Querenberg“ and get off at „Ruhr-Universität“ after 9 minutes. Head right and walk across the pedestrian bridge towards the university.

Other transport connections reach and leave the university directly:

- A) Subway U35 towards „Schloß Strünkede“ via „Herne“
- B) Schnellbus SB67 towards „Wuppertal central station“ via „Sprockhövel“ (every hour)
- C) Bus 320 towards „Witten“ (every 20 min)
- D) Bus 339 towards „Witten-Center“ (every hour)
- E) Bus 346 towards „Bochum-Oberdahlhausen“ (every 20 min)
- F) Bus 370 towards „S-Bahnhof Dortmund Lütgendortmund“ via „Bochum-Langendreer“ (every hour)
- G) Bus 377 towards „Bochum-Langendreer Nord“ (every 20 min)

Timetables are available on the website of the local transportation company „[Verkehrsverbundes Rhein-Ruhr](#)“.



HOTELS

ACORA HOTEL UND WOHNEN BOCHUM

NORDRING 44 // 44787 BOCHUM

HOMEPAGE: WWW.ACORA.DE

TEL.: 02 34-68 96-9 85 OR 02 34-68 96-0

E-MAIL: BOCHUM@ACORA.DE

PRICE CATEGORY: \$\$ // 70,00 – 100,00€

Picture Credits @Acora Hotel und Wohnen Bochum

The Bochum city centre can be reached in just a few minutes of walking distance. The metro station *Deutsches Bergbau-Museum* can also be reached in a few minutes from the hotel. From there you can continue on public transport, taking the metro U35 in the direction of *Hustadt/Querenburg* to get to the Ruhr-University Bochum. Get off on the eponymous station.



CLAUDIUS HOTEL

CLAUDIUS-HÖFE 10 // 44789 BOCHUM

HOMEPAGE: WWW.HOTEL-CLAUDIUS.DE

TEL.: 0234-52 00 81-10

E-MAIL: INFO@HOTEL-CLAUDIUS.DE

PRICE CATEGORY: \$ // 60,00 – 80,00€

Picture Credits @Claudius Hotel Bochum

All the region's public transport services can be reached just in a few minutes of walking distance from the hotel. The Bochum city centre can be reached in about 15 minutes. The Ruhr-University Bochum can be reached from the station *Bochum Hauptbahnhof*, taking the metro U35 in the direction of *Hustadt/Querenburg*. Get off on the station *Ruhr-Universität Bochum*.



COURTYARD BY MARRIOTT BOCHUM STADTPARK

KLINIKSTRASSE 43 – 45 // 44791 BOCHUM

HOME PAGE: WWW.COURTYARDBOCHUM.DE

TEL.: 02 34-8 93 95 55

E-MAIL: RESERVIERUNG@MARRIOTT-RUHRGEBIET.DE

PRICE CATEGORY: \$\$ // 70,00 – 100,00€

Picture Credits @Courtyard by Marriott
Bochum Stadtpark

The tram lines 308 and 318 can be reached just in a few minutes of walking distance from the hotel. From there you can get easily to the Bochum city centre. You can reach the Ruhr-University Bochum as follows: Get on the station *Planetarium* on the tram line 308 in the direction of *Hattingen Mitte S-Bahnhof* or the tram line 318 in direction of *Bochum-Dahlhausen S-Bahnhof* and get off on the station *Bochum Hauptbahnhof*. From there the Ruhr-University Bochum can be reached taking the metro U35 in the direction of *Hustadt/Querenburg*. Get off on the eponymous station.



H+ HOTEL BOCHUM

STADIONRING 22 // 44791 BOCHUM

HOME PAGE: WWW.RAMADA.DE

TEL.: 0234-92 56 60

E-MAIL: BOCHUM@H-HOTELS.COM

PRICE CATEGORY: \$\$ // 70,00 – 90,00€

Picture Credits @H+ Hotel Bochum

The tram lines 308 and 318 can be reached just in a few minutes of walking distance from the hotel. From there you can get easily to the Bochum city centre. You can reach the Ruhr-University Bochum as follows: Get on the station *Planetarium* on the tram line 308 in the direction of *Hattingen Mitte S-Bahnhof* or the tram line 318 in direction of *Bochum-Dahlhausen S-Bahnhof* and get off on the station *Bochum Hauptbahnhof*. From there the Ruhr-University Bochum can be reached taking the metro U35 in the direction of *Hustadt/Querenburg*. Get off on the station *Ruhr-Universität Bochum*.



IBIS BOCHUM ZENTRUM

UNIVERSITÄTSSTRAÙE 3 // 44789 BOCHUM

HOMEPAGE: WWW.IBISHOTEL.COM

TEL.: 0234-3 33 11

E-MAIL: H1440@ACCOR.COM

PRICE CATEGORY: \$ // 60,00 – 80,00€

Picture Credits @IBIS Hotel Bochum Zentrum

All the region's public transport services can be reached in just a few minutes of walking distance from the hotel. The Bochum city centre can be reached in about 10 minutes. The Ruhr-University Bochum can be reached from the station *Bochum Hauptbahnhof*, taking the metro U35 in the direction of *Hustadt/Querenburg*. Get off on the station *Ruhr-Universität Bochum*.



MERCURE HOTEL BOCHUM CITY

MASSENBERGSTRASSE 19 – 21 // 44787 BOCHUM

HOMEPAGE: WWW.MERCURE-HOTEL-BOCHUM.DE

TEL.: 02 34-9 69-12 21

E-MAIL: RESERVIERUNG.BECHUM@EVENTHOTELS.COM

PRICE CATEGORY: \$ // 70,00 – 80,00€

Picture Credits @Mercure Hotel Bochum City

All the region's public transport services can be reached just in a few minutes of walking distance from the hotel. The Bochum city centre can be reached in about 15 minutes. The Ruhr-University Bochum can be reached from the station *Bochum Hauptbahnhof*, taking the metro U35 in the direction of *Hustadt/Querenburg*. Get off on the station *Ruhr-Universität Bochum*.



RENAISSANCE BOCHUM HOTEL

STADIONRING 18 // 44791 BOCHUM

HOME PAGE: WWW.RENAISSANCEBOCHUM.DE

TEL.: 02 34-8 93 95 55

E-MAIL: RESERVIERUNG@MARRIOTT-RUHRGEBIET.DE

PRICE CATEGORY: \$\$\$ // 80,00 – 120,00€

Picture Credits @Renaissance Bochum Hotel

The tram lines 308 and 318 can be reached in just a few minutes of walking distance from the hotel. From there you can get easily to the Bochum city centre. You can reach the Ruhr-University Bochum as follows: Get on the station *Planetarium* or *Vonovia Ruhrstadion* on the tram line 308 in the direction of *Hattingen Mitte S-Bahnhof* or the tram line 318 in direction of *Bochum-Dahlhausen S-Bahnhof* and get off on the station *Bochum Hauptbahnhof*. From there the Ruhr-University Bochum can be reached, taking the metro U35 in the direction of *Hustadt/Querenburg*. Get off on the station *Ruhr-Universität Bochum*.



TUCHOLSKY ART HOTEL

VIKTORIASTRASSE 73 // 44787 BOCHUM

HOME PAGE: WWW.ART-HOTEL-TUCHOLSKY.DE

TEL.: 0234-96 43 60

E-MAIL: INFO@ART-HOTEL-TUCHOLSKY.DE

PRICE CATEGORY: \$\$ // 60,00 – 90,00€

Picture Credits @Tucholsky Art Hotel Bochum

All the region's public transport services can be reached in just a few minutes of walking distance from the hotel. The Bochum city centre can be reached in about 5 minutes. The Ruhr-University Bochum can be reached from the station *Bochum Hauptbahnhof*, taking the metro U35 in the direction of *Hustadt/Querenburg*. Get off on the station *Ruhr-Universität Bochum*.



SCIENTIFIC BOARD

PROF. DR. SANDRA AßMANN (RUHR-UNIVERSITY BOCHUM, GERMANY)

Professor of Educational Sciences with a focus on Social Spaces and Places of Non-Formal and Informal Learning

Institute of Educational Research; Ruhr-University Bochum, Germany

Research Focus: media activities of children and adolescents in informal and non-formal contexts of learning, game-based learning

Statement:

Across different disciplines, the study of space has undergone a profound transformation – also known as „The Spatial Turn“. Also the Educational and Social Studies, which concentrate on the phenomenon of learning are part of this transformation. This is only logical: Learning takes place in a variety of (informal, nonformal and formal) contexts which interact with each other. Furthermore, in the 21st century we cannot think about social spaces and places of learning without regarding (digital) media and its effects on spatial circumstances. Against this background, I am very glad to invite international researchers from different disciplines to Bochum to discuss the exciting and important questions of our learning society.



PROF. DR. GRIT IM BRAHM (RUHR-UNIVERSITY BOCHUM, GERMANY)

Professor of Educational Sciences

Development of Teaching and Empirical Educational Research, Working Group School Research, Institute of Educational Sciences; Ruhr-University Bochum, Germany

Research Focus: educational trajectory including second-chance education, development of teaching, balance between school and personal life of adolescents

Statement:



DR. JULIA EBERLE (RUHR-UNIVERSITY BOCHUM, GERMANY)

Senior Researcher

Educational Psychology Research Group, Institute of Educational Science; Ruhr-University Bochum, Germany

Research Focus: situated learning, computer-supported collaborative learning, socio-motivational aspects of learning

Statement:

Providing an evidence base for guiding the effective and beneficial design of future learning opportunities is one of the central tasks of educational research. This includes the investigation of affordances, opportunities, and challenges arising from the integration of digital technology, virtual learning tools, and informal learning communities into formal learning spaces. I am very much looking forward to learning more about the different perspectives and ideas on these topics that will be presented and discussed during this conference.



PROF. DR. PETRA GRELL (DARMSTADT UNIVERSITY OF TECHNOLOGY, GERMANY)

Professor of Educational Sciences with the focus on Media Literacy

Institute of Media Literacy; Darmstadt University of Technology, Germany

Research Focus: interactive media in institutional teaching contexts, games and gamer experiences in digital worlds

Statement:



PROF. DR. THEO HUG (UNIVERSITY OF INNSBRUCK, AUSTRIA)

Professor of Educational Sciences, Coordinator of the Innsbruck Media Studies Research Forum

Department of Media, Society and Communication; Leopold-Franzens-University Innsbruck, Austria

Research Focus: media education, philosophy of education, mobile learning, microlearning, research methodology and theory of knowledge, medialization and philosophy of science

Statement:

According to various conceptualizations of 'space' and 'turn,' spatial turns open up a wide range of possibilities for re-thinking seams of formal and informal learning contexts. This applies to both, relations to other turns like cultural, ecological, digital, or medial turns, and concepts, models, and practices of learning on individual, organizational, generational, or societal levels. This implies considerations beyond the frequently invoked trinity of behaviourism, cognitivism, and constructivism in learning theory.



PROF. DR. EDWIN GEORG KEINER (FREE UNIVERSITY OF BOZEN-BOLZANO, ITALY)

Professor of Education, Vice-Dean for Teaching

Faculty of Education; Free University of Bozen-Bolzano, Italy

Research Focus: foundations and comparative history of education and education research

Statement:

In times of (perceived?) uncertainties, insecurities and ignorance we obviously prefer – sometimes explicit, sometimes implicit – dichotomizing constructions: digital and non-digital, formal and informal, text and context, learning and living, real and virtual, eutopic and dystopic, old and new. It is especially the metaphor of places and spaces (plural!), which seems to transcend such binary constructions by suggesting to reconstruct such constructions as constructions, especially if time is considered additionally. This means that 'walking on the edge', changing sides and perspectives, travelling 'in between', seems to be an adequate researcher's privileged, fishtailed and Janus-headed position, within which s/he defends subtle questions against too quick answers, and communicatively and methodologically breeds, relativises and limits processes of constructing and deconstructing our scholarly world views.



PROF. KARINA NIMMERFALL (UNIVERSITY OF COLOGNE, GERMANY)

Karina Nimmerfall is a visual artist and professor of Interdisciplinary Artistic Media Practice and Theory at the Institute for Art and Art Theory, University of Cologne. In her work, she engages reciprocal relations of architecture and media, as well as their conditions within a system of cultural, political and ideological representations.



Statement:

The radically expanded concept of space—the so-called „spatial turn“ found in the cultural and social sciences since the late 1980’s—opens new possibilities for artistic practices that critically engage in concerns around space as a concept in which, as Edward Soja states, all “subjectivity and objectivity, the abstract and the concrete, the real and the imagined, the knowable and the unimaginable, the repetitive and the differential, structure and agency, mind and body, consciousness and the unconscious, the disciplined and the transdisciplinary, everyday life and unending history” comes together.

PROF. DR. MARC STADTLER (RUHR-UNIVERSITY BOCHUM, GERMANY)

Professor of Competence Development and Competence Modeling

Institute of Educational Research; Ruhr-University Bochum, Germany

Research Focus: learning with multiple documents on the WWW, learner variables: metacognition, epistemological beliefs, teaching and learning with new media, expert-layperson-communication, conflict management

Statement:

The Internet provides access to scientific information which is without precedent in human history. Many citizens utilize this information in the course of running their everyday lives. With the triumphant advance of the Internet, however, the distinction between expert knowledge and knowledge made available by laypersons becomes blurred. While this development is in one sense entirely desirable, due to the ‚democratisation‘ of knowledge, from a psychological point of view it places multiple challenges on the informal learning of non-experts. In my research, I explore the question as to which (reading) competencies people require in order to inform themselves about scientific topics via the internet, which sources they trust, and how to deal with the provisional and contradictory nature of scientific statements.



MIRJAM THOMANN (UNIVERSITY OF COLOGNE, GERMANY)

Artist

Department for Art and Art Theory, Intermedia;
University of Cologne, Germany

Statement:

Working with installation, sculpture, text and printed matter, I use what is at hand at a certain site as an impetus, as material, space, and terrain to develop her artistic projects. In my current series of work entitled „Women and Space“ I refer to the legacy of land art, feminist architectural theory, and a post-conceptual and -minimal approach to material. My contribution to the conference will be focused on social, architectural and institutional parameters shaping critical, spatial artistic practices.



PROF. DR. ANNA TUSCHLING (RUHR-UNIVERSITY BOCHUM, GERMANY)

Professor of Media Studies, Co-Founder of the
Center for Anthropological Knowledge in Scientific
and Technological Cultures (CAST)

Spaces of Anthropological Knowledge, Mercator
Research Group; Ruhr-University Bochum, Germany

Research Focus: critical media anthropology, cultural
theories of anxiety, history of digitalization,
learning strategies and learning regimes



Statement:

The IFL2018 conference examines an important shift in the understanding und practices of learning caused by digital, networked media today. With this focus on informal learning spaces and its media the program discusses new concepts of learning and mediality. Digital media are not misunderstood as mere tools but discovered in their complex interaction with the environment and the spaces they are opening for learners. This approach calls for a new interdisciplinary discussion and a multiple-methods approach that the conference promotes.

PROGRAM

THURSDAY, 8TH MARCH 2018	THE SPATIAL TURN AND ITS IMPLICATIONS ON (IN)FORMAL LEARNING CONTEXTS		
10:15 – 11:00	Reception With coffee, tea and sweets in the VZ Location: Foyer / Anteroom		
11:00 – 11:30	Opening and Welcome Speech Reception by Rectorate and Head of the Conference Location: Room 2a		
11:30 – 13:00	Opening Keynote Learning lives across spatial boundaries – technological expansions and educational transformations Speaker: Prof. Dr. Ola Erstad (University of Oslo, Norway) Location: Room 2a		
13:00 – 14:00	Lunch Break Location: RUB Mensa / Canteen		
14:00 – 15:00	Lecture 01 The “differentiating de-centralization“ of education in school and the reconfiguration of formal and informal learning Speaker: Budde & Reißler Location: Room 1	Lecture 02 Authentic Learning of Educational Science Methods in an Out-of-School Lab – Investigating Students’ Perceived Authenticity of the Learning Activity Speaker: Nachtigall et. al. Location: Room 3	Workshop 01 Knowledge and practices of space in school contexts – Developing scientific approaches to (school) environments as viewed from the perspective of teachers and pupils Speaker: Kosica & Matthes Location: Room 4
15:00 – 15:30	Short Presentation 01 Digitality, Transmediality and Convergence Culture Speaker: Hahn et. al. Location: Room 1	Short Presentation 02 Formal and informal learning in university context Speaker: Teruggi & Zuccoli Location: Room 3	

15:30 – 16:30	Lecture 03 Development of a digital competence framework for professors Speaker: Eichhorn Location: Room 1	Lecture 04 From chocolate toward ANT: iterations of reciprocal informal learning through physical-virtual spaces in research contexts Speaker: Marguin et. al. Location: Room 3	Workshop 02 Innovativeness meets spatial citizenship – Fostering participation through spatial simulation Speaker: Weis et. al. Location: Room 4
16:30 – 17:00		Short Presentation 03 Prisons as ambiguous learning spaces Speaker: Fehrmann Location: Room 3	
17:00 – 17:30	Short Break Including Finger Food Buffet Location: Foyer / Anterrom		
17:30 – 18:30	Lecture 05 Informal refugee learning – On inclusive aspects in social spaces of new immigrants Speaker: Böhmer Location: Room 1	Lecture 06 Klafkis role for digital learning with a focus on methods Speaker: Dähling & Standop Location: Room 3	Lecture 07 The turn towards the informal in the field of urban development strategies Speaker: Dittbrenner Location: Room 4
18:30 – 19:30	Recapitulation and Closing Day 1 Location: Room 2a		
19:30 – OPEN END	Conference Dinner (Prior registration required) Location: Q-West (RUB)		

FRIDAY, 9TH MARCH 2018	THE SPATIAL TURN AND ITS IMPLICATIONS ON (IN)FORMAL LEARNING CONTEXTS		
08:00 – 09:15	Reception With coffee, tea and sweets in the VZ Location: Foyer / Anteroom		
09:15 – 09:30	Opening Program Presentation Location: Room 2a		
09:30 – 10:30	Lecture 08 How students take responsibility over their on- and offline learning spaces when they engage in knowledge building communities Speaker: Hod et. al. Location: Room 1	Lecture 09 The Mosh Pit – An area for excess or a place of learning? Speaker: Epp Location: Room 3	Lecture 10 Investigating Informal Learning from Others in the Workplace using Mixed Methods Social Network Analysis: Pitfalls and Protocols Speaker: Froehlich Location: Room 4
10:30 – 11:30	Lecture 11 Adopting the spatial turn between digital and physical space – A Bourdieu perspective Speaker: Bernhard-Skala Location: Room 1	Lecture 12 An explorative study on media action in the context of homework German-Swiss students Speaker: Rummler et. al. Location: Room 3	Lecture 13 Sufficiency as a key strategy for the change of symbolic artefacts at universities – Why do we need to rethink concepts of learning space design? Speaker: Ninnemann Location: Room 4
11:30 – 12:30	Lunch Break Location: RUB Mensa / Canteen		
12:30 – 13:30	Art Exhibition Thick Space - Artistic interventions on the occasion of the conference '(In)formal Learning' at Ruhr-Universität Bochum Artists: Nimmerfall & Thomann Location: Foyer / Anteroom		

<p>13:30 – 14:00</p>	<p>Short Presentation 04 Company based continuing vocational training with authoring systems for tasks in industrial manual assembly</p> <p>Speaker: Gerschner et. al.</p> <p>Location: Room 1</p>	<p>Short Presentation 05 Teachers, resources, internet and lifelong learning - Does this fit together?</p> <p>Speaker: Itzerodt</p> <p>Location: Room 3</p>	<p>-</p>
<p>14:00 – 15:00</p>	<p>Poster Presentation All posters will be represented in the Foyer of the VZ</p> <p>Poster 01: Left on their Own? Informal Learning in Latent Organizations Speaker: Froehlich</p> <p>Poster 02: Comparable evaluation of video-based online-learning modules Speaker: Lohner</p> <p>Poster 03: Multimedia walking tours: social barriers and spatial embeddedness of user experience Speaker: Maximova</p> <p>Poster 04: Improving questioning/answering strategies in learning from texts – Effects of an intervention on teachers' practices in students' performance Speaker: Minguela et. al.</p>		
<p>15:00 – 15:30</p>	<p>Short Break Including Finger Food Buffet</p> <p>Location: Foyer / Anteroom</p>		
<p>15:30 – 17:00</p>	<p>Closing Keynote Designing Teaching to Enhance Learning in CrossActionSpaces</p> <p>Speaker: Prof. Dr. Isa Jahnke (University of Missouri-Columbia, USA)</p> <p>Location: Room 2a</p>		
<p>17:00 – 17:30</p>	<p>Recapitulation and Closing Day 2</p> <p>Location: Room 2a</p>		

THICK SPACE

Thick Space. Artistic Interventions on the Occasion of the Conference '(In)formal Learning' at Ruhr-Universität Bochum

The IFL2018 conference will also be hosting an art project with national and international renowned artists. This project is called Thick Space. Since the Spatial Turn is an interdisciplinary and also in the art negotiated topic, the art project should connect organically to the conference and pick up on the concept of space from an artistic perspective. Under the leadership of Prof. Karina Nimmerfall and Mirjam Thomann (both University of Cologne) the following concept emerged:

Six renowned artists, whose work deals with spatial-theoretical, sociological and phenomenological issues in various ways and with such diverse media as drawing, video, photography, sculpture and text, will be invited, to create artistic interventions for the convention center and / or to design the campus of Ruhr-Universität Bochum. The presentation of the projects takes place during the conference and should be documented in a publication. Following the conference call, which locates the Spatial Turn beyond learning and teaching contexts in an overall societal field ("The spatial turn itself reflects much broader transformations and shifts in the economy, politics, culture and education of the contemporary world as well as thematising shifts in identity and subjectivity: Space and place matter, not only for the trivial reason that occurs in spaces and places - sometimes referred to as locus cultural trends. "), the artists will be invited to develop or propose works that are thematically linked to the contents of the conference and deal with the venue itself as a significant "space and place". The brutalistic architecture of the university Bochum (the interplay of nature and concrete) could also be the starting point for this such as the art collection and the campus museum or the conference rooms and the convention center. From the presentation of videos to ephemeral architectural interventions, there are no limits to the artistic form.

The following artists have worked in this project:

Andreas Bunte, Berlin (<http://andreasbunte.net>)

Julia Horstmann, Berlin (<http://hiddenlinesofspace.org>)

Karina Nimmerfall, Köln/Berlin (<http://karinanimmerfall.com>)

Bojan Sarcevic, Paris (<http://www.bojansarcevic.net>)

Jochen Schmith, Hamburg (<http://www.jochenschmith.com>)

Mirjam Thomann, Köln/Berlin (<http://nagel-draxler.de/artists/mirjam-thomann/>)

ANDREAS BUNTE

Laboratory Life, which was created specifically for Skulptur Projekte Münster, is based on the interplay between moving pictures and scientific experimental set-ups. In these films, Bunte removes everyday occurrences—like the rotation of a car-wash brush on a wind-screen, a plastic bag flapping in the wind, or someone operating a slot machine—from their original context and places them in a laboratory-like setting under video surveillance. Bunte's films enable viewers to observe isolated processes in a new light, specifically using 'motion capture', where the performance of an everyday activity is reduced to an abstract dance of points and lines in front of a black background, or human limbs are replaced by robot arms. By means of QR codes that have been printed on posters and hung up around Münster, these everyday choreographies can be watched on viewers' phones.

Andreas Bunte (*1970) lives in Berlin. His work has recently been shown at Skulptur Projekte Münster, Münster (2017), at Kunsthalle Wien (2016), Simon Fraser University Gallery, Vancouver (2016) and Kunstverein Hildesheim (2015).

<http://andreasbunte.net>

JULIA HORSTMANN

Hidden Lines of Space was initiated by artist Julia Horstmann and curator Annette Hans. The project investigates the visualisation of spaces from a fine art perspective and highlights the floor plan as a latent, indeed invisible spatial parameter. Floor plans (and the drawings that go with them) contain specific structural instructions that govern movement and sequences of movements. They determine the life that unfolds within them and the concomitant relationships: they store memories and cultural norms. They affect individuals, communities and societies. The semantics of the floor plan also functions here as a multi-axis temporal projection fusing past, present and future: for instance, what is the history behind and what are the defining thought patterns informing the design of spatial structures we currently inhabit but whose conception points to the future? We are interested in the historical development of the floor plan and the attendant implications for its various meanings, its transformation through history and its legibility, likewise its many effects and desired influences. For example, the understanding of the role of the female and considerations in support of women's emancipation at the start of the twentieth century via altered spatial structures and how this was later interpreted as a form of isolation. We are also interested in the representation of space in the floor plan which, on the one hand, is functional but which can also be understood as a free artistic idea and thus as a form of expression and a design for the future. Which cosmic and divine principles and proportions do they represent? Which image of humankind do they project? However, our primary interest is in the various semantic uses and translations of floor plans in visual art. Hidden Lines of Space articulates questions and research ideas in salons, exhibitions and publications in order to hone our perception of the relationship between people and space.

Julia Horstmann (*1974) lives in Berlin. Her work has been shown at Kunstverein am Rosa-Luxemburg-Platz, Berlin (2017), Galerie Christian Nagel, Berlin (2012), Neuer Kunstverein Wuppertal (2011) and Kunstverein Braunschweig (2008).

<http://hiddenlinesofspace.org>

KARINA NIMMERFALL

New (luxury) housing projects in urban metropolitan areas worldwide seem to have returned mainly to bourgeois residential culture. In addition to adapted concepts of mid-century modern elements—such as large glass facades or open spaces—one can find especially the stylistic idioms of the 18th century, whether Sophie Charlotte, Queen of Prussia (Kronprinzengärten Berlin) or Louis XV (Baccharat New York). Within the advertising portfolios of these „reconstructed fictions“ (Niklas Maak), housewives shop in luxury malls, relax by the pool on a roof top terrace, and—when the evening arrives—meet their husbands for dinner in the nearby exclusive restaurant. One could say that the historicizing design of these visions of a perfect life is paying respect to values of an era that was dominated by aristocracy and absolutism, as well as the beginnings of industrialization and large-scale capitalism. Life as Art Form (the title quotes a real estate slogan) combines a large-scale computer-generated interior with a dry wall construction, to become a three-dimensional wall tableau. Drawing on common 3-D visualization practices, the interior consists of standard décor found in various luxury real estate portfolios, but with a subversive twist: The interior’s iconography reveals details (patterns of the carpet and pillow, magazines, painting and furniture) that refer to the history of politically engaged women, and early radical women’s movements—all symbols that undermine the image, and question conventional representational patterns of the real estate industry, as well as their social values.

Karina Nimmerfall (*1971) lives in Berlin and Cologne. Her work has recently been shown at MAK Center for Art and Architecture, Los Angeles (2016), Kunstpavillion, Innsbruck (2015), Kunsthaus Graz (2012), Kunsthalle Mainz (2011) und Kasseler Kunstverein (2009).

<http://karinanimmerfall.com>

BOJAN SARCEVIC

Are we living in the most conformist phase of modern history?

Why is every attempt at criticizing society simply disarmed and discredited?

Why is it that nowadays any possibility of social protest is co-opted and absorbed?

If capitalism has been able to work and develop not in spite of, but thanks to the conflicts that exist in society, why is social and political conflict vanishing from our Western society today?

How is it that criticism was so fertile and incisive during a period without economic hardship, culminating in 1968, while nowadays for all the hardship and problems society remains apathetic?

Is it true that society today no longer wants to be a society but rather has settled for putting up with itself?

Is there reason to think that possibilities still exist to generate a transformational project which society might wish to aspire to?

What would be today the image today by which society can forge a representation of affirmation and valorization for itself?

Supposing that the evolution of culture and art has some connection with the inertia and passivity that characterize the world today. The renewal of their vitality will be inseparable from a certain drive that shall yield the form and content of a new project of autonomy.

Are we troubled by the impossibility to imagine the content of such a creation?

Bojan Sarcevic (*1974) lives in Paris. His work has recently been shown at Modern Art, London (2016), Kunstmuseum Liechtenstein, Vaduz (2012), Institut d'Art Contemporain, Villeurbanne, France (2012), Leopold-Hoesch-Museum and Kirche Sankt Anna, Düren, Germany (2012).

<http://www.bojansarcevic.net>

JOCHEN SCHMITH

In its multi-media works, which take a critical approach to institutions, the artist collective Jochen Schmith illustrates the role of the artist and other protagonists in the art market. Against the backdrop of the conversation piece genre, which became popular in England in the 18th century, showing a group of middle class family members or friends as an informal group portrait in their domestic environment, Jochen Schmith uses subtle, site-specific interventions to question the relationship between private and public space in their recent solo exhibition at Drawing Room, Hamburg, between art and commercialisation, between authorship, the appropriation of artistic identity and the luxury consumer goods industry. The result is a comprehensive display-tableau that initiates an exciting dialogue between the works of Jochen Schmith and selected pieces of the collection ES, thereby leaving diverse traces and awakening very different associations with the "art business" in the viewer.

The artist collective Jochen Schmith worked as a trio from 2000 and has worked as a duo (Peter Steckroth and Carola Wagenplast) since 2016. The collective has realized numerous international exhibitions, including London, Brussels, Berlin, Munich, Amsterdam, Maastricht, Vienna, Oslo, Montevideo, Hong Kong and Beijing. In August 2017, they were awarded the Lichtwark Prize by the Free and Hanseatic city of Hamburg.

<http://www.jochenschmith.com>

MIRJAM THOMANN

The work *Lean In 1–3* (2016) is addressing the geographical expansion of the exhibition *Unknown Landscape*. Nord-kystens Kunst Triennale and the curatorial concept that it takes place in the entire region of the Gribskov Municipality. Three similar steel structures are set up at different spots in the landscape near the sites and institutions where the exhibition is shown. Each sculpture marks a particular space—the statuepark at Rudolph Tegners Museum, the sculptural garden at Munkeuphus and the front yard of the lighthouse at Nakkehoved. Thus the steel structures painted in flesh color function as recognizable and recurring signs for the visitors of the triennial. They connect the sites of the exhibition as well as referring to the movement from site to site. The steel structures are prefabricated leaning rails which are usually installed in public places like transit stops or waiting areas. Like benches they are part of a urban furnishing but refer even more to a status of inbetweenness: not properly sitting, neither standing, leaning rails are used by people to take a small break and to relax while waiting. Detached from the public realm they are originally planned for, they leave their primary function behind and become singular objects without an explicit benefit. No longer being an element in the organization of the urban sphere, they primary seem to foreground their peripheral surrounding as much as they are foregrounded by exactly this periphery. Nevertheless, the sculptures can and should be used by the visitors of the triennial. People are invited to linger around for awhile. Each sculpture is set up according to a specific view—be it a spot in the landscape, an architectural site, or an artwork. For visitors in favor of smoking, ashtrays are fixed to the steel structures.

Mirjam Thomann (*1978) lives in Berlin. Her work has recently been shown at Kunstverein Arnsberg (2017), Galerie Krobath, Wien (2016), Museum Villa Stuck (2015), MAK Center for Arts and Architecture, Los Angeles (2015), Galerie Nagel Draxler, Berlin (2015), and MOCA Museum of Contemporary Art, Tapei (2013).

<http://nagel-draxler.de/artists/mirjam-thomann/>

FULL ABSTRACTS

WORKSHOPS

Knowledge and practices of space in school contexts. Developing scientific approaches to (school-) environments as viewed from the perspective of pupils and teachers

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Abstract: By combining spatial concepts and practical scientific approaches in the context of school environments, this workshop addresses the problem of describing spatial experiences and developing a scientific understanding of space as viewed from the perspective of teachers and pupils. In discourses about education, school, teaching, and learning, space was long disregarded as a relevant category of educational scientific research. Furthermore, recent discussions have only viewed space from a primarily theoretical perspective, for example viewing space as the third pedagogue. However, “talking about space” (Nugel 2014, p. 279) currently does not only imply the development of educational theories of space and its territorialization per se, but addresses the experiences of teachers and pupils who are involved in specific (educational) contexts, and who create and limit space. Against this background, the two approaches represented in this talk do not focus on the external description of physical dimensions of space, but rather aim to examine relational aspects (Kajetzke/Schroer 2015; Löw 2001) in the interaction and the transaction between people and things (Nohl 2016, Waldenfels 2013). This is to be visualized from the perspectives of teachers and pupils in the specific school context through space-creating interactive and transformative processes, both in verbalization and illustration.

Introduction

Thus, the constitution of space is not presupposed, but examined with regard to its representation and creation within the everyday educational practice. On the basis of two research projects concerning the scientific evaluation of educational spaces from phenomenological (Kosica 2018) and praxeological-knowledge-sociological (Matthes 2018) perspectives, theoretical, methodological, and empirical approaches will be presented in order to outline how the use of space in school contexts can be scientifically dimensioned and analyzed. Specific emphasis is placed on the ascertainability of implicit (knowledge) structures. The two underlying research designs presented in the workshop focus on the verbal and visual representations of space in school contexts. The workshop is intended to be a platform for reflection and discussion. The concluding discussion will address the problem of describing

spatial experiences and developing a scientific understanding of space as viewed from the perspective of teachers and pupils in the context of the approaches presented during the talk.

Simone Kosica: phenomenological – narrated school tours – pupils

The phenomenologically oriented research project carried out by Simone Kosica concerns the genesis and structure of primary school pupils’ experiences of institutional and architectural school environments. The investigation aims to answer the question of which phenomena, i.e. which types of experiences, can be observed when we analyse how school pupils experience the school space.

The phenomenological understanding of space and architecture in this context focuses on the space between ‘the world of things’ and ‘the world of people’ (Waldenfels 2013; Bürklin/Janson 2002). Space can therefore be understood as a lived or experienced space in which our body acts as a corporeal responsory (“leibliches Responsorium”) (Waldenfels 2016, p. 463) resonating also with physical objects and architecture – the producer of space forming things (“Produzent raumbildener Dinge”) (Waldenfels 2013, p. 202).

The question and theoretical background described above present a number of methodological challenges. In order to overcome these challenges, a research design has been developed that combines the idea of the participating experience (“teilnehmende Erfahrung”) (Beekman 1984, p. 16) – a traditional method of phenomenological research in educational science – with the explorative method of narrated school tours (Kosica 2018). In these filmed narrated school tours, in which primary school pupils take the researcher to a tour through their school, the responsive event (Antwortgeschehen) (Waldenfels 2016) that occurs between the pupils and the institutional and architectural school environments is of particular importance.

In order to gain a deeper insight into this relationship the narrations of the pupils and their movements (Waldenfels 2007) are used for the analysis.

In line with the phenomenological research tradition in educational science, exemplary descriptions (“exemplarische Deskriptionen”) (Lippitz 2003, p. 236) were written based on the video recordings and written logs of the co-experiences.

By taking this approach to analysing primary school pupils’ experiences of institutional and architectural school environments, the researcher also aims to consider the affective and pathic dimension of space and architecture.

Dominique Matthes: praxeological-knowledge-sociological – narrated mapping – teachers

Dominique Matthes’ scientific project with its praxeological and knowledge-sociological focus examines the complexity of the constitution of space in the teaching profession, its production and presentation in narrative concepts.

Thus, the project examines space from the personal perspective of teachers rather than the perspective of educational sciences. In the language of the documentary method, using images and texts as expressions of social practice (Bohnsack 2011), the reconstruction of the manner, in which teaching professionals produce space, is brought to the fore. The researchers therefore more actively and consequently step back in favor of the meaning-positing of the participants with regards to the site-dependency (in comparison to observational evaluation types).

It is assumed by means of space-theoretical Heuristics, that space is understood as fluid, metaphorical, and as multidimensional “Prozesse von Verräumlichung” (Kajetzke/Schroer 2015), and that it cannot be defined for participants as “the space”, in which actors act and use space: Space is produced, disintegrates, stabilizes, and changes as and within social practice, meaning the collective involvement and interconnectedness of people and things (Nohl 2016). These practice-space-relations do not only exist in a relational connection (Löw 2001) but also in a state of ‘transaction’ (Nohl 2016).

The socio-objective constellations, which frequently constitute themselves and overlap in the context of the teaching profession, is said to be constantly reconstituted and interpreted in its habitual potential.

If in a process of “talking about space” (Nugel 2014, p. 279) an examination by teachers of their everyday teaching practice comes to the fore – without assuming an explicability of space – a conscious experience and reconstruction of space is initiated (Nohl 2016), and the contexts of teaching practice becomes more comprehensible / predictable (Bohnsack 2011).

Within a qualitative-reconstructive design of narrative maps and qualitative interviews the practical contexts and interpretations of the teachers will be examined through stimulated acts of visualization and verbalization. In this praxeological knowledge-sociological perspective (Bohnsack 2017) in relation to network-oriented and pragmatical considerations (Nohl 2016) questions about experienced social and material infrastructures and conditions and their processing in the everyday practice of teachers become especially relevant. In the discussion of explicit and implicit inventories of knowledge, the project also continuously deals with the question of the definability of space.

Structure of the workshop

The workshop is divided into two phases. Based on the two explorative scientific approaches, which were presented in detail in the abstracts, a first contextualization will be given by the two lecturers within a collective introductory setting in response to the conference's topic: „The Spatial Turn and its Implications on (In)Formal Learning Contexts“. In doing so, the motivation behind and potentials of the developed approaches will be clarified in consideration of the current state of research within the space-conscious educational sciences. In a more detailed comparison of the two participant-centered scientific approaches, spatial theory as well as method(ologi)cal considerations about the related reference theory from the praxeological knowledge sociology, phenomenology and explanations for the specific scientific processes within the research designs will be presented. Thus, both approaches will be discussed under consideration of the respective understanding of space, the target group and respective correlations of origin, the translation-process of knowledge as well as experience of space of the focused target groups in images and language, and the practical scientific challenges in the development of existing methods and methodologies.

After a short round for questions of clarification, the lecture-focused plenary-session will be followed by a more interactive, reflective period of small-group work (40 min; comp. Raumsituation II). For this, the participants will be divided into two Groups, which will each be assigned to one of the two scientific projects. The intention for both groups is not only to grant insight into the surveyed material and the respective evaluative content, but rather to

reflect upon and discuss its validity and significance with regard to the topic of the conference.

In a final discussion (20 min) the results of the small-group work will be collected and put up for discussion.

References

Beekman, T. Hand in Hand mit Sasha: Über Glühwürmchen, Grandma Millie und andere Raumesgeschichten. Im Anhang: teilnehmende Erfahrung. Lippitz and Meyer-Drawe (Eds.), *Kind und Welt – Phänomenologische Studien zur Pädagogik* (pp. 11-26). Forum Academicum in der Verlagsgruppe Athenäum, Hain, Hanstein, 1984.

Bohnsack, R. *Praxeologische Wissenssoziologie*. Opladen/Toronto: Budrich, 2017.

Bohnsack, R. *Qualitative Bild- und Videointerpretation. Die dokumentarische Methode*. Opladen/Farmington Hills: Budrich, 2011.

Bürklin, T and A. Janson. *Auftritte/Scenes. Interaktionen mit dem architektonischen Raum: die Campi Venedigs. Interaction with the Architectural Space: the Campi of Venice*. Basel/Boston/Berlin: Birkhäuser, 2002.

Kajetzke, L and M Schroer. *Die Praxis des Verräumlichens. Eine soziologische Perspektive*. n.p.: Europa Regional, 21(1-2), 9-22, 2015.

- Kosica, S. Bewegungen im Schulraum. Sich von SchülerInnen (ent-)führen lassen. Engel et al. (Eds.), *räumen* - Raumwissen in Natur, Kunst, Bildung und Architektur. Beltz/Juventa: Weinheim, 2018.
- Lippitz, W. Differenz und Fremdheit – Phänomenologische Studien in der Erziehungswissenschaft. Frankfurt am Main: Peter Lange GmbH, 2003.
- Löw, M. Raumsoziologie. Frankfurt am Main: Suhrkamp, 2001.
- Matthes, D. Raum(wissen) im Narrativen Entwurf. Ein dokumentarischer Zugang zu Narrativen Karten und Interviews am Beispiel einer Studie zum LehrerInnenberuf. Engel et al. (Eds.), *räumen* - Raumwissen in Natur, Kunst, Bildung und Architektur. Beltz/Juventa: Weinheim, 2018.
- Nohl, A-M. Pädagogische Prozesse im Raum – pragmatische und wissenssoziologische Perspektiven auf Sozialisation und Bildung. n.p.: Vierteljahresschrift für wissenschaftliche Pädagogik, 92(3), 393-407, 2016.
- Nugel, M. Erziehungswissenschaftliche Diskurse über Räume der Pädagogik. Eine kritische Analyse. Wiesbaden: Springer VS, 2014.
- Waldenfels, B. Sichbewegen. Brandstetter and Wulf (Eds.), *Tanz als Anthropologie* (pp. 14-30). Paderborn: Fink, 2007.
- Waldenfels, B. Sinnesschwellen. Studien zur Phänomenologie des Fremden. Frankfurt am Main: Suhrkamp, 2013 [3rd ed.].
- Waldenfels, B. Antwortregister. Frankfurt am Main: Suhrkamp, 2016 [2nd ed.].
- Further English Literature*
- Bohnsack, R. The Interpretation of Pictures and the Documentary Method. n.p.: FQS, 9(3), Art 26, 2008.
- Bohnsack, R, Pfaff, N and W. Weller (Eds.): *Qualitative analysis and documentary method in international educational research*. Opladen: Budrich, 2010.
- Bohnsack, R and A-M Nohl. Youth culture as practical innovation. Turkish German youth, 'time out' and the actionisms of breakdance. n.p.: *European Journal of Cultural studies*, 6(3), 366-385, 2003.

Innovativeness meets Spatial Citizenship Fostering Participation through Spatial Simulation

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Abstract: Within our complex world, innovations promising improvement—without considering perspectivity and ambiguity of such promise—are to be analyzed critically. These innovations are reflected in cities' transforming landscapes and in processes of (intersectional) struggle for space and the appropriation of urban space, also reflected in relational concepts of space. In this context, and, in contrast to a neoliberal understanding of education, this paper proclaims lifelong learning as an educational mission referring to the need to enable individuals of all ages and from various backgrounds to cope with contradiction, pace of change and, moreover, empower them to participate in societal and spatial decision-making and innovation processes according to their reflections and ideas of how society should be shaped. Aligning with a humanistic ideal of education, this paper—drawing from theories on Spatial Citizenship and the model of Innovativeness—translates theory into educational practice by introducing Spatial Simulations as a method to foster innovativeness—the ability to participate in innovation processes—by initiating simulated innovation processes within a spatial framework.

Introduction — Reasons to foster real participation

Individuals are challenged by contradictions, uncertainty and pace of change (e.g., Beck 2007 & Keller & van der Gracht, 2013). Not only people, but also institutions are subject to change as, for instance, education systems – a development not limited to Germany – undergo dynamic processes of change due to demands for more efficiency and output orientation (Olano et al., 2010). Within this age of complexity, innovations arise which “promise to improve current conditions without reflecting on the ambiguity of improvement” (Weis et al. 2017a, p. 386). These innovations become visible in cities' transforming landscapes and in spatial power relations related to the appropriation of urban space, also reflected in relational concepts of space (e.g., Lefebvre 1991, Werlen, 1993 & de Certeau, 1988).

This paper proclaims that individuals of all ages need to be able to cope with these challenges to (re-)act competently and participate in spatial and societal decision-making processes. Regarding education this implies that pupils and staff working in the education sector alike shall learn and experience to question current circumstances and develop solutions to build society according to their understanding of how the world should be shaped (e.g., Weis et al. 2017a). Hence, individuals working in education perform dual roles, as they are subject to change themselves and shall at the same time implement the empowerment of pupils/students in school/university.

This call for participation in education is also reflected in educational policy (KMK, 2007 & Schulentwicklung NRW, 2008). Apparently, there is also an increasing interest in implementing learning innovativeness in university education and professional working environments as well (Weis et al. 2017b & Schubert, 2009). Even though there are several forms and options of participation (Fatke & Niklowitz, 2003, p. 16) as well as varying definitions of the term itself (e.g., Stange & Tiemann, 1999, p. 215, Jaun, 1999, p. 266), these claims for participation and innovativeness tend to follow a rather neoliberal ideal that supports participation to consolidate a given framework (Gryl & Naumann, 2016) and—referring to Hart (1997)—tend to promote non-participation. In contrast, this paper argues for a *humanistic perspective* (Humboldt, 1792/93) on innovativeness and participation. Participation, in accordance with this humanistic ideal supports “people's active in-

volvement regarding all processes, that influence their lives” (Weber, 2013, p. 10; translated by the authors) and real options of action, regarding future- and development-oriented structuring of society (Gryl & Naumann, 2016, Weis et al., 2017 & Humboldt, 1792/93).

This contribution seeks to foster the ability to participate in spatial decision-making and innovation processes by introducing *Spatial Simulation* as an instrument, which is based on theories on *Spatial Citizenship* (Gryl & Jekel, 2012 & Jekel et al., 2015a) and the model of *Innovativeness* (Weis et al., 2017b), in order to learn and experience critical thinking, reflection on crucial spatial circumstances and the development of alternative approaches. We thereby proclaim an education that promotes the ability to participate in a mature way (Adorno 1971) according to Hart (1997) instead of token participation (ibid.).

Since (not least) educational goals have to be justified from a perspective that considers an uncertain future (Schnack & Timmermann, 2008), teaching settings should not only focus on facts and specialized competencies (Klieme et al., 2010), but instead contribute approaches, which provide individuals with room to reflect, discuss and (re-)create/invent since—as the authors argue—these skills will be needed throughout their lives in order to participate and be self-determined. Meeting this claim, educational approaches drawn from theories on Spatial Citizenship and the model of Innovativeness can be linked to *lifelong learning in a humanistic sense*.

This paper does not only provide a theoretical background on Spatial Citizenship (Gryl & Jekel, 2012 & Jekel et al., 2015a) and Innovativeness (Weis et al., 2017b), it also defines Spatial Simulation as a didactical tool to foster mature participation. This paper outlines a workshop setting addressing several individuals working in the educational sector (teachers, headmasters, professors, social workers, etc.) as the conducted Spatial Simulation offers opportunities to increase one’s own abilities to participate and negotiate and at the same time it presents a method to be used in school and/or university in order to enable pupils and students to participate in a mature manner.

Theoretical background — Innovativeness meets Spatial Citizenship

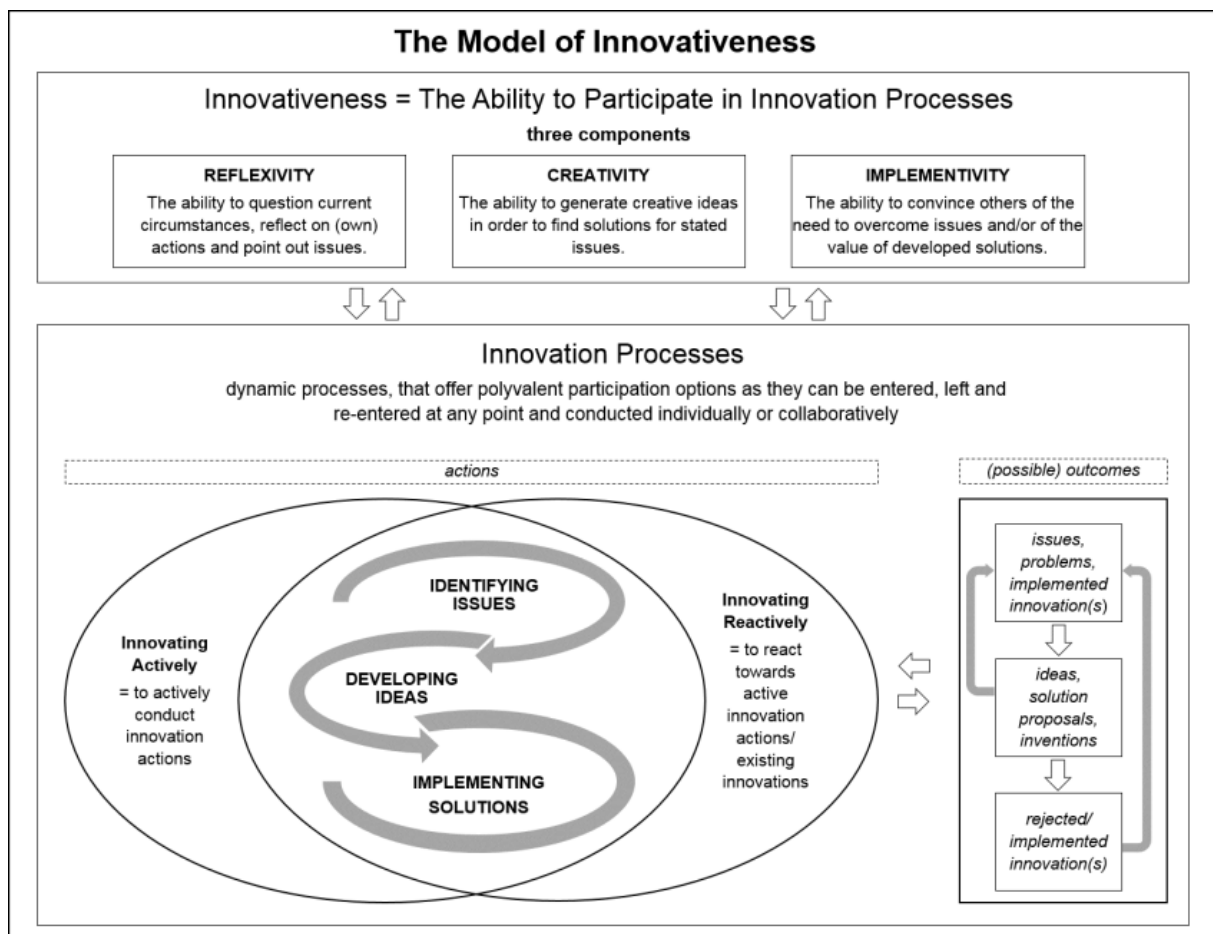
As outlined above, one can identify the need to promote participation in spatial and societal decision-making and innovation processes as a reply to current and forthcoming challenges. Yet, the increased call for participation in educational contexts tends to follow a more neoliberal path (Gille, 2013). In contrast, this paper proclaims an education that focuses on the ability to participate and innovate in a mature way following a humanistic ideal of education (Humboldt, 1792/93). In the following, we outline the theoretical background and introduce Spatial Simulations as a method to foster innovativeness within a spatial framework.

Providing an educational basis — The Model of Innovativeness

As outlined above, individuals are challenged by dynamic changes, complexity and innovations, which promise improvement within this demanding environment. Apart from identifying this as a challenge for current and future generations, Gryl (2013) as well as Jekel and colleagues (2015b) tried to derive consequences for educational policy and approaches and started to utilize the term “innovation” for educational contexts in the sense as that schools offer room to learn and experience to take part in innovation processes. The term is used in varying disciplines (Scharf et al., 2016), not uncommonly with different or missing reference to a theoretical background (Nahrstedt, 1988 & Moldaschl, 2010). Nevertheless, Gryl (2013) defines a common ground for a theoretical foundation: Innovations are mostly connoted positively and aim to improve present circumstances (ibid.). Being able

to innovate considers three major components: (1) *Reflexivity*—the ability to point out issues based on individuals capability to reflect, question and analyze critically own actions as well as their surrounding circumstances—; (2) *creativity*—the ability to generate ideas and develop solutions, so called “inventions”, for defined issues—and (2) *implementivity*—the ability to turn inventions into innovations by convincing others of the need to overcome stated issues by using the proposed solutions, in short by implementing developed solutions in society— (ibid., Jekel et al., 2015a & Weis et al. 2017b). Based on this and on Weis (2016), Weis and colleagues (2017b) have developed the model of *Innovativeness* (ibid.) (s. Figure 1) and hereby connected theory on *innovation processes* and *innovativeness*, “the ability to participate in [these] processes”, (Scharf et al. 2017, p. 296), which consists the three main components named above.

Figure 1. The model of Innovativeness (based on Weis et al. 2017)



As illustrated in Figure 1, there are multiple forms of participating in innovation processes, e.g. individually or rather collaboratively, partly or holistically. Based on Scharf et al. (2016) and Weis et al. (2017a, b), one can innovate rather *actively*—referring to actively conducted actions within innovation processes, namely *identifying issues*, *developing ideas* and/or *implementing solutions*—or *reactively*—referring to reactions towards actively conducted actions and/or existing innovations, e.g. in order to support the implementation of inventions.

In order to utilize the model of *Innovativeness* (Weis et al. 2017) for education, Scharf and colleagues (e.g., Scharf 2017) operationalize the model as base to analyze existing educational approaches in search of fruitful teaching and learning material that evokes and/or fosters innovativeness. Weis and colleagues (e.g., 2017b) develop new didactical

tools that foster innovativeness. This paper presents simulations as such tools (ibid.). Since the model of Innovativeness deals with innovations which arise in different disciplines and contexts, the model itself refers to a variety of topics, e. g. regarding economics or technical development, is thematically open and may be transferred in return to several fields of interest and/or multidisciplinary approaches in education. Therefore, the model needs to be filled with a contextual framework, which in this paper, will be a geographical perspective on spatial challenges in our modern society.

Adding a contextual frame — Spatial Citizenship

An education for Spatial Citizenship, aims at everyone's, i.e. not only students', mature appropriation of space with the help of (digital) geomeia, such as easy-to use online mapping tools (Gryl & Jekel 2012 & Jekel et al. 2015b). The term maturity hereby refers to the abilities of autonomous action, critical reflection, self-determination and, if necessary, opposition towards anti-democratic tendencies (Adorno 1971). In the context of participation, the use of geomeia in this case not only relates to the consumption, but also to the production and communication of spatial representations and therefore to take part in everyday processes of shaping spaces. Therefore, the approach draws back on relational concepts of space (Lefebvre 1991 & Werlen 1997), which regard spaces as products of individuals' and institutions' constructions which are attached with meaning in order to sustain control and power relations. These power relations can be analyzed using an intersectional approach (Crenshaw 1989 & Winker & Degele 2010) making visible specific forms of discrimination and exclusion from micro- to macro-scale and aiming at participation as a means for empowerment.

Merging the two — Defining Spatial Simulations

In order to meet the educational claim of an education for Innovativeness and Spatial Citizenship outlined above, we combine simulations as didactical tool, which foster innovativeness, and a mapping method, that allows to visualize alternative spatial scenarios. Weis et al. (2017b)—e.g. referring to Geuting (1992) and Rebmann (2001)—state that simulations are flexible didactical tools, which can be adapted to a setting fostering/evoking innovativeness as they provide room to “explore ideas, be creative and reflect options of acting on a hypothetical base” (Weis et al., 2017b, p. 386/6). As such, simulations offer a potential to foster the three components *reflexivity*, *creativity* and *implementivity* as participants pass simulated innovation processes, which provoke and require these abilities. Consequently, simulations rather focus upon the ability to *innovate actively*. Initial conceptions of simulations (e. g. Weis et al. 2017c) revealed this to be a promising approach. In contrast to, for instance, political planning games (e.g., Mickel 2003) or business simulations (e.g., Guillén Nieto 2009), the aim of simulations as defined by the authors is not to teach how institutions are constructed nor how work force needs to act in order to be politically or economically successful—apparently a rather neoliberal approach—, but instead to make individuals reflect, create and innovate as well as negotiate based on their own ideas and in accordance with their *very own attitudes, experiences and beliefs*—an approach meeting the claim for innovativeness and participation with a humanistic base as outlined above. Hence, the content of a simulated scenario within a simulation shall always refer to circumstances, constraints and/or issues *connected to the lifeworld* of its participants. Furthermore, simulations aim to take place in a bias-free—if at all possible—environment.

Thus, roles within a simulation are always on an *equal scale*, so that, for instance, all participants are ministers in the same administrative office (e.g., Weis et al. 2017) and therefore share equal (voting) power.

Furthermore, the simulation provides a fruitful ground to integrate *map-making* which will make use of an easy-to use web mapping tool to create and to communicate a spatial vision. In conclusion, the authors define a *Spatial Simulation as didactical tool, based on the model of Innovativeness (Weis et al., 2017, based on Gryl, 2013 & Jekel et al. 2015b) and enriched with theory on Spatial Citizenship (Gryl & Jekel, 2012 & Jekel et al., 2015a), which aim to foster mature participation in spatial decision and innovation processes in alliance with a humanistic ideal of education by providing a simulated spatial scenario, in which participants act in equal roles and shape space within a fictive innovation process, which is constituted based on actual circumstances derived from their lifeworld.*

In the following, initial research and a workshop setting, which includes a Spatial Simulation, will be presented.

Putting theory into action — Providing a workshop on Spatial Simulation

For this workshop, a Spatial Simulation including the utopian framework of a specific urban planning environment based on the example of the German city Essen (North-Rhine Westphalia) has been developed. The workshop is designed along the following outline: During the first workshop phase, participants will be introduced to their equal roles as members of the Ministry of Equal and Sustainable Urban Life in the year 2030. By 2030 urbanization has increased which further intensified conflicts along processes such as urban segregation, the search for affordable housing etc. to an extent that mankind needs to rethink the concepts of urban living and planning. In the second, interactive workshop phase, participants will take part in mapping processes: First, they will be invited to planet Innovasian, where they are asked to reflect on the planets' current urban circumstances (*focus on reflexivity*). Secondly, they will have to re-develop concepts of urban planning for the planet's capital city Innos New Town according to their very own understanding and ideas of how equal and sustainable urban living should be organized in the future (*focus on reflexivity and creativity*). Finally, the Spatial Simulation emphasizes on the ability to implement ideas as the groups will be asked to agree on one of the concepts (*focus on implementivity*).

In conclusion, the workshop provides theoretical insights, allows participants to get acquainted with Spatial Simulations by practical experience, gives room to discuss future urban living and subsequently allows for a discussion of this didactical approach in terms of its potential to be further integrated into educational practice.

Conclusion

With this contribution, we combine research approaches on the development of didactical tools fostering innovativeness (Weis et al., 2017b) and supporting Spatial Citizenship (Gryl & Jekel 2012) through spatial decision-making processes, in particular low-key mapping methods in the context of a Spatial Simulation, which is defined as didactical tool. By this, this paper aims to foster mature participation and links lifelong learning to a humanistic perspective on education.

Forthcoming research will focus on developing and empirically exploring Spatial Simulations in educational contexts in order to move towards an education for Innovativeness and Spatial Citizenship.

References

- Adorno, T.W. *Erziehung zur Mündigkeit. Vorträge und Gespräche mit Hellmut Becker 1959 bis 1969.* Berlin, 1971.
- Beck, U.: *Risk society. Towards a new modernity.* London, 2007.
- de Certeau, M. *Die Kunst des Handelns.* Berlin, 1988.

- Crenshaw, K. Demarginalizing the intersection of race and sex: a black feminist critique of antidiscrimination doctrine, feminist theory and antiracist policy. *University of Chicago Legal Forum*, 1(8), 139-167, 1989.
- Fatke, R, and M. Niklowitz. *Den Kindern eine Stimme geben. Partizipation von Kindern und Jugendlichen in der Schweiz*. Zürich, 2003.
- Geuting, M. *Planspiel und soziale Simulation im Bildungsbereich*. Frankfurt am Main, 1992.
- Gille, A.S. Die Ökonomisierung von Bildung und Bildungsprozessen aus dispositivanalytischer Sicht. Wengler, Hoffarth and Kumiega (Eds.). *Verortungen des Dispositiv-Begriffs* (pp. 73-89). Wiesbaden, 2013.
- Gryl, I. and T. Jekel. Re-centering GI in secondary education: Towards a spatial citizenship approach. *Cartographica*, 47, 18-28, 2012.
- Gryl, I. Alles neu. Innovation durch Geographie und GW-Unterricht? *GW-Unterricht*, 131, 16-27, 2013.
- Guillén Nieto, V. *Intercultural Business Communication and Simulation and Gaming Methodology*. Bern, 2009
- Hart, R. *Children's Participation. The Theory and Practice of Involving Young Citizens in Community Development and Environmental Care*. London and New York, 1997.
- Humboldt, W. v. *Theorie der Bildung des Menschen (Bruchstück)*. In: A. Filtner & K. Giel (Eds.) (1969). *Wilhelm von Humboldt*. Darmstadt, 234–240, 1792/93.
- Jaun, T. *Durch Identifikation zu Verantwortungsbewusstsein: Die Partizipation von Kindern und Jugendlichen als Chance für eine nachhaltige Entwicklung*. Kaufmann-Hayoz and Künzli, (Eds.). „... man kann ja nicht einfach aussteigen.“ *Kinder und Jugendliche zwischen Umweltangst und Konsumlust* (pp. 261-274). Zürich, 1999.
- Jekel, T., Ferber, N., and K. Stuppacher. Innovation vs. innovativeness. Do we support our students in (re-)inventing the world? In: *GI_Forum*, 3, 373-381, 2015.
- Jekel, T., Gryl, I. and A. Oberrauch. Education for Spatial Citizenship: Versuch einer Einordnung. In: *GW Unterricht* 137, 5-13, 2015.
- Keller, J. and H.A. van der Gracht. The influence of information and communication technology (ICT) on future foresight processes. *Technological Forecasting and Social Change*, 85, 81–92, 2013.
- Klieme, E., Jude, N., Baumert J. and M. Prenzel (Eds.). *PISA 2009*. Münster, 2010.
- KMK (Kultusministerkonferenz) (Eds.). *Bildung für nachhaltige Entwicklung in der Schule*, 2007. Available at: http://www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2007/2007_06_15_Bildung_f_nachh_Entwicklung.pdf. Accessed November 15, 2017.
- Lefebvre, H. *The production of space*. Oxford, 1991.
- Mickel, W. *Praxis und Methode: Einführung in die Methodenlehre der politischen Bildung*. Berlin, 2003
- NRC (National Research Council). *Learning to think spatially. GIS as a Support System in the K-12 curriculum*. Washington DC, 2006.
- Olano, D. d., Knodel, P., Martens, K. and M. Popp (Eds.). *Das PISA-Echo*. In: Olano, Knodel, Martens and Popp (Eds.). *Das PISA-Echo* (pp. 9-26). Frankfurt/New York, 2010
- Rebmann, K. *Planspiel und Planspieleinsatz*. Hamburg, 2001.
- Scharf, C., Gryl, I. and S. Weis. Innovative Pupils. *Documentary Research on Teaching and Learning Arrangements for Innovativeness*. Brighton In: *The European Conference on Education: Official Conference Proceedings*, 295-313, 2017. Available at: http://papers.iafor.org/papers/ece2017/ECE2017_36558.pdf.
- Schnack, J. and U. Timmermann. Kernkompetenz Selbstständigkeit. *Pädagogik*, 9 (60), 6-9, 2008.

- Stange, W., and D. Tiemann. Alltagsdemokratie und Partizipation: Kinder vertreten ihre Interessen in der Kindertagesstätte, Schule, Jugendarbeit und Kommune. Glinka, Neuberger, Schorn, Stange, Tiemann et al. (Eds). Kulturelle und politische Partizipation von Kindern (pp. 211-330). Munich, 1999.
- Weis, S.: Schüler als Entdecker, Erfinder, Erneuerer? Unpublished examination paper. 2016, Essen.
- Schulentwicklung NRW. Richtlinien und Lehrpläne für die Grundschule in Nordrhein-Westfalen, 2008. Available at: http://www.schulentwicklung.nrw.de/lehrplaene/upload/klp_gs/LP_GS_2008.pdf. Accessed November 15, 2017.
- Weis, S., Scharf, C. and I. Gryl. New and even newer. Fostering innovativeness in primary education. INTCESS, 193–202, 2017a. Available at: http://www.ocerint.org/intcess17_epublication/abstracts/a233.html.
- Weis, S., Scharf, C., Greifzu, L. and I. Gryl. Stimulating by Simulating. Fostering Innovativeness in Education. International Conference on Education: IACB, ICE & ICTE Conference Proceedings, 386/1–386/11, 2017b. Available at: <https://www.cluteinstitute.com/proceedings/>.
- Werlen, B. Sozialgeographie alltäglicher Regionalisierungen. Band 1: Zur Ontologie von Gesellschaft und Raum. Stuttgart, 1997.
- Winker, G. and N. Degele. Intersektionalität. Zur Analyse sozialer Ungleichheiten. Bielefeld, 2010

PAPER PRESENTATIONS

Space & Spatiality: Differentiating de-centralization of education and teaching in schools

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Abstract: “Space is fundamental in any form of communal life; space is fundamental in any exercise of power.“ (Foucault 1984, p. 252) In accordance with Michel Foucault’s famous notion of a fundamental significance of space, our contribution discusses a spatial phenomenon we call “differentiating decentralization of education in schools“. It does so by adopting a practice theoretical perspective and its spatial implications. First we seek to mark off some major points of reference by outlining two theoretical movements labeled ‘spatial turn’ and ‘practice turn’ both of which we seek to delimit by – it might seem paradoxical – foregrounding their multifacetedness. Second we highlight a dominant notion of education and teaching being tightly knit with classrooms, then again condense our argument, that in an ongoing process of school-transformation, this strong linkage dissolves in favor of decentralized orders. Third, we propose a praxeological approach to describe this process.

Spatial Turn & Practice Turn

Labels like “spatial turn” (Soja 1989, p. 39) or “space studies” (Kajetzke & Schroer 2012) comprise but also cover up a decidedly broad range of (a) socio-theoretical perspectives, (b) methodological, methodical approaches, (c) research questions and research prospects as well as (d) diverse concepts of space and spatiality. Space studies in educational science in general but also in research on schools, education and teaching in special for one thing concurs with this (re-)turn to space(s). For another it reflects the complexity in all the dimensions listed above. Such complexity and multifacetedness are also key-characteristics of a parallel movement that gathers momentum in educational science (eg. Budde et al. 2017) and comes under labels such as “practice turn” (Schatzki et al. 2001) or “practice theory” (e.g., Reckwitz 2003, Shove et al. 2012). Concurrent with the plurality of educational sciences space studies practice theory in general “hardly constitutes a uniform homogenous theoretical corpus” (Nicolini 2012, p. 9). It designates an assemblage of heterogeneous theories – a rather “diffuse movement” (Shove et al. 2012, p. 6) – that share some but at the same time differ in other elements. At a most basic level, practice theories share the conviction that practices – howsoever fuzzy this term itself may be – are the fundamental theoretical category (e.g., Reckwitz 2003 & Schäfer 2016). Hence, by no means the aforementioned labels designate one singular approach or a synthesis of multiple perspectives. As matters stand, there is not even one such thing as one single *praxeological spatial concept* (e.g., Schütz 2015, p. 101) but rather the plurality of practice theories is reflected in a plurality of praxeological understandings of space and spatiality.

The classroom as central locus and its status in empirical research on school and teaching

One common characteristic of education in schools is its tight and persistent linkage to *classrooms* and/or specific subject rooms as *the* central locus for educational practices (e.g., Böhme et al. 2016 & Willems & Eichholz 2008). While the centrality as well as the thickness and stability of this linkage for one thing rests on some organizational and theoretical arguments (e.g., Budde & Rißler 2017 forthcoming) it is also reflected in empirical research on schools and teaching. Empirical research on schools and teaching routinely revolves around social life, learning and organization in the (static material) classroom (e.g., Mehan 1979 & Krappmann 2001). But also space related research on schools regularly refers to

the classroom in a static and material manner e.g., while referring to and operating with Erving Goffman's concept of frontstage and backstage *in classrooms* (e.g., Breidenstein 2010 & Bennewitz 2004), while analyzing seating arrangements *in classrooms* (e.g., Willems 2007 & Budde & Reißler 2016) or while claiming "that *in classrooms* various actions take place simultaneously in different and sometimes independent spaces" (e.g., Breidenstein 2004, p. 87, all emphasis added). Therefore, while opening the 'black box of schooling' (Lacey 1970 & Braster et al. 2014), the material classroom itself is conceptualized as static (sometimes even as a static box itself filled up with artefacts and human beings) for one thing which is (sometimes) detached from what happens in it (learning, social life) and also from what happens elsewhere.

The Differentiating de-centralization of education in schools

In regard to the ongoing transformation of schools within the last decades, we highlight the argument that besides space related debates centering around 'design' features (e.g. colours; shapes; furniture) and their effects on e.g. teaching and learning (e.g., Forster & Rittelmeyer 2010); around material classrooms as a medium for education (e.g., Hackl 2015) around classrooms conceived of as another supplementary educator (e.g., Kajetzke & Wilde 2013) or centering around changes of their configuration (e.g., in the context of new learning cultures or the concept of governmentality via establishing different 'work-zones'; group-tables etc. (e.g., Patzner 2005)) the strong linkage between education and classrooms itself continuously dissolves via the constitution of other specific 'functional spaces' (e.g., Nugel 2016), like so called "Trainingsräume", "Differenzierungsräume" or "Inklusionsräume" and even via allowing or forcing specific students to work 'outside' (e.g., in the hallway). By that, also the spatial principle of a side by side of classrooms dissolves into a side by side of different and at them same time differentiating spaces. This process can be labeled as "differentiating de-centralization of education in schools", which also re-configures the relation between formal and informal learning in novel ways – formal achievement-oriented learning by teachers 'here' (in the classroom), education (of differentiated pupils) by social pedagogues or special needs teachers 'there' (in the adjoining room) and relaxation elsewhere.

To analyze and theorize this phenomenon of "differentiating de-centralization of education in schools" we refer to the theory of Schatzki. It allows to capture the phenomena in conceiving of schools as a constellation of linked practice-arrangement bundles, that are inherently spatial. (1)

Practices | Arrangements | Bundles | Space & Spatiality

In the following section we sketch out the basics of a spatial analysis of schools conceived of as constellations. First we delineate two of the basic analytical categories i.e. practices and arrangements, then illustrate the notion of a practice-arrangement bundle. Second we spell out the ways in which such bundles are spatial. We then make the claim that bundles connect into constellations which implicates, that not only practice-arrangement bundles are inherently spatial but that transformations in bundled practice-arrangement bundles i.e. constellations affect space/spatiality of such constellations.

Practice(s) | Material Arrangements | Bundles

Schatzki defines a *practice* (1) "as an open-ended, spatially-temporally dispersed nexus of doings and sayings" (Schatzki 2012, p. 14). Examples of practices include e.g. cooking practices, design practices, political practices but also educational and teaching practices. The definition highlights two central elements: (a) Activities | actions and (b) organization | structure. Hence, at the most basic level a practice can be conceived of as a manifold of

activities, namely bodily doings and sayings. As for the second basic element Schatzki claims that these sets of doings and sayings link or hang together according to a characteristic and at the same time fundamentally dynamic structure or organization (e.g., Schatzki 1991; 2006). The organized activities that constitute a practice (e.g., what goes into teaching) are structured through a tetrad of organizing factors. (2)

Practical understandings denote a set of knowing-hows or abilities. Namely the knowing how to X, which means the ability to (a) carry out acts of X-ing, (b) knowing how to identify X-ings and (c) knowing how to prompt and respond to X-ings (e.g., Schatzki 1996; Schatzki 2002). This set of abilities enables people to carry out actions that it makes sense to perform. General understandings denote abstract senses of the worth, value and nature of things (Schatzki 2012) – e.g., the “nobility of educating students” (Schatzki 2012, p. 16) or about proper student-teacher interactions (Schatzki 2006, p. 1864). A third way in which activities/actions are kept together is via ubiquitous instructions, precepts, formulations, principles, injunctions, requirements et cetera all of which captured under the term rule(s). They “enjoin, direct, or remonstrate people to perform specific actions” (Schatzki 2002, p. 79), and thereby “prescribe, require, or instruct that such and such be done, said, or the case.” (Schatzki 2005, p. 471) What is more, linking activities into a practice is its teleoaffective structure. It denotes “an array of ends, projects, uses (of things) and even emotions that are acceptable or prescribed for participants in the practice” (Schatzki 2005, p. 472) and that are also hierarchically ordered. All together a practices organization circumscribes “a normativized array of understandings, beliefs, expectations, emotions” (Schatzki 2006, p.481) which in the end are features of the practice and not of participants.

Regarding material arrangements Schatzki suggests a conception of “assemblages of material objects” (Schatzki 2006, p. 1864) or entities and thereby denotes “linked people, organisms, artifacts, and things (Schatzki 2011, p. 4). In other words: material arrangements – closely related to Bruno Latours famous network – are conceived of as “a set of interconnected material entities” (Schatzki 2010, p. 129). Since practices and material arrangements mutually relate – i.e. practices effect, use and give meaning to material arrangements while material arrangements are essential, facilitate and prefigure practices Schatzki speaks of practice-arrangement bundles. Characteristic of a bundle are dense and enduring relations between practices and arrangements. The next section explores in which ways such practice-arrangement bundles are inherently spatial. 4

Activity (Time)Space | Objective Space

Schatzki differentiates spatiality from objective space – two ways in which practice-arrangement bundles are inherently spatial. Spatiality (4) denotes the spatial dimension of a phenomenon Schatzki refers to as timespace (e.g., Schatzki 2013). It encompasses “arrays of places and paths anchored in material entities” (Schatzki 2009, p.36) – a “space of places” (Schatzki 1996, p. 115) or “activity-place space” (Schatzki 2002, p. 43). Spatiality is itself a social feature. It is a social feature for it derives from and depends on social practices and the arrangement with which they are bundled (e.g., Schatzki 2015 & 2012). A student’s desk therefore can be a place to perform a variety of activities/actions, the desk being the material artefact anchoring this variety: a place to write, a place to sleep, a place to watch the teacher, a place to mock classmates etc. A door meanwhile can anchor a path from the faculty lounge, the classroom or the canteen to the hallway or elsewhere. Since these places are anchored in or stationed at material entities places are anchored in objective (physical) space (c.f. section on objective space(s)). In the end, the objects found in schools, say in a teacher’s lounge or in “Trainingsraum” anchor a myriad of places, hence are also linked to a myriad of activities. Moreover, the timespaces of different people’s activities interweave. The next section suggests three prominent types of this interweaving of timespaces.

Commonality | sharing | orchestration of activity (time)spaces

Commonality, sharing and orchestration are concepts highlighting specific modes of interweaving not solely but also in the context of the concept of timespace (3). They are also closely linked to the normative organization of a practice and to the material arrangements they are bundled with. Commonality connotes that participants in a practice “proceed through the same places [...] anchored at the same particular entities or types thereof” (Schatzki 2015) because this is enjoined in the practice’s normative organization. A place for teachers to stand and speak for example is anchored for all participants of educational practices alike at the front of classrooms (e.g., Schatzki 2012). Places and their anchorings are shared when participants proceed through the same places, but doing so is not enjoined but rather deemed acceptable in the practice’s normative organization. Meanwhile, the term orchestration circumscribes the interdependency of different place’s anchoring in the same or different material entities for different people. (5)

Objective Space(s)

Another way practice-arrangement bundles are inherently spatial is by making up or forming objective spatial configurations. For one thing the spatially dispersed doings and sayings that constitute one (or more practices) are localized in objective physical space. Teaching for example takes place in the entirety of locations where the multitude of bodily doings and sayings performed by teachers, students etc. in which teaching consists, occur. Hence, the constituents are activities/actions – the specific objective space at hand in some contexts is labeled activity space (Schatzki 2002, p. 43). As for objective physical space, it’s the material entities comprised by arrangements that “form objective spatial configurations” (Schatzki 2015). The qualifier objective denotes the persistence and independency of objective physical space from human activity, experience and understandings etc. This means that even though (most) material configurations are effected by human beings or human activity – say through putting material objects (specimens of the four entities just mentioned) here or in positioning them elsewhere – in the end, objective spatial configurations are independent of human experience, activity and understandings. Hence, in this conception and compared to other practice theoretical concepts that tie space to the entity of humans alone (e.g., Löw 2001), an objective (physical) spatial configuration persists, even if all human life vanished (e.g., Schatzki 1991).

Practice-arrangement bundles | constellations

Organized activities and actions are inevitably and essentially bound up with material entities, the linked material entities of material arrangements. Such practice-arrangement bundles are inherently spatial in the ways just mentioned. Practice-arrangement bundles – e.g., teaching practice-arrangement bundles consisting of e.g., students, teachers and organized activities and practice-arrangement bundles of administration – furthermore bundle into constellations. Relative to practice-arrangement bundles this term captures large(r) social phenomena where large and small denote relative spatial extension (Schatzki 2016). In the end “a constellation of bundles is just a larger bundle” (Schatzki 2015) constituted via the same sort of links that connect (a) practices with practices (b) practices with arrangements and (c) arrangements with arrangements. (e.g., Schatzki 2015) Since bundles connect into constellations (and constellations into even larger constellations), space and spatiality of practice-arrangement bundles connect and interweave with those of other practice arrangement bundles. Transformations in practice-arrangement bundles as elements of constellations therefore may lead to transformation as well as integrating new participants and/or new practices into constellations already established. Therefore space and spatiality of practice-arrangement bundles are not only dynamic but

they are also effected by practice-arrangement bundles they are connected with, which themselves can't be considered independent of other practice-arrangement bundles etc.

Conclusion

Schatzki's version of a practice theory and its conception of space and spatiality have a lot to offer. First, it highlights the fundamental significance of space. In this perspective, the static and material linkage between educational practices and classrooms must be criticized in two ways. First as a practice-arrangement bundle, educational practices constitute classrooms as an ongoing practical process of spacing. Places and paths are as well results of practices as well as they enable or restrict specific activities. Second, the idea of one static and material classroom is also to be questioned because of an increasing decentralization of material spaces. Practices of teaching and learning seem to spread all over the school building and are no longer concentrated within the one room for every class. At the same time, the places and paths within the classroom themselves seems to duplicate and differentiate in specific functional 'subareas'. In sum, this process leads to more dynamic and differentiating concepts of educational practice-arrangement-bundles in school (constellations) in terms of a general increasing of individualization practices.

Endnotes

(1) Thinking in constellations i.e. bundles of larger spatial extension opens up possibilities to analyze large social phenomena

(2) The distinction between integrative and dispersed practices which is followed by a distinction of central organizing items respectively is left aside.

(3) Practices also interweave through common organization and timespaces for one thing and via shared activities for another (e.g., Schatzki 2015). Therefore commonality refers to different people's timespaces as participants of a as well as to the timespaces of different practices.

(4) Or place-path-arrays, where a place is conceived of as a microsite for human activity (cf. Schatzki 1991) hence "a place to perform such and such action" (Schatzki 2015, p. 655) while a path is a route between such places (cf. Schatzki 1991). Besides these modes of interweaving Schatzki differentiates unique anchorings of places in material entities.

References

Bennewitz, H. Helenas und Fabiennes Welt. Eine Freundschaftsbeziehung im Unterricht: Zeitschrift für Soziologie der Erziehung und Sozialisation 24(4), 393-407, 2004.

Böhme, J, V. Flasche, V. and I. Herrmann. Die Territorialisierung des (Schul-)Pädagogischen im urbanen Wandel. Ein Forschungsbeitrag aus der Pädagogischen Morphologie: Zeitschrift für Pädagogik 62(1), 62-78, 2016.

Braster, S., I. Grosvenor and M. del Mar del Pozo Andrés (Eds). The Black Box of Schooling. A Cultural History of the Classroom. Brüssel: Peter Lang, 2011.

Breidenstein, G. Klassenräume - eine Analyse räumlicher Bedingungen und Effekte des Schülerhandelns: Zeitschrift für qualitative Bildungs-, Beratungs- und Sozialforschung 5(1), 87-107, 2004.

Breidenstein, G. Überlegungen zu einer Theorie des Unterrichts: Zeitschrift für Pädagogik 56(6), 869-887, 2010.

Budde, J., M. Bittner, A. Bossen and G. Reißler. Konturen praxistheoretischer Erziehungswissenschaft. Weinheim, München: Beltz Juventa, 2017.

Budde, J and G. Reißler. Die Exklusion aus dem schulischen Anspruch. (Re-)Produktionsprozesse sozialer Ungleichheit in der Sekundarstufe I: I. Diehm, M. Kuhn and C. Machold

- (Eds.). *Differenz - Ungleichheit - Erziehungswissenschaft: Verhältnisbestimmungen im (Inter-)Disziplinären (179-198)*. Wiesbaden: VS Verlag für Sozialwissenschaften, 2016.
- Forster, J. and C. Rittelmeyer. *Gestaltung von Schulbauten. Ein Diskussionsbeitrag aus erziehungswissenschaftlicher Sicht*, 2010. Online: www.schulentwicklung.nrw.de/unterstuetzungsportal/rr_datei_download.php?dateiid=435. [Stand: 20.11.2017]
- Foucault, M. *Space, Knowledge, and Power*: P. Rabinow (Hg.): *The Foucault Reader* (239-256). New York: Pantheon Books, 1984.
- Kajetzke L. and J. Wilde. *Starre Pult-Lehrer, flexible Tisch-Schüler? Über Dinge, Bewegung und Macht in konventionellen und flexiblen Klassenzimmern*: W. Schönig and C. Schmidlein-Mauderer (Eds.), *Gestalten des Schulraums. Neue Kulturen des Lernens und Lebens* (163-182). Bern: hep, 2013.
- Kajetzke, L. and M. Schroer, *Space Studies*: S. Moebius (Eds.), *Kultur. Von den Cultural Studies bis zu den Visual Studies. Eine Einführung* (196-215). Bielefeld: transcript, 2012.
- Krappmann, L. *Soziales Leben und Lernen im Klassenzimmer*: H. Merckens and J. Zinnecker (Eds.), *Jahrbuch Jugendforschung* (99-116). Opladen: Leske + Budrich, 2001.
- Lacey, C. *Hightown Grammar: The school as a social system*. Manchester: Manchester University Press, 1970.
- Patzner, G. *Schule im Kontext neoliberaler Gouvernementalität*, In: H. Brei, M. Rittberger and M. Sertl (Eds.): *Schulheft 118 Kontrollgesellschaft und Schule* (53-71). Innsbruck, Wien, München: Studien Verlag, 2005.
- Mehan, H. *Learning lessons: social organization in the classroom*. Cambridge, Mass.: Harvard University Press, 1979.
- Nicolini, D. *Practice theory, work, and organization. An introduction*. Oxford: Oxford University Press, 2012.
- Nugel, M. *Stichwort. Bildungsräume – Bildung und Raum: Zeitschrift für Erziehungswissenschaft* 19(1), 9-29, 2016.
- Reckwitz, A. *Grundelemente einer Theorie sozialer Praktiken. Eine sozialtheoretische Perspektive: Zeitschrift für Soziologie* 32(4), 282–301, 2003.
- Schäfer, H. *Einleitung. Grundlagen, Rezeption und Forschungsperspektiven der Praxistheorie*: H. Schäfer (Eds.), *Praxistheorie. Ein soziologisches Forschungsprogramm* (9-27). Bielefeld: transcript, 2016.
- Schatzki, T. R. *Spatial Ontology and Explanation: Annals of the Association of American Geographers*, 81(4), 650-670, 1991.
- Schatzki, T. R. *Social practices. A Wittgensteinian approach to human activity and the social*. Cambridge: Cambridge Univ. Press, 1996.
- Schatzki, T. R., K. Knorr-Cetina and E.v. Savigny, (Eds.), *The practice turn in contemporary theory*. London, New York: Routledge, 2001.
- Schatzki, T. R. *The site of the social. A philosophical account of the constitution of social life and change*. University Park: Pennsylvania State University Press, 2002.
- Schatzki T. R. *On organizations as they happen: Organization Studies* 27(12), 1863-1873, 2006.
- Schatzki, T. R. *Materiality and Social Life: Nature and Culture* 5(2), 123-149, 2010.
- Schatzki, T. R. *A Primer on Practices*: J. Higgs, R. Barnett, S. Billet, M. Hutchings and F. Trede (Eds.), *Practice-based education. Perspectives and strategies* (13-26). Rotterdam, Boston: Sense Publishers, 2012.
- Schatzki, T. R. *The Timespace of Human Activity. On Performance, Society, and History as Indeterminate Teleological Events*. Lanham, Boulder, New York: Lexington Books, 2013.

- Schatzki, T. R. "Spaces of Practices and of Large Social Phenomena.", *EspacesTemps.net, Travaux*, 24.03.2015. Online verfügbar unter: <http://www.espacestemp.net/articles/spaces-of-practices-and-of-large-social-phenomena/> [Zugriff 03.10.2017]
- Schatzki, T. R. Praxistheorie als flache Ontologie: H. Schäfer (Eds.), *Praxistheorie. Ein soziologisches Forschungsprogramm* (29-44). Bielefeld: transcript, 2016.
- Schütz, A. *Schulkultur und Tischgemeinschaft. Eine Studie zur sozialen Situation des Mittagessens an Ganztagschulen*. Wiesbaden: Springer VS, 2015.
- Shove, E., M. Pantzar and M. Watson (Eds.), *The dynamics of social practice. Everyday life and how it changes*. London, Thousand Oaks: SAGE, 2012.
- Soja, E. W. *Postmodern Geographies. The Reassertion of Space in Critical Social Theory*. New York, NY, London: Verso, 1989.
- Willems, K. *Schulische Fachkulturen und Geschlecht. Physik und Deutsch - natürliche Gegenpole?* Bielefeld: Transcript, 2007.
- Willems, H. and D. Eichholz: *Die Räumlichkeit des Sozialen und die Sozialität des Raumes. Schule zum Beispiel*: H. Willems (Eds.), *Lehr(er)buch Soziologie. Für die pädagogischen und soziologischen Studiengänge*. Bd. 2 (865-907), Wiesbaden: VS Verl., 2008.

Authentic Learning of Educational Science Methods in an Out-of-School Lab – Investigating Students’ Perceived Authenticity of the Learning Activity

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Abstract: Building upon the assumptions of authentic learning, we investigated whether a variation of the authenticity level of a student activity that simulated the scientific inquiry process of educational scientists in an out-of-school lab [OSL] had an impact on students’ perceived authenticity and their situational interest. We conducted a quasi-experimental study with 212 10th-graders in a German OSL for educational sciences. We implemented two conditions: Productive Failure (PF) as an authentic learning activity that simulates a scientific inquiry process, in which students try to solve a complex and novel problem without guidance prior to instruction, and Direct Instruction (DI) as a less authentic learning activity that does not simulate a scientific inquiry process, in which students receive instruction before they apply the instructed procedure to solve a problem. In contrast to our expectations, students in the PF condition did not report higher perceived authenticity and situational interest than students in the less authentic DI condition. The findings are discussed in light of theoretical assumptions about authentic learning and in light of current research on authentic learning within and outside of OSLs.

Introduction

Authentic learning aims at increased transfer of knowledge acquired in formal learning spaces (e.g. school) to informal learning spaces outside of school (e.g. Herrington & Oliver, 2000). To achieve this goal, authentic learning approaches try to integrate features of the informal out-of-school world into the formal school setting. Although definitions of the term authentic learning are very diverse (e.g. Shaffer & Resnick, 1999), instructional designs of authentic learning environments often have in common that they try to engage learners in activities, materials, and contents that simulate and characterize the out-of-school world of the learners, or the world of professionals (Herrington & Oliver, 2000; Rule, 2006). Often, this is attained by using technologies. For instance, computer-based labs are used for authentic science education in formal learning spaces as they provide access to real experimental instruments (Sauter, Uttal, Rapp, Downing, & Jona, 2013). Another, less artificial opportunity to give students access to authentic materials and contents are non-formal learning spaces outside of school such as museums, science centers, or zoos (for definition of non-formal learning, see Eshach, 2007). Especially for authentic science learning, these settings can be promising to foster students’ interest in and knowledge about scientific ways of working and thinking by engaging them with authentic scientific methods and tools (e.g. Luehmann, 2009). In Germany, the same goal is approached by out-of-school labs (OSLs). OSLs are learning spaces that aim at fostering students’ interest and literacy in the field of natural and social sciences by involving them in authentic learning within a real scientific environment. Indeed, previous research has demonstrated that students perceive the learning experiences in OSLs as more authentic and interesting (situational interest) than in school (Betz, 2017). Therefore, the authenticity of the location (OSL at a university campus versus classroom at school) seems to play a role for students’ perceived authenticity and situational interest. However, OSLs differ with respect to their authenticity on various dimensions (e.g. method, material, etc.). Yet, it has not been investigated which of these dimensions most strongly foster students’ perceived authenticity and situational interest within OSLs. As Hempelmann and Haupt (2014) argued that OSLs have to focus on engaging students in the scientific research process, it can be assumed that not only the authenticity level of the location, but also of the learning activity that simulates

the scientific inquiry process within the lab is important for an authentic learning experience. Also, theoretical models emphasize that authentic learning is characterized by aspects such as the student activity and the method that students use to work on a problem (e.g. Betz, Flake, Mierwald, & Vanderbeke, 2016). Against this background, the present study focuses on the question whether the authenticity level of the learning activity that simulates the scientific inquiry process in an OSL has an impact on students' perceived authenticity and their situational interest.

The characteristics of authentic learning activities that simulate the scientific inquiry process within OSLs differ depending on the discipline. In STEM oriented labs, students usually conduct hands-on experiments with authentic equipment, substances, and clothing, as natural scientists do within laboratories (Haupt & Hempelmann, 2014). Therefore, STEM oriented OSLs are able to use surface features of the scientific research process such as the equipment to design authentic learning activities. In contrast, social scientists do not wear white coats and glasses, and do not use specific tools to analyze substances within a specifically equipped room. Probably because social sciences oriented OSLs cannot vary the authenticity level of those surface features of the research process, they focus on underlying core features of scientific inquiry. For instance, Pauly (2012) argued that OSLs in social sciences should aim at engaging students in the authentic experience of the work of social scientists as complex processes that might involve frustration. This goal of communicating science as complex and sometimes frustrating process has also been formulated with regard to science education: Schwab (1966) claimed that science should be taught as a "[...] mode of investigation which [...] proceeds through uncertainty and failure [...]" (p. 5). The question arises how to design an authentic learning activity in such a way that it simulates the underlying processes of complex inquiry such as frustration, uncertainty, and failure. OSLs often implement learning activities that start with an explanation phase where students receive instruction before they apply the instructed steps in the following hands-on phase in order to engage students in scientific inquiry (for instance, in the study of Scharfenberg and Bogner, 2010). This approach of instruction followed by problem solving is typically termed *Direct Instruction* (DI: Kirschner, Sweller, & Clark, 2006). Hodson (1999) criticized this kind of learning approach, which is often implemented at school, because it promotes the myth of scientific inquiry as "a simple, algorithm procedure" (p. 784). Another opportunity to engage students in the research process is by means of *Productive Failure* (PF: Kapur, 2015). In PF approaches, two successive learning phases are combined: a generation phase that asks students to invent solutions to a complex and so far unknown problem, and an instruction phase that provides a discussion of disadvantageous solution attempts and an explanation of the canonical solution. In light of the axiom put forward by the falsificationism theory, namely that the goal of research should be to falsify hypotheses, and to learn from trial and error (Chalmers, 2013), the PF approach seems to be more authentic than DI. In PF, students try to explore the solution of a complex problem by the generation of different possible solutions, but often they fail to solve the problem canonically. Afterwards, during the instruction, the erroneous solutions are compared to each other and their respective difficulties are discussed. It is assumed that the failure experience during the initial problem-solving phase prepares students for learning from the following instruction by prior-knowledge activation, knowledge-gap awareness, and deep-features recognition (Loibl, Roll, & Rummel, 2017). In contrast, failure in DI can only occur if students struggle to apply the solution method they were instructed on. This failure would not be caused by exploration and trial and error, but rather by unsuccessful or incomplete learning from the instructional explanation. Therefore, in order to simulate scientific inquiry as a complex, sometimes frustrating process that is related to failure, PF seems to be more promising than DI.

However, with respect to students' stereotypical images of scientists as elderly men with white coats, glasses, and beards who work in laboratories surrounded by equipment such as test tubes, bottles, and Bunsen burners (Christidou, 2011), it can be assumed that students' perceived authenticity and situational interest is easier to foster by varying the authenticity level of surface features of the research process (e.g. lab equipment) than by varying the authenticity level of core features (e.g. failure). Against this background, we propose to investigate whether students' perceived authenticity and situational interest can be promoted by varying the authenticity level of the learning activity that simulates scientific inquiry within a social sciences oriented OSL which is not characterized by stereotypical surface features of a scientific lab. Building upon the argument regarding the authenticity of PF, we hypothesize that students will perceive the learning activity of PF as more authentic (H1) and interesting (H2) than the learning activity of DI.

Method

Participants, learning domain, and design

To investigate our hypotheses, we conducted a quasi-experiment with 212 10th-graders in a German OSL for educational sciences. The learning domain of our study was principles of experimental design. We implemented two conditions: PF, in which students try to solve a complex and novel problem without guidance prior to instruction, and DI, in which students receive instruction before they apply the instructed method to solve a problem. In both conditions, we assessed students' perceived authenticity and situational interest as dependent variables using a post-questionnaire at the end of the OSL visit. A pre-questionnaire at the beginning of the visit assessed their individual interest and their grades for three subjects as control variables. Figure 1 illustrates the procedure in both conditions.

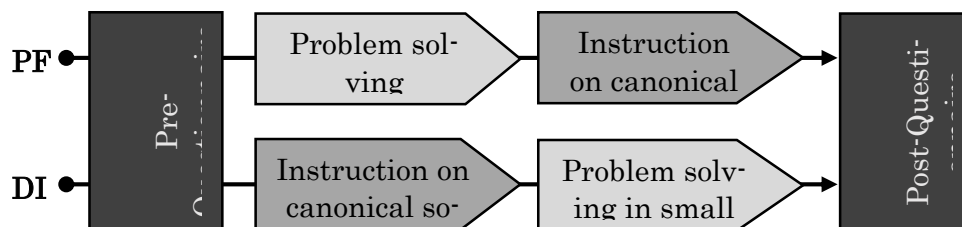


Figure 1. Overview of the procedure in both conditions.

Measures

We assessed students' perceived authenticity and their situational interest as dependent variables. Perceived authenticity was measured by using a ten item-scale adapted from Gulikers, Baestians and Kirschner (2006). An example item for perceived authenticity is "I think that the tasks in this project fit well with the work of real scientists". Situational interest was measured by the 12-item scale from Knogler, Harackiewicz, Gegenfurtner, and Lewalter (2015). An example item for situational interest is "The engagement with the contents of this project was exciting for me". Students' individual interest in the subject was assessed with seven items (e.g. "The subject of educational sciences is one of my favorite subjects"). Students replied on a scale of 1 (strongly disagree) to 5 (strongly agree) to each item of the three instruments. The internal consistencies of all three measures were satisfactory (*Cronbach's a* between .78 and .93).

Results

MANOVA analyses revealed no significant differences between both conditions in the reported grades, nor in individual subject interest. To assess differences in the effect of the experimental condition on participants' perceived authenticity (H1) and reported situational interest (H2), we calculated a MANCOVA. Students' individual subject interest and their grades correlated significantly with students' situational interest and were therefore included as covariates. Both hypothesis 1 and 2 were refuted, as the MANCOVA revealed no differences between both conditions in students' perceived authenticity nor in their situational interest (see Table 1 for descriptive statistics), and therefore no effect of the authenticity level of the learning activity was found.

Table 1: Descriptive statistics of students' perceived authenticity and situational interest

Variables	PF (<i>n</i> = 121)		DI (<i>n</i> = 90)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Perceived authenticity	3.18	0.56	3.23	0.67
Situational interest	2.73	0.78	2.73	0.61

Discussion and conclusion

Our results demonstrated that the authenticity level of the learning activity that simulates scientific inquiry of educational scientists in an OSL did not lead to differences in students' attitudes towards the learning setting. In contrast to our expectations, students of the PF condition did not report higher perceived authenticity (H1), nor higher situational interest (H2) than students of the less authentic DI-condition. Therefore, although the authenticity level of the learning activity is assumed to affect students' perceived authenticity and situational interest (e.g. Betz et al. 2016), and although PF can be characterized as authentic learning activity (Cho, Caleon, & Kapur, 2015), our results deviate from these conjectures. One possible explanation to explain these findings could be related to an underestimated effect of students' epistemological and stereotypical beliefs of research. As introduced before, students typically associate the work of scientists with surface features such as the lab equipment (Christidou, 2011), and school curricula often do not communicate the core features of scientific inquiry (Hodson, 1999). Moreover, social scientists often are attributed to just express their individual opinions and thoughts, and not to systematically discover findings as natural scientists do (Pauly, 2012). Therefore, it could be assumed that the core features of scientific inquiry such as complexity, failure, and uncertainty within an educational sciences OSL did not reflect students' expectations of scientific inquiry, and especially not the work of educational scientists. As a consequence, the variation of the authenticity level of the learning activity may not have affected students' perceived authenticity nor their situational interest. In the authentic-learning model of Betz et al. (2016), the epistemological beliefs of students and the features of the learning setting play an equal role as predictors of perceived authenticity. Alternatively, building upon our results, it could be supposed that students' prior beliefs of research do not indicate students' perceptions, but rather moderate the effect of the authenticity level of the learning setting on students' perceived authenticity.

Another explanation for our findings may be related to an underestimated effect of the authenticity level of the learning setting as a whole. Features such as the location, the instructor, or the content may have had a higher impact on students' perceived authenticity and situational interest than the authenticity level of the learning activity alone. As these other features were the same in both conditions, students' might not have perceived the

authenticity of both learning activities differently. Gulikers, Bastiaens, and Martens (2005) have made a similar assumption about distinct effects of different features of an authentic learning setting. They compared a highly authentic online-learning setting with a less authentic setting and did not find any differences in students' perceived authenticity or motivation. As students had to work on the same task in both conditions, Gulikers et al. (2005) concluded that the authenticity of the task might have had the highest impact. In contrast, the findings from Betz (2017) demonstrated that the location did affect students' perceived authenticity and situational interest, although students had worked on the same task at both locations. So far, theories of authentic learning (e.g. Herrington & Oliver, 2000; Rule, 2006) do not indicate that the location or other particular features of the learning setting are more important than the learning activity to realize authentic learning. On the contrary, despite all the differences, most of the theories refer to the form of the learning activity as a feature of authentic learning, but not to the type of location. However, a perspective from situated learning theory supports the assumption that especially the place influences why and how people learn (Bell, Tzou, Bricker, & Baines 2013). Therefore, it could be assumed that the effect of the authenticity level of the location, although kept constant in our study, might have outweighed the effect of the authenticity level of the learning activity on students' perceived authenticity and situational interest. To investigate this assumption, the effect of the authenticity level of the learning activity should be compared between OSL and school.

Against this background and from a pedagogical perspective, it seems promising for realizing authentic learning to visit non-formal learning settings outside the school with students. Nevertheless, future research should investigate how the perceived authenticity within a particular location could be fostered. Moreover, to be able to generalize our findings, future research should examine, whether the authenticity level of the learning activity that simulates the scientific inquiry process has effects in other domains than educational sciences.

References

- Bell, P., Tzou, C., Bricker, L., & Baines, A. D. (2013). Learning in diversities of structures of social practice: Accounting for how, why and where people learn science. *Human Development*, 55(5-6), 269-284.
- Betz, A. (2017). *Linguistische Wissenschaft authentisch vermitteln. Eine Interventionsstudie zu Schülerlaboren am Beispiel des Ruhrdeutschen*. [Authentic teaching of linguistics. An intervention study on OSLs on the example of the „Ruhr-German“] (Unpublished doctoral dissertation). Ruhr-Universität Bochum, Bochum.
- Betz, A., Flake, S., Mierwald, M., & Vanderbeke, M. (2016). Modelling authenticity in teaching and learning contexts. A contribution to theory development and empirical investigation of the construct. In C.-K. Looi, J. Polman, U. Cress, & P. Reimann (Eds.), *Transforming Learning, Empowering Learners: The International Conference of the Learning Sciences (ICLS) 2016*, Volume 2 (pp. 815–818). Singapore: International Society of the Learning Sciences.
- Chalmers, A. F. (2013). *What is this thing called science?*. Hackett Publishing.
- Cho, Y. H., Caleon, I. S., & Kapur, M. (2015). *Authentic problem solving and learning in the 21st century*. Singapore: Springer.
- Christidou, V. (2011). Interest, Attitudes and Images Related to Science: Combining Students' Voices with the Voices of School Science, Teachers, and Popular Science. *International Journal of Environmental and Science Education*, 6(2), 141-159.
- Eshach, H. (2007). Bridging in-school and out-of-school learning: Formal, non-formal, and informal education. *Journal of science education and technology*, 16(2), 171-190.

- Gulikers, J. T., Bastiaens, T. J., & Martens, R. L. (2005). The surplus value of an authentic learning environment. *Computers in Human Behavior*, 21(3), 509-521.
- Gulikers, J. T. M., Bastiaens, T. J., & Kirschner, P. A. (2006). Authentic assessment, student and teacher perceptions: the practical value of the five dimensional-framework. *Journal of Vocational Education and Training*, 58(3), 337-357.
- Hempelmann, R., & Haupt, O. J. (2014). The German Schülerlabor – definition and categories. Retrieved October 21, 2016, from http://www.lernortlabor.de/download/Hempelmann-Haupt_GermanSchuelerlabor.pdf
- Herrington, J., & Oliver, R. (2000). An instructional design framework for authentic learning environments. *Educational technology research and development*, 48(3), 23-48.
- Hodson, D. (1999). Going beyond cultural pluralism: Science education for sociopolitical action. *Science Education*, 83(6), 775-796.
- Kapur, M. (2015). Learning from productive failure. *Learning: Research and Practice*, 1(1), 51-65.
- Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work. *Educational Psychologist*, 41, 75–86.
- Knogler, M., Harackiewicz, J. M., Gegenfurtner, A., & Lewalter, D. (2015). How situational is situational interest? Investigating the longitudinal structure of situational interest. *Contemporary Educational Psychology*, 43, 39-50.
- Loibl, K., Roll, I., & Rummel, N. (2017). Towards a theory of when and how problem solving followed by instruction supports learning. *Educational Psychology Review*, 29(4), 693-715.
- Luehmann, A. L. (2009). Accessing resources for identity development by urban students and teachers: Foregrounding context. *Cultural Studies of Science Education*, 4(1), 51-66.
- Pauly, Y. (2012). Was sind und zu welchem Zweck brauchen wir geisteswissenschaftliche Schülerlabore? [What are and for what purpose do we need OSLs on humanities and social sciences]. In *Handbuch Wissenschaftskommunikation* (pp. 205-210). Wiesbaden: VS Verlag für Sozialwissenschaften.
- Rule, A. C. (2006). Editorial: The components of authentic learning. *Journal of Authentic Learning*, 3(1), 1-10.
- Sauter, M., Uttal, D. H., Rapp, D. N., Downing, M., & Jona, K. (2013). Getting real: the authenticity of remote labs and simulations for science learning. *Distance Education*, 34(1), 37-47.
- Shaffer, D. W., & Resnick, M. (1999). „Thick“ authenticity: new media and authentic learning. *Journal of Interactive Learning Research* 10(2), 195-215.
- Scharfenberg, F. J., & Bogner, F. X. (2010). Instructional Efficiency of Changing Cognitive Load in an Out-of-School Laboratory. *International Journal of Science Education*, 32(6), 829-844.
- Schwab, J. (1966). The teaching of science as enquiry. In P.F. Brandwein (Hrsg.), *The teaching of science* (pp. 3-103). Cambridge, MA: Harvard University Press.

Acknowledgments

We thank the members of the doctoral program “Science Education in Out-of-School Labs” of the Graduate School of Educational Studies (GSoES), Ruhr-University Bochum, for their input and feedback to the ideas that are presented in this paper.

Development of a Digital Competence Framework for Higher Education Teachers

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Abstract: The development of digital literacy is of vital importance to higher education teachers in the face of the challenges of increasing digitization of higher education and society. This paper first addresses the notion of digital literacy in general and the specific context of higher education teachers. Furthermore, the development of a competence framework is documented with which the digital competence of university lecturers can be systematically recorded. In addition, higher education and media didactic further education courses can be aligned to this framework in order to specifically promote the development of digital competence of teachers.

Introduction

In the modern knowledge society, digital technologies are constantly gaining in importance and are now penetrating them almost completely, both at work and in the private sector. Social participation is also becoming increasingly important via digital media. The European Union takes this development into account by considering the competent and reflected use of digital technologies as one of the eight key competences for Life Long Learning (EU 2006). In this context, the question of the development of competences to master the challenges of digitalisation arises for the professions of professors.

2. What is Digital Competence?

In the German-speaking world in particular, the term media competence has often been used in the past, which goes back to the work of Dieter Baacke (1973, 1996). According to this, media literacy is a special form of communicative competence (see Habermas, 1981) or the ability to use all kinds of media actively for their own repertoire of communication and action. Baacke's concept of media, however, was aimed primarily at classical mass media rather than at interactive digital media, so more recent concepts are more likely to use the term digital competence (Ilomäki et al., 2011), which is becoming increasingly prevalent. A broad definition of the term can be found at Ferrari (2012, pp. 3ff.):

"Digital Competence is the set of knowledge, skills, attitudes [...] that are required when using ICT and digital media to perform tasks, solve problems, communicate, manage information, collaborate, create and share content, and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming, and empowerment."

This definition, which applies the competence concept of Weinert (2001) and Klieme (2004) to the digital field, serves as the basis for the development of the competence framework presented here.

Structure of the Competence Framework

In order to assess the individual abilities of university lecturers in dealing with digital media, a model fulfilling two conditions is needed. On the one hand, it has to be comprehensive enough to cover the different facets of digital literacy. On the other hand, the model should also look at the profile of professors in their entirety. University lecturers are not only teachers but also scientists who are also in constant contact with the scientific community and society (see Reinmann et al., 2013 and Wedekind, 2004, 2008, 2009).

For the development of the competence grid various international competence models for the description of digital competencies were investigated, among others the framework model *TPCK (Technological Pedagogical Content Knowledge)* by Koehler and Mishra (2006), the *digi.kompP* model, which is used in Austrian teacher training (Brandhofer et al., 2016), as well as the *DIGCOMP* framework of the European Commission (see eg Ferrari et al., 2013; Vuorikari et al., 2016; Gomez et al., 2017).

However, the most important inspiration was the Norwegian model "Digital *Bildung*" (Søby, 2003; Krumsvik and Jones, 2013), and in particular the Digital Literacy Framework of the British Joint Information System Committee JISC (2012, 2014).

3.1 Description of the Competence Framework

Analogous to the Ferrari definition of digital competences, the competence framework comprises a total of eight dimensions:

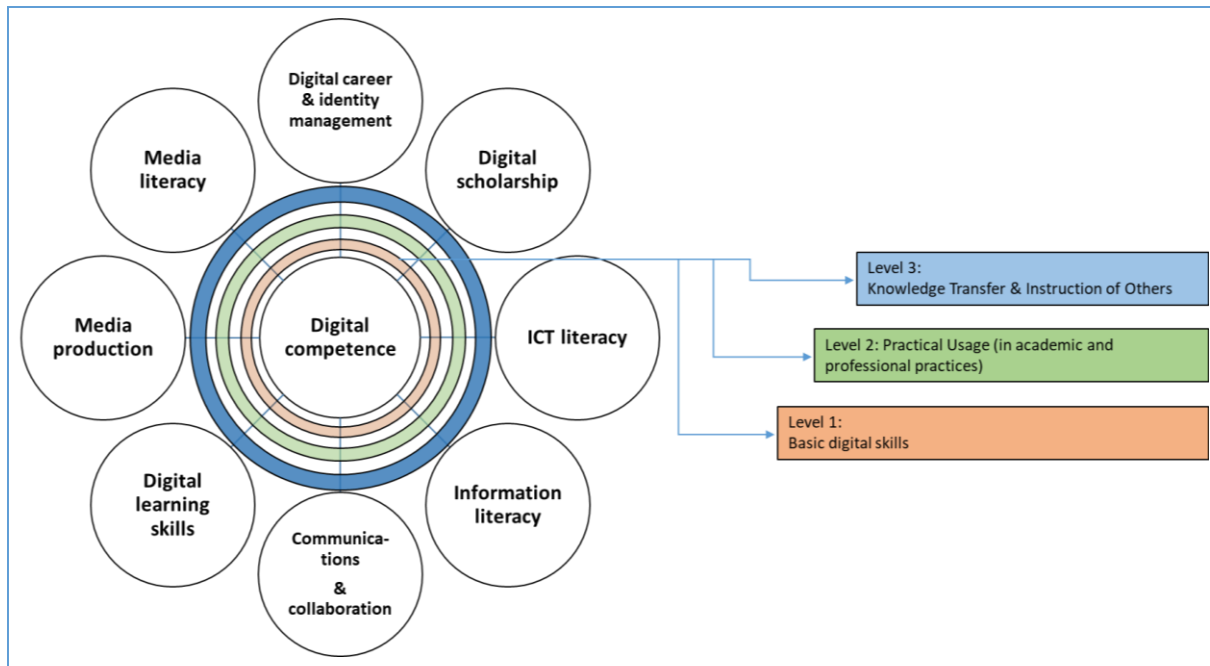
- *ICT competence*: Adopt, adapt and use digital devices, applications and services
- *Teaching skills*: Teach and support informal study and learn effectively in technology-rich environments
- *Digital scholarship*: Participate in emerging academic, professional and research practices that depend on digital systems
- *Information literacy*: Find, interpret, evaluate, manage and share information
- *Media literacy*: critically read academic and professional communications in a range of media
- *Media production*: creatively produce digital media for teaching, learning and research
- *Communication and collaboration*: Participate in digital networks for learning and research
- *Career and identity management*: Manage digital reputation and online identity

Although these dimensions of competence can be described independently of a specialized academic discipline, they must be individually trained within a discipline (see Kerres, 2017). In order to be able to record the current state of digital competence as well as a possible increase in competence for the individual dimensions, three levels of competence were introduced in the model. These are based on the learning taxonomy according to Bloom (1976) and Anderson et. al (2001) as well as on the above-mentioned model of "Digital *Bildung*" and are subdivided as follows:

- *Level 1*: Basic digital skills
- *Level 2*: Practical usage (in academic and professional practices)
- *Level 3*: Knowledge transfer and instruction of others (students and colleagues)

A graphic representation of the resulting competence framework is shown in Figure 1.

Figure 1. Digital Competence Framework: Schematic representation (From: Eichhorn et al. 2017, p. 214).



For each of the eight dimensions, it was now necessary to define the individual subject areas, which are covered by the respective dimension. In some cases, descriptions from the JISC model were used, which were then concretely specified and expanded. This resulted in the following topics on the individual dimensions (see Table 1):

Table 1: Distribution of the topics on the individual dimensions of the competence framework (1).

Dimension	Topic
ICT competence	PC skills, ICT skills, cloud computing, programming, work organization, learning platform management and authoring systems
Information literacy	Search instruments, search strategies, reference management, knowledge management, copyright, data protection
Communication and collaboration	Online Communities, Web 2.0, Social Media, Open Source, Open Access, Tutoring on Learning Platforms, eTutoring, eModeration
Teaching skills	Terms (eLearning, blended learning, distance learning), learning theories, didactic design, OER, eAssesment, badges, social media
Career and identity management	Social media, self-marketing, badges as proof of competence, data protection, personal protection, knowledge management
Digital scholarship	Open Access, Open Data, Big Data, Crowd Science, Digital Humanities, Digital Knowledge Communication, Communities of Practice
Media production	Image editing, screencasting, podcasting, video production, creating interactive content such as WBTs, etc.

Media literacy	Media analysis, media criticism, reflection on their own use of media, reflection on their own use of media and their own teaching activities, reflection on their own learning process
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3.2 Design of the Framework with Can-Do Descriptions

Based on the outlined topics, which should be covered in the respective dimensions, the framework was designed accordingly. To this end, can-do descriptions of the three competence levels were created for each dimension to obtain a description of the content of digital literacy. For the formulation of the can-do descriptions, various lists of key verbs for competence formulation were used, which describe directly observable actions (inter alia Roloff, 2003 and Schermutzki, 2007). In Table 2, the structure of the competence framework will be exemplified by the dimension *Teaching skills* (2):

Table 2: Distribution of the topics on the individual dimensions of the competence framework.

Competence dimension <i>Teaching skills</i>	
<i>Level 1:</i> Basic digital skills	He / she can play basic learning theories and name the main terms and acronyms around e-learning and digitization, as well as explain their meaning. He / she can describe different eLearning scenarios and identify their added value. He / she can describe relevant methods of online teaching and learning. He / she can assign suitable media for a planned scenario and describe their characteristics and potential in support of methods and social forms. He / she can designate important planning aspects for the conception of eLearning scenarios.
<i>Level 2:</i> Practical usage (in academic and professional practices)	He / she can design and implement concepts for the use of online or blended learning scenarios as well as for the use of online-based assessment forms. For this he / she can transfer the existing knowledge about eLearning scenarios and their added values into practice. He / she can select and apply appropriate methods, social forms and media. In doing so, he / she can consider the required planning aspects.
<i>Level 3:</i> Knowledge transfer and instruction of others (students and colleagues)	He / she is able to explain and communicate basic concepts around eLearning and digitization of teaching. He / she can explain and explain the knowledge of scenarios and added values, the methods and social forms derived from them as well as the adequate use of suitable media. With the help of this knowledge, he / she is able to guide, advise and support others in the planning and design of media-supported teaching / learning settings.

This exemplary presentation clarifies the structure and functioning of the competence framework. With the help of the optional descriptions, the topic fields of the individual dimensions are operationalized, so that questionnaires for the self-assessment by the university teachers can be easily created. Due to the focus on observational actions the evaluation can also be done by a trainer or a teacher.

First results from practical use

For practical use, a self-assessment questionnaire was created from the descriptions. Each dimension and level was described with at least 3 items. The assessment was made on a scale of 6 ("1 = strongly disagree" to "6 = completely agree"). The self-assessment was conducted in the summer semester 2017 with teachers (N = 56) who had participated in eLearning qualification offers. As a result, teachers who had acquired a didactic eLearning certificate were much better off than teachers who attended only selected individual events. Deficits are recognized by the involved teachers, especially in the dimensions *digital scholarship* and *career and identity management*. Both aspects play only a minor role in the current eLearning qualification offer (see Figure 2).

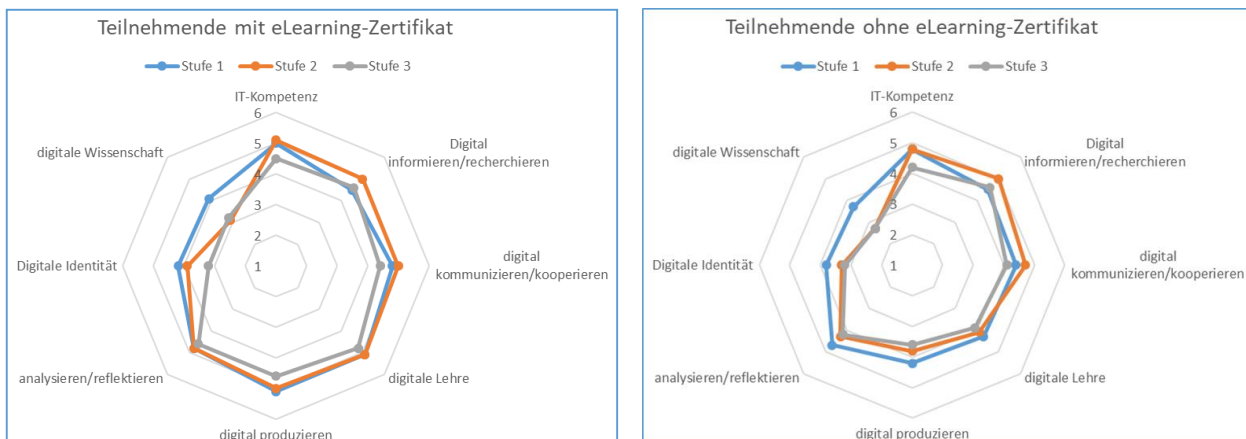


Figure 2. Evaluation of the self-assessment of the digital competence on the individual dimensions. Comparison of the participants with or without eLearning certificate.

Conclusion and Outlook

The competence framework is currently work-in-progress and is constantly being revised. Through interviews with selected participants, the completeness and comprehensibility of the items is currently being determined.

From the winter semester 2017/18, the competence framework will also be used as part of a pre- and post-survey of all participants of the eLearning certificate in order to determine the increase in competence. The goal here is both the use as an individual diagnostic tool, as well as a statement about which competence dimensions in a particular training offer to which extent be strengthened.

Endnotes

- (1) Of course, the list of topics does not claim to be exhaustive, but rather serves to concretize the dimensions for the first time.
- (2) For reasons of space, a description of the can-do descriptions for all eight dimensions is omitted here. The complete competence framework with all can-do descriptions is available online at: http://www.studiumdigitale.uni-frankfurt.de/65903024/Kompetenzraster_Digitale-Kompetenz-Hochschullehrende.pdf

References

- Anderson, Lorin W., et al. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives., Longman Publishing Group, 2001.
- Baacke, Dieter. Kommunikation und Kompetenz: Grundlegung einer Didaktik der Kommunikation und ihrer Medien. 1973.

---. "Medienkompetenz - Begrifflichkeit und sozialer Wandel." Medienkompetenz als Schlüsselbegriff, edited by Antje von Rein, Deutsches Institut für Erwachsenenbildung, 1996, pp. 112–44. www.die-frankfurt.de/esprid/dokumente/doc-1996/rein96_01.pdf. Accessed 23 March 2017.

Bloom, Benjamin Samuel, and Max D. Engelhart, editors. Taxonomie von Lernzielen im kognitiven Bereich. 5. Aufl. - 17. - 21. Tsd, Beltz, 1976. Beltz-Studienbuch 35.

Brandhofer, Gerhard, et al. "digi.kompP - Digitale Kompetenzen für Lehrende: Das digi-kompP-Modell im internationalen Vergleich und in der Praxis der österreichischen Pädagoginnen- und Pädagogenausbildung." R&E-Source, Oktober 2016, 2016, pp. 38–51. journal.ph-noe.ac.at/.

Eichhorn, Michael, et al. "Entwicklung eines Kompetenzrasters zur Erfassung der „Digitalen Kompetenz“ von Hochschullehrenden." Bildungsräume: Proceedings der 25. Jahrestagung der Gesellschaft für Medien in der Wissenschaft : 5. bis 8. Sep. 2017 in Chemnitz, edited by Christoph Igel, Waxmann, 2017, pp. 209–19. www.waxmann.com/?eID=texte&pdf=3720Volltext.pdf&typ=zusatztext. Accessed 18 Sep. 2017.

Europäische Union (EU). Schlüsselkompetenzen für lebenslanges Lernen: Empfehlung 2006/962/EG des Europäischen Parlaments und des Rates vom 18. Dezember 2006 zu Schlüsselkompetenzen für lebensbegleitendes Lernen. 2006. Accessed 23 March 2017. eur-lex.europa.eu/legal-content/DE/TXT/?uri=uriserv:c11090.

Ferrari, Anusca. Digital Competence in Practice: An Analysis of Frameworks . European Commission, 2012. Accessed 20 Feb. 2017. ftp.jrc.es/EURdoc/JRC68116.pdf.

Ferrari, Anusca, et al. DIGCOMP: A framework for developing and understanding digital competence in Europe, Publications Office, 2013. EUR, Scientific and technical research series 26035.

Gomez, Stephanie Carretero, et al. DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, Publications Office, 2017. EUR, Scientific and technical research series. Accessed 29 May 2017.

Habermas, Jürgen. Theorie des kommunikativen Handelns, Suhrkamp, 1981.

Ilomäki, Liisa, et al. What is digital competence? 2011, tuhat.helsinki.fi/portal/files/48681684/Ilom_ki_et_al_2011_What_is_digital_competence.pdf. Accessed 20 Feb. 2017.

JISC. Developing Digital Literacies: Briefing Paper. 2012, www.jisc.ac.uk/media/documents/publications/briefingpaper/2012/Developing_Digital_Literacies.pdf. Accessed 13 Oct. 2016.

---. Developing Digital Literacies: Overview. 2014, www.jisc.ac.uk/guides/developing-digital-literacies. Accessed 13 Oct. 2016.

Kerres, Michael. "[preprint] Digitalisierung als Herausforderung für die Medienpädagogik: „Bildung in einer digital geprägten Welt.“ Pädagogischer Mehrwert? Digitale Medien in Schule und Unterricht, edited by Christian Fischer, 1. Auflage, vol. 133, Waxmann Verlag GmbH; Ciando, 2017, pp. 85–104. mediendidaktik.uni-due.de/sites/default/files/kerres4m%C3%BCnster_0.pdf. Accessed 18 May 2017.

Klieme, Eckhard. "Was sind Kompetenzen und wie lassen sie sich messen?" Pädagogik (Weinheim), vol. 56, no. 6, 2004, pp. 10–13.

Koehler, Matthew, and Punya Mishra. "Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge." Teachers College Record, vol. 8, no. 108, 2006, pp. 1017–54.

Krumsvik, Rune Johan, and Lise Oen Jones. Teachers' Digital Competence in Upper Secondary School. (Work in Progress), ICICTE Proceedings. 2013, www.icitte.org/Proceedings2013/Papers%202013/05-1-Krumsvik.pdf. Accessed 24 March 2017.

Reinmann, Gabi, et al. Akademische Medienkompetenz im Schnittfeld von Lehren, Lernen, Forschen und Verwalten. 2013, gabi-reinmann.de/wp-content/uploads/2013/07/AkademischeMedienkompetenz_Reinmann_Hartung_Florian.pdf. Accessed 13 Oct. 2016.

Søby, M. Digital Competence: from ICT skills to digital „Bildung.“ ITU, 2003.

Vuorikari, Riina, et al. DigComp 2.0: The digital competence framework for citizens, Publications Office of the European Union, 2016. EUR, Scientific and technical research series 27948.

Wedekind, Joachim. “Medienkompetenz an Hochschulen.” E-Learning-Strategien und E-Learning-Kompetenzen an Hochschulen, edited by Claudia Bremer and Kerstin Kohl, Bertelsmann, 2004, pp. 267–79.

---. “Medienkompetenz für (Hochschul-)Lehrende.” zeitschrift für e-learning, vol. 3, no. 2, 2008, pp. 24–37.

---. Akademische Medienkompetenz. Schriftfassung der Virtuellen Ringvorlesung e-teaching.org vom 19.01.2009, 2009, www.e-teaching.org/projekt/organisation/personalentwicklung/medienkompetenz/Medienkompetenz_JW.pdf. Accessed 22 March 2017.

Weinert, Franz E., editor. Leistungsmessungen in Schulen. Dr. nach Typoskript, Beltz, 2001.

From chocolate toward ANT: iterations of reciprocal informal learning through physical-virtual spaces in the research context

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Abstract: Positioned in the current debate on interdisciplinary and media labs (Parikka, Emerson, Wershler 2017), our research project “ArchitecturesExperimente” explores the reciprocal relationship between space and knowledge practices. The aim is an elaboration of characteristics of spaces that promote collaborative learning. We understand space as relational (Löw, 2001) and as active (Farias & Wilkie, 2015) or more specifically as an integrative interpenetration of physical and virtual spaces in the sense of an entanglement of analogue and digital practices (Beck, 2015). Methodologically, we proceed experimentally, interdisciplinarily and co-laboratively (Niewöhner, 2016). For this purpose, we have developed an experimental set-up with regular design interventions in the context of the Excellence Cluster at Humboldt-Universität Berlin. In this call, we would like to investigate physical-virtual spaces that promote informal learning in the sense of method- and knowledge-transfer. The analysis highlights a gradation from informal to formal exchange, which unfolds along passages between analogue and digital medias. Based on the analysis of this passage through the physical-virtual spaces of everyday research, we aim to work out the characteristics of a habitat, which promotes mutual learning (Schmidt 2006).

Positioned in the current debate on interdisciplinary and media labs (Parikka, Emerson, Wershler 2017), our research project “ArchitecturesExperiments” explores the reciprocal relationship between space and knowledge practices. What does the design of the physical-virtual space do with practices of interacting, communicating, learning, exhibiting, reading, researching or demonstrating? How do these practices spatially unfold and materialize? The topic of mutual informal learning has proved to be central in our empirical material. After a short presentation of our theoretical and methodological frame, we will present our empirical results about a research habitat promoting mutual learning.

1. An experimental space research on research practices

1.1 Integrative space and practice theory

The object of our research is the production of knowledge, and in particular the agency of space in this context. We understand space as relational (Löw, 2001) and as active (Farias & Wilkie, 2015). Hence we define space as an assemblage of human and non-human agents, such as persons, artefacts or architectural elements. In this context and with regards to the analysis of practices of knowledge, it is important for us to question the dichotomy between physical and so-called "virtual space". In contrast to the prevailing notion of additive spaces, we are pursuing the concept of an integrative space. Physical and non-physical aspects of space are no longer understood as independently existing spaces, but as aspects of one integrative space. In this regard we speak of physical-virtual space (hyphenated). By focusing on the practices of knowledge, we pursue a practice theory approach. We aim to neither investigate scientific theories in the field of the history of thought nor to pursue the institutionalist approach on the studies of science. Instead, we observe and describe the scientists in their everyday work. Or to put it differently: the focal point of the investigation is materialized knowledge. To that effect, the subjects of our observation are notably bodies, artifacts and routines.

The central objective of this investigation is to bring together these two topics, space and practices of knowledge. By doing so, we move along the path of Stefan Beck and his practice theory 3.0, which calls for investigations on the "assemblages of human and non-human elements in specific contexts of action – and in particular at the intersection of digital and analogue" (Beck, 2015:7). Accordingly, we believe that these assemblages of human and non-human elements produce dynamical and various spaces of knowledge.

1.2 An experimental, interdisciplinary and co-laborative methodological approach

Our methodological approach is based on a dual experimental approach, experimentalizing both the design and the field research. For this purpose, we have developed a set-up with regular design interventions in the context of the Excellence Cluster at Humboldt-Universität Berlin: the so-called experimental zone.

The experimental zone is located on the 4th floor of a former commercial building in Berlin. When the project began, in 2015, we removed all partitioning walls in order to create a flexible, open space with an area of 335 m², allowing various configurations of mobile elements such as partitions, furniture and instruments. Since then, 50 scientists from various disciplines (the so-called "participants") use this space to collaborate in a dozen projects; at the same time they are also the subject of extensive observations by our team. In bi-monthly so-called physical, digital and social experimental settings, we design, build, test and observe various spatial configurations.

Therefore our research project oscillates between opposing poles: experiment and field-work, design and social sciences, irritation and optimization, hypothesis-driven and exploratory approaches, but also qualitative and quantitative methods of collecting data. Such an experimental set-up involves several methodological challenges: firstly the questions of intervention, which implies a direct influence on the subject of observation; secondly the challenge of reflexivity: how do we observe our peers? Here we privilege a co-laborative approach (Niewöhner, 2016), in which we investigate not "the participants" but "with the participants"; thirdly, the question of multi-site, as the participants' production of knowledge doesn't only take place in the Experimental Zone, but also in the laboratory, in the workshop or in the library.

2. Informal learning in the research context

In this paper, we would like to investigate physical-virtual spaces that promote informal learning in the sense of method and knowledge transfer. The aim is to elaborate the characteristics of spaces that promote collaborative learning.

2.1 Informal learning as an indispensable component and prerequisite for collaboration

The principal sources of data for this specific topic are the participant observation but also an interdisciplinary method we have developed at the intersection between architecture and ethnology: the so-called „cartography of movements and interactions“. By interaction we mean interpersonal exchange in physical co-presence, i.e. face-to-face. We investigate where, how and for how long interactions take place but also what they are about. In a first step, the observed forms of interaction were classified. Central parameters for this were the physical location (place and posture), the degree of formalization (swift, informal, formal) and the time span.

The question of knowledge and method transfer is central to the analysis of collaborative spaces. In the empirical investigation, the learning from one another and the knowledge transfer have been identified as an indispensable component and prerequisite for collaboration. Differentiated forms of both method transfer and tool transfer have been observed on three different levels of collaboration (within research teams, between participants of

the experimental zone, between our research team and the participants of the experimental zone) and with regards to different contents (theoretical, methodological, epistemological, organizational, private).

2.2 Characteristics of a habitat promoting mutual learning

The analysis highlights that this gradation from informal to formal exchange unfolds along passages e.g. of physical proximity to virtual communication channels back to the physical meeting space towards a digital collaboration platform. For example an informal offline conversation about chocolate can turn anytime into a theoretical discussion about Actor-Network-Theory leading to an online PDF-exchange and thus trigger informal learning.

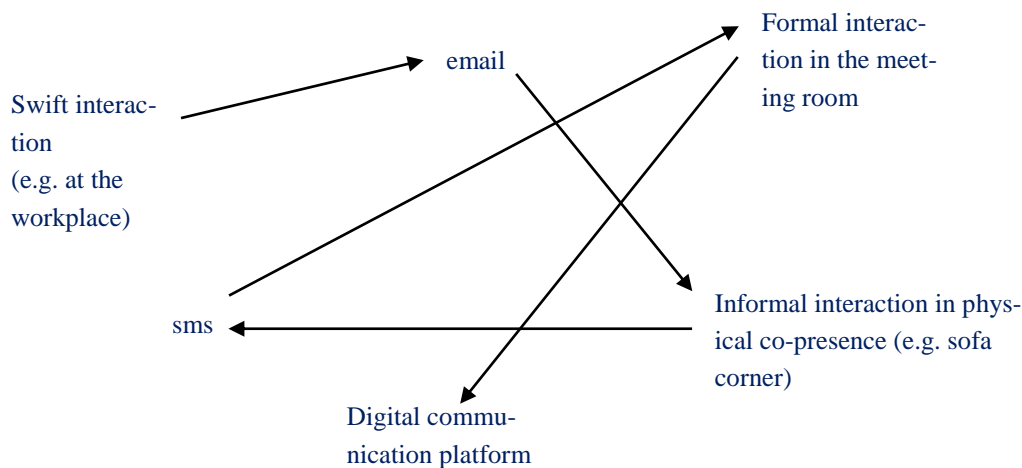


Figure 1. Passages of interaction

Based on the analysis of passages through the physical-virtual spaces of everyday research, we aim to trace the characteristics of a habitat, which promotes mutual learning (Schmidt 2008).

References

- Beck, S. Von Praxistheorie 1.0 zu 3.0 – oder: wie analoge und digitale Praxen relationiert werden sollten. Keynote bei der Tagung “Digitale Praxen”. Goethe Universität Frankfurt am Main.19. Februar 2015. Unveröffentlichtes Vortragsmanuskript. <https://hu-berlin.academia.edu/StefanBeck/Talks>
- Fariás, I. and Wilkie, A. (Eds). *Studio Studies. Operations, Topologies & Displacements*. London; New York: Routledge, 2015
- Löw, M. *Raumsoziologie*. Berlin: Suhrkamp Verlag, 2001
- Parikka, J., Emerson, L. and Wershler, D. *What is a Media Lab? Situated Practices in Media Studies*. <http://whatisamedialab.com>, 2017
- Schmidt, R. Das Zusammenspiel von Habitat und Habitus und die Sozialität der Artefakte: zur empirischen Rekonstruktion der praktischen Logik von Programmierung und Softwareentwicklung. Rehberg, K-S (Eds.), *Deutsche Gesellschaft für Soziologie (DGS) (Eds): Die Natur der Gesellschaft. Verhandlungen des 33. Kongresses der Deutschen Gesellschaft für Soziologie in Kassel 2006*. Teilbd. 1 u. 2. Frankfurt am Main: Campus Verlag, 1961-1967, 2008
- Niewöhner, J. *Raum aus anthropologischer Perspektive*. Oßenbrügge, J. and Vogelpohl, A. (Eds.) *Theorien in der Raum- und Stadtforschung*. Münster: Westfälisches Dampfboot, 14-23, 2014

Informal refugee learning On inclusive aspects in social spaces of new immigrants

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Abstract: Educational processes of refugees often take place in more informal settings such as informal groups, but also chatrooms and via messenger services. By growing numbers of immigrants in 2015 the German education system came (and still is) under growing pressure – especially to reflect on practices of communicative and educational behaviors of new immigrants to support their educational needs. In 2017 a German-American research project took place to reach for evidence about good practice of learning processes in school and social spaces of new immigrants. Semi-structured interviews made clear, that informal learning is combined with aspects of power and more or less inclusive effects. By highlighting the use of ICT, its tools and the spatial coherence and consequences of these practices, the paper describes some critical aspects of a subjectivity oriented educational theory of space and ICT in everyday life of new immigrants.

Guideline of Research

Learning takes place not only in classrooms and seminar rooms, but in even more informal settings such as groups, cafés or even chatrooms and via messenger services. These aspects can be reflected in educational settings of refugees in general. By growing numbers of immigrants in 2015 (Bundesregierung, 2016), the German education system came under growing pressure to reflect on practices of communicative and educational behaviors of new immigrants to support their educational needs – and thus to include a huge number of new learners. Thereby new challenges occur, not only quantitative ones because of simply higher numbers of migrants, but even more qualitative aspects due to more differences in competences, socialized behavior and systemic answers. These challenges are not defined finally, yet. And a defined position of educational sciences is missing either.

Therefore, a German-American research project took place in 2017 to produce more knowledge about current practices of education for new immigrants and to reach for evidence about good practice of their learning processes in school and social spaces. Semi-structured interviews were led with professionals, volunteers and immigrants themselves. First results show, that informal learning is combined with aspects of power and more or less inclusive effects.

This paper will show those perspectives of refugee learning in informal and formal settings, highlight the use of ICT (Information and Communication Technologies), their tools and the spatial coherence and consequences of these practices. By doing this, critical aspects of education and space will contextualize the research project. Some selected results of this field are presented to show structures and processes of education, reflect on inclusive and exclusive consequences of these systemic settings and lead to perspectives of a critical educational theory of space and ICT in everyday life of new immigrants. However, by reflecting ICT in refugee practices and the learning results the paper gives ground to differentiate epistemic categories of social, public and educational spaces.

Theoretical Framework

Migration is an experience that German society is dealing with for a long time – but with different efforts (cf. Autorengruppe Bildungsberichterstattung, 2016; OECD, 2015a; 2015b; Reiss, Sälzer, Schiepe-Tiska, Klieme, & Köller, 2016). Reasons for integrating migrants – and refugees in particular – vary widely, since there are economic, political, educational,

humanitarian or other reasons for integration programs. So first of all, it is important to conceptualize reasons, policies and practices of integration and inclusion of refugees via education.

By concentrating on these aspects, it is necessary to deal with differences in competences and socialized behavior (cf. Brücker, Rother, & Schupp, 2016; Brücker H., et al., 2016) and systemic answers of new immigrants as well (cf. Auernheimer & Rosen, 2017; Barz, et al., 2015; Böhmer, 2017; Blossfeld, et al., 2016; Ricken, 2016; Rose, 2012; SVR, 2016). This means that it is to assume inclusion as multiple inclusion of refugees in different social and societal fields (cf. Amelina, 2013; 2008). Education under this perspective means a multi-complex process of including people in contexts of national and/or societal contexts (cf. Amelina, 2012, S. 273). In detail, educational research therefore has to concentrate on heterogeneity in formal education processes, in social contexts and therefore in educational led inclusion(s). In using these concepts, the paper longs to “consider the multiplicity and inconsistency of actors’ social positions in cross-border arenas” (ibid., S. 285) by asking for concrete practices in spatial and technological processes.

In a second approach the paper searches for societal and systemic answers to these challenges in analyzing data of everyday life and everyday learning. Therefore, it is asked for those practices refugees use to learn or refugees are said to have learned after a while. It became important to understand the use of ICT in operating with other migrants and with educational actors or systems in order to understand the producing of social spaces by using these technologies. Asking for different systemic answers means to reconstruct educational practices and to work on a wider range of understanding (cf. Auernheimer & Rosen, 2017; Barz, et al., 2015; Böhmer, 2017; Blossfeld, et al., 2016; Ricken, 2016; Rose, 2012; SVR, 2016).

Not only to use affirmative approaches but to find a critical position to ongoing educational developments, critical aspects of international theories on education and space (referring to Bourdieu 2005; 2001; 1987; Butler 2007; 2001; Butler/Athanasίου 2013; Foucault 2015; 1992a; 1992b) are connected with national conceptions of education as a practice of subjectivation in late modernity (cf. Böhmer, 2016; 2014; Ricken, 2016; 2015a; 2015b; 2015c). By using these concepts, it is possible not only to ask for everyday practice, but also for everyday power and its effects on inclusion of refugees – and their marginalization.

Combining societal, social, spatial and educational concepts in a critical mode makes possible to examine transnational processes of informal learning and to show which kinds of subjectivation might be experienced in the future. Thus, it becomes possible to develop an alternative educational model of emancipative education.

Research Approach

In order to use the theoretical framework described above, different operational steps of research were realized in the project. First aspects of learning a new language were investigated since a “monolingual habitus” seems to be still very important – not only for the German educational system (cf. Gogolin, 2015; 2008; Gogolin, et al., 2011). But in addition to language driven research that leads to the results discussed in this paper, even more important might be the question concerning learning about everyday life in a new country. Because of this reason experts from public space management and education were interrogated, the investigation went over to those acting in institutions of formal and of informal learning and finally came to an end by asking new immigrants on their own about their

experiences of everyday life and their learning within. By doing this, first insights could be found to reconstruct processes of assembling a different habitus as becoming a member of a new society, still designated as a refugee, a stranger or someone else.

In detail, the research process focused on

- living in social networks of other refugees,
- living in social connection with volunteers,
- coming into contact with other people in actions of everyday life,
- focusing different structures and processes of formal and informal learning.

Dealing with these questions and the results of the interviews the paper refers to, it might be helpful to have a contrasting look into recent German research projects conferring to ICT (cf. DIVSI 2015; mpfs, 2017; 2016) and local educational contexts (cf. Böhmer, 2017; Emmerich, Hormel, & Jording, 2017).

Methodology

Examining individual and structural processes of educating and producing social spaces, the project uses a qualitative methodology – to say it more precise: semi-structured interviews – to reconstruct individual perspectives and aims. Because of the challenges of the field mentioned above first steps into this field were done by interviewing experts. The reason for this procedure is the importance of getting more understanding not only about individual points of view, but also to understand more about the not primarily visible processes and reasons in dealing with structural challenges.

Therefore, both parts of the project – the American and the German one – asked experts to gain this understanding. Further on also volunteers and new immigrants were interviewed to come into contact with their understanding of everyday life as well as with the possibilities and impossibilities of formal and non-formal learning. By combining these parts of knowledge, the project is able to enrich the possibilities of understanding and learning modes of refugees in Germany.

In order to get this knowledge, semi-structured interviews (n = 10) with experts, volunteers and refugees were led to understand

- the way new immigrants learn,
- what experiences they make,
- how they use ICT to produce social spaces and how ICT support formal and informal learning processes,
- which processes and structures support – and which block – their inclusion.

To ask for answers to these questions in an international comparative design helps to generate contrasts and by doing this to find more and new ways of dealing with these challenges.

Results

By working like explained before, two levels of results were achieved:

1. on the stage of everyday life processes, it is possible to understand strategies and efforts of actors in these fields on behalf of inclusion via ICT-driven formal and especially informal learning arrangements;
2. on a more metatheoretical level it becomes possible to differentiate epistemic categories of social, public and educational spaces, such as transnational, transcultural and transsubjective belongings of individuals, groups, networks and institutions.

When asking for the coherence of these results and their levels it becomes possible to reconstruct social spaces of new immigrants as highly variable, but in the same time – for the individuals in question – as coherent as possible (as reflected on spatial, subjective and social qualities). By understanding these structural moments of inclusion, their relevance for individuals (both: autochthone and new immigrants) and the consequences for the institutions on duty with those migrants is to make it more possible to describe further possibilities of including new immigrants by education and the use of ICT.

Bibliography

Amelina, Anna. „Socio-spatial scales as social boundaries? Or: How do migration studies profit from including ‘space’ in the sociology of social boundaries.“ *Migration Letters* 2012: 273-288.

—. „Transnationale Inklusion als ein multilokales Phänomen. Ein Abschied vom Assimilationsparadigma der Migrationsforschung?“ *Die Integrationsdebatte zwischen Assimilation und Diversität. Grenzziehungen in Theorie, Kunst und Gesellschaft*. Hrsg. Özkan Ezli, et al. Bielefeld: transcript, 2013. 119-155.

—. *Transnationalisierung zwischen Akkulturation und Assimilation: Ein Modell multipler Inklusion. COMCAD Working Papers No. 41, 2008*. Bielefeld: Eigenverlag, 2008.

Auernheimer, Georg und Lisa Rosen. „Lehrer-Schüler-Interaktion in der Migrationsgesellschaft.“ *Lehrer-Schüler-Interaktion. Inhaltsfelder, Forschungsperspektiven und methodische Zugänge*. Hrsg. Martin K. W. Schweer. Wiesbaden: Springer VS, 2017. 435-463.

Autorengruppe Bildungsberichterstattung. *Bildung in Deutschland 2016. Ein indikatorengestützter Bericht mit einer Analyse zu Bildung und Migration*. Bielefeld: W. Bertelsmann Verlag, 2016.

Böhmer, Anselm. *Bildung als Integrationstechnologie? Neue Konzepte für die Bildungsarbeit mit Geflüchteten*. Bielefeld: transcript, 2016.

—. *Diskrete Differenzen. Experimente zur asubjektiven Bildungstheorie in einer selbstkritischen Moderne*. Bielefeld: transcript, 2014.

—. „Sprache, Kultur, Arbeit? Zur Inklusion neu Zugewanderter durch Bildung.“ *Aus Politik und Zeitgeschichte* 2017: 21-26 [Invited Paper] .

Barz, Heiner, et al. *Große Vielfalt, weniger Chancen. Eine Studie über die Bildungserfahrungen und Bildungsziele von Menschen mit Migrationshintergrund in Deutschland*. Essen, Düsseldorf: Eigenverlag, 2015.

Blossfeld, Hans-Peter, et al. *Integration durch Bildung. Migranten und Flüchtlinge in Deutschland. Gutachten*. Hrsg. vbw (Vereinigung der Bayerischen Wirtschaft e.V.). Münster: Waxmann, 2016.

Bourdieu, Pierre. *Das politische Feld. Zur Kritik der politischen Vernunft*. Konstanz: UVK, 2001.

—. *Die feinen Unterschiede. Kritik der gesellschaftlichen Urteilskraft*. Frankfurt/M.: Suhrkamp, 1987.

—. *Die männliche Herrschaft*. Frankfurt/M.: Suhrkamp, 2012.

Brücker, Herbert, et al. *Flucht, Ankunft in Deutschland und erste Schritte der Integration. IAB-BAMF-SOEP-Befragung von Geflüchteten. BAMF-Kurzanalyse 5/2016*. Nürnberg: Eigenverlag, 2016.

Brücker, Herbert, Nina Rother und Jürgen Schupp, *IAB-BAMF-SOEP-Befragung von Geflüchteten: Überblick und erste Ergebnisse. Forschungsbericht 29*. Nürnberg: Eigenverlag, 2016.

Bundesregierung. *Migrationsbericht 2015. Drucksache 18/10700*. Berlin: Deutscher Bundestag Eigenverlag, 2016.

Butler, Judith. *Das Unbehagen der Geschlechter*. Frankfurt/M.: Suhrkamp, 2003.

—. *Kritik der ethischen Gewalt*. Frankfurt/M.: Suhrkamp, 2007.

—. *Psyche der Macht. Das Subjekt der Unterwerfung*. Frankfurt/M.: Suhrkamp, 2001.

- Butler, Judith und Athena Athanasiou. *Die Macht der Enteigneten. Das Performative im Politischen*. Wien: diaphenes, 2013.
- Deutsches Institut für Vertrauen und Sicherheit im Internet [DIVSI]. *DIVSI U9-Studie. Kinder in der digitalen Welt. Eine Grundlagenstudie des SINUS-Instituts Heidelberg im Auftrag des Deutschen Instituts für Vertrauen und Sicherheit im Internet (DIVSI)*. Hamburg, 2015.
- Emmerich, Marcus, Ulrike Hormel und Judith Jording. „Prekarisierte Teilhabe. Flucht-migration und kommunale Schulsysteme.“ *Die deutsche Schule 2017*: 209-222.
- Foucault, Michel. „Andere Räume.“ *Aisthesis. Wahrnehmung heute oder Perspektiven einer anderen Ästhetik*. Hrsg. Karlheinz Barck, et al. Leipzig: Reclam, 1992. 34-46.
- . *Was ist Kritik?* Berlin: Merve Verlag, 1992.
- Gogolin, Ingrid. *Der monolinguale Habitus der multilingualen Schule*. 2. Münster: Waxmann, 2008.
- . „Vervielfältigung von sprachlicher Vielfalt. Beobachtungen und Forschungsergebnisse zur sprachlichen Lage in Deutschland.“ *Migration und Soziale Arbeit 2015*: 292-298.
- Gogolin, Ingrid, et al. *Förderung von Kindern und Jugendlichen mit Migrationshintergrund. FörMig – Bilanz und Perspektiven eines Modellprogramms*. Münster: Waxmann, 2011.
- Medienpädagogischer Forschungsverbund Südwest [mpfs]. *KIM-Studie 2016. Kindheit, Internet, Medien. Basisstudie zum Medienumgang 6- bis 13-Jähriger in Deutschland*. Stuttgart: Eigenverlag, 2017.
- . *JIM 2016. Jugend, Information, (Multi-) Media. Basisstudie zum Medienumgang 12- bis 19-Jähriger in Deutschland*. Stuttgart: Eigenverlag, 2016.
- Organisation for Economic Co-operation and Development [OECD]. *Bildung auf einen Blick 2015. OECD-Indikatoren*. Bielefeld: W. Bertelsmann Verlag, 2015a.
- . „In It Together. Why Less Inequality Benefits All.“ 2015b. 31. Juli 2016. <<http://dx.doi.org/10.1787/9789264235120-en>>.
- Reiss, Kristina, et al., *PISA 2015. Eine Studie zwischen Kontinuität und Innovation*. Waxmann: Münster, New York, 2016.
- Ricken, Norbert. „Bildung als Dispositiv. Bemerkungen zur (Macht-)Logik eines Subjektivierungsmusters.“ *Medien – Bildung – Dispositive. Beiträge zu einer interdisziplinären Medienbildungsforschung*. Hrsg. Julius Othmer und Andreas Weich. Wiesbaden: Springer VS, 2015a. 41-58.
- . „Pädagogische Professionalität – revisited. Eine anerkennungstheoretische Skizze.“ *Schulkultur. Theoriebildung im Diskurs*. Hrsg. Jeannette Böhme, Merle Hummrich und Rolf-Torsten Kramer. Wiesbaden: Springer VS, 2015b. 137-157.
- . „'Streit trennt, Streit verbindet'. Das Problem der Heterogenität zwischen Immunisierung und Communisierung.“ *Pädagogisches Können in der Migrationsgesellschaft*. Hrsg. Aysun Doğmuş, Yasemin Karakaşoğlu und Paul Mecheril. Wiesbaden: Springer VS, 2016. 43-58.
- . „Was heißt »jemandem gerecht werden«? Zum Problem der Anerkennungsgerechtigkeit im Kontext von Bildungsgerechtigkeit.“ *Zur Gerechtigkeit von Schule*. Hrsg. Veronika Manitius, Hermstein Björn und Nils Berkemeyer. Münster u.a.: Waxmann, 2015c. 127-145.
- Rose, Nadine. *Migration als Bildungsherausforderung. Subjektivierung und Diskriminierung im Spiegel von Migrationsbiographien*. Bielefeld: transcript, 2012.
- Sachverständigenrat deutscher Stiftungen für Integration und Migration [SVR]. *Doppelt benachteiligt? Kinder und Jugendliche mit Migrationshintergrund im deutschen Bildungssystem. Eine Expertise im Auftrag der Stiftung Mercator*. Berlin: Eigenverlag, 2016.

Rediscovering Klafki: Critical-constructive consequences of the *spatial turn* in education

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Abstract: After many years of neglect, the *spatial turn* has once again led academics to focus their attention on space. At the same time, the digital media constituted themselves as spatial concepts or were conceived as spatial concepts. The challenges posed by digitalisation must therefore be tackled with the help of the insights gained in the course of the *spatial turn*. These new findings can also help to transfer old reflexions into the new situation and make them applicable for it. In the field of pedagogy, Wolfgang Klafki's thoughts on the concept of education (*Bildung*) in modern society belong to these considerations with potential for use in the 21st century. On the basis of general considerations on the significance of spatial concepts for the education sector, the methodological narrowing that is frequently observed in the field of e-learning is criticised with reference to the *era-typical key problems (epochaltypische Schlüsselprobleme)* formulated by Klafki. Finally, a virtual cooperation project in teacher training will be presented, which is based on some of these aforementioned considerations.

Introduction

After decades in which the term space lead a niche existence within the social and cultural sciences, due to its historical burden acquired during the Nazi time and the preference of most philosophers of the last decades for the category of time - especially in the course of the Enlightenment where a dominance of time as the central concept of social science emerged, expressed in the paradigm of progress and development (e. g. Bachmann-Medick, p. 212) - concepts of space have once again become the focus of interest for science in the course of the *spatial turn* (e.g. Jameson, p.16), whose arrival was not initiated but expressed in Michel Foucault's article "Of Other Spaces":

The great obsession of the nineteenth century was, as we know, history: with its themes of development and of suspension, of crisis, and cycle, themes of the ever-accumulating past, with its great preponderance of dead man and the menacing glaciation of the world. [...] The present epoch will perhaps be above all the epoch of space. We are in the epoch of simultaneity: we are in the epoch of juxtaposition, the epoch of the near and far, of the side-by-side of the dispersed. We are at the moment, I believe, when our experience of the world is less that of a long life developing through time than that of a network that connects points and intersects with its own skein. (Foucault, p. 22)

At the same time, digital media became increasingly widespread and posed their very own questions to spatially oriented social and cultural studies, since the categories in which the new media possibilities are thought of, as is shown by "cyber-spaces", „virtual rooms" and many other terms, are categories of space and extension.

The disappearance of borders and thus the de-spatialization of reality has, according to anthropologist Marc Augé, led to the emergence of "non-spaces" (airports, train stations, globalized amusement parks) whose inauthenticity is no longer able to constitute any sense of identity (e.g. Augé, pp. 75ff.). At the same time, however, this development was also accompanied by the emergence of completely new spaces in the virtual sphere, which are of outstanding importance for the identity formation of the young generation.

The pressure for change that the digital development has triggered and whose witnesses the ordinary newspaper readers become every day, when they read the reports of impressive innovations in robotics or artificial intelligence, naturally affects not only the political and economic sphere, but also plays a significant role in the field of education.

The scientific findings obtained in the course of the *spatial turn* should serve as an innovative approach to new challenges, but they can also enable us to make already existing reflections fruitful and modify them for new pedagogical challenges.

In this sense, the following section will illustrate to what extent the findings of the *spatial turn* can be applied to make use of the considerations of Wolfgang Klafki, the nestor of general didactics in the second half of the last century, with regard to a sustainable, modern concept of education for the specific situation of the 21st century. This will be followed by the presentation of a university project in which these theoretical considerations have been implemented.

The *spatial turn* and its relevance for the concept of *Bildung*

For postmodern reflections on space, the focus of spatial concepts is the individual human being. This contemplation thus again takes up a position that has historically sometimes been marginalized but which always had its representatives (e.g., Bering & Rooch 1, p. 46-48) with philosophers such as Aristotle (in contrast to his teacher Plato) and Immanuel Kant (in contrast to Gottfried Wilhelm Leibnitz) (e.g., Bering & Rooch 2, p. 103).

This non-absolute, situational view of space is from the beginning closely linked with the political and ethical dimensions of Aristotle's political doctrine, which has its very starting point in common shared space (e.g., Bering & Rooch 1, p. 47). Under the conditions of the 21st century with its encounters of different people in the same virtual space, this concept poses questions of universal responsibility and global citizenship, which are being severely neglected in many considerations of digital learning in favour of a pure discussion of methods. A responsible pedagogy would once again insist on the primacy of general didactics against this narrowness and would not forego the concept of *Bildung* in this decisive phase of humanity.

Wolfgang Klafki's reflections on the *key problems typical of the era (epochaltypische Schlüsselprobleme)* (such as the question of war and peace, the environmental problems or questions of migration), which are playing an even more important role today, and with which dealing with on a merely national scale has always been nonsensical and only due to the limited possibilities of the past, are particularly relevant here (e.g., Klafki, p. 43-72). The spaces constituted by communicative action allow the contradictions of society to become concrete (e.g., Lefebvre, p. 365) and thus open up a critical-constructive approach in the best sense of the term which should find expression in concrete learning settings.

Practical implementation: an example

In a first, modest attempt, we have now, on the basis of the above considerations, attempted to work on several of the key problems identified by Wolfgang Klafki as typical of the era, in a way that takes account of the considerations arising from the spatial turn for education and the new opportunities and challenges offered by virtual learning environments. The key problems addressed in this case were the question of war and peace and of multicultural coexistence in modern societies.

Together with Alfred Weinberger from the Pedagogical University Linz in Austria, an online project was initiated in which binational groups dealt with questions of the coexistence

of cultures and the intercultural competence of teachers. All collaboration was executed via a virtual learning environment, the transnational encounters were realized by means of a video conferencing software, with the help of which presentations and group work took place.

The outstanding role of spatial concepts in the conceptual design can already be traced in individual key terms. Lessons are conducted as an "online project" using the method of

"problem-based learning", whereby both the terms *project* and *problem* go back to the same ancient Greek meaning *the reproached, the thrown forward*. The final product that the students produced and used to keep track of their learning progress was a concept map and thus a representation of relational knowledge in spatial form.

We hereby try to address the new reality in which space is being thought of outside of the traditional territorial, nation-state context. Space is rather viewed as a meeting point of fluid identities, not as, according to the traditional view, "static 'container' of cultural conditions [...] confined to a national space with territorial borders". (Bachmann-Medick, p. 219).

In future arrangements of the established online cooperation, the critical reflection on the role of online media will be integrated into the project in order not to remain on the little-differentiated, uncritical level of reflection regarding the digital world, which has previously been critically examined.

References

Augé, M. *Non-places: An Introduction to Supermodernity*. New York: Verso, 2009.

Bachmann-Medick, D. *Cultural Turns: New Orientations in the Study of Culture*. Berlin / Boston. De Gruyter, 2016.

Bering, K.; Roach, A. *Raum. Gestaltung-Wahrnehmung-Wirklichkeitskonstruktion 2*. Oberhausen: Athena, 2008.

Foucault, M. „Of Other Spaces“. *Diacritics*. Spring 1986, pp. 22-27.

Jameson, F. *Postmodernism or, The Cultural Logic of Late Capitalism*. Durham / New York: Duke University Press, 1991.

Klafki, W. *Neue Studien zur Bildungstheorie und Didaktik. Zeitgemäße Allgemeinbildung und kritisch-konstruktive Didaktik*. Weinheim und Basel: Beltz, 2007.

Lefebvre, H. *The Production of Space*. Oxford: Basil Blackwell, 1974.

The turn towards the informal in the field of urban development strategies

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(A Full Abstract will be submitted after the conference took place)

If you look at the current development of guiding urban principles and city goals, you can observe – beside a focus on the Creative and Sustainable City – a pointed emphasis on the development of child friendliness, play and the educating character of cities. These guiding urban principles serve to guide a process from the Functional City to a place of social, ecological, but also economically powerful communities. By that, cities not only work on their infrastructures, but also create identity-establishing distinctions to other cities. In these planning processes, education (Bildung) or the Playable City (die beispielbare Stadt) are not only the goal, but also become the instrument of successful urban marketing, which puts cities with the help of location factors like special educational landscapes (Bildungslandschaften) or appropriation playscapes on the scene.

This article focuses especially on the last two guiding principles – the Playable City and the Educating City (Bildende Stadt) – and how they are entangled and used for urban strategies, which are seeking to strengthen the informal. The related discourses on both principles point to a shared dispositif and hence a shared urgency, which spawns the dispositif of the informal: Formal provisions like schools or playgrounds tend to strengthen the trend of children's "domestication" and „islandization"¹ and are depicted to be insufficient to comply with requirements and challenges of e.g. lifelong learning, PISA² or the concept of participating citizenship resp. current models of a fulfilled ludic childhood³. The informal in form of public, flexible spaces, appropriation activities and roving around obtains the role of a savior concerning societal and subjective achievements to be fulfilled⁴.

With the help of the reconstruction of selected micro-dispositifs⁵ like the "Beispielbare Stadt Griesheim"⁶ or the project "Bildungsband Osdorfer Born"⁷, it is targeted to explain and depict, how the favoritism and especially the strategic assignment of the informal generates the conceptualizations of play and education (Bildung) and influences ways of subjectivization. From the current state of inquiry, it can be stated, that a strategic assignment of the informal – especially in relation to wild processes like play and education (Bildung) – can lead to a situation, in which a) former counterparts to institutions are directed back

¹ For the concept of domestication and islanization, see: Löw, M. (2013). *Raumsoziologie*. Suhrkamp Verlag. S. 69ff.

² Vgl. Coelen, T., Heinrich, A. J., & Million, A. (Eds.). (2015). *Stadtbaustein Bildung*. Springer Verlag.

³ Vgl. Lehmann, D. *Freiräume für Kinder und Jugendliche: Das Zusammenwirken von Produkt, Prozess und Strategie als mehrdimensionaler Handlungsansatz* (Doctoral dissertation, Dissertation, Dortmund, Technische Universität, 2015).

⁴ Vgl. Bollweg, P. (2010). *Räume flexibler Bildung: Bildungslandschaft in der Diskussion*. VS Verlag für Sozialwissenschaften.

⁵ Vgl. Eugster, D. (2013). *Mikrodispositive: Die kurze Geschichte eines Automatenladens*. In *Verortungen des Dispositiv-Begriffs* (pp. 57--72). Springer Fachmedien Wiesbaden.

⁶ <https://www.griesheim.de/bildung-kultur/beispielbare-stadt/> . Letzter Abruf: 27.7.2017, 10:54

⁷ <http://www.montag-stiftungen.de/jugend-und-gesellschaft/veroeffentlichungen/projektveroeffentlichungen/bildungsband-osdorfer-born.html> . Letzter Abruf: 27.7.2017, 10:55

to those institutions or in which b) the informal counterparts become institutions with formal regulations and spaces themselves. So, the turn to the informal in planning and programming processes can cause at worst, that – in contrast to the former idea of an open, mixed landscape – possibilities for informal learning and play get lost and more homogeneous landscapes of play and education take shape.

How Students take Responsibility over their On-and Offline Learning Spaces when they Engage in Knowledge Building Communities

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The goal of education in today's innovation age is to encourage students to become self-directed and self-initiated learners, who know how to build knowledge in collaboration with others (Collins & Halverson, 2009; Scardamalia & Bereiter, 2014). As part of the efforts to foster these skills in students, researchers and practitioners increasingly pay attention to the spaces where learning takes place (Ellis & Goodyear, 2016). Worldwide, we see a rapidly growing trend towards redesigning learning spaces (Adams Becker, Freeman, Giesinger, Cummins & Yuhnke, 2016) and turning them into Future Learning Spaces (FLSs) – labelled this way due to their orientation to be relevant for societal demands of the innovation age (Hod, in press). FLSs provide technology-supported opportunities for learning together in ways that traditional, physically fixed learning spaces often impede. However, they come with new challenges: In traditional learning spaces, learners may need a great deal of resourcefulness to overcome the physical challenges imposed by chairs and tables locked into the floor, when they want to build knowledge collaboratively. FLSs, in contrast, require a great deal of discipline and learning strategies in learners so they do not get sidetracked by the flexibility they are offered.

So far, claims about how to best design FLSs and how to support learners in FLSs, is often based on anecdotal evidence, lacking a solid empirical basis (Temple, 2008). This is particularly true as new, innovative spaces continue to emerge – both on-and offline – that continually challenge our notions of how FLSs can be used (see Hod et al., 2016). In order to be able to develop support strategies and to make evidence-based decisions for the design of FLSs, this research addresses the question: How do students take responsibility and ownership over their on-and offline FLSs when they engage in knowledge building communities?

To answer this question, we will investigate the learning processes in a graduate course designed to foster self-directed learning in a knowledge building community that takes place in an FLS at the University of Haifa, Israel, between October 2017 and January 2018. During the course, we will investigate the relationship between the ways students use the on-and offline FLSs in relation to measures of collective cognitive responsibility (Zhang, Scardamalia, Reeve, & Messina, 2009) and individual perceived control and psychological ownership (Buchem, 2012). Our mixed methods approach can yield significant insights with both theoretical and practical implications on the cutting-edge topic related to learning in the innovation age.

References

Adams Becker, S., Freeman, A., Giesinger, C., Cummins, M. and Yuhnke, B. (2016). NMC/CoSN Horizon Report: K-12 Ed. Austin, TX: New Media Consortium.

- Buchem, I. (2012). Psychological ownership and personal learning environments. Do sense of ownership and control really matter? Proceedings of the PLE Conference 2012, PLE Conference Aveiro, Portugal.
- Collins, A., & Halverson, R. (2009). Rethinking education in the age of technology: The digital revolution and schooling in America. New York, NY: Teachers College Press.
- Ellis, R. A., & Goodyear, P. (2016). Models of learning space: Integrating research on space, place and learning in higher education. *Review of Education*, 4, 149–191.
- Hod, Y., (in press). Future learning spaces in schools: Concepts and designs from the learning sciences. *Journal of Formative Design in Learning*.
- Hod, Y., Charles, E., Bielaczyc, K., Kapur, M., Acosta, A., Ben-Zvi, D., Chen, M., Choi, K., Dugdale, M., Kali, Y., Lenton, K., McDonald, S. P., Moher, T., Quintana, R. M., Rook, M. M., Slotta, J. D., Tietjen, P., Weiss, P. T., Whittaker, C., Zhang, J. (2016). Future learning spaces for learning communities: New directions and conceptual frameworks. In C.K. Looi, J.L. Polman, U. Cress, and P. Reimann (Eds.). *Transforming Learning, Empowering Learners: The International Conference of the Learning Sciences (ICLS)*, Volume 2 (pp. 1063-1070). Singapore: International Society of the Learning Sciences.
- Scardamalia, M., & Bereiter, C. (2014). Knowledge building and knowledge creation: Theory, pedagogy, and technology. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences*, Second Edition (pp. 397-417). New York, NY: Cambridge University Press.
- Temple, P. (2008) Learning spaces in higher education: An under-researched topic, *London Review of Education*, 6(3), 229–241.
- Zhang, J., Scardamalia, M., Reeve, R. & Messina, R. (2009). Designs for collective cognitive responsibility in knowledge-building communities, *Journal of the Learning Sciences*, 18(1), 7-44.

The Mosh-Pit – An Area for Excess or a Place of Learning?

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Abstract: Spaces and places of learning becoming more and more differentiated. Nowadays classical concert-halls are also considered as educational places. But what about other spaces where concerts take place? The paper traces this question and highlights that heavy metal concerts can also be considered as settings for education processes.

1. Heavy Metal and Education – A Pair of Apparent Opposites?

With the continuing pluralization of society not only the boundaries between private, public, working and learning life are becoming blurred, but also the places and spaces of education. Over the last 150 years the perception of how learning spaces and places should be organized and where they should be located changed considerably. Today, school-settings (e.g. classrooms, seminar rooms) which were usually considered as places for learning and education compete with other settings. According to Dohmen (2001) 70 percent of all adult learning occurs outside of formal education institutions. Overall, learning settings are becoming more differentiated and provide links between formal, non-formal and informal learning (Seipold, 2014).

Not only new educational areas emerged, but those which have not been recognized as education settings before, like in-formal and non-formal settings (e.g. music schools, youth centers etc.), are drawing increased attention (cf. Epp, 2010). This is especially visible in cultural education. For example, in “Handbuch kulturelle Bildung” different areas of activities and places are mentioned: dance schools (Beyeler & Patrizi, 2012), theaters (Bolwin, 2012), art associations (Baumann, 2012), sociocultural centers (Bode, Hesse & Nagel, 2012), youth work (Sturzenhecker, 2012, see also Epp 2010) or concert halls of orchestras (Mertens, 2012). To consider these settings as learning environments can be quite confusing initially because they are primarily considered to be cultural and not educational institutions and education is not perceived as their core business. They replicate rather seasons than curricula's. Consequently, most staff consist of artists and there are less pedagogues (ibid., p. 553). The self-conception of concert halls, however, has changed over the last decades: Concerts are not only the main business anymore. Almost every German orchestra has an education-program, like the education-activities of the Berliner Philharmoniker illustrate (Schulze Steinen, 2011, p. 30).

Since concert-halls are mainly limited to classical-music, it is of interest whether other places and spaces where concerts take place such as music venues can be considered as places of education. Thus, the current paper investigates the educational influence of heavy metal concerts on the audience. As heavy metal concerts take place in different places from youth centers to big concert-halls, this paper does not focus on a specific location but on heavy metal concerts in general.

Considering these concerts as locations with educational value might appear absurd. Society often associates heavy metal concerts with black outfits, alcohol and drugs, loud, aggressive, and unaesthetic music. These concerts are usually not considered as a means of education (Epp, 2016, p. 87). This view is in contrast, however, with a study by Chaker (2014) who showed that the majority of the heavy metal fans have an academic background. Does this mean that heavy metal features a special environment where education processes can take place? Or does it feature an explicitly education-program like the concert-halls of orchestras or is it in a manner of speaking invisible (Hill, Biburger & Wenzlik, 2008, p. 13)?

Drawing on Humboldt's (1793/1980) theoretical considerations as well as empirical data these questions are examined.

2. Education as Interdependency of I and World

Humboldt does not limit the individuals' development to requirements which are made by the outside world. He sees education as the highest expansion of the human strength which everyone should try to develop as thorough as possible. Strength is not only limited to the mind, but it also includes fantasy, imagination, senses etc. Moreover, Humboldt considers education as a development from the inside rather than a development influenced by the outside. This does not mean, however, that education functions as a solipsistic reference to the individual itself. Education in the sense of the development of the highest expansion of the human strength is not possible to achieve by the individual alone. It is only possible when the individual operates with an externally located element. Humboldt names this element "world" and the relation between the individual and the world is described as "interdependency". Hence the concept of education focuses on the issue of the interdependency of I and world.

With his concept "world" Humboldt not only recognizes other human beings but also (cultural) objects created by mankind (ibid., p. 64ff.). Languages Humboldt ascribes a significant relevancy related to the interdependency of I and world. For him languages are educating organs of thoughts through which ideas can be generated. Accordingly, every language has a special view of the world with its own phonetic system, vocabulary and grammar which also influences the cosmos of thinking and sentiments. The diversity of languages causes the assumption that a multiplicity of worldviews exists. For Humboldt the miscellaneous languages enrich the interdependency of I and world which leads to the previous worldviews being broadened. Thus, learning new languages implicates a way to understand different worldviews. It is important to note that this view does not only refer to languages like Arab, Turkish or Farsi. In fact, Humboldt has a broad understanding of languages so that the term language also includes individual or group specific manners of speaking like the ones used in subcultures (ibid., p. 426ff.).

3. The Methodical Approach

To answer the question whether heavy metal concerts provide a learning environment, concertgoers who visited a Heaven Shall Burn concert during their Veto-Tour 2013 were interviewed with a focus interview (Merton & Kendall, 1979). The band was founded in 1996 and is known for their political activities. In a variety of their lyrics, the band takes an explicitly political position. For example, in the song "Combat" from the album *Invictus* (Iconoclast III) they provide a critical perspective on war and refer to the problem of child soldiers. Furthermore, they are known for their intense live shows and stage-settings in the heavy metal scene.

In total, 13 male concertgoers in 5 different concert-locations participated in the interviews. Their age ranged from 16 to 42 years. A period of 1 to 2 weeks lay between the interviews and concerts.

Focus interviews are based on a stimulus – the concert happening – which all participants experienced. In the interview-setting it is ensured that the participants can describe their experiences of the concert, emotions, feelings etc. freely: They are encouraged to narrate, so that their subjective perspectives can be captured. It offers the possibility of a restrained, non-direct conversation with the interest in very specific information and the possibility of subject-related explication of meanings (ibid., p. 178ff.).

The initial question was: "Please tell me what comes to your mind when you think about the Heaven Shall Burn concert on the [date] in [name of the city]". Subsequently immanent

requests, which usually used in narrative-biographic interviews (Schütze, 1983), with regard to already mentioned aspects of the participants were initiated to gain more detailed information about the issue of interest.

The conducted interviews were analyzed with a Grounded Theory framework (Strauss & Corbin, 1996). Its methodical instruments give priority to the data and the examined field. Theoretical assumptions are not applied to the object. Instead they are discovered in the field (data) and formulated as a result. Accordingly, the openness guarantees to capture the subjective perspectives of the participants and not the assumptions of the researchers.

4. Education program heavy metal-concert?!

What influences heavy metal-concerts can have on the concertgoers is roughly outlined with the help of 4 case examples (see 4.2 and 5). Since all interview partners, except one, refer to the opening-passage of the concert by themselves it is in the focus of the following discussion. Further, the focus on the opening-passage ensures an appropriate comparison, because it marked the beginning of the concert each night. For this reason, the opening-passage and the stage-setting is roughly outlined before referring to the case examples.

4.1 Intro: Stage-setting

Throughout the entire Veto-Tour six big screens were placed on the stage. This is, for example, documented for the concert in Dresden at the location Alter Schlachthof on November 30th (Link 1). Before the band enters the stage, the audience can see blurry images of a sea and a ship on the screens. Suddenly faces appear on it and eight people introduce themselves by saying their names and where they come from. They always end with the phrase “I’m Sea Shepherd” (Link 1). After the eight of them finish introducing themselves two of them state the following:

For so many years I have been really connected to hardcore, metal and punk music scene. And for me and several other people around here the music scene made us the person that we are today. We all left our homes a long time ago to become crew members of one of the Sea Shepherd ships, taking part of several campaigns to protect marine wild life, threatened by the cruelty of insanity of the human race. Sea Shepherd is a direct action organization network. Over thirty-five years has fought to protect those who not can protect themselves. We will simply start an operation for wildlife which is an attempt in our campaign to protect endangered whales from being illegally slaughtered. Last year we had our biggest success down in Antarctica. Saving over ninety percent of the whales these murderers had in their {inapprehensible}. We are hoping that with your help this year there will be even a bigger success that we can put an end on this unnecessary bloodbath. There are a lot of people just like us aboard the ships and we are glad that we can still feel this connection to the music scene. Thanks to bands like Heaven Shall Burn and people like you that still believe that music can carry a message about a change. We are days away from once again putting a life on the line. We are days away from once again for hunt for hunters until the slaughter system disappears. So now have a blast with Heaven Shall Burn and support Sea Shepherd. (Link 1)

After the two of them finish their statement the band starts to play the song Hunters Will Be Hunted from their record Veto released in 2013. This sequence took place every night.

4.2 Outro (Results): Education Processes

After I set the question-impulse, Martin¹ a 42-year-old man, immediately mentions the opening-passage of the concert. “What I really liked is the stage-setting and how HSB [Heaven Shall Burn] use it”. In addition, he explains that he thinks that it is magnificent, even if the band became so popular, that they still use political statements. He admires that they address social relevant topics. In this connection he establishes a relationship to concerts of the past: “Back in the days it was a standard practice that bands address social and political relevant aspects, like humans or animal rights. But this has changed more and more”. Related to his past experiences he further mentions, how he encountered the music scene. One day his friends took him to a concert and he was surprised that social and political issues were stressed more than the music. Through this experience Martin states that he started to think more about the mentioned issues and that he did some research on them: “In comparison to today it was a bit difficult, because the internet was not like today. But I got lots of information’s about the issues at the concerts. There have been flyers and information desks from different organizations or just from people who like to inform others about human and animal rights, meat consume, animal-testing, gender equality, about the ecological destruction of our environment and so on. Just like last week at the HSB concert²”. Further, he used fanzines³ which he got at the concerts as a source of information. For example, he discovered quotes from Adorno and others in these self-made magazines, and to gain a better understanding he borrowed the relevant books from the library.

All in all, these quotes illustrate that Martin gathered information about the addressed issues at the concerts. Of importance is the first visit of such a concert for Martin. It marks a not only a significant moment for encouraging new ideas and point of views but also allowed to deal with them in a comprehensive examination. Martin seems to be very aware of this because he mentions “the concert socialization is quite important for me. And that’s the reason why I really like it that HSB still try to animate people to think a step further or about social important issues faraway from mainstream media. [...]. I am really happy that my friends took me to the concert at that time. Who knows maybe I would never have had the idea to go to these places and I would have never have gained this knowledge”. This self-evaluation and using the term concert socialization underlines how important the experiences he made in such concert contexts are for his biography.

The illustrated phenomena – dealing with a theme in greater depth which was addressed by a band at a concert – can be found in other interviews as well. Jens a 16-year-old teenager who visited a Heaven Shall Burn concert for the first time was deeply impressed by it. Besides the energy and caring about each other in the mosh-pit he was fascinated by the stage-setting and the screened video sequences. “Of course, I have heard about whale hunting before, but the videos encouraged me to think about it more. I googled for Sea Shepherd and watched some videos on YouTube. These poor animals. I didn’t know about all of this”. In contrast to Martin and Jens, other participants like Sven (22-years-old) mention the opening-sequence but only name aesthetic aspects of the staging. Even when asked to outline the aspects of the staging in a more elaborated way Jens only states: “It was wicked. The visual in combination with the lights and the changeover starting the music. Freaking awesome”.

5. Education as Interdependency of I and Heavy Metal?

In conclusion, the illustrated influences and experiences made at the concerts described in the light of Humboldt’s ideas as education(processes) are outlined briefly. Different view-points show that music can be seen as a kind of language which can enter into a dialogue with its environment (Hargreaves, Miell & MacDonald, 2002, p. 1). This also includes

heavy metal music. Elflein (2010, p. 45ff.) in his musicological approach, for example, conceives heavy metal as a self-developing musical language and as a form of expression. According to the ideas of Humboldt heavy metal can be considered as a subcultural language. The examples of Martin and Jens indicate that both of them entered the dialogue by exploring the articulated themes at the concert(s) further. They tried to understand the worldview of the band(s). In Humboldt's view this is an educational process: In his theoretical considerations he states that every dialogue in which one tries to understand the worldview of the counterpart can be seen as an educational process because one's worldview is being expanded or challenged (Humboldt, 1793/1980, p. 224ff.). It could be shown that heavy metal can provide such dialogue: Relating to the examples of Martin and Jens in paragraph 4.2 one can speak of interdependency of I and the world of heavy metal.

Heavy metal concerts, however, feature by no means an education-program, like a few authors state for some subcultural (music) scenes (Schmidt, 2012, p. 821). Indeed, members of the heavy metal scene can also accumulate mostly scene-specific-knowledge, like in other scenes, but this neither consists of a curricular nor of any aims which are formulated. It is up to the individual if he or she responds to the offer of dialogue or not. Not all concertgoers are open enough to enter the dialogue, like Markus: "I don't care about these issues. I just want a great night with cool music and action in the mosh-pit". This quotation clarifies that education opportunities do not generally exist at heavy metal concerts. Thus, it is more adequate not to speak of an education-program neither of an invisible one (Hill et al., 2008, p. 13), but rather of a practice of self-education (Alkemeyer, Budde & Freist, 2013) as a development form the inside in interdependency of I and the world of heavy metal. In the process of self-education Humboldt's ideas that the individuals' development should not be limited to requirements which are made by the outside world are visible (Humboldt, 1793/1980, p. 235ff.).

However, education processes at concerts raise questions as well: To what extent are the individuals (biographically) pre-sensitized to the subject matter. Are the exemplified education processes also possible when bands not address an explicit statement about an (political) issue or not using an elaborate stage-setting? How important is the political magnitude of a band to initiate education processes? It also must be questioned how sustainable the education experiences are and after what period they are recognized as having an educational influence. In general, music has a special significance together with other relevant social-instances, like peers and media. For popular music different studies document how it influences identities, forms communities, enables aesthetic experiences and satisfies consumer needs (Binas-Preisendörfer, 2012, p. 575). Thus, the question arises: What role does the interdependency between the concert, music-scene and peers play?

Endnotes

1 All names utilized in this manuscript are pseudonyms.

2 People from Sea Shepherd had an information desk at every Heaven Shall Burn concert of the Veto-Tour 2013. They informed the attending audience with information's about their work, campaigns, answered questions etc..

3 The term fanzine is a blend of fan and (maga)zine. It is a non-professional and non-profit-orientated publication produced by enthusiasts of a particular cultural phenomenon for the pleasure of others who share their interest (Doehring, 2014, p. 72).

References

Alkemeyer, T., Budde, G. & Fresit, D. *Selbst-Bildungen: soziale und kulturelle Praktiken der Subjektivierung*. Bielefeld: Transcript, 2013.

- Baumann, L. Kunstvereine: Kunstvermittlung dezentral und experimentell. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), *Handbuch kulturelle Bildung* (pp. 448-450). München: kopaed, 2012.
- Beyeler, M. & Patrizi, L. Tanz - Schule - Bildung. Überlegungen auf der Erfahrungsgrundlage eines Berliner Tanz-in-Schulen-Projekts. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), *Handbuch kulturelle Bildung* (pp. 600-603). München: kopaed, 2012.
- Binas-Preisdörfer, S. Selbst-Bildungen. Praktiken musikalischer und kultureller Sozialisation im Zeitalter medialer Multioptionalität. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), *Handbuch kulturelle Bildung* (pp. 575-580). München: kopaed, 2012.
- Bode, R., Hesse, B. & Nagel, T. Kulturelle Bildung in den Soziokulturellen Zentren. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), *Handbuch kulturelle Bildung* (pp. 773-777). München: kopaed, 2012.
- Bolwin, R. Theater als Ort Kultureller Bildung. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), *Handbuch kulturelle Bildung* (pp. 622-627). München: kopaed, 2012.
- Chaker, S. Schwarzmetall und Todesblei. Über den Umgang mit Musik in den Black- und Death-Metal-Szenen Deutschlands. Berlin: Archiv der Jugendkulturen, 2014.
- Doehring, A. Musikkommunikatoren Berufsrollen, Organisationsstrukturen und Handlungsspielräume im Popmusikjournalismus. Berlin: De Gruyter, 2014.
- Dohmen, G. Das informelle Lernen. Die internationale Erschließung einer bisher vernachlässigten Grundform menschlichen Lernens für das lebenslange Lernen aller. Bonn: BMBF 2001.
- Elflein, D. Schwermetallanalysen: die musikalische Sprache des Heavy Metal. Bielefeld: Transcript, 2010.
- Epp, A. Musikprojekte als Bildungsinstitution – Zu den Wirkungen kultureller Jugendarbeit. In P.-U. Wendt (Ed.), mit Wirkung! Zur Nachhaltigkeit von Jugendarbeit im ländlichen Raum (pp. 107-116). Marburg: Schüren Verlag, 2010.
- Epp, A. Worshipping the Devil or (Sub-)Cultural Expressions against Authorities? In K. Holtsträter & M. Fischer (Eds.), *Lied und populäre Kultur – Jahrbuch des Zentrums für populäre Kultur und Musik 2015/2016* (pp. 87-98). Münster: Waxmann, 2016.
- Hargreaves, J., Miell, D. & MacDonald, R. A. R. What are musical identities and why are they important? In J. Hargreaves, D. Miell & R. A. R. MacDonald (Eds.), *Musical identities* (pp. 1-10). Oxford: Oxford University Press, 2002.
- Hill, B., Biburger, T. and Wenzlik, A. Kulturelle Bildung verändert Lernkulturen. In B. Hill, T Biburger and A. Wenzlik (Eds.), *Lernkulturen und Kulturelle Bildung. Veränderte Lernkulturen - Kooperationsauftrag an Schule, Jugendhilfe, Kunst und Kultur* (pp. 9-23). München: kopaed, 2008.
- Humboldt, W. v. Theorie der Bildung des Menschen. In W. v. Humboldt: *Werke in fünf Bänden* eds. By A. Filtner & K. Giel. Bd. 1. Darmstadt: Wissenschaftliche Buchgesellschaft, 1793/1980.
- Mertens, G. Konzerthäuser und Orchester als Orte Kultureller Bildung. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), *Handbuch kulturelle Bildung* (pp. 553-556). München: kopaed, 2012.
- Merton, R. K. & Kendall, P. L. Das fokussierte Interview. In C. Hopf & E. Weingarten (Eds.), *Qualitative Sozialforschung*. Stuttgart: verlagsgemeinschaft Ernst Klett, 1979.
- Schmidt, C. Jugendkulturelle Szenen und Kulturelle Bildung. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), *Handbuch kulturelle Bildung* (pp. 819-821). München: kopaed, 2012.
- Schütze, F. Biographieforschung und narratives Interview. *Neue Praxis*, 13(3), 283-293, 1983.

Schulze Steinen, M. "Neugier gehört zu unserem Beruf" – Musiker der Berliner Philharmoniker über ihr Engagement in der Education-Abteilung. In Berlin Philharmoniker das magazine, Mai/Juni, 30-33, 2011.

Seipold, J. "Mobile Learning: Structures, Concepts and Practices of the British and German Mobile Learning Discussion from a Media Education Perspective." MedienPädagogik: Zeitschrift für Theorie und Praxis der Medienbildung, 24, 2014, 30-52.

Strauss, A & Corbin, J. Grounded Theory. Grundlagen Qualitativer Sozialforschung. Weinheim: Psychologie Verlags Union, 1996.

Sturzenhecker, B. Kulturelle Bildung in der Kinder- und Jugendarbeit. In H. Bockhorst, V.-I. Reinwand & W. Zacharias (Eds.), Handbuch kulturelle Bildung (pp. 743-746). München: kopaed, 2012

Internet-source:

Link 1: <https://www.youtube.com/watch?v=-U1q5Y6tDxQ> [19.10.2014]

Investigating Informal Learning from Others in the Workplace using Mixed Methods Social Network Analysis: Pitfalls and Protocols

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Abstract: Informal learning from others is an important component of informal learning in the workplace. Given the social nature of this source for learning, social network analysis—the investigation of social structures and their implications and antecedents—seems like a natural fit to investigate this phenomenon. However, the approaches used in social network analysis are often of quantitative nature, which may leave out some of the depth associated with the construct of informal learning. Therefore, we propose mixed approaches to social network analysis as important ways to investigate informal learning from others in the workplace. Unfortunately, while mixed approaches to social network analysis is often applied in research practice, there is little structured information about how integration—the major challenge in any mixed methods study—can be achieved in this context. Based on three original research studies in different contexts, we set out to develop protocols and a list of potential pitfalls to advise researchers in this respect.

Purpose

Informal learning from others is an important component of informal learning in the workplace (Froelich, S. A. J. Beausaert, and Segers; Froelich, Beausaert, Segers, et al.). Given the social nature of this source for learning, social network analysis—the investigation of social structures and their implications and antecedents (Borgatti et al.; Froelich and Brouwer; Wasserman and Faust)—seems like a natural fit to investigate this phenomenon. The importance of this approach is illustrated by the surge in social network analysis-related publications in this domain of research—from 37 in 2003 to more than 400 a decade later in the ERIC database for publications in the field of learning and instruction. However, the approaches used in SNA are often of quantitative nature, which may leave out some of the depth associated with the construct of informal learning. Therefore, we propose mixed approaches to social network analysis as important ways to investigate informal learning from others in the workplace (Domínguez and Hollstein; Franke and Wald). Unfortunately, while mixed-method social network analysis is often applied in research practice, there is little structured information about how integration (Maxwell et al.)—the major challenge in any mixed methods study—can be achieved in this context (Froelich). Based on three original research studies in different contexts, we set out to develop protocols and a list of potential pitfalls to advise researchers in this respect.

For clarity, we split the following method section in two parts: First, we discuss how the data was collected and analyzed in the respective primary studies (which will not be discussed here). Second, we discuss the procedure in reflecting about the “pitfalls and protocols.”

Method

Data and Approaches of the Primary Studies

We collected psychometric and sociometric data about informal learning and related constructs in three very different workplaces: teaching, freelance product development, and speakers. These three samples are now described in more detail. Note that the data collection is ongoing.

Teachers

The majority of respondents of the teacher sample (n=44) represent “fellows” of a *Teach for All*-affiliated organization. Thus, they do not represent “ordinary” teachers with the required educational qualification, but rather persons with quite varied backgrounds. We did a census of the persons currently working in schools. In order to provide for contrasts with regular teachers, we also recruited a comparable sample of respondents who currently work in schools and went through teacher education. The total sample size was 76; the teachers were on average 33 years old (SD = 8.17 years) and had about three years of pedagogical experience (SD = 3.11 years). 51 (67%) of the respondents were female. First, a quantitative survey was issued. The survey participants were then invited to participate also in qualitative interviews. The survey data was then used to steer the conversation in the interview.

Freelancers

A small sample (n=22) of board game designers located in Austria and Germany was drawn. First, qualitative interviews were lead with such board game designers. The participants were then invited to participate also in a quantitative survey and to circulate the survey among their colleagues (“snowball sampling”). The qualitative interviews did affect the psychometric questions that were asked in the survey.

Speakers

We collected data among aspiring speakers in Western Europe. The respondents were recruited at speaker conferences or via informal contacts. Thirty (43.5%) of the 69 respondents were female; 78.3% have completed at least their A-levels. The mean age was 40 years (SD = 12.60 years). First, a quantitative survey was issued. The survey participants were then invited to participate also in qualitative interviews. The survey data was then used to steer the conversation in the interview.

Instruments used in the Primary Studies

Quantitative data collection

The underlying network model was heavily influenced by the seminal work of Borgatti and Cross . Accordingly, network questions were asked about the relationships to these persons (adapted for the specificities of each of the samples), whether the person knows about the knowledge the alters possess, whether the person values that knowledge and has access to it, and how often information is sought from that person. Additionally, we asked for the helpfulness of any feedback received (Froehlich, S. Beausaert, and Segers).

Next to this, a host of other concept was asked for, including themes of feedback-seeking (Frieling and Froehlich; Harwood and Froehlich) and innovative work behavior (Froehlich and Messmann; Gerken et al.) . However, these instruments will not be used in this particular presentation.

Qualitative data collection

Semi-standardized interview protocols were used to conduct the interviews. The interviews were conducted by pairs of interviewers; all of which have received rigorous and standardized interviewer training before the actual interview. The average duration of the interviews was about 50 minutes.

Reflection on Pitfalls and Protocols

Throughout the process, the research team collected memos of what worked well and what did not (based on the primary studies’ research goals). These memos were then discussed in focus groups with twenty leading scholars in the domain of learning and instruction that are either experts of social network analysis, multiple and mixed methods, or both.

Conclusion

As outlined in the purpose statement of this presentation abstract, more and more criticism is voiced against the high reliance on quantitative methods of social network analysis. One solution that had been proposed is to include qualitative approaches on top of the quantitative procedures (Bolíbar, 2015; Domínguez & Hollstein, 2014). Such mixed methods social network analysis may resolve some of the limitations that a purely quantitative approach has. Indeed, social network analysis increasingly relies on both quantitative and qualitative approaches to gather and analyze data (Froehlich, 2016; Rienties, Johan, & Jindal-Snape, 2015). This trend towards mixed methods permits commendation, but MMSNA still misses conceptual clarity. For example, an overarching framework that guides researchers through the many decisions that need to be made in mixed methods social network analysis research designs—such as when to mix, how to mix, and why to mix—are rarely addressed (Schoonenboom & Froehlich, 2016).

In this presentation, we will provide an overview of the lessons learned about integration in MMSNA in terms of “pitfalls and protocols”. Specifically, the output is organized around the lessons learned in using mixed-methods in social network analysis when collecting data (cf. Smith, “Social Network Boundaries and Tricky to Access Populations: A Qualitative Approach”; Smith, “A Three-Step Approach to Exploring Ambiguous Networks”), analyzing data, and integrating conclusions (Schoonenboom et al.). The hope is that this contributes more structured information that can be used to design further studies.

References

- Borgatti, Stephen P., et al. “Network Analysis in the Social Sciences.” *Science*, vol. 323, no. 5916, Feb. 2009, pp. 892–895, doi:10.1126/science.1165821.
- Borgatti, Stephen P., and Rob Cross. “A Relational View of Information Seeking and Learning in Social Networks.” *Management Science*, vol. 49, no. 4, 2003, pp. 432–45.
- Domínguez, Silvia, and Betina Hollstein. *Mixed Methods Social Networks Research: Design and Applications*. Edited by Silvia Domínguez and Betina Hollstein, Cambridge University Press, 2014.
- Franke, Karola, and Andreas Wald. “Möglichkeiten Der Triangulation Quantitativer Und Qualitativer Methoden in Der Netzwerkanalyse [Opportunities for Triangulating Quantitative and Qualitative Methods in Social Network Analysis].” *Qualitative Netzwerkanalyse: Konzepte, Methoden, Anwendungen [Qualitative Network Analysis: Concepts, Methods, Applications]*, edited by Betina Hollstein and Florian Straus, VS Verlag für Sozialwissenschaften, 2006, pp. 153–175.
- Frieling, Madeline, and Dominik Emanuel Froehlich. “Homophilie, Diversity Und Feedback: Eine Soziale Netzwerkanalyse [Homophily, Diversity, and Feedback: A Social Network Analysis].” *Internationales Personalmanagement: Rollen – Kompetenzen – Perspektiven. Implikationen Für Die Praxis [International Human Resource Management: Roles – Competencies – Perspectives]*, SpringerGabler, 2017.
- Froehlich, Dominik Emanuel, Simon Beausaert, and Mien S. R. Segers. “Development and Validation of a Scale Measuring Approaches to Work-Related Informal Learning.” *International Journal of Training and Development*, vol. 21, no. 2, June 2017, pp. 130–144, doi:10.1111/ijtd.12099.
- Froehlich, Dominik Emanuel, Simon A. J. Beausaert, and Mien S. R. Segers. “Great Expectations: The Relationship between Future Time Perspective, Learning from Others, and Employability.” *Vocations and Learning*, vol. 8, no. 2, July 2015, pp. 213–227, doi:10.1007/s12186-015-9131-6.

---. "Learning to Stay Employable." *Career Development International*, vol. 19, no. 5, 2014, pp. 508–525, doi:10.1108/CDI-11-2013-0139.

Froehlich, Dominik Emanuel. *The Challenge of Mixing Methods in Social Network Analysis in Learning and Instruction*. EARLI Advanced Study Colloquium on Social Network Analysis in Learning and Instruction, Vienna.

Froehlich, Dominik Emanuel, and Jasperina Brouwer. "Social Network Analysis as Mixed Analysis." *Reviewer's Guide for Mixed Methods Research Analysis*, edited by Anthony J Onwuegbuzie and R Burke Johnson, Routledge, Forthcoming.

Froehlich, Dominik Emanuel, and Gerhard Messmann. "The Social Side of Innovative Work Behavior: Determinants of Social Interaction during Organizational Innovation Processes." *Business Creativity and the Creative Economy*, vol. 3, no. 1, 2017.

Gerken, Maike, et al. "Personal and Contextual Antecedents of Innovative Work Behavior." *Triggers, Antecedents, and Consequences of Informal Learning at Work*, edited by Gerhard Messmann et al., Routledge, 2017.

Harwood, Jade, and Dominik Emanuel Froehlich. "Proactive Feedback-Seeking, Teaching Performance, and Flourishing Amongst Teachers in an International Primary School." *Agency at Work: An Agentic Perspective on Professional Learning and Development*, edited by Michael Goller and Susanna Paloniemi, Springer, 2017, pp. 425–444, doi:10.1007/978-3-319-60943-0_21.

Maxwell, Joseph, et al. "Designing Integration in Multimethod and Mixed Methods Research." *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry*, edited by Sharlene Hesse-Biber and R. Burke Johnson, Oxford University Press, 2015, pp. 223–39.

Schoonenboom, Judith, et al. "Combining Multiple Purposes of Mixing Within a Mixed Methods Research Design." *International Journal of Multiple Research Approaches*, Forthcoming.

Smith, Stephanie S. "A Three-Step Approach to Exploring Ambiguous Networks." *Journal of Mixed Methods Research*, vol. 10, no. 4, Oct. 2016, pp. 367–383, doi:10.1177/1558689815575855.

---. "Social Network Boundaries and Tricky to Access Populations: A Qualitative Approach." *International Journal of Social Research Methodology*, vol. 17, no. 6, 2013, pp. 613–623, doi:10.1080/13645579.2013.820076.

Wasserman, Stanley, and Katherine Faust. *Social Network Analysis: Methods and Applications*. Cambridge University Press, 1994.

Adopting the spatial turn between digital and physical space – a Bourdieu-perspective

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Abstract: Current discourse argues against the use of spatial metaphors, when analyzing digital learning. Spatial metaphors are said to separate virtual and physical space and to devalue digital learning worlds. This paper will state that this problem needs to be tackled by adopting a clear theoretical socio-spatial standpoint, in order to analyze adult learning and teaching processes. It will discuss Bourdieu's concept of social space and its implications for researching adult learning in a combination of digital and non-digital: Following Bourdieu's thought, analyzing social practices, habitus' and fields in learning and teaching processes needs to be in the focus of research. Due to its high degree of abstraction, this approach not only allows to analyze socio-spatial structures in physical terms, but can contribute to conceptualizing physical and digital space as a dynamic process of power struggle and appropriation. The Bourdieuan perspective might be able to highlight a combination of physical and virtual space, conceptualizing it as an artifact of social space.

Spatial metaphors in virtual learning

In one of his latest papers, Michael Kerres argues: When analyzing digital learning, the disadvantage of using spatial metaphors lies in the ongoing separation of virtual and physical space (Kerres, 2017). Furthermore, talking about virtual space does devalue digital learning worlds as not real or artificial, although virtual (learning) spaces are perceived by a growing number of learners as real and have real effects on learning, as much as on society as a whole. As a consequence, Kerres pleads for using the metaphor "Ecosystem".

The present paper will take Kerres' argument that researching and creating learning infrastructures needs a consistent conceptualization for integrating virtual and physical learning worlds into one another, a conceptualization that values both, virtual learning AND learning in a physical environment. At the same time, this paper raises the question, if it's not social space theory that has to offer such an integrating framework. Latest adult learning research activities show that social space theory provides quite insightful research, valuing places of informal and non-formal learning. By presenting some thoughts of Löw's landmark contribution, the paper will set common grounds and explain basic assumption of social space theory, in order to further investigate Bourdieu's concept of social space. By using examples from the internet, it will show how concepts like cultural and economic capital establish social spaces and positionings in virtual, physical and social worlds. At the same time, it offers an approach of bringing learning into the focus of virtual learning.

Social space approaches in adult education

In recent years, the German adult education academia has adapted socio-spatial approaches (e.g. Bernhard et al 2015, Stang et al. 2016; Nuissl und Nuissl, 2014; Wittwer et al 2015): Architecture, regions, cities, and classrooms have been brought to the fore in a number of studies, which all adapted a critical concept of space: They considered space not being a stable physical container or surrounding, but a "relational ordering" (Löw, 2008, p. 35) or social product (Werlen, 2013, p. 11; Bourdieu, 1991, p. 33) rooting in social practices, perception, and action. From this point of view, researchers have been re-discussing learning places (Kraus, 2016; Stang, 2015), teaching activities in classrooms (Kraus & Meyer, 2015), program planning in regions (Bernhard, 2017) and the implicit processes of in- and exclusion that go alongside (Schreiber-Barsch, 2015; Bernhard, 2017). These studies reveal

implicit normative aspects of learning by adopting a clear action perspective on learning places and on the appropriation of the social and physical world (Ludwig & Ebner von Eschenbach, 2015; Ebner von Eschenbach, 2016; Kraus 2016) and by developing a subject-oriented view on learning and teaching. They adopt aspects of the spatial turn, trying to shed light on power relations, which go hand in hand with normatively defining places, where adult learning by the powerful is said to (not) happen. In the German discourse, especially Böhnisch and Münchmeier together with Deinet (1993) have successfully theorized a subject-oriented approach on youngsters' learning spaces. This socio-spatial approach has been adopted by Reutlinger, who analyzed learning spaces and problem solving spaces of marginalized youngsters in Latin America (2001).

By adopting this critical view on learning spaces and power relations, socio-spatial research does very much follow a tradition of post-colonial studies (Bachmann-Medick, 2006) and might shed light on false divisions between physical and virtual learning places or the devaluation of one of them. How can this be done with a focus on virtual and physical worlds?

Moving away from the use of spatial metaphors towards a spatial theory

In the German discourse, the use of spatial metaphors has been very frequent. Especially the national funding schemes "Learning Regions" (BMBF, 2000) and "Local Learning" (BMBF, 2008) have effectively boosted spatial metaphors. Reutlinger (2012) pleads for dissolving spatial metaphors and grounding them in spatial theory for a critical analysis (see alike Bernhard, 2014; Höhne, 2010). This means reflecting spatial terms as a construct of analysis in consideration of their scientific (geographical) background. Spatial constructs are strongly linked to concrete interests of analysis and action as much as to criteria. Although their use might sound very pleasant, they *always* imply "in" and "out". The analysis of spatial terms in consideration of their academic tradition reveals how categories of inclusion and exclusion are built and how in the use of these categories boundaries are implicitly drawn between learning phenomena and subjects. This analysis does not need to be restricted to the use of spatial metaphors, but can be enlarged to underlying processes of perception and action. Social space theories do provide an analytical framework to those processes.

Reutlinger and Kessl (2010) have successfully introduced socio-spatial concepts to the educational discourse by using Löw's landmark-contribution. She defines social space as a "relational ordering of living entities and social goods" (Löw, 2008, p. 35). This definition of space raises the question, "what is ordered and who orders" (ibid.) as these orders are not naturally given spaces or stable containers, but agents "are involved in constituting space not only as elements". Agents "position under pre-defined conditions" (ibid.). Löw distinguishes two basic processes of space constitution: Spacing and synthesis.

"First, space is constituted by a spacing, the situating of social goods and people and/or the positioning of primarily symbolic markings in order to render ensembles of goods and people recognizable [...] It is positioning in relation to other positionings. [...] Second, the constitution of space also requires synthesis, that is to say, goods and people are connected to form spaces through processes of perception, ideation, or recall." (ibid).

This concept of space provides a first framework for socio spatial analyses. Due to its great impact on the German discourse, it can serve as a starting point in this paper.

Bourdieu's thought on social space

While Löw in her idea of social space still refers very explicitly to physical orderings, Bourdieu offers a concept of social space which is much more abstract, but reflects physical space as well dynamically. In Bourdieu's point of departure point, agents represent not only social, but also biological beings. Their social being is based on a body, which does exist in only one place in a time. Agents do socially and physically position themselves by means of their physically incorporated habitus representing economic and cultural capital. At the same time, they are socially and physically positioned, within a social and physical existing society (Bourdieu, 2001).

As a consequence, differences in economic and cultural capital establish different social positions and relations in-between. Bourdieu calls these relations social distances and, by that, consequently, introduces a concept of social space (Bourdieu, 2006). These social distances are inscribed into the physical structure of the world: There are places that represent accumulations of economic capital or cultural capital or even both, there are other places that represent rather a lack of resources or even people that lack of any resources and as a consequence do not have any place. So, by analyzing positions (positioning and being positioned), symbolic distances and the symbolism of centers, researchers can shed light on processes of differentiation, inclusion and exclusion (Bourdieu, 2001).

The dynamic character of space in Bourdieu's thought comes in with the concept of appropriation (Bourdieu, 2001). Agents do appropriate social and physical spaces by means of economic and cultural capital, all the time. By accumulating economic capital, one can enter and even appropriate new physical spaces – e.g. by being able to pay for a very expensive restaurant, or buying a house in a very posh neighborhood. By accumulating cultural capital, one might get the invitation to very sophisticated clubs. As economic and cultural capital represent scarce unequally distributed resources in a society, the idea of appropriation implies struggle and conflict around appropriation processes, it implies power relations and brings up again Löw's question, who orders and what is ordered.

Departing from Bourdieu's conception, one can claim that there is a spatial disintegration of social worlds, which is reflected in physical structure and by the constitution of physical space. This can be analyzed within Bourdieu's terminology of economic, social and cultural capital: People from different social positions in the social space do not share spaces in the physical world neither. As a consequence, they would rarely meet anyway, but whenever they met, they would probably not like each other or have a common subject to talk about (Bourdieu, 2006).

Consequences for researching adult learning in physical and virtual worlds

The consequence of relational social space conception like Löw's or Bourdieu's, have one point in common: Space is not a stable container, but a product or artefact of social structure and social practice. As a consequence, when investigating spaces, research needs to focus incorporated social practices and how they create physical spaces. One of these social practices might be adult learning. Setting the assumption that adult learning represents a conscious action or social practice like e.g. in the Holzkamp Critical Psychology or in Bourdieu's thought, questions come up like, where does learning take place? How is a learning process socially (and physically) positioned, how do the agents position themselves, when learning? Where do adults, students or youngsters gather together to learn? Where do they get their learning resources from? What is their sense making in this process? Which places are locked up for them? Which ones do they lock up themselves? Which ones do they not have access to? Which ones can be opened by the accumulation of economic and social capital and are they helpful?

Coming back to the idea of integrating virtual and physical spaces into one adult learning scenario, means sketching some ideas, how social space theory might have an integrating

effect on physical and virtual learning spaces. What makes the internet a place in the sense of Bourdieu? Bourdieu argues that physical and social structures are bound to a biological being (1991): places are defined by the possibility of entering them and appropriating them in a social practice by the use of cultural and economic capital. This idea of social practice, of social struggle, of inclusion or exclusion exists in physical *and* in virtual spaces like websites or online communities. The process of entering or not entering the internet itself for the sake of learning processes, is highly linked with cultural capital (routines of how to use the internet) and economic capital (having access to a fast computer and high-speed internet).

Once entered the internet, one can observe many other social practices, which go along with inclusion and exclusion, with struggle along the dimensions of economic and cultural capital: Adult learners or agents get access to learning communities and portals by registering, maybe paying for their registration or even paying a premium account. Once, owning a membership in a virtual community or learning platform, members enter a description of themselves, referring to categories that are highly relevant for the rest of the community. E.g. LinkedIn, which is a job and career network, asks for jobs, for previous positions and other business related categories. “Ultimate guitar” asks for a favorite rock band and the most amazing riff, one has ever succeeded to play. Finally, members are asked to upload a photo. All these things represent cultural capital in the sense of Bourdieu. So in short: In the internet, processes of appropriation and struggle in the sense of Bourdieu can be analyzed. Social hierarchies can be reflected in the structures of the internet, spaces are – by powerful agents - said to be good and other places – by the same agents - are said to be bad. In the internet, agents struggle around access, about followers, impact. Processes of differentiation are produced by agents entering or leaving a place. And again, it is highly probably that people from different social fields rarely meet, like in the physical world, and even if they met, they would not appreciate each other. In this perspective, virtual worlds and online-processes can be analyzed as learning spaces, when investigating adult learning as a social practice.

Outlook

The idea of Bourdieu that physical space is a symbol or representation for social space can be transferred to virtual space. The benefit is that space can be analyzed not as a container, but as a relational order. This approach gives researchers a very clear theoretical perspective and positioning for their analysis of virtual and physical spaces with all its excluding and including moments. Especially adult learning and teaching practices can be analyzed separately from each other. One future perspective might be the analysis of habitus in online-learning communities. Bremers work (2007; 2015) provides fruitful insights in adult learning in physical spaces, which might be broadened to virtual space.

Discussing the internet or digital processes as a space implies that the internet is and creates a relational ordering of human beings and social goods. These relations are still bound to our biological and physical being, to action and perception to “co-presence” – using Giddens (1984) words. Therefore it is still valid to talk about virtual space, but this needs to be grounded in a solid theoretical framework. It will be on future research to find out about the different quality of digital relations in comparison to physical relations and how we can map those digital relations.

References:

- Bachmann-Medick, D. *Cultural turns: Neuorientierungen in den Kulturwissenschaften*. Hamburg Rowohlt, 2006.
- Bernhard, C. „Region ≠ Region: Vom normativen Regionsbegriff zur interpretativen Regionalität.“ *REPORT. Zeitschrift für Weiterbildungsforschung*, 4, 2014, 83–96.
- Bernhard, C. „Erwachsenenbildung und Region: Eine Professionsperspektive.“ *Der pädagogische Blick. Zeitschrift für Wissenschaft und Praxis in pädagogischen Berufen*, 2, 2017, 78–88.
- Bernhard, C., et al. (Eds.). *Erwachsenenbildung und Raum: Theoretische Perspektiven - professionelles Handeln - Rahmungen des Lernens*. Bielefeld: W. Bertelsmann, 2015.
- Böhnisch, L. and R. Münchmeier, (Eds.). *Pädagogik des Jugendraums: Zur Begründung und Praxis einer sozialräumlichen Jugendpädagogik*. Weinheim: Juventa, 1993.
- Bourdieu, P. „Physischer, sozialer und angeeigneter physischer Raum.“ Wentz, M. (Eds.) *Stadt-Räume* (pp. 25–34). Frankfurt: Campus, 1991.
- Bourdieu, P. „Ortseffekte.“ Pierre Bourdieu (Eds.) *Das Elend der Welt* (pp. 159–67). Konstanz: UVK, 1997.
- Bourdieu, P. „Sozialer Raum, symbolischer Raum.“ Jörg Dünne and Stephan Günzel (Eds.) *Raumtheorie: Grundlagentexte aus Philosophie und Kulturwissenschaften* (pp. 354–70). Frankfurt: Suhrkamp, 2006.
- Bremer, H. *Soziale Milieus, Habitus und Lernen: Zur sozialen Selektivität des Bildungswesens am Beispiel der Weiterbildung*. Weinheim: Juventa, 2007.
- Bremer, Helmut, et al. „Sozialraumorientierung und 'Bildungsferne': Aufsuchende Bildungsarbeit und -beratung in der Weiterbildung.“ C. Bernhard et al. (Eds.) *Erwachsenenbildung und Raum: Theoretische Perspektiven - professionelles Handeln - Rahmungen des Lernens* (pp. 105–116). Bielefeld: W. Bertelsmann Verlag, 2015.
- Bundesministerium für Bildung und Forschung. „Bekanntmachung von Förderrichtlinien für das Programm ‚Lernende Regionen – Förderung von Netzwerken‘.“ 2000, URL.: www.lernende-regionen.info/dlr/2_7_10.php. Accessed 27 Feb. 2012.
- Bundesministerium für Bildung und Forschung. „Bekanntmachung des Bundesministeriums für Bildung und Forschung von Förderrichtlinien für das Programm ‚Lernen vor Ort‘.“ 2008, URL.: www.bmbf.de/foerderungen/bekanntmachung-379.html. Accessed 27 Feb. 2012.
- Ebner von Eschenbach, M. „Symbolische Repräsentationen des Raums: Verbleib des Realen? Zur produktiven Wideraneignung der ‚Inneren Unvermesslichkeit‘ sozialer Räume am Beispiel Xavier de Maistres ‚Voyage autrour des ma chambre‘.“ *Hessische Blätter für Volksbildung*, (66)1, 2016, 14–28.
- Ebner von Eschenbach, M. „Im Grenzbereich des Räumlichen: Vorüberlegungen zu einer topologischen Perspektive in der erwachsenenpädagogischen Raumforschung.“ *Zeitschrift für Weiterbildungsforschung - Report*, 1, 2017, 91–118.
- Ebner von Eschenbach, M., and J. Ludwig. „Kategoriale Reflexionen auf sozialräumliche Ansätze in der Erwachsenenbildung.“ Henning Pätzold et al. (Eds.) *Programme, Themen und Inhalte in der Erwachsenenbildung: Dokumentation der Jahrestagung der Sektion Erwachsenenbildung der Deutschen Gesellschaft für Erziehungswissenschaft vom 19. bis 21. Sep. 2013 an der Otto-von-Guericke-Universität Magdeburg* (pp. 247–62). Hohengehren: Schneider, 2014.
- Giddens, A. *The constitution of society: Outline of the theory of structuration*. Berkeley: Univ. of California Press, 1986.
- Höhne, T. „Bildungsregionen: Zur bildungspolitischen Konstruktion neuer Bildungsräume“. *Tertium Comparationis. Journal für International und Interkulturell Vergleichende Erziehungswissenschaft*, (16)1, 2010, 179–99.

- Holzcamp, K. Lernen: Subjektwissenschaftliche Grundlegung. Frankfurt/Main: Campus, 1993.
- Kerres, M.. "Lernprogramm, Lernraum oder Ökosystem? Lernprogramm, Lernraum oder Ökosystem? Metaphern in der Mediendidaktik." Kerstin Mayrberger et al (Eds.), Jahrbuch Medienpädagogik 13: Vernetzt und entgrenzt - Gestaltung von Lernumgebungen mit digitalen Medien (pp. 15–28), VS Verlag für Sozialwissenschaften, 2017.
- Kessl, F., and C. Reutlinger, (Eds.) Sozialraum: Eine Einführung. Wiesbaden: VS Verlag für Sozialwissenschaften, 2010.
- Kraus, K. "Lokalität des Lernens: Zur Vielfalt der Lernorte und ihrer Strukturierung". Hessische Blätter für Volksbildung, 1, 2016, 53–60.
- Kraus, K., and N. Meyer. "Handlungsräume von Kursleitenden in der Erwachsenenbildung: Eine empirische Rekonstruktion zur Vermittlungstätigkeit und ihren Bedingungen." Christian Bernhard et al. (Eds.) Erwachsenenbildung und Raum: Theoretische Perspektiven - professionelles Handeln - Rahmungen des Lernens (pp. 143–54). Bielefeld: W. Bertelsmann Verlag, 2015.
- Löw, M. "The Constitution of Space." European Journal of Social Theory, (11)1, 2008, 25–49.
- Nuissl, E., and H. Nuissl, (Eds.). Bildung im Raum. Hohengehren: Schneider, 2015.
- Reutlinger, C. Unsichtbare Bewältigungskarten von Jugendlichen in gespaltenen Städten: Sozialpädagogik des Jugendraumes aus sozialgeographischer Perspektive. Technische Universität Dresden. 2001. URL.: <http://hsss.slub-dresden.de/hsss/servlet/hsss.urlmapping.MappingServlet?id=1014891521046-2341>, Accessed 28 Nov. 2017.
- Reutlinger, C. Bildungslandschaften raumtheoretisch betrachtet: Ermöglichende Perspektiven im Zusammenspiel von schulischen und ausserschulischen Räumen der Bildung und Erziehung. sozialraum.de. 2012, URL.: <http://sozialraum.de/bildungslandschaften-raumtheoretisch-betrachtet.php>, Accessed 28 Nov. 2017.
- Schreiber-Barsch, S. "Inklusionsarchitekturen: Wie wird ein Lernort zu einem inklusiven Lernort im öffentlichen Raum des Lebenslangen Lernens?" Zeitschrift für Weiterbildungsforschung, 3, 2017, 295–319.
- Stang, R. "Lernräume in Bibliotheken: Optionen für eine offene Lerninfrastruktur." Christian Bernhard et al., (Eds.) Erwachsenenbildung und Raum: Theoretische Perspektiven - professionelles Handeln - Rahmungen des Lernens (pp. 167–78). W. Bertelsmann Verlag, 2015,.
- Stang, R., et al. "Lernräume in der Erwachsenenbildung." Aiga von Hippel and Rudolf Tippelt (Eds.) Handbuch Erwachsenenbildung/Weiterbildung (pp. 1-18). Wiesbaden: VS Verlag für Sozialwissenschaften, 2016.
- Wittwer, W., et al., (Eds.). Lernräume: Gestaltung von Lernumgebungen für Weiterbildung. VS Verlag für Sozialwissenschaften, 2015.

Homework and Media Education. An exploratory study on media activities in homework contexts of Swiss primary and secondary school pupils

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Abstract: The explorative research project “Homework and Media Education” investigates forms and contents of media activities of primary and secondary school pupils from the Swiss cantons Zürich and Schwyz. The study aims to gain detailed insights into the daily practice of media activities in the wider context of pupils doing their homework. The overall research question is how pupils use media as resources in the complex ecology of home learning resp. at the intersection between learning in the formal context of school and learning in the informal context at home. The main empirical data source are 92 paper-based media diaries which were filled in during two weeks by pupils from seven primary and two secondary school classes. The media diaries were digitalized, consensually coded and interpreted upon an open qualitative content analysis. The project was conducted during a research module at the Zurich University of Teacher Education consisting of twelve teacher students, led by one professional researcher. Students focused in pairs on six self-formulated research topics based on the common empirical corpus. This paper will collect results from these research foci regarding formality and informality and construction of contexts. One specific aspect is the choice of YouTube videos within doing homework.

Homework and Media Education: The overarching project framework

The general and wider research project “Homework and Media Education” is funded by the Swiss National Foundation from March 2018 to February 2021. It investigates forms and contents of media activities of primary, but mainly secondary school pupils in the German speaking cantons of Switzerland. The study aims to gain detailed insights into the daily practice of media activities in the wider context of pupils doing their homework. The overall research question is how pupils use media as resources in the complex ecology of home learning resp. at the intersection between learning in the formal context of school and learning in the informal context at home.

The main empirical data source are paper-based media diaries which are filled in during two weeks by pupils.

The specific project context

Just before starting the main and overarching project, the second of two pre-studies were conducted. This second pre-study from Autumn 2017, which is the focus of this paper, was conducted in the two Swiss cantons Zürich and Schwyz with 73 primary and 19 secondary school pupils participating (n=92). Their media diaries were digitalised, consensually coded and interpreted upon an open qualitative content analysis.

This pre-study was conducted during a research module at the Zurich University of Teacher Education (PH Zürich) consisting of twelve teacher students, led by one professional researcher. The module duration was from September 2017 to February 2018 and students were awarded 3 ECTS. The learning outcomes of the module aim to give students in their third resp. in their fifth semester insights into basic principles of empirical social research, providing opportunities to conduct own small-sized projects and ideally to let them participate in an actual project process within the university’s department of research & development.

Students focused in pairs on six self-formulated topics based on the common empirical corpus. The topics cover the issues *information retrieval*, *relevant third persons*, and *general and potentially problematic media usage*. The output of the module is a coherent, common, edited research report which is published on the school's OpenAccess repository at zenodo.org. This paper gives an overview to this second pre-study and to its framework as a research module. It will outline basic theoretical underpinnings which also apply to the overarching project framework. Furthermore the paper will outline the methodological approach and its practical procedure. The results will be presented in two parts: part one will present selected findings regarding pupils' construction of formal or informal contexts. The second part will present findings from one student group focussing on the practice and criteria of choosing explanatory videos from YouTube as one specific practice of context construction.

Theoretical underpinnings to Media Education and construction of contexts

During the recent decade German Media Education as a scientific discipline and community developed the theoretical framework "Media Education" (German: Medienbildung) with its central understanding that *Bildung* or "formation of the self" is an individual self-driven life-long process. According to Norbert Meder this is a threefold relationship of oneself to the things and factual processes in the world (and within its mode of representation),

of oneself to the other(s) in a social entity (and within a certain mode of communication), of oneself to oneself and his or her past, present and future (and within a certain mode of interaction) (Meder, 'Theorie der Medienbildung. Selbstverständnis und Standortbestimmung der Medienpädagogik' 65; Meder, 'Von der Theorie der Medienpädagogik zu einer Theorie der Medienbildung' 77)

According to Meder processes of *Bildung* are defined as the change of this threefold relationship: on the one hand in the perspective of material or content where new situations and circumstances, new social relations and self-explanations can be integrated into existing media structures. On the other hand, this process of change can be seen in a formal and logical perspective as it always also means the change of structure of the medium itself, i.e. *Bildung* means to create a new medium on the basis of an existing medium in order to change or to enhance the relation to oneself and to world. (Meder, 'Von der Theorie der Medienpädagogik zu einer Theorie der Medienbildung' 78f.)

The pupils' activities with media are in the centre of this research. As such, those activities are seen as articulations which on the one hand need media to be enacted and on the other hand produce media themselves. It is thus the active process of appropriation and the inherent agency which constitutes this reflexive relationship between one's own lifeworld and everyday life. (Wolf et al. 143)

Constructing contexts

The issue of homework or learning at home / outside school is generally shaped by the informal characteristics of home. But yet, they are rather arranged, so rather formal driven by the posed task, they are partly intended and yet not intended, so rather informal. They are not directly oriented towards a certificate or diploma, they are only partly driven by a curriculum but not fully open. Homework is also shaped by implicit and explicit acquisition of knowledge, so they are rather informal, and their tasks are not always artificial, but yet not always situated and authentic as would be characteristics of informal contexts (see Aßmann 69).

Additionally, to Aßmann's notion that it is the contexts that are shaped by rather formal or informal characteristics, it seems necessary to acknowledge that contexts are also constructed by the learners themselves. Those learner-generated contexts (see Seipold) are constructed structures, or situations, or spaces by the pupils within their interaction. They are shaped or limited by time and their physical location, by the situative availability of resources and their sustainability, and yet they are based on more or less stable structures, agency and cultural practices (Rummler) of the learners. The selected findings of the project will demonstrate this construction of contexts and will describe how formal and informal characteristics are situatively applied to these contexts by the learners.

Methodological approach and practical procedure

In the perspective of the theory of "Media Education" it makes sense to focus on the articulations of pupils as they are the product of the above mentioned threefold relationship, but they are also able to document that relationship as a process. For the actual research process, it is sometimes difficult to fully collect all articulations. It was thus decided to have those articulations documented in a research journal (Fuhs), resp. in a dedicated diary (Moser 109ff.), where pupils are free to write about their media activities that they conduct and find relevant in the course of their homework over the period of two weeks. In that sense the diaries can be considered a written survey consisting of broad open questions with a run-time of two weeks. The diaries are paper-based A5 booklets, containing a basic description of the project plus an introduction for the pupils. Each double page in the booklet represents one day and is only roughly pre-structured by half pages for mornings, school time, afternoon and evenings.

The students in the module previously had internships in various schools and thus had several school teachers as mentors, whom they contacted for their willingness to participate in the project with their classes. The resulting seven primary and two secondary school classes were then visited by students in their function as researchers and were introduced to the research project and were handed out the booklets (media diaries).

Basing on the pluralism of the Mixed Methods Research (Johnson) and oriented at principles of Grounded Theory (Lampert) the media diaries are transcribed and coded in-vivo as deeply as possible in MAXQDA (Kuckartz), and with regard to the overall project as well as with regard to the students' individual research projects. In order to secure the inter-coder reliability about half of all 92 diaries were double coded by rotating the material within the students. Before and after each coding session the code tree was harmonised. It needs to be mentioned that more sessions of coding and code tree harmonisation would have been necessary but due to the structure and framework of the module further optimisation had to be left optional.

Selected findings

Mobility: Creating contexts on the move

Primary school pupils differ from secondary school pupils in terms of their physical and spacial range. Although limited in spacial range, primary pupils mainly listen to music from their smartphones when they move on their own. For secondary pupils especially times on public transportation provides contexts for work and leisure activities which are strongly connected to their smartphones.

Relevant thirds: Creating contexts with family, friends and colleagues

Throughout the material teachers are almost not mentioned in relation to homework and media. Even parents are barely mentioned when it comes to homework and media. Pupils draw a clear line between colleagues and friends, where friends are those with whom they would make an appointment and meet outside to play. Colleagues or classmates are those with whom they would discuss or collaboratively / collectively work on homework via various (chat) channels.

Formal or informal: Creating contexts from different media in different situations

Trust in media is generated via rational choice and pupils seem to be choosing sources of information according their low threshold (but low reputation) compared to social reputation and safety they gain from it. Additionally, the creation of contexts and their degrees of (in)formality may greatly vary, be extremely situated, and foremost they can be nested in each other, which will be demonstrated during the paper.

YouTube: Special focus on creating contexts with online videos

Youtube is often used as a support for the learning process. The choice which video students watch is an individual thing. Each has different criteria. The usage of YouTube is higher than the usage of TV.

References

- Abmann, Sandra. *Medienhandeln zwischen formalen und informellen Kontexten: Doing Connectivity*. Springer Fachmedien Wiesbaden, 2013. <https://doi.org/10.1007/978-3-658-01940-2>.
- Fuhs, Burkhard. 'Medientagebuch - Chronografische Methode'. *Handbuch Kinder Und Medien.*, edited by Angela Tillmann et al., Springer VS, 2014, pp. 259–71. https://doi.org/10.1007/978-3-531-18997-0_20.
- Johnson, R. Burke. 'Dialectical Pluralism: A Metaparadigm Whose Time Has Come'. *Journal of Mixed Methods Research*, vol. 11, no. 2, Apr. 2017, pp. 156–73. <https://doi.org/10.1177/1558689815607692>.
- Kuckartz, Udo. *Einführung in die computergestützte Analyse qualitativer Daten*. 3., Aktualisierte Aufl, VS, Verl. für Sozialwiss, 2010. <http://link.springer.com/10.1007/978-3-531-92126-6>.
- Lampert, Claudia. 'Grounded Theory'. *Qualitative Medienforschung: Ein Handbuch*, edited by Lothar Mikos and Claudia Wegener, UVK Verlagsgesellschaft, 2005, pp. 516–26.
- Meder, Norbert. 'Theorie der Medienbildung. Selbstverständnis und Standortbestimmung der Medienpädagogik'. *Jahrbuch Medienpädagogik 6. Medienpädagogik - Standortbestimmung einer erziehungswissenschaftlichen Disziplin*, edited by Werner Sesink et al., vol. 6, VS Verlag für Sozialwissenschaften, 2007, pp. 55–73. https://doi.org/10.1007/978-3-531-90544-0_3.
- . 'Von der Theorie der Medienpädagogik zu einer Theorie der Medienbildung'. *Medialität und Realität. Zur konstitutiven Kraft der Medien*, edited by Johannes Fromme et al., VS Verlag für Sozialwissenschaften, 2011, pp. 67–81. https://doi.org/10.1007/978-3-531-92896-8_5.
- Moser, Heinz. *Instrumentenkoffer für die Praxisforschung: Eine Einführung*. 6., Überarbeitete und ergänzte Auflage, Lambertus, 2015.
- Rummler, Klaus. 'Foundations of Socio-Cultural Ecology: Consequences for Media Education and Mobile Learning in Schools'. *MedienPädagogik: Zeitschrift Für Theorie Und Praxis Der Medienbildung*, edited by Dorothee M. Meister et al., no. 24 Pedagogical Media Ecologies, July 2014, pp. 1–17, <https://doi.org/10.21240/mpaed/24/2014.07.10.X>.
- Seipold, Judith. 'Lernergenerierte Contexte. Ressourcen, Konstruktionsprozesse Und Möglichkeitsräume Zwischen Lernen Und Bildung'. *Lernräume Gestalten - Bildungskontexte Vielfältig Denken*, edited by Klaus Rummler, vol. 67, Waxmann, 2014, pp. 91–101, <http://2014.gmw-online.de/091/>.
- Wolf, Karsten D., et al. 'Medienbildung Als Prozess Der Unsgestaltung Zwischen Formaler Medienerziehung Und Informeller Medienaneignung'. *Medienbildung Und Medienkompetenz. Beiträge*

Zu Schlüsselbegriffen Der Medienpädagogik, edited by Heinz Moser et al., kopaed, 2011, pp. 137–58, <http://dx.doi.org/10.21240/mpaed/20/2011.09.17.X>.

Acknowledgments

With contributions from: Matthias Bänninger, Stefan Braunschweiler, Evelyn Eigenmann, Michaela Hofstetter, Caroline Jaberg, Nando Looser, Jelena Lucic, Céline Meier, Simela Minidis, Jana Zumbühl, Zurich University of Teacher Education – PH Zürich.

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Sufficiency as Key Strategy for the Change of Symbolic Artefacts in Higher Education: Why do we Need to Rethink Concepts of Learning Space Design?

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Abstract: To understand the implementation of innovative learning environment concepts at universities, artefacts and development practices of learning space designs were analyzed at five universities in Germany, Sweden, Austria, Great Britain and the USA. The case study collected data from analyzing artefacts, field observations and interviews. Data analysis included a bottom up approach. First, different levels of innovation needs and innovation awareness have been categorized and second, aspects which support or hinder the integration of innovations were identified. The results showed the phenomenon *sufficiency* as a relevant strategy of action to achieve the highest innovation level. The concept of sufficiency requires to question existing learning infrastructures from the view of social interactions. With the sufficiency approach technological or spatial issues are not in the focus but social patterns for designing, realizing and adapting learning environments. The empirical findings from the selected innovative universities emphasize the relevance of a different approach to develop strategies and new ways to merge social, organizational, physical and virtual spaces layers. The shift from developing exemplary learning environment concepts or building typologies to a holistic perspective on culture, places and processes makes it possible to rethink innovative learning space designs.

Introduction

In the digital age, requirements for learning are changing (Howland et al.). There is a demand for lifelong learning (OECD) and a shift to focus on student-centered learning as one central goal of the Bologna reform (Hochschulrektorenkonferenz). The „shift from teaching to learning“ (Barr and Tagg; Wildt) no longer represents learning concepts as ‘knowledge transfer’ or students as passive recipients; it is assumed that learning has to be seen as an active process of knowledge construction to support student learning outcomes and success (Roth). The paradigm change affects teaching and learning cultures as well as learning environments in higher education: „An active, collaborative teaching and learning philosophy is often manifested in a different design. Space can either enable - or inhibit - different styles of teaching as well as learning“ (Oblinger 2005, p. 14).

While the learning paradigm is changing toward open active learners, the question remains, how does this align with the existing physical space of learning? For example, a look behind the facades of old buildings at universities as well as newly build spectacular campus premises designed by international “starchitects” (Heathcote) shows typical lecture halls and seminar rooms as symbolic artefacts of the universities in the last couple of centuries (Krüger et al.). In addition, the rapid spread of teaching centers and learning centers in the last decade - with its spatial separation of teaching and learning and the social segregation from faculty activities - widens the gap between formal and informal learning processes as well as it hinders the collaboration of teachers and learners as a central condition to foster student engagement (Ninnemann). It can be argued that existing learning space concepts at universities tend to work against the possibilities of learning as an active process of knowledge construction.

Project description

The starting point of the research study was the observation of reluctant implementation of new learning space concepts at universities that link formal and informal learning pro-

cesses (Jahnke 2012) as well as physical and virtual learning environments to “CrossActionSpaces” (Jahnke 2015). The central goal was to study factors that influence (support or hinder) the integration of innovative learning spaces at universities.

The enormous maintenance backlog of existing building infrastructures at universities, for example in Germany with the amount of approximate 35 billion Euros till 2025 (Kulturministerkonferenz), and the increasing demands for digitalization in higher education (Hochschulforum Digitalisierung) shows the relevance of this project. If campus buildings have to be refurbished or universities are located in the physical and virtual world equally it is important to know which concepts and processes are essential to identify and integrate innovations in learning spaces design.

Data collection and analysis

The study was inspired by the Grounded Theory as an explorative and qualitative methodology (Strauss and Corbin). Due to the conceptual structure and research process of this methodology, applying analytical steps as well as using creative moments (Mey and Mruck), the Grounded Theory comes very close to the thinking and working attitude of architects in design and planning processes. This is especially useful because of the absence of a transdisciplinary research method in architecture for considering socio-spatial aspects. The research study included cases from five universities in five different countries (Germany, Austria, Sweden, Great Britain and the USA). Universities were selected because they are characterized by innovative learning space concepts. Empirical data was collected through the application of artifact analysis (Froschauer; Lueger) and participatory observations (Mayring; Lamnek). The data collection took part from year 2014 to year 2016. The universities have been visited on its physical and virtual campuses at various times to understand the development and change management praxis. The goal was to reconstruct interaction processes in the context of existing learning environments as well as to analyze interaction processes by the development of learning space designs equally. Additional interviews were conducted with selected stakeholders at these universities to reflect the interpretation of data.

The methods of qualitative field research provided an interpretative bridge between the various disciplinary perspectives and spatial levels. Conceptual links between the five case studies and relevant characteristics of its learning space design processes were analyzed and performance criteria for integrating innovations could be identified.

Results

One fundamental result of the research study shows the differentiation of four innovation levels to understand diverse learning space concepts (Figure 1). The levels of the innovation pyramid indicate how formal and informal learning processes are spatially anchored at innovative universities. Based on these innovation levels, a total of 42 theses were derived to describe the challenges and opportunities when implementing innovative learning spaces. In this paper, I focus on the phenomenon of sufficiency; it was identified as one of the relevant strategies of action to achieve the highest innovation level - which is characterized by the conceptual integration of public and private spaces in physical and virtual environments.

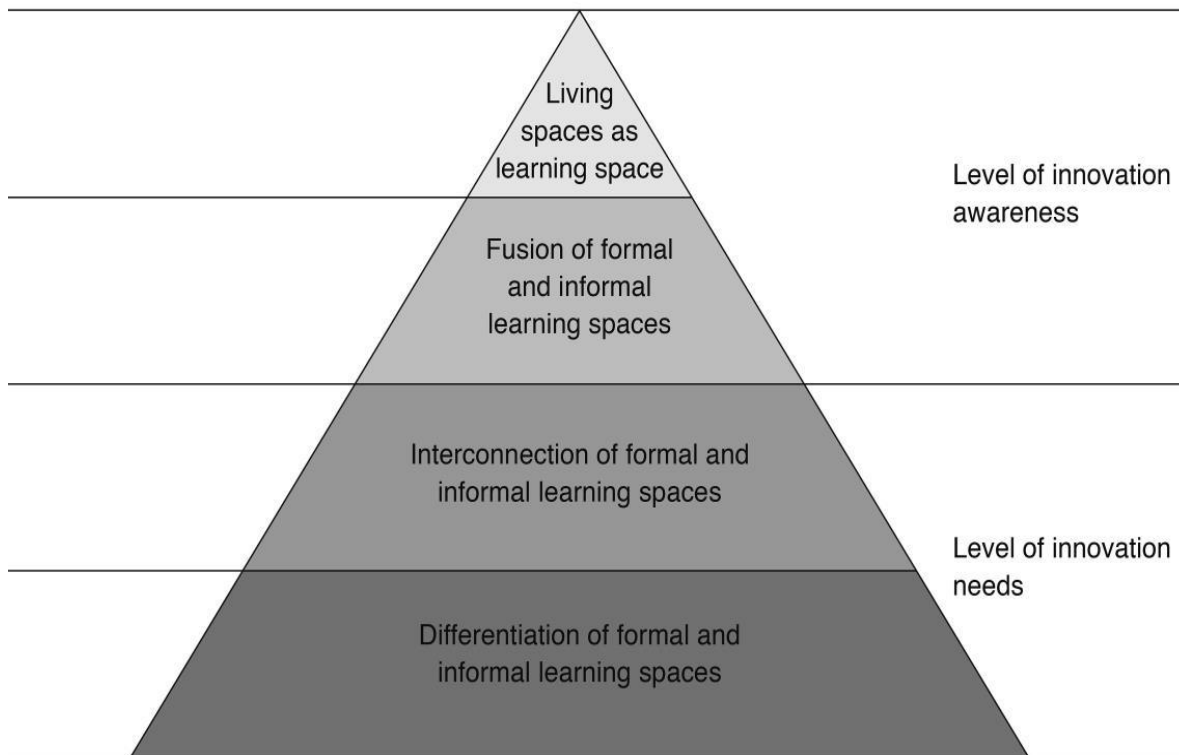


Figure 1. Innovation pyramid - Understanding diverse learning space concepts (Ninmann)

Sufficiency is a principle in the field of sustainability research that was first mentioned in the 1990ies (Sachs; Boulanger). It is seen as a concept to focus on behavioral changes in order to balance social and technological innovations: “the logic of sufficiency consists of consuming the right quantity of material goods and services, a quantity that is just necessary and sufficient for optimal health, well-being and happiness” (Boulanger, p. 5).

In the context of learning environments, the identified phenomenon of sufficiency requires to question existing learning infrastructures from the view of social interactions. The findings of the case study analysis made clear that with different concepts of teaching and learning processes as well as different approaches to integrate information and communication technologies (ICT) new symbolic artifacts of learning environments emerge. This doesn't imply that new building typologies are evolving, like the previously mentioned teaching and learning centers in recent times. On the contrary, already existing premises and its “communities of practice” (Wenger) are in the focus to be activated as learning environments, like student residences, private houses, public libraries, cafés, municipal institutions, business offices or co-working spaces for example. These places are already socially accepted and legitimated to fit heterogeneous needs of individual stakeholders.

Social interactions between students and teachers as well as members of non-university communities and organizations are in the spotlight: “The university is no longer the gatekeeper of information, as it has been since the Renaissance” (Lambert , p. 27). If learning takes place at any time and any place (Oblinger 2006; Woolner; Bachmann et al.; Rohs) the concept and the major amount of lecture halls and seminar rooms can be stated as obsolete. For this reason, it is relevant to detect and strengthen appropriate spatial solutions which allow the reposition of universities in the knowledge society. The concept of sufficiency implicates that technological and spatial issues are not in the primarily focus but social and organizational processes for discovering, developing, adopting and adapting learning environments.

It is obvious that the concept of sufficiency requests a different approach to establish new design strategies. The main challenge is to abandon from a development practice which is limited to single exemplary classroom designs or building typologies. To activate different space layers and resources it is necessary to shift the perspective from the “Pedagogy-Space-Technology (PST) Framework” (Radcliffe) to a more holistic view which focuses on culture, places and processes (Figure 2). Although the PST framework is accepted as an evidence based design for developing and evaluating innovative learning spaces (Cleveland and Fisher; Ng) this framework has to be revised with the new findings of the phenomenon sufficiency.

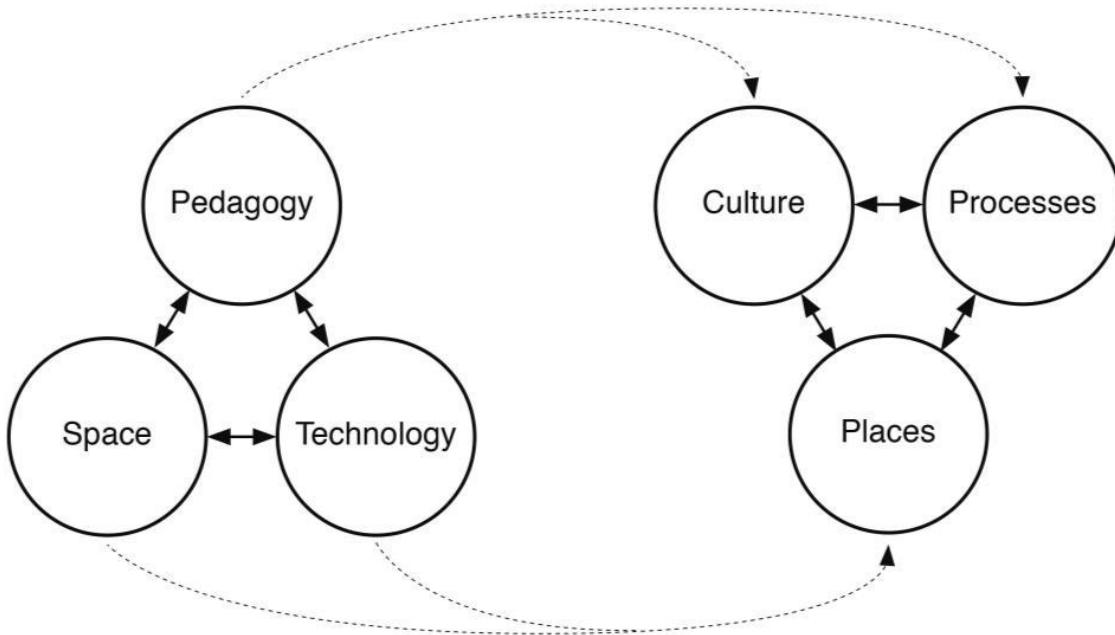


Figure 2. The shift from the PST to the CPP framework (Ninnemann)

While physical and virtual learning environments are merging to “CrossActionSpaces” (Jahnke 2015) and the gap between campus universities and online universities starts to erode it has to be stated that the differentiation between space and technology is counterproductive. To this background these aspects of the PST framework are united under “places”. With the aspect of places, it is clearly indicated that learning can take place anywhere and anytime and that it is essential to activate and strengthen new symbolic places. The comparative case study analysis in the research project clearly showed that innovative learning spaces are coming along with a fundamental change of learning and teaching cultures as well as new conceptions for development processes to integrate innovations in learning space design. To meet upcoming challenges as well as opportunities the aspect of pedagogy turned out to be not adequate anymore and that it has to be extended to the already mentioned issues of “culture” and “processes” in the “Culture-Places-Processes (CPP) Framework” (Ninnemann). The aspect of culture embraces a wide range of topics, like the changing roles and identities of students and faculty in the context of knowledge construction and the paradigm shift as well as the strategic significance of teaching related to research engagements at universities. Furthermore, the concept of sufficiency empirically showed evidence to differentiate between processes while developing new learning environments and processes when adopting new learning spaces by different stakeholders and communities of practice.

This leads to the conclusion that developing and integrating innovative learning environments has to be understood as an iterative process. This implicates an approach that the

development of learning space environments has to be organizational integrated in higher education with resources to work on spatial solutions in order to support learning and teaching processes according to constant changes.

Conclusion

The empirical findings in this research study emphasize the relevance of a different approach to develop strategies and new ways to merge social, organizational, physical and virtual spaces layers. With the CPP Framework it is possible to rethink the implications of the phenomenon sufficiency on different spatial layers and various scales in order to establish new symbolic places in higher education.

The phenomenon of sufficiency clearly indicates that the development of innovative learning environments is not limited to spatial aspects but includes social and organizational issues as well. The case studies show that it is fundamentally necessary to rethink and reorganize the development, coordination and operation practices of learning spaces designs. This includes new ways to involve relevant stakeholders and to redesign concepts of user participation processes.

In summary one can state that with the phenomenon sufficiency and the relevance to consider culture, places and processes a shift occurs from the guiding principle „learning space as a change agent“ (Oblinger 2006) to the conception of learning spaces a change indicator. This implies that learning spaces by itself aren't the key to change the practice of teaching and learning in formal and informal contexts but symbolic artifacts and places are catalysts for tracing the challenges of future demands and opportunities.

References

- Bachmann, G. et al. "Moderne Lernumgebung für den Campus von morgen: Das Projekt ITSI." Lernumgebungen an der Hochschule: Auf dem Weg zum Campus von morgen, edited by Tina Škerlak et al., Waxmann, 2014, pp. 17–58. Medien in der Wissenschaft 66.
- Barr, R. B. and J. Tagg. "From Teaching to Learning: A New Paradigm for Undergraduate Education." *Change*, vol. 27, no. 6, 1995, pp. 13–25.
- Boulanger, P.-M.. "Three strategies for sustainable consumption." *S.A.P.I.E.N.S. Surveys and Perspectives Integrating Environment and Society*, vol. 3, no. 2, 2010.
- Cleveland, B. and K. Fisher. "The evaluation of physical learning environments: A critical review of the literature." *Learning Environments Research*, vol. 17, no. 1, 2014, pp. 1–28.
- Froschauer, U. "Artefaktenanalyse." *Handbuch Methoden der Organisationsforschung: Quantitative und qualitative Methoden*, edited by Stefan Kühl et al., 1st ed., VS Verlag für Sozialwissenschaften, 2009, pp. 326–47.
- Heathcote, E. "Campus creativity." *The Future of the University*, edited by Financial Times, 2014, pp. 24–28.
- Hochschulforum Digitalisierung. Diskussionspapier - 20 Thesen zur Digitalisierung der Hochschulbildung. Hochschulforum Digitalisierung, 2015. Arbeitspapier Nr. 14, hochschulforumdigitalisierung.de/sites/default/files/dateien/HFD%20AP%20Nr%202014_Diskussionspapier.pdf. Accessed 18 Sep. 2017.
- Hochschulrektorenkonferenz. Bologna-Prozess 2020 – der Europäische Hochschulraum im kommenden Jahrzehnt: Communiqué der Konferenz der für die Hochschulen zuständigen europäischen Ministerinnen und Minister. Leuven/Louvain-la-Neuve, 28. und 29. Apr. 2009, 2009.
- Howland, J. L. et al. *Meaningful learning with technology*. 4th ed., Pearson, 2012.

Jahnke, I. "Technology-Embraced Informal-in-Formal Learning." 21st Century Learning for 21st Century Skills: 7th European Conference on Technology Enhanced Learning, Proceedings. edited by Andrew Ravenscroft et al., Springer, 2012, pp. 395–400. Lecture notes in computer science 7563.

Jahnke, I. Digital Didactical Designs: Teaching and Learning in CrossActionSpaces. Routledge, 2015.

Krüger, A. et al. "Containerraum der Lehre? Raum(be)deutungen im universitären Kontext." Räume bilden: Pädagogische Perspektiven auf den Raum, edited by Constanze Berndt et al., Klinkhardt, 2016, pp. 129–46.

Kultusministerkonferenz. Solide Bauten für leistungsfähige Hochschulen: Wege zum Abbau des Sanierungs- und Modernisierungsstaus im Hochschulbereich. 2016. Accessed 31 Oct. 2016. www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2016/2016_02_11-Abbau-Sanierungsstau.pdf.

Lambert, C. "Twilight of the Lecture." Harvard Magazin, vol. 114, no. 4, 2012, pp. 23–27. harvardmag.com/pdf/2012/03-pdfs/0312-HarvardMag.pdf.

Lamnek, S. Qualitative Sozialforschung: Lehrbuch. 5th ed., Beltz, 2010.

Lueger, M. Grundlagen qualitativer Feldforschung: Methodologie, Organisation, Materialanalyse. WUV-Universitätsverlag, 2000. Uni-Taschenbücher 2148.

Mayring, P. Einführung in die qualitative Sozialforschung: Eine Anleitung zu qualitativem Denken. Beltz, 2002. Beltz-Studium.

Mey, G. and K. Mruck. "Grounded-Theory-Methodologie: Entwicklung, Stand, Perspektiven." Grounded Theory Reader, edited by Günter Mey and Katja Mruck, 2nd ed., VS Verlag für Sozialwissenschaften, 2011, pp. 11–48.

Ng, J. "Innovating with Pedagogy-Space-Technology (PST) Framework: The Online Moot Court." Learning Communities: International Journal of Learning in Social Contexts, vol. 18, 2015, pp. 52–65. doi:10.18793/LCJ2015.18.06.

Ninnemann, K. Innovationsprozesse und Potentiale der Lernraumgestaltung an Hochschulen: Die Bedeutung des dritten Pädagogen bei der räumlichen Umsetzung des „Shift from Teaching to Learning“. Zugl. Diss., Waxmann. Im Erscheinen, 2017.

Oblinger, D. G. "Leading the Transition from Classrooms to Learning Spaces." EDUCAUSE Quarterly, no. 1, 2005, pp. 14–18.

Oblinger, D. G., editor. Learning Spaces. EDUCAUSE, 2006.

Oblinger, D. G. "Space as a Change Agent." Oblinger, Oblinger 2006, pp. 1–4.

OECD. "Lifelong Learning and Adults." The OECD Perspective, 2012, OECD Publishing.

Radcliffe, D. "A Pedagogy-Space-Technology (PST) Framework for Designing and Evaluating Learning Places." Learning Spaces in Higher Education: Positive Outcomes by Design, edited by David Radcliffe et al., University of Queensland, 2009, pp. 10–16.

Rohs, M. "Zur Neudimensionierung des Lernortes." REPORT Zeitschrift für Weiterbildungsforschung, vol. 33, no. 2, 2010, pp. 34–45.

Roth, G. "Warum sind Lehren und Lernen so schwierig?" Zeitschrift für Pädagogik, vol. 50, no. 4, 2004, pp. 496–506.

Sachs, W. "Die vier E's : Merkposten für einen maßvollen Wirtschaftsstil." Politische Ökologie, vol. 11, no. 33, 1993, pp. 69–72.

Strauss, A. L., and J. M. Corbin. Grounded Theory: Grundlagen qualitativer Sozialforschung. Beltz, 1996.

Wenger, E. Communities of practice: Learning, meaning, and identity. Cambridge University Press, 1998. Learning in doing.

Wildt, J. "The Shift from Teaching to Learning": Thesen zum Wandel der Lernkultur in modularisierten Studienstrukturen." Qualitätssicherung und Studienreform: Strategie-

und Programmentwicklung für Fachbereiche und Hochschulen im Rahmen von Zielvereinbarungen am Beispiel der Heinrich-Heine-Universität Düsseldorf, edited by Holger Ehlert and Ulrich Welbers, 1. Auflage, Grupello, 2004, pp. 168–78.

Woolner, P. *The Design of Learning Spaces*. Continuum International Publishing, 2010. *Future Schools*.

SHORT PAPER PRESENTATIONS

Prisons as ambiguous learning spaces

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Abstract: This paper explores the relationship between (in)formal learning and the spatial characteristics of prisons by combining criminological and pedagogical research on learning, space and juvenile prisons. Learning in prison is very special, since the deprivation of technology impacts on learning possibilities. These limitations as well as prisons' further deprivations act as boundaries, influence prisons' learning spaces and places and have implications on the overall concept of learning in a prison. Learning in prison mainly happens outside the formal classroom – informal learning processes, happening between the prisoners, can take place in every physical space in prison, such as the prison cell, the library, the hallway or the outdoor area. Therefore, this paper presents a research project that is set in 12 German juvenile prisons. By using an evaluation method called “semantic differential” the paper displays significant distinctions between the prisons under study and illustrates the inmates' perceptions of prisons as ambiguous spaces. This finding presents the prospect of successfully establishing learning spaces, even in such an extremely hostile and coercive environment.

This paper explores the relationship between (in)formal learning and the spatial characteristics of prisons by combining criminological and pedagogical research on learning, space and prisons. In Germany and elsewhere, prisons are often portrayed as inhospitable and bleak places (Goerdeler 2011, p. 129) where hardly any learning takes place, except for learning on how to be even more criminal. It is common knowledge that spaces impact on the individuals' learning process, well-being, compliance, performance and discipline (Schäfer & Schäfer 2009, p. 235; Heynen et al. 2014, p. 45) and contribute to the prevention – or the exacerbation – of emotional and social difficulties (Günder 2015, p. 156).

Prisons' inherent contradiction between care and control permeates throughout every aspect of prison life and its physical environment is a form of embodiment of societal attitude towards prisoners that shapes their emotional experiences of incarceration (Bettelheim 1975, p. 126 ff.). Usually, prisoners are hardly ever considered to be active producers of the learning environment that surrounds them in this institution. The close confines of prison mostly do not stimulate positive personal development but trigger feelings of oppression and incapacitation and, therefore, possibly hinder a reasonable learning process. All in all, learning in prison is very special, since the deprivation of technology impacts on learning possibilities. These limitations as well as prisons' further deprivations act as boundaries, influence prisons' learning spaces and places and have implications on the overall concept of learning in a prison.

Although prison is a non-school setting there are, in institutions for young offenders, schools in order to provide for the prisoners' compulsory school attendance. In prison, however, the classroom isn't considered as the primary locus for learning: Learning in prison mainly happens outside the formal classroom – informal learning processes, happening between the prisoners, can take place in every physical space in prison, such as the prison cell, the library, the hallway or the outdoor area.

Therefore, this paper presents a research project that is set in 12 German juvenile prisons (Boxberg et al. 2016, p. 428 ff.). The said research project asked 882 male and 269 female prisoners to reflect on the prison spaces that surround them day-to-day, e.g., the prisoner's cell and the courtyard. This research acknowledges prisons as highly charged emotional and contradictory spaces. By using an evaluation method called “semantic differential” the paper displays significant distinctions between the prisons under study and

illustrates the inmates' perceptions of prisons as ambiguous spaces. The results show that inmates do not disrelish prison places without exception but rather have mixed feelings about these places, experiencing aversion but also positivity at the same time. This finding presents the prospect of successfully establishing learning spaces, even in such an extremely hostile and coercive environment.

References

- Bettelheim, B. *Der Weg aus dem Labyrinth. Leben lernen als Therapie*. Stuttgart: Deutsche Verlags-Anstalt, 1975.
- Boxberg, V, Fehrmann, S E, Häufle, J, Neubacher, F & Schmidt, H. „Gewalt als Anpassungsstrategie? Zum Umgang mit Belastungen im Jugendstrafvollzug“, *Monatsschrift für Kriminologie und Strafrechtsreform* 99(6) (2016): 428-449.
- Goerdeler, J. *Gewalt im Strafvollzug*. Puschke (Hrsg.): *Strafvollzug in Deutschland* (pp. 105-134). Berlin: BWV, 2011.
- Günder, R. *Praxis und Methoden der Heimerziehung Entwicklungen, Veränderungen und Perspektiven der stationären Erziehungshilfe*. Freiburg im Breisgau: Lambertus-Verlag, 2015.
- Heynen, E, van der Helm, P, Stams, G-J & Korebrits, A. “Measuring group climate in a German youth prison: A German validation of the prison group climate instrument”, *Journal of Forensic Psychology Practice* (2014): 45-54.
- Schäfer, G E & Schäfer, L. *Der Raum als dritter Erzieher*. Böhme (Hrsg.), *Schularchitektur im interdisziplinären Diskurs. Territorialisierungskrise und Gestaltungsperspektiven des schulischen Bildungsraums* (pp. 235-248). Wiesbaden: Springer VS, 2009.

Formal and informal learning in the university setting

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Abstract: This article analyzes the Blended Course of *General Didactics* (Teaching and learning methods) within the Degree Course in Primary Education of the University of Milan-Bicocca. Lessons, activities and activities were evaluated in terms of their incidence in students learning processes throughout questionnaires and interviews. Results evidence that classroom discussions between professors and students during the lessons and one of the activities were considered significantly useful to understand and conceptualize the contents of the course.

Introduction

The case study presented concerns a Teaching and Learning (General Didactics) module offered by the University of Milano-Bicocca (Nigris, Teruggi & Zuccoli, 2016). The Degree Course in Primary Education, of which the module in Teaching and Learning is part, is designed to form teachers for nursery (3-6 years) and primary schools (6-10 years). Since 1999, the year when this degree course was set up, the concept of teacher underpinning it, and shared by the academic team that developed the course, has been that of a reflective practitioner (Schön, 2006) who reflects both during and outside of his/her practice, in order to address the everchanging challenges encountered in teaching work. The most recent educational measure concerning teacher training came into force in Italy with the Ministerial Decree n° 249 of 2010, which states that “The five-year degree course in Primary Education promotes advanced theoretical and practical training in psycho-pedagogical, methodological, didactic, technological and research disciplines. It also provides specific training for the reception and inclusion of pupils with disabilities.”

An overview of competencies

The newly trained teacher is expected to develop competence in multiple areas, drawing on the positive experiences of the past and planning improvements for the future, in light of shifting societal needs. The list of proposed competences for this teacher included: “possessing up-to-date knowledge and being able to metacognitively reflect on the process of acquiring it; having the ability to observe contexts and relationships in order to design meaningful educational interventions; knowing how to listen to and understand students with a view to managing communication with and among pupils, together with families; reflecting and sharing with colleagues about the work carried out; and recording and evaluating teaching and learning activities.” (Teruggi & Zuccoli, 2015, p.76) The reference here, although not fully explicit, is to 21st century skills, particularly:

Effective Oral and Written Communication, Collaboration Across Networks and Leading by Influence, Initiative and Entrepreneurialism, Assessing and Analysing Information, Critical Thinking and Problem Solving, Curiosity and Imagination.

Workshops and teaching practice

From the outset, the degree course’s complex structure has reflected the need to foster a wide range of such competences. It was designed to combine the imparting of traditional knowledge, albeit using innovative (active) methods of teaching (Nigris, Negri, & Zuccoli, 2007), with tutorials, laboratories, and teaching practice in nursery and primary schools, partly conducted directly in the classroom and partly delivered on campus by in-service teachers. Initially, the intake of students was limited to between 25 and 30 per group.

The value of the workshops lies in their dynamic nature “... as cognitive, operational and relational experience among adults based on:

- 1- collaborative learning in small and large groups;
- 2- real-life tasks providing the opportunity to observe, experiment, compare, enquire, hypothesize, produce;
- 3- critical interpretation and creative production;
- 4- meta-reflection on the processes implemented; mainly procedural as opposed to declarative contents;
- 5- a high level of interaction between lecturers and students” (Varani, 2014, p. 187).

The Teaching and Learning module: comparing traditional and blended learning formats

This background is required to understand the dual aims (both original and current) of the Teaching and Learning module: that is to say, on the one hand to lead students to reflect on the role of the teacher, the learning context, communication processes, didactic transition, teaching-learning tools, methods and methodologies, and on the other, to provide them opportunities for practical experience directly, both in laboratory settings and through teaching practice in schools. The current intake on the module in Teaching and Learning, which is offered during the second year of the five-year Master’s Degree Programme, is 400 students. Attendance at lectures, tutorials, etc., has never been obligatory for the students on this module, as many of them work and are unable to be full-time on-campus. Thus, an e-learning depository has traditionally been available to students, allowing them to access the course materials (slides, PowerPoint presentations, observational protocols, readings, videos) delivered on campus, which are published online, either in advance of classes, so as to facilitate student participation and debate, or immediately after them as an aid to preparing for the final exam. The e-learning depository has consistently received highly positive feedback from the students, in the context of the annual formal review of the degree course (the review process is jointly conducted by academic staff and students, who administer surveys, collect and analyse the survey data, and make recommendations for improvements and refinements to the course).

However, both the students and the university felt that there was a need go further, and to supplement the traditional method of delivery with a full-blown distance learning option. As a first step in this direction, the lecturers in charge of the Teaching and Learning module, Lilia Teruggi and Franca Zuccoli, undertook to deliver a blended learning version on an experimental basis. For two years, alongside the traditional mode of delivery, the course has also been offered in a blended learning format.

In order to develop this blended learning module, these lecturers, who did not have any prior expertise in the field of blended learning, had to attend specific training sessions on how to make optimal use of the blended learning platform offered by the university. This training input enabled them to familiarise with what the platform allowed them to do, from an operational point of view, and thus to identify how they could best use it to deliver the module. With the support of the technicians who had created the platform, they developed a set of learning units that offered a variety of materials selected with a view to fostering the required depth of learning. While the traditional learning format enabled the academic staff to supplement the required reading for the module by interacting with the students face-to-face; organizing group work, followed by further discussion and analysis with the entire class; using protocols, videos and readings; and inviting in-service teachers to speak to the students, the blended course offered fewer face-to-face sessions, thus demanding a different approach, and far more advance programming. Essentially, they needed to systematically identify key learning contents, classify them, decide which to deliver face-to-face and which using distance learning methods; select appropriate e-tivities; decide how

to elicit students' interest and participation, and how to hear their voices and ensure that their voices reached the group, thereby facilitating interaction among peers without the involvement of lecturers or tutors (who however play a crucial role in managing the platform); determine what feedback to provide to the students and how; define how to assess the students' overall learning, and how the blended learning path should be incorporated into the final oral exam.

Case study Methodology

During the delivery of the module, all learning activities, from both traditional and blended formats, were thoroughly documented. Compared to 250 students enrolled on the traditional face-to-face module, only 25 signed up for the blended-learning alternative. The students in the blended learning group were a variety of ages and typically had greater professional experience. The blended learning module consisted of seven face-to-face classes (lasting a total of 20 hours), a series of e-tivities (4), and a debriefing session, in addition to the oral examination.

The aim of the experimental programme was to lead the academic staff to reflect more consciously on the teaching-learning path they wished to develop, viewing it both as a case study (Fook, Gardner, 2007, Mantovani, 1998) in blended learning, and as a field of experience (Bertolini, 1998) inviting critical appraisal of the learning contents to be offered.

In preparation for designing the blended course, the academic team reviewed and analysed all the materials previously produced for the traditional modules. The research drew on a range of sources (Yin 2009): documentation produced by other university communities, in particular in connection with the European project *Voices The Voice of European teachers*, in which the Bicocca blended learning lecturers were taking part (research group comprising 1. Saxion University of Applied Sciences(NL), 2. Hogeschool-Universiteit Brussel (BL), 3. Universitat Autònoma de Barcelona (ES), 4. Università degli Studi di Milano-Bicocca (IT), 5. University of Derby (UK), 6. University College of Teacher Education Styria (AU), 7. Univerzita Palackeho v Olomuci (CZ), 8. Uludag Universitesi, Bursa (TR), 9. Universidade do Minho, Braga (PT)).

The syllabuses of the other universities were analysed, especially in relation to their blended learning modules in teaching and learning methods. A review was also carried out of the key scientific literature in the field (Falcinelli & Laici, 2009; Haselberg & Motsching, 2016; Islam, Beer & Slack, 2015; MacDonald, 2008; McDonald, 2014; Zanniello, 2009). A particular focus was brought to bear on distance learning themes, and especially on how to develop the capacity to create, organize and share learning content in both formal and informal contexts.

The lecturers in charge Lilia Teruggi and Franca Zuccoli, who at the end of the course, observed the materials produced by the student and analysed their ratings, questionnaire responses, and direct feedback throughout interviews, suggest that a different way of delivering the course and creating a virtual space in which students could compare, create and deposit the materials they produced has led to the achievement of competencies that are rarely exercised or displayed by the students on the traditional course (Archer, Garrison, & Anderson, 1999; Garrison & Archer, 2000; Garrison & Anderson, 2003; Garrison & Kanuka, 2004). Although the students on the experimental blended learning module belonged to the generation of digital natives (Palfrey & Gasser, 2008; Ferri, 2011), not all displayed true familiarity with technology-related proposals. The choice of professors, in agreement with the tutors, was to propose a series of exercises, always in pairs or in small groups, ranging from a simple level to an increasingly complex level (Swan, 2001). The latest productions by students reflected a high level of competence, including from the digital point of view, not present at the beginning of the course. These same products, which

summarized key learning themes, were then used as study materials along with texts and other media (Carletti, 2007; Faggioli, 2011).

Questionnaires and interview transcripts were analysed following constructed categories or themes that became the category system. As Mayring (2002, p.114) explains, “by using this category system, the aspects, which are to be filtered from the material, are defined”. In our study, the aspects to be filtered from the collected data were fragments of text related to what students communicated as conscious learning achievements. We then carried out a comparative analysis, with the aim of identifying similarities and differences among the data sources, in particular between the goals of the course respect the main concepts a what students referred.

Final Reflexions

From the analysis of the questionnaires it appeared that in what concerned face to face instruction students appreciated the classroom discussions between professor and students; and in what concerned the blended learning, they appreciated particularly the development of video “knowledge pills”. “The knowledge pills are short brief educational videos with specific issues which convey specialized contents in an attractive and innovative format” (Arnàiz-Uzquiza, Alvarez Alvarez & Corell Almuzara, 2014, 237). In our case, students created in pairs a television news bulletin of 2/3 minutes concerning one of the teaching methods. In this way contents related to the course could take a different form, allowing students to combine the various theoretical contents, linking them to the practice and to the use of the ICT.

(1) Even though the authors worked together to elaborate this contribution, paragraphs were written as follows: Lilia Teruggi: abstract, 1, 2; Franca Zuccoli: 3, 4.

References

- Archer, W., Garrison, D. R and T. Anderson. “Adopting disruptive technologies in traditional universities: Continuing education as an incubator for innovation.” *Canadian Journal of University Continuing Education*, 25 (1) (1999): 13-30.
- Bertolini, P. *L'esistere pedagogico. Ragioni e limiti di una pedagogia come scienza fenomenologicamente fondata*. Firenze: La Nuova Italia, 1998.
- Carletti, A. *Ambienti d'apprendimento: Nuove applicazioni della didattica costruttivista nella scuola*. Trento: Erickson, 2007.
- Garrison D. R. and H. Kanuka. “Blended learning: Uncovering its transformative potential in higher education”. *Internet and Higher Education* 7 (2004): 95-105.
- Garrison, D. R. and T. Anderson. *E-learning in the 21st century: A framework for research and practice*. London: Routledge/Falmer, 2003.
- Garrison, D. R. and W. Archer. *A transactional perspective on teaching-learning: A framework for adult and higher education*. Oxford, UK: Pergamon, 2000.
- Faggioli, M. (Ed.). *Tecnologie per la didattica*. Milano: Apogeo, 2011.
- Falcinelli, F. and C. Laici. *E-learning e formazione degli insegnanti. Un ambiente collaborativo per la costruzione condivisa della professionalità docente*. Roma: Aracne, 2009.
- Ferri, P. *Nativi digitali*. Milano: Bruno Mondadori, 2011.
- Fook, J. and F. Gardner. *Practising Critical Reflection. A Resource Handbook*. Maidenhead: McGrawHill, Education, 2007.
- Haselberg, D. and R. Motsching. “Students’ perspectives on eLearning activities in personcentered, blended learning settings”. *International Journal on E-learning*, vol. 15, n. 1 (2016): 47-69.

- Islam, N., Beer, M. and F. Slack. "E-learning challenges faced by academics in higher education: a literature review". *Journal of Education and Training Studies*» vol. 3, n. 5 (2015): 102-112.
- MacDonald, J. *Blended learning and online tutoring: planning learner support and activity design*. Aldershot (UK): Gower Publishing, 2008.
- McDonald, P.L. "Adult learners and blended learning: A phenomenographic study of variation in adult learners' experiences of blended learning in higher education". *Humanities and Social Sciences*, 73 (2014).
- Mayring, Ph. "Qualitative content analysis – research instrument or mode of interpretation?" In M. Kiegelmann (Ed.), *The role of the researcher in qualitative psychology* (pp. 139 – 148). Tübingen: Verlag Ingeborg Huber, 2002.
- Mantovani, S. (Ed.). *La ricerca sul campo in educazione. I metodi qualitativi*. Milano: Bruno Mondadori, 1998.
- Nigris, E., Negri, S.C. and F. Zuccoli (Ed.). *Esperienza e didattica. Le metodologie attive*. Roma: Carocci, 2007.
- Nigris, E., Teruggi, L. and F. Zuccoli (Ed.). *Didattica Generale*. Milano-Torino: Pearson, 2016.
- Palfrey, J. and L. Gasser. *Born Digital: Understanding the First Generation of Digital Natives*. Basic Books, 2008.
- Schön, D. A. *Formare il professionista riflessivo: per una nuova prospettiva della formazione e dell'apprendimento nelle professioni*. Milano: Franco Angeli. (*Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*, 1987), 2006.
- Smith, K. *Come diventare un esploratore del mondo*. Milano: Corraini (*How to be an explorer of the world*), 2008.
- Stake, R. *The Art of Case Study Research*. Thousand Oaks, CA: Sage Publications, 1995.
- Swan, K. "Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses". *Distance Education*, 22(2) (2001): 306-331.
- Teruggi, L. and F. Zuccoli. "The status of twenty-first century skills within the University of Milan-Bicocca's Degree Programme in Primary Education". *E-PEDAGOGIUM*, 2015(II) (2015): 75-87.
- Varani, A. *Osservazione e riflessione. I laboratori dei Supervisor*. In C. La Neve and F. Pascolini (Eds.). *Nella Terra di Mezzo: Una ricerca sui Supervisor del Tirocinio* (pp.173–188). Brescia: Editrice La Scuola, 2014.
- Yin, R. *Case Study Research: Design and Methods*, fourth edition, Thousand Oaks, CA: Sage Publications, 2009.
- Zanniello, G. *Competenze metacognitive e processi di autovalutazione nel blended elearning: metodologie di apprendimento cooperative*. Lecce: Pensa Multimedia, 2009.

Digitality, Transmediality and Convergence Culture

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Abstract: In recent decades, technical innovations, the increasing digitalization and medialization of our everyday life and the economic interests of globally organized media conglomerates have created a highly networked media landscape. These developments have not only changed (and continue to change) the ways of how we interact and communicate with each other, but also how we perceive the world in general – how we live, learn, work and produce sense with regard to our culture, our society, our environment and our very own identity. Against this background, this paper introduces the project *flipping university* which was funded by the University of Cologne to improve teaching and learning quality.

Digitized Learning Cultures und the Project Flipping University

In recent decades, technical innovations, the increasing digitalization and medialization of our everyday life and the economic interests of globally organized media conglomerates have created a highly networked media landscape. These developments have not only changed (and continue to change) the ways of how we interact and communicate with each other, but also how we perceive the world in general – how we live, learn, work and produce sense with regard to our culture, our society, our environment and our very own identity. Against this background, this paper introduces the project *flipping university* which was funded by the University of Cologne to improve teaching and learning quality.

But before we go deeper into concrete aspects of the project, we want to state some ideas about what we mean by digitalization and how learning culture is affected by that.

Important ideas about the above-mentioned changes which have become prevalent in our society can be taken from the work of Felix Stalder. According to him, digitality is not primarily tied to technology, but its effects certainly are. In his text “Kultur der Digitalität”, (english version: *digital condition*) he emphasizes that media are technologies of relationality, which means that by media the interaction and the types of connections between people and objects are changed (Stalder, p. 17).

Digitality refers, following Stalder, “to historically new possibilities of the constitution and the connection of different human and non-human actors” (p. 18). Therefore, digitality does not only refer to digital media, “but appears as a relational pattern everywhere and changes the space of possibilities of many materials and actors” (p. 18). This is also very much in line with the thoughts of the American media scholar Henry Jenkins who coined the term “convergence culture” in his book of the same name. In his early texts about this idea, Jenkins sharply distinguishes the term “convergence” to a “dumb industry idea” (*Convergence? I Diverge!*, n.p.) in which every medium we consume technically converges into something like a black box. Instead, those changes are way more profound and effect several levels of how we make sense of the world. As early as 2003, Jenkins wrote:

“[...] thanks to the proliferation of channels and the increasingly ubiquitous nature of computing and communications, we are entering an era where media will be everywhere, and we will use all kinds of media in relation to one another. We will develop new skills for managing information, new structures for transmitting information across channels, and new creative genres that exploit the potentials of those emerging information structures.” (*Convergence? I Diverge!*, n.p.)

One of those creative genres may indeed be Jenkins' highly influential narrative concept of transmedia storytelling, which he introduced in an article in the popular scientific magazine *Technology Review* and was deepened in the book mentioned above. In an updated definition, Jenkins defines transmedia storytelling as "a process where integral elements of a fiction get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated entertainment experience. Ideally, each medium makes its own unique contribution to the unfolding of the story." (*Transmedia*, n.p.)

While Jenkins' influence of this idea is clearly undeniable, there are nevertheless numerous problems with his concept that cannot be substantially discussed in this article. But in the context of informal learning structures, flipped classrooms and third place literacies, it is still fruitful to pick out of one Jenkins' many ideas: the idea of something Jenkins calls *worldbuilding* in contradistinction of the process of *worldmaking* – two terms that Jenkins uses indeed interchangeably. While *worldbuilding* may be described as „the creation of an imaginary world and its geography, biology, cultures, etc. especially for use as a setting in science fiction or fantasy stories, games etc.“ (Prucher, p. 270), the term *worldmaking* was prominently coined by the American philosopher Nelson Goodman and originally means something entirely else. Goodman's ideas rather highlight the importance of processes of the mind when we engage in symbolic representations of the world: artefacts like paintings and literature, but also political and scientific depictions that shape our understanding of the world and provide "*world-versions*" (5, 94). By referring to certain 'ways of worldmaking', Goodman argues that there is not one 'objective' world in our mind that is cut and dry, but rather many (inter-)subjective *world-versions* that do not necessarily correspond to any universal truth. However, they can gain a certain sense of "rightness" (19) within a certain community or discourse; meaning that a certain world-version can become accepted as truthful by some (or even most) people while others may hold good reasons for believing otherwise.

Behind this lies a certain concept of culture as a "process that brings together and re-generates the signified and the significant over and over again" (Baecker, p. 548). Culture refers to „forms of social coexistence and individual self-understanding considering these forms of coexistence“ (p. 511). Different ways of *world-making* in Goodman's sense shape the forms of communication and hence the forms of culture in terms of a *condition*. But why should the differentiation of "worldbuilding" and "worldmaking" be of any importance for our subject matter?

Since digital developments have altered social interactions significantly, "changed mediality leads to changed subjectivity" as Jörissen and Meyer consolidate in 2015. That means, adopting a pedagogical perspective, that the subject of education transforms within the changes of media culture. So we need to work on the question, what effects digitalization will have on education, its institutions and their students. Looking on the subject of education in universities as institutions of higher education, it might help to question the theory of networked individualism by Rainie and Wellmann. According to them, residential and workplaces, privacy and publicity are more closely intertwined than current educational institutions depict. The networked individuals live and learn under conditions of flatter hierarchies, higher information density and looser relationships. The 'new social operating systems' produce changes in social and labour relations and bring about changes in working and learning – and thus also in the conditions of study – and require new strategies and skills to solve problems and plan actions. In other words: these aspects help to lay the building blocks of learning environments which are more adequate to the developments in the recent digital convergence culture.

Copy-Pasting as Worldmaking

According to Stalder, Referentiality is one characteristic form of the digital condition. This fundamental trait manifests itself in the diverse processes of remix, mem, reenactment, postproduction or mashup (Stalder, p.96). Referentiality is, as Stalder describes it, a method by which individuals can inscribe themselves into cultural processes and constitute themselves as producers. In his understanding of culture, as a shared social meaning, that means, that referential acts can never be limited to the individual but rather happen within a larger framework for which the existence and development of common formations are central (p. 95). German writer and researcher Wolfgang Ulrich talks about an "Ethos of Copying". He claims, that every form of posting, reposting, reblogging are techniques of the internet. Everything that happens on the internet is copy. And every form of creativity in the internet is copy. (Ulrich, n.p.). The digital condition, according to Stalder, is about creating relations (p. 96). Copy-Pasting in that sense has become so much of a cultural technique that we describe it as a condition – a copy-paste-condition.

Looking on the field of the arts, where copying has had a long tradition of faking and was by implication negatively coined (as in most of all academic fields), Nicholas Bourriaud proposes 2002 the term of *postproduction* as actual modus operandi of art-production. „These artists who insert their own work into that of others contribute to the eradication of the traditional distinction between production and consumption, creation and copy, readymade and original work. The material they manipulate is no longer *primary*“ (Bourriaud, p. 13). Jörissen comments on that, "that art does not create this new thing by itself in a magical or ingenious way, but that it refers to the preceding: to (form-) discourses and (traditional) discursive practices. You have to be 'in the game' and believe in the game to change the game" (*Transgressive Artikulation*, p. 101). Acting in a culture of referentiality can be furthermore understood as a form of curating own content out of a multitude of existing material in order to transform it.

That refers to the concept of *worldmaking*, as introduced with Goodman. As Goodman writes: "Worldmaking as we know it always starts from worlds already on hand; the making is a remaking" (p. 6). We may indeed understand Goodman's claim a process of reshaping (medial) worlds, that never arise in a vacuum. The significations are based on artifacts as material for new and individual understandings of the world, which, as soon as they build something like communality, deposits into culture. In that sense, *worldmaking* is, in its necessity of re-making, re-shaping and re-evaluating a characteristic part of a potential copypaste-condition.

By suggesting a copy-paste-condition as mode of cultural production according to *worldmaking*, we propose a change in dealing with the artefacts and further offerings, we get confronted with, in direction of *handling with* instead of *inventing*. That implicates a change in our understanding of subjectivity which inevitably has impact on education.

Educational implementations

We understand *education* to mean the transformation of the self-word-relation. That refers to the concept of education by Humboldt, which means, shortly and not sufficient, that education, or maybe it is better to use the german term *Bildung* happens, when the relation between self and word changes. The change does not occur without any interruption. Shifts in media-technology on a structural level is such an interruption that might change the understanding of subjectivity on a structural level, as we proposed earlier with Jörissen and Meyer.

Bildung as procedural event, is not education of or about 'something', as is the case with learning (Jörissen, *Ästhetik und Medialität*, p.49). In educational theory, it is primarily concerned with the observation of processes of the emergence and transformation of self and world relations (Kokemohr, p. 14 & Koller, p. 70). "From this perspective, education cannot be understood as a result or a state, but rather as a process in which existing structures and patterns of world order are replaced by more complex views of the world and the

self" (Jörissen, p.50). According to the understanding of worldmaking described above, *Bildung* can take place in the moment, where by transgression new arrangements of (mediatized) patterns happen, and therefore new orders of *self-world-organization* get arranged. Following this understanding of education, changes are about the question of determinities. What is clearly as it is, and what is not? Which aspects of self-world-organization are clear to see, and which handle in between? Humans are, according to Marotzki, regarded as beings of possibility. And possibility can only be understood from the dimension of the future (Marotzki, p. 156). Education is in that sense understood as a deal of certainties with uncertainties according to the self and world relation.

But how to deal with possibilities? How to deal with new uncertainties? How can they be interlaced into institutions of education, that might deal with actual modes of education?

Benjamin Jörissen proposes the term of "transgression" to handle that problem. That implicates a "theoretical moment of transgression knowledge of orientation - and thus at the same time must be regarded as a characteristic limitation of perspectives on the world and on oneself" (*Ästhetik und Medialität*, p.51). "Any 'transformation' in the sense of lifting old patterns and establishing new, more complex patterns therefore necessarily goes hand in hand with an overstepping of the boundaries of viewpoints set by the old frameworks." (p. 51)

***Flipping University* (Project Description)**

Based on the concepts and ideas discussed above, the project *flipping university* carries on university development in the horizon of the fundamentally changed media cultures of the 21st century. The project thematises new approaches to knowledge (Bunz, ch.2) and aims to establish a new collaborative and networked learning culture.

At various levels of the university organization, cooperative structures of the participating institutes and work areas are developed, brought together, supplemented and sustainably established. The project is divided into three major work areas which contain different sub-projects. Hereinafter a short overview and description:

The *Flipped Classrooms* part emphasizes the changing conditions of the production and distribution of learning materials. The subsection *Educational Resources* concentrates on the further development and networking of the platform for open teaching / learning materials and integration of existing resources as lecture recordings and interviews with artists and further experts. Students get the opportunity to access learning materials regardless of their location, watch educational videos and special curated professional brief explanations. The other subsection *Portfolio Learning* redesigns learning and exams processes in selected areas of study. Based on the elementary changes, Stalder describes as 'Referenzialität', studying is organized as some process of rearranging perspectives on the world and oneself. Students conduct a portfolio online in which they reconnect various contents of the study with each other, exchange ideas with fellow students, stowing parts together and *make* and present their individual view of the special subject of the art and the world. They digital curate their own process of education. This also implies the idea of bringing one's worldview into a shared knowledge space like an online blog or social network, to display information, to aggregate material, to juxtapose the already given and therefore to create new meaning by highlighting connections. Sequencing information leads to an intertextual association process; sometimes resulting in a story of one's own: "In this way, curation, even in its most traditional form, implies a level of storying, engagement, and informing according to new information or changing perspectives, of uncovering and revealing things previously not well understood or even deliberately covered up." (Potter, McDougall, p. 64). Following this idea, both the concept of transmedia storytelling and

portfolio learning can be combined to offer new insights. Digital curation in the sense of creating a portfolio becomes an “opportunity to put things that [learners] make and share into new configurations alongside what they have previously achieved. Under the right conditions, this could function as a resource that they can draw on to develop new knowledge, to make new artefact and productions.”

Display University Life is the first subproject of *Community Building*, which forms the second major area. It includes the editing and production of content for the institutional Info-System and the development of a professional community within the university. Furthermore *Networking-beyond* is part of the area and connect alumni to the institute's projects and processes and develop events specific to them. Expansion of the lecture program and networking with schools and external cultural and educational institutions let the students maintain a connection to the institute after graduation.

The 3rd major work area is the *Learning Spaces* subsection. This involves the development of a concept for the intelligent combination of physical and virtual university rooms and their enlargement to the Third Places, Oldenburg described in 1991. It designs the Third Places infrastructures between the lecture hall and the home office in the university's corridors, cafes, exhibition halls and lounges and connects to the concept of the *MakerSpaces*. *MakerSpaces* rearranges learning spaces to incorporate digital elements in the physical classroom and support project-based work and learning and enable students to use the virtual and physical locations flexibly, mobile and self-organized. This deconstructs established forms and especially places of university and leads to the need to rethink university.

(i) How and especially WHERE does learning (or even *Bildung*) take place in the advanced 21st century between the lecture hall, the seminar room and (the place called) home?

(ii) How and especially WHERE the university in the advanced 21st century can actively (re-) shape itself and its mediatised environment and create teaching and learning scenarios that adequately and comprehensively stimulate and accompany educational processes?

References

- Baecker, Dirk. Kultur. Barck, Karlheinz et al. (Eds.), *Ästhetische Grundbegriffe: Historisches Wörterbuch in sieben Bänden. Bd. 3.* (pp. 510–556). Stuttgart: Metzler. 2001.
- Bourriaud, Nicolas. *Postproduction. Culture as Screenplay: How Art Reprograms the World*, New York: Lucas & Sternberg. 2002.
- Bunz, Mercedes. *Die stille Revolution: wie Algorithmen Wissen, Arbeit, Öffentlichkeit und Politik verändern, ohne dabei viel Lärm zu machen.* Berlin: Suhrkamp. 2012.
- Goodman, Nelson. *Ways of Worldmaking.* Indianapolis: Hackett Publishing. 1978.
- Jenkins, Henry. *Convergence? I Diverge!* n.p.: Technology Review. 2003.
<http://www.technologyreview.com/article/401042/convergence-i-diverge>. Accessed 25 Feb. 2018.
- . *Convergence Culture. Where old and new media collide.* New York: Tauris. 2006.
- . *Transmedia 202: Further Reflections.* 2011.
http://henryjenkins.org/2011/08/defining_transmedia_further_re.html. Accessed 25 Feb. 2018
- Jörissen, Benjamin. *Transgressive Artikulationen. Eine Skizze zum Zusammenhang von Kunst, Medialität und Kultureller Bildung.* Burkhardt, Sara; Meyer, Torsten; Ullaß, Mario (Eds.), *convention. Ergebnisse und Anregungen* (pp. 97–102). München: kopaed. 2013.
- . *Transgressive Artikulationen: Ästhetik und Medialität aus Perspektive der strukturalen Medienbildung.* Hagener, Malte; Hediger, Vinzenz (Eds.), *Medienkultur und Bildung. Ästhetische Erziehung im Zeitalter digitaler Netzwerke* (pp. 49–64). Frankfurt/M.: Campus. 2015.
- Jörissen, Benjamin; Meyer, Torsten (Eds.). *Subjekt Medium Bildung.* Wiesbaden: Springer VS. 2015
- Kokemohr, Rainer. *Bildung als Welt- und Selbstentwurf im Anspruch des Fremden. Eine Theoretisch-empirische Annäherung an eine Bildungstheorie.* Koller, Hans-Christoph; Marotzki, Winfried;

- Sanders, Olaf (Eds.), Bildungsprozesse und Fremdheitserfahrung. Beiträge zu einer Theorie transformatorischer Bildungsprozesse (pp. S. 13–68). Bielefeld: transcript. 2007.
- Koller, Hans-Christoph. Probleme einer Theorie transformatorischer Bildungsprozesse. Koller, Hans-Christoph; Marotzki, Winfried; Sanders, Olaf (Eds.), Bildungsprozesse und Fremdheitserfahrung. Beiträge zu einer Theorie transformatorischer Bildungsprozesse (pp. S. 69–81). Bielefeld: transcript. 2007.
- . Bildung anders denken. Einführung in die Theorie transformatorischer Bildungsprozesse. Stuttgart: Kohlhammer. 2009.
- Marotzki, Winfried. Bildung als Herstellung von Bestimmtheit und Ermöglichung von Unbestimmtheit. Psychoanalytisch-lerntheoretisch geleitete Untersuchungen zum Bildungsbegriff im Kontext hochkomplexer Gesellschaften. Hansmann, Otto; Marotzki, Winfried (Eds.), Diskurs Bildungstheorie: Rekonstruktion der Bildungstheorie unter Bedingungen der gegenwärtigen Gesellschaft (pp. 311–333). Weinheim: Deutscher Studien-Verlag. 1988.
- Oldenburg, Ray. The Great Good Place. New York: Marlowe & Company. 1991.
- Potter, John; McDougall, Julian. Digital Media, Culture and Education. Theorising Third Space Literacies. London: Macmillan Publishers Ltd. 2017.
- Prucher, Jeff. The Oxford dictionary of science fiction. n.p.: Oxford reference online premium. 2007. <http://www.oxfordreference.com/view/10.1093/acref/9780195305678.001.0001/acref-9780195305678>. Accessed 25 Feb. 2018.
- Rainie, Lee; Wellman, Barry. Networked: The New Social Operating System. Cambridge: MIT Press. 2012.
- Stalder, Felix. Kultur der Digitalität. Berlin: Suhrkamp. 2016.
- Ullrich, Wolfgang. Vom Ethos des Kopierens. In: POP. Kultur und Kritik. 2015. <http://www.pop-zeitschrift.de/2015/11/05/vom-ethos-des-kopierensvon-wolfgang-ullrich5-11-2015>. Accessed 25 Feb. 2018.

Company based continuing vocational training with authoring systems for tasks in industrial manual assembly

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Abstract: The Success of Small and Medium-sized Enterprises (SME) in manufacturing industries depends on their innovative ability as well as flexibility in structures and processes. Therefore, they have to face the growing relevance of digitalization. In order to achieve effective and efficient production processes, the consideration and coverage of changes in competences requirements of formal non-qualified employees is essential. There is an underrepresentation of these employees in company based continuing vocational training. This paper addresses the mentioned problem and outlines outcomes of a didactic concept with the use of authoring systems. Incorporating relevant specific working and learning processes of SME in manufacturing industries. Furthermore, it approaches for inclusion of basic digital skill development in the training concept. In addition, the paper describes the implementation environment of the training including the chosen training assembly processes. Last, the paper introduces three areas of evaluation in the research project.

Introduction

Small and Medium-sized Enterprises (SME) in Germany react fast to demand changes in markets. Their international competitiveness depends on high innovativeness and designing abilities (Kritikos et al.). Furthermore, state of the art outcome-based methods allow them to encourage and promote technical progress (cf. Maaß and Führmann). Inside all branches, trends of digitalization influence and shift nowadays business models (Kiel et al.). Manual assembly stands for all operations in assembling a product (Nyhuis and Wiendahl, 17ff.). It subdivides into part-processes such as preparation of working area and work process as well as check of facility equipment. Demand on flexible and adaptable production systems drives digitalization progress. When setting up these production systems, SME harvest advantages due to data mining of obtained information by installed information and communication technology in production processes (Federal Ministry of Labour and Social Affairs; Schuh and Stich). Implementation of digital enhancements and assistance for tasks, operations and processes in manual assembly starts and is growing in more and more SME (Faber et al.; Czerniak-Wilmes et al.). In Germany, the term “Industry 4.0” summarizes these developments (cf. Kagermann). Besides, effects are growing complexity of human tasks in manual assembly and studies hint a boost in the likelihood of automation scenarios in non-qualified jobs and professions (Spöttl et al.; Frenz et al.).

The paper aims to answer the following research questions:

- How to form a didactic concept with the use of authoring systems for company based continuing vocational training in (digitalized) manual assembly?
- How to match typical manual assembly processes in the training with tutorial creation?
- How to develop basic digital skills within the target group by producing learning media?
- How to promote problem-structuring skills for non-formal qualified employees?
- How to implement issues on technology acceptance on digital learning media?

Target Group

Non-formal qualified employees process an increasing number of tasks in manual assembly. Studies show an underrepresentation of this employee group in measures of company based continuing vocational trainings (Federal Ministry of Education and Research; Gerschner et al. 2017a). In general, many of their skills and competences have remained unrefined since joining an SME. Nowadays, employees need to be qualified in dealing with challenges of digital transformation. As a result, formal non-qualified employees in manual assembly need support and training in order to address and adapt to futures business developments. This includes aside from changes in manual assembly technology the field of digitalized work processes. Because of the fact that digital media are absent in most manual assembly facilities, target group needs to get into contact with digital media in vocational environment and vocational occupations (Initiative D21 e.V.). For this reason, the vocational training aims to promote target group by usage of authoring systems into, in terms of digital competences, competent employees.

Authoring System

Authoring systems match the processes involved in manual assembly, because both consist of similar structures. Resulting, the authoring system method fits all requirements of the training concept and there is an ability to utilize synergies. Parallels exist in the planning, implementation and optimization of manual assembly and tutorial creation processes (cf. Begleiter; Arndt; Schlick et al.). To be an author, employees need skills in process structuring (Schulmeister). So, the training concept adapts basic methods of authoring systems to utilize synergies with manual assembly. Moreover, it combines them in a blended-learning concept with widespread teaching methods such as Wiemer or Schröder suggest. Participants will use paper-based planning methods and multiple software applications. This is due to their dependence on diverse employers, which own individual company-based software and software systems. Further, digital applications help them to create a tutorial of a manual assembly situation. Hence, learners become authors of company-based learning material, which is useful to apprentice new employees to manual assembly tasks. Consequently, employees have to describe and analyze manual assembly processes. In conclusion, they will learn rudiments in software applications and planning methods dedicated for all phases in tutorial creation and manual assembly learning situations. While creating a video tutorial with an iPad, participants get into contact with problems of digital systems.

Didactic Concept and intended outcomes

Constructivist didactics focus especially on individual, interactive self-oriented learning processes that build upon existing competences and creativity. Thus, the task is to include new and unknown questions and problems that enrich and upgrade the existing competences (Reich; Siebert). Situated learning embodied in problem-based learning enables to encourage learning of problem solving competences in professional environment. Participants will face transfer problems in application of their new problems solving abilities on the constraints and boundaries in their own workplace. The training will present a problem solving strategy, which is universally applicable in manual assembly processes. For generation of the outcomes for all fields of occupation, the authors use Möller's approach of learning outcome orientation in curricular didactics. Incorporating paradigms of moderate constructivist didactics fits the demands of active learning. This framework level represents a curriculum that outlines complete operations of occupational fields in manual assembly. According to Gillen, competence orientation on curriculum level in a didactical framework of vocational education and training aims always for outcomes of the learning process. The didactic framework consists of objective and subjective requirements of work and rests

upon Bader and Müller's learning field concept as standard approach in vocational education and training in Germany (cf. Kultusministerkonferenz, 2017). Integrating results of empirical analysis (Gerschner et al. 2017a, 2017b), the framework concentrates on competences in three fields of occupation: material provision and equipment, assembly/disassembly and function and quality tests. German National Qualification Framework DQR (Bundesländer-Koordinierungsstelle), the German version EQF (European Parliament, and European Council), helps to differentiate competence levels and complements the didactic concept. Because of the selected target group, the developed concept divides all occupational fields into different fields of competence regarding to the lowest three levels of eight in DQR. Within the fields of competence, there are competence descriptions, which cover all types of competences of the DQR framework. Fields of competence comply with one operational situation each. In addition, operational situations relate to a selected assembly process in the implementation environment in line with the didactic goal – the development of vocational action competence and reflexive action competence in manual assembly (Dehnbostel). The training concept specifies real tasks, describes structure of tasks, operation-learning problems as well as it defines operational and mental outcomes. Selection of operational situation considers present, futures and generic relevance. On top of that, one main issue is fostering individual development and reasoning of the significance in vocational practice. Furthermore, learning units derive from operational situations. These units contain a detailed procedure of the implementation including chronological structure, phases of articulation, social and action forms, learning material and tasks for the participants. Moreover, the concept focusses digital creation and edition of video-based tutorials for single fields of occupation. Therefore, the framework includes also competences in the field of occupation of tutorial creation. This field of occupation also divides into different fields of competence regarding to the lowest three levels of DQR. Fields of competence in tutorial creation comply with one operational situation in tutorial creation each. In addition, a learning unit of tutorial creation derives from operational situations.

To develop basic digital skills in manual assembly, same considerations as in manual assembly take place based on Carretero et al. Furthermore, German county governments have developed a position paper for digital competences in school, which complements Carretero et al.'s DigComp 2.1 in the training concept (Länderkonferenz MedienBildung). The competence categories represent a holistic view on digital literacy. In addition to that, digital competence framework and best practice or curriculum approaches from several countries complement DigComp 2.1 (cf. Institut Weiterbildung und Beratung; Bundesministerium für Bildung). These competences deliver a basis for derivation of learning outcomes. Fields of competence include competences such as usage of operating system iOS or photo and video data searching, selection and creation. The enrichment of the competence fields, operational situations and learning units shows that the defined operational and mental outcomes of the continuing vocational training fit to digital competences described on the level of fields of competence. Last, the training communicates respect to copyrights and intellectual property.

Resulting, digital competences influence the training concept as central ideas such as process orientation in manual assembly and situation-oriented reflexive operation ability, too.

Implementation planning

The implementation will take place in a research and manufacturing plant environment of Demonstrationsfabrik Aachen (DFA). The company based continuing vocational training participants will assemble parts of an electric go-cart's front axle. DFA's plant provides multiple assembly process assistant systems for this process. Due to that, this process suits

well for manual assembly, because it contains the most common joining technologies. Before the training starts, redesign of a few process steps is necessary to maintain the aspired outcome of occupational reflection. Thus, heterogenic groups of target group can learn of different competence levels using the same assembly process. In the training, the overlay allows the combination of individual manual assembly competence levels with different levels of tutorial development competence. Both, processes of manual assembly and video creation sequence one time. Within the training employees have to describe and analyze processes in DFA, by producing learning tutorials based on videos. These tutorials enable employees to become acquainted with new or complex and digitalized processes in manual assembly. Thereby, learners analyze and reflect their working processes and log all parts of particular processes within a storyboard. The storyboard allows the recreation of manual assembly processes using digital camera equipment of iPads. Based on storyboards and with the aid of iPads, participants develop tutorials for these processes. This process hints at optimization potentials and structural problems. Participants identify them while filming or in the postproduction. They will edit the filmed processes and store them in knowledge management systems for training of employees in the future. Finally, optimizations integrate into the manual assembly process. Ideally, the tutorial contains all optimizations in the manual assembly.

Evaluation methodology

For developing and pre-testing the concept, the research project uses a continual improvement process for evaluation of the training concept in implementation ability (cf. Kosta and Kosta, p.10ff). All participants respond to their tasks in the training and grade them in terms of difficulty. Moreover, they give hints when having problems with document design or learning material. As well, they state comments on micro didactic training aspects that include helpfulness, utility and behavior of training staff in the learning process. The assessment uses half-structured interviews by oral interrogations and paper-pencil questionnaires. The continual improvement process ensures an evaluation of these inputs with regard to the training aims and intended outcomes. As formative evaluation suggests, all suitable improvements enter into the training concept.

In the training, all participants receive an individual grading on their competence level in each occupational field. Situated learning enables to use the work results in comparison to a criteria-based benchmark for grading the participants. E.g. video content of all scenes concerning technical and creative skills. Previously defined operational outcomes from the didactic concept allow deriving quality criteria for all occupational situations. Likert scales with top and bottom benchmarks in qualitative and quantitative manner help in valuation of criteria. Next, there is a weighting of all criteria consulting their relevance in the competence descriptions. The weighted sum of the criteria grading will apply to a grading scheme for an aggregated evaluation of the occupational competence. After that, all participants obtain a

certification of existing and achieved competences. Employer's references guide for a practical orientation of the certificates.

The research project aims to measure effects on acceptance of new learning media and methods by heterogeneous participants during the training. In order, the evaluation concept favors usage of the technology-based user acceptance model by Venkatesh et al. Implementation will need a task-accompanying interview or an interruption concept such as Endsley prefers in her methodology.

When focusing on the intended outcomes of the training, the research projects will conduct a summative evaluation approach on transferability to a professional manual assembly environment several weeks after participation. Kirkpatrick's (3ff.) evaluation model helps

to focus on outcomes while an adaption of Baldwin and Ford supports for a search on reasons that processed these outcomes. Mental outcomes and competence descriptions from the learning field concept assist in item construction, because they represent second and third level of Kirkpatrick's model. All evaluation activities respect standards of Beywl.

Conclusions

To summarize, the paper shows how to form a didactic concept with the use of authoring systems for company based continuing vocational training in digitalized manual assembly. Furthermore, it describes how basic digital skills find consideration in the didactic concept. Next, realization and implementation of the designed training will start at DFA Aachen. While the training, the research project aims to answer the following research questions:

- Is the use of authoring systems a suitable method for company based continuing vocational training of formal non-qualified employees in manual assembly?
- Which technology acceptance effects arise from digital learning media compared to analogue ones?
- How to develop basic digital skills of formal non-qualified employees by dealing with and creating learning media with tablets?
- How to support efficiently learning with self-produced tutorials?
- How to transfer outcomes of the training into industrial manual assembly environment?

References

- Arndt, Klaus-Dieter. "Arbeitsvorbereitung und Arbeitsplanung." *Handbuch Maschinenbau*, edited by Alfred Böge and Wolfgang Böge, Springer Fachmedien Wiesbaden, 2017, pp. 1735–72.
- Bader, Reinhard, and M. Müller, editors. *Unterrichtsgestaltung nach dem Lernfeldkonzept*. Bertelsmann, 2004.
- Baldwin, Timothy, and J. Kevin Ford. "Transfer of Training: A review and directions for future research." *Personnel Psychology*, vol. 41, no. 1, 1988, pp. 63–105. doi:10.1111/j.1744-6570.1988.tb00632.x.
- Becker, Matthias, et al., editors. *Einheit und Differenz in den gewerblich-technischen Wissenschaften: Berufspädagogik, Fachdidaktiken und Fachwissenschaften*. LIT-Verlag, 2017.
- Begleiter, Marcie. *From word to image: Storyboarding and the filmmaking process*. Michael Wiese Productions, 2011.
- Beywl, Wolfgang, editor. *Standards für Evaluation*. Geschäftsstelle DeGEval, 2002.
- Bundesministerium für Bildung. *Verbindliche Übung „Digitale Grundbildung“ in Sekundarstufe 1 Inhalte für Pilotierung im Schuljahr 2017/18: BMB-9.000/0029-II/8/2017*. 2017.
- Bund-Länder-Koordinierungsstelle für den Deutschen Qualifikationsrahmen für lebenslanges Lernen. *Handbuch zum Deutschen Qualifikationsrahmen*. 2013.
- Carretero, Stephanie, et al. *DigComp 2.1: The digital competence framework for citizens with eight proficiency levels and examples of use*. 2017. EUR 28558 EN.
- Czerniak-Wilmes, Julia, et al. "Innovative Mensch-Maschine-Interaktionskonzepte für den Facharbeiter der Zukunft in der Produktion 4.0." *Industrie 4.0: Risiken und Chancen für die Berufsbildung*, edited by Georg Spöttl and Lars Windelband, wbv, 2017, pp. 171–86. Berufsbildung, Arbeit und Innovation 44.
- Dehnbostel, Peter. *Konstitution reflexiven Handelns im arbeitsbezogenen Lernen: Erwachsenenbildung im betrieblichen Kontext*. 2005.
- Endsley, Mica. "Design and evaluation for situation awareness enhancement." *Proceedings of the Human Factors Society 32nd Annual Meeting*. Santa Monica Human Factors Society, 1988, pp. 97–101.

- European Parliament, and European Council. *Recommendation on the establishment of the European Qualifications Framework for lifelong learning*. 2008.
- Faber, Marco, et al. "Cognition-enhanced assembly sequence planning for ergonomic and productive human–robot collaboration in self-optimizing assembly cells." *Production Engineering*, vol. 11, no. 2, 2017, pp. 145–54.
- Federal Ministry of Education and Research. *Weiterbildungsverhalten in Deutschland 2014: Ergebnisse des Adult Education Survey - AES Trendbericht*. 2015.
- Federal Ministry of Labour and Social Affairs, editor. *Weissbuch Arbeiten 4.0*. 2016.
- Frenz, Martin, et al. "Industrie 4.0: Anforderungen an Fachkräfte in der Produktionstechnik." *Berufsbildung in Wissenschaft und Praxis*, vol. 44, no. 6, 2015, pp. 12–16.
- Gerschner, Katharina, et al. "Company based continuing vocational training wirh authoring systems for tasks in industrial manual assembly." *ICERI 2017 Proceedings: 10th international conference of education, research and innovation*, Sevilla, ICERI2017.
- Gerschner, Katharina, et al. "Analyse von Arbeitsanforderungen zur Entwicklung eines Weiterbildungskonzepts mit Autorensystemen in der industriellen Produktion." *Einheit und Differenz in den gewerblich-technischen Wissenschaften: Berufspädagogik, Fachdidaktiken und Fachwissenschaften*, edited by Matthias Becker et al., LIT-Verlag, 2017, pp. 310–25.
- Gillen, Julia. "Kompetenzorientierung als didaktische Leitkategorie in der beruflichen Bildung: Ansatzpunkte für eine Systematik zur Verknüpfung curricularer und methodischer Aspekte." *bwp@Berufs- und Wirtschaftspädagogik – online*, no. 24, 2013, pp. 1–14.
- Initiative D21 e. V. *D21-Digital-Index 2016: Jährliches Lagebild zur Digitalen Gesellschaft*. 1. Auflage, Initiative D21, 2016. D21-Digital-Index.
- Institut Weiterbildung und Beratung. *mi4u: Orientierungsrahmen Medien & Informatik im Unterricht*. 2017, www.mi4u.ch.
- Kagermann, Henning, et al. *Umsetzungsempfehlungen für das Zukunftsprojekt Industrie 4.0: Deutschlands Zukunft als Produktionsstandort sichern*. Abschlussbericht des Arbeitskreises Industrie 4.0, Forschungsunion, 2013.
- Kiel, Daniel, et al. "Sustainable Industrial Value Creation: Benefits and Challenges of Industry 4.0." The XXVIII ISPIM Innovation Conference, 18 June 2017, Wien.
- Kirkpatrick, Donald L., and James D. Kirkpatrick. *Transferring learning to behavior: Using the four levels to improve performance*. 1st ed., 2005.
- Kostka, Claudia, and Sebastian Kostka. *Der kontinuierliche Verbesserungsprozess: Methoden des KVP*. 6. Aufl., Hanser, 2013.
- Kritikos, A. S., et al. "Auch kleinste Betriebe stoßen erfolgreich Innovationen an, sie tun es nur seltener." *DIW Wochenbericht*, vol. 89, no. 37, 2017, pp. 755–74.
- Kultusministerkonferenz. *Handreichung für die Erarbeitung von Rahmenlehrplänen der Kultusministerkonferenz für den berufsbezogenen Unterricht in der Berufsschule und ihre Abstimmung mit Ausbildungsordnungen des Bundes für anerkannte Ausbildungsberufe*. 2017.
- Länderkonferenz MedienBildung. *Kompetenzorientiertes Konzept für die schulische Medienbildung: LKM-Positionspapier*. 2015.
- Locatis, Craig, and Hana Al-Nuaim. "Interactive technology and authoring tools: A historical review and analysis." *Educational Technology Research and Development*, vol. 47, no. 3, 1999, pp. 63–75.
- Maaß, Frank, and Bettina Führmann. *Innovationstätigkeit im Mittelstand: Messung und Bewertung*. IfM-Materialien, Institut für Mittelstandsforschung (IfM) Bonn, 2012. 212.
- Möller, Christine. "Die curriculare Didaktik." *Didaktische Theorien*, edited by Herbert Gudjons et al., 14. Aufl., Bergmann + Helbig, 2015, pp. 75–92. PB-Bücher 1.

- Nyhuis, Peter, and Hans-Peter Wiendahl. *Logistische Kennlinien: Grundlagen, Werkzeuge und Anwendungen*. 3. Aufl. 2012, Springer, 2012. VDI-Buch.
- Reich, Kersten. *Konstruktivistische Didaktik: Lehren und Lernen aus interaktionistischer Sicht*. Luchterhand, 2002. Pädagogik und Konstruktivismus.
- Schlick, Christopher M., et al. *Arbeitswissenschaft*. Springer Berlin Heidelberg, 2010.
- Schröder, Norbert. "Medien machen schafft Praxis-Wissen. Tutorials, Learning-Apps und eBooks im Einsatz an der berufsbildenden Schule." *L.A. multimedia*, no. 2, 2014, pp. 10–13.
- Schuh, Günther, and Volker Stich, editors. *Produktion am Standort Deutschland: Ergebnisse der Untersuchung 2013*. FIR, 2013.
- Schulmeister, Rolf. *Grundlagen hypermedialer Lernsysteme: Theorie - Didaktik - Design*. 4., überarb. u. aktualisierte Aufl., Oldenbourg, 2009.
- Siebert, Horst. *Pädagogischer Konstruktivismus: Lernzentrierte Pädagogik in Schule und Erwachsenenbildung*. 3., überarb. und erw. Aufl., Beltz, 2005. Studium Paedagogik.
- Spöttl, Georg, et al. *Industrie 4.0 – Auswirkungen auf Aus- und Weiterbildung in der M+E Industrie*. bayme vbm, 2016.
- Venkatesh, et al. "User Acceptance of Information Technology: Toward a Unified View." *MIS Quarterly*, vol. 27, no. 3, 2003, p. 425.
- Wiemer, Christian. "Autorenlernen." 18. Hochschultage Berufliche Bildung, 20 March 2015, TU Dresden.

Acknowledgments

This research is funded by research programme "Innovative Ansätze zukunftsorientierter beruflicher Weiterbildung" of the Federal Ministry of Education and Research (BMBF) and administrated by Federal Institute for Vocational Education and Training (BiBB) within the research project "innowas: Innovative Weiterbildung mit Autorensystemen – Stärkung der horizontalen Mobilität in der Produktion durch Lernenden-Tutorials" (funding ID: 21IAWB093). Thanks to all project and value partners of innowas research project for participation in this project. Involved are IAW RWTH Aachen University, WZL RWTH Aachen University, Demonstrationsfabrik Aachen, PH Mechanik, Dörries Scharmann Technologie, ELABO, memex, Miele imperial-Werke, bhm Outsourcing Personalmanagement Zeitarbeit, Mies-van-der-Rohe-Schule Aachen.

Teachers, Resources, Internet and lifelong learning - A suitable combination?

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Lifelong learning means handling all the information digital media offers. This includes skills for example searching, sorting, using, analysing and reflecting. In my opinion it is in the hands of teachers to improve such skills for a better digital *Handlungs- and Medienkompetenz*. This also includes that curricula and teachers have to be prepared for getting pupils ready for lifelong learning. The curricula have already been improved for this. As you can see at the KMK 2016 principles (KMK). They advice skills, which pupils should achieve at school to be prepared for learning in formal, informal or nonformal conditions. For this the KMK schedule 6 skills which they need for lifelong-learning: *Suchen, Verarbeiten und Aufbewahren; Kommunizieren und Kooperieren; Produzieren und Präsentieren; Schützen und sicher Agieren; Problemlösen und Handeln sowie Analysieren und Reflektieren* (KMK, p. 15ff). So those skills can be improved under the pressure of economical needs for example with iPad classes (e.g., Eickelmann 2017, p. 9).

But are teachers prepared for this? Could they handle the new claims? Like Kommer mentioned with the expression: ‚clash of habitus‘ (Kommer 2010, p. 96). Are they even prepared for teaching those new skills? This is a question my dissertation wants to solve, by asking teachers in qualitative interviews and analysing them with the grounded theory, I want to know how they prepare lessons with and without digital media and how they use them in their lessons. The first impression is that there are planning-types and they use digital media only as a proper tool. That means a lot of them only google or use tablets for showing a picture. But what does that mean for lifelong learning, if teachers only google or use websites preparing their lessons? The problem is: there is no strategy in searching and no quality criteria for the material they found instead of their own criteria. The second impression is that they only know about two pages where to get worksheets for using or remixing them, like *4teachers* or *meinunterricht*. Once they used that page, they will use it forever for copying and remixing worksheets for their lessons (Itzerodt). Creating lessons is a complex arrangement, which is insufficiently studied (Litten, p. 23). My first results also show that creating lessons means among other things, mixing worksheets and getting them into a method for good learning (Itzerodt). But what do we know about giving lessons? We know much about the visible structures of education, like organisation, methods and social forms. So what about the invisible structures like classroom management, assistance, activation of pupils and the use of digital media in classroom. The COACTIV-Study shows how math-teachers prepare their lessons (Döll, p. 31ff). The result is a structured model based on the knowledge, content, motivation, goals and the self-regulation of math teachers. It shows, that teachers should be experts in math-content, pedagogic, pedagogic-psychology and organization. They could determine different types of knowledge like how to explain something or how to introduce tasks for a better training.

Similar to that, the TPACK-Model shows how to integrate technology beside the pedagogical and the content-knowledge. They developed a kind of didactical-manual for the integration of technology, for e.g. how and wherefore to use a tablet in the classroom (TPACK). Other studies ascertain, that the use of technology is based on the will (Eickelmann 2010) or the attitude (Petko 2012) of teachers. But one thing is missing in all those studies: the process of planning. So how do teachers plan their lessons exactly?

I found out that they start planning lessons with the idea of a subject they want to teach, similar to *content* mentioned before. After the idea, there are some planning-steps which are different along the planning-types. One strategy is focused on goal pupils should reach. The next type search for the problems pupils might want to solve. And the third one seems to be more pragmatic focused on the material. But every planning-type uses the internet for getting information, or material or even to check definitions (Itzerodt). So what does this finally mean for our today's educational system? On the one hand we need new academic training, which improves the skills of teachers in searching, finding and evaluating the material they use and also how to apply it in classroom, to be prepared for the requirements of the KMK. On the other hand we need an internet-platform where the above mentioned facts are combined. That means there have to be every kind of qualitative and easy-to-use content based on the subjects and linked with the pedagogical knowledge. This kind of platform should be installed by the ministry of education, checked and filled by educational publishers. Also there should be all kind of resources (even digital) like explaining videos, games, worksheets, etc. Rated by the teachers and equipped with comments or videos how to get those resources into a good lesson. This platform could be the start of a new kind of using technology in school and sharing resources in the sense of OER. And it hasn't to be free, because teachers are willing to pay for good educational material, for example exams (Itzerodt). So the educational publishers should get a space for selling their quality proved materials. This kind of website could be *logineo NRW* which is planned to unite functions of data, like moodle, the class-book, learn-line, clouding, digital textbooks, Edmond, products of education publishers and so on, in one platform for all schools in Nordrhein-Westfalen (logineo). Also the link to the internal school organization system is offered, by one IT-Solution. This project of the educational ministry has passed the NRW parliament and the implementation is beginning. That means we have to start a discussion for criteria of digital material and how to use it among the planning-types in the classroom. Because modern education starts with modern resources and with teachers knowing where to get and how to use them. Let's start to combine it.

References

- Döll, J. and Prenzel, M. Bildungsqualität von Schule. Lehrerprofessionalisierung, Unterrichts-entwicklung und Schülerförderung als Strategien der Qualitätsverbesserung. Münster: Waxmann, 2004, 31-53.
- Eickelmann, B. Digitale Medien in Schule und Unterricht erfolgreich implementieren. Eine empirische Studie aus Sicht der Schulentwicklungsforschung. Münster: Waxmann, 2010.
- Eickelmann, B. Konzepte und Entwicklungsperspektiven. Kompetenzen in der digitalen Welt. Berlin: Friedrich-Ebert-Stiftung, 2017, 9-10.
- Itzerodt, F. Unterrichtsvorbereitung in der digitalen Welt - Vorläufige Ergebnisse aus den Interviews zur Dissertation (unveröffentlicht).
- KMK. Bildung in der digitalen Welt Strategie der Kultusministerkonferenz, 2016, https://www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2016/2016_12_08-Bildung-in-der-digitalen-Welt.pdf
- Kommer, Sven Kompetenter Medienumgang? Eine qualitative Untersuchung zum medialen Habitus und zur Medienkompetenz von SchülerInnen und Lehramtsstudierenden. Leverkusen: Budrich UniPress Ltd. 2010.
- Litten, K. Wie planen Geschichtslehrkräfte ihren Unterricht? Birkach: V&R, 2017.
- logineo: <http://www.logineo.schulministerium.nrw.de/LOGINEO/Startseite/>

Petko, D. „Hemmende und förderliche Faktoren des Einsatzes digitaler Medien im Unterricht: Empirische Befunde und forschungsmethodische Probleme.“ Jahrbuch Medienpädagogik 9 (2012): 29-50.

TPACK. <http://www.tpack.org>

POSTER PRESENTATIONS

Comparable Evaluation of Video-Based Online-Learning Modules

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Abstract: The use of instructional videos is increasingly being used in higher education. These are often designed differently and are sometimes provided on different platforms. In order to enable a systematic evaluation of these instructional videos, quality criteria must be developed which can be applied to these videos. This is currently done at the Karlsruhe Institute of Technology (KIT) using an online course in geophysics as an example. The corresponding poster to this article is available online (1).

Introduction

Higher education teaching cannot escape digitisation either. Concepts such as "blended learning" have been cited as current trends for several years (see Becker et al. 2017). But also courses that take place exclusively online are gaining ground. There are no reliable quality criteria for a systematic teaching evaluation of video-based learning modules in online courses. By means of an exemplary online course in geophysics (described by Lohner 2017) at the Karlsruhe Institute of Technology (KIT), such criteria for different teaching video genres as tutorials, lecture recordings and elaborately produced studio videos in the field/laboratory are developed within the framework of a doctoral project.

Motivation

Digitization has led to an increase in the number of web-based teaching formats at universities and colleges that rely on the medium of web-video (Reutermann 2017). KIT has an established systematic evaluation process for conventional classroom teaching (Craanen 2011), whereas there is no such tool for digital, online-based formats. The dissertation project described here is intended to pave the way for designing that tool. Didactic considerations regarding the embedding of videos in learning environments are marginally considered because the videos are not only shown on *one* platform (that offers a certain set of specific features). Rather, the videos should be shown to the general public (2) and thus enable lifelong learning and promote interest in geophysics.

Study Design and Preliminary Results

The produced videos are to be examined in terms of their suitability as learning material. This means that the videos are evaluated by learners. First of all, with a focus on the didactic features intended by the video authors, and which were incorporated into the videos with great effort and resources. This includes, for example, a self-contained arc of tension; the insertion of "note-sentences" which are references to particularly relevant contents, which in addition to the audio track are once again emphasized in textual and visual terms; and the clarity of the chosen visualizations.

These characteristics were evaluated using two prototypically selected videos. As this is a bridging course to a master's degree course in a small subject (geophysics), the number of participants is very low. Nevertheless, it turns out that the didactic features are predominantly assessed positively – especially with regard to the actual target group of the videos (students of geophysics). The comparison group (students in engineering education) assesses the characteristics in a similar way, but there are deviations with regard to the content-driven features. For example, this group found the number of the earlier mentioned

note-sentences in too low and the speed of the content conveyed was too high. This poorer assessment is presumably due to a lack of specialist knowledge in this particular topic. However, this is negligible, as the videos are primarily intended for teaching geophysics. In line with the design-based research approach, the results will be used for further production and evaluation of the videos. The online course consists of five modules, one of which has only been completed so far. The preliminary findings gained from the investigations on the first videos will be incorporated into the production of the other modules. It has to be determined in which form this can happen, because in some cases other teaching video genres (e. g. lecture recordings) are also planned in the other modules. Furthermore, new elements resulting from the observations of the survey results will be incorporated into the course. For example, a video covering the topic "How to learn with videos" is provided (as suggested by Merkt 2015) to counteract the fact that some participants found the speed of the videos to be too fast, others too slow.

Further perspectives

The scientific support of the production process enables a mutual influence of research and production. This means that the videos to be produced in the future can benefit from the results of the preliminary evaluations, so that the end product as a whole is of higher quality. During the process, features of educational videos will crystallize on which learners place value. In this way, research paves the way to a systematic evaluation tool for use in university online teaching.

Endnotes

- (1) Corresponding poster to this article: <http://bit.ly/IFL2018-lohner>
- (2) Watch the videos that are publicly available: <http://bit.ly/KIT-geophysics>

References

- Becker, A., et al.: „NMC Horizon Report: 2017 Higher Education Edition“. The New Media Consortium, 2017.
- Craanen, M.: „Fakultätsübergreifende Qualitätsentwicklung von Lehrveranstaltungen Am Karlsruher Institut Für Technologie (KIT)“. Das Hochschulwesen: Forum für Hochschulforschung, -Praxis Und -Politik; vol. 59, no. 5, pp. 153-161, 2011.
- Lohner, D.: „Modulares Lernen Online: Ein Interaktiver Brückenkurs in das Geophysik-Masterstudium (IBRIDGE)“. Bildungsräume: DeLFI 2017 – Die 15. E-Learning Fachtagung der Gesellschaft für Informatik, pp. 379-380, 2017.
- Merkt, M.: „Didaktische Optimierung von Videos in der Hochschullehre“. (online: 29.01.2018) <https://www.e-teaching.org/praxis/iwm/geo.2007-08-08.4643141820/didaktische-optimierung-von-videos-in-der-hochschullehre>, 2015.
- Reutermann, J.: „Differences and Commonalities – A Comparative Report of Video Styles and Course Descriptions on EdX, Coursera, Futurelearn and Iversity“. Proceedings of the European Stakeholder Summit 2016, pp. 384-392, 2017.
- Seufert, S.: „Design Research für die Implementation von eLearning: ein vielversprechendes Paradigma für die Zusammenarbeit von Wissenschaft und Praxis“. HMD Praxis der Wirtschaftsinformatik; vol. 52, no. 1, pp. 120-131, 2015.

Left on their Own? Informal Learning in Latent Organizations (Poster)

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Abstract: Large corporations are disintegrating and transform into market networks of smaller and more flexible organizations. One question is how this will affect employees' learning. We study the learning and innovation practices that are going on among board game designers using a mixed methods research design. The research project is designed to not only inform about the learning and innovation practices undertaken by board game designers, but also to see what can be learned for the more general picture of latent organizations.

Purpose

Large corporations are disintegrating and transform into market networks of smaller and more flexible organizations. The model of a latent organization (Starkey et al.) that has a rather small but static administrative core which assigns project to a larger number of loosely connected organizations—or even single freelancers—is not new. However, one interesting question is how this will affect employees' informal learning. After all, this organizational structure does not only disrupt the business processes, but also the collegial structures within the organization, that are so important for learning (Froehlich, Beusaert, Segers, et al.; Froehlich, Beusaert, and Segers, "Great Expectations: The Relationship between Future Time Perspective, Learning from Others, and Employability"; Froehlich, Beusaert, and Segers, "Development and Validation of a Scale Measuring Approaches to Work-Related Informal Learning").

In this poster presentation, we study the learning and innovation practices that are going on among board game designers using a mixed methods research design (Creswell; Schoonenboom et al.) and drawing from social network analysis (Froehlich and Brouwer; Borgatti et al.). This industry of board game design can be described as a latent organization and shares many features with the potential business organizations of the future. The administrative core in this case is represented by publishers and agencies that link board game designers (the freelancers) with the market.

Method

Approach

This research project is executed in two phases. In the first phase, very loosely structured interviews are led with important persons of this industry in Europe, including board game designers, agents, and representatives of publishers. The aim of this step is to extract the main activities that help board game designers learn and innovate, the metrics that most likely capture success also objectively, and related information. In the second phase, and based on this first empirical evidence, a survey instrument is developed to gauge activities of informal learning and innovation. In sum, the research project is designed to not only inform about the learning and innovation practices undertaken by board game designers (and to distinguish what works), but also to see what can be learned for the more general picture of latent organizations.

Data

A small sample (n=22) of board game designers located in Austria and Germany was drawn. First, qualitative interviews were led with such board game designers. The participants were

then invited to participate also in a quantitative survey and to circulate the survey among their colleagues (“snowball sampling”). The qualitative interviews did affect the psychometric questions that were asked in the survey, which include personality measures and questions about innovative work behavior (Froehlich and Messmann; Gerken et al.; Messmann and Mulder). Note that the data collection is ongoing.

Conclusions

The results show how board game designers structure their network. We discuss how this can be seen as an agentic move (Harwood and Froehlich) that replaces the learning function that is fulfilled by traditional organizations and the collegial networks within them.

References

- Borgatti, Stephen P., et al. “Network Analysis in the Social Sciences.” *Science*, vol. 323, no. 5916, Feb. 2009, pp. 892–895, doi:10.1126/science.1165821.
- Creswell, John W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed., Sage Publications, 2014.
- Froehlich, Dominik Emanuel, Simon A. J. Beausaert, and Mien S. R. Segers. “Development and Validation of a Scale Measuring Approaches to Work-Related Informal Learning.” *International Journal of Training and Development*, vol. 21, no. 2, June 2017, pp. 130–144, doi:10.1111/ijtd.12099.
- . “Great Expectations: The Relationship between Future Time Perspective, Learning from Others, and Employability.” *Vocations and Learning*, vol. 8, no. 2, July 2015, pp. 213–227, doi:10.1007/s12186-015-9131-6.
- . “Learning to Stay Employable.” *Career Development International*, vol. 19, no. 5, 2014, pp. 508–525, doi:10.1108/CDI-11-2013-0139.
- Froehlich, Dominik Emanuel, and Jasperina Brouwer. “Social Network Analysis as Mixed Analysis.” *Reviewer’s Guide for Mixed Methods Research Analysis*, edited by Anthony J Onwuegbuzie and R Burke Johnson, Routledge, Forthcoming.
- Froehlich, Dominik Emanuel, and Gerhard Messmann. “The Social Side of Innovative Work Behavior: Determinants of Social Interaction during Organizational Innovation Processes.” *Business Creativity and the Creative Economy*, vol. 3, no. 1, 2017.
- Gerken, Maike, et al. “Personal and Contextual Antecedents of Innovative Work Behavior.” *Triggers, Antecedents, and Consequences of Informal Learning at Work*, edited by Gerhard Messmann et al., Routledge, 2017.
- Harwood, Jade, and Dominik Emanuel Froehlich. “Proactive Feedback-Seeking, Teaching Performance, and Flourishing Amongst Teachers in an International Primary School.” *Agency at Work: An Agentic Perspective on Professional Learning and Development*, edited by Michael Goller and Susanna Paloniemi, Springer, 2017, pp. 425–444, doi:10.1007/978-3-319-60943-0_21.
- Messmann, Gerhard, and Regina H. Mulder. “Development of a Measurement Instrument for Innovative Work Behaviour as a Dynamic and Context-Bound Construct.” *Human Resource Development International*, vol. 15, no. 1, 2012, pp. 43–59, doi:10.1080/13678868.2011.646894.
- Schoonenboom, Judith, et al. “Combining Multiple Purposes of Mixing Within a Mixed Methods Research Design.” *International Journal of Multiple Research Approaches*, Forthcoming.
- Starkey, Ken, et al. “Beyond Networks and Hierarchies: Latent Organizations in the U.K. Television Industry.” *Organization Science*, vol. 11, no. 3, June 2000, pp. 299–305, doi:10.1287/orsc.11.3.299.12500.

Multimedia walking tours: social barriers and spatial embeddedness of user experience

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Abstract: The poster dwells on preliminary results of a qualitative study of user experience with multimedia walking tours. Focusing on tours created as part of “Topography of Terror” project in Moscow, it explores what expectations users have, what visual resources they employ to find objects of interest, and how they engage in a social situation of walking together wearing headphones. As long as this experience may be personally exciting and moving, but socially isolating, participant observation data helped understand how people overcome this problem. Three modes of listening are distinguished, separate, synchronous, and joint mode.

About the study

My research regards using multimedia guides in an app as a social practice, and looks into the issues that hinder exploration of the tour and user’s methods of overcoming these issues. Through poster presentation, I would like to share some preliminary results of research in progress, although more data is needed.

Two things became starting points for the research. First, the fact that guided tours are an inherently collective activity, and multimedia tours, while able to create personal meaningful experiences, may be perceived as designed primarily for individual use. That might be a reason to choose not to use the app. Secondly, exploring a tour happens not in a specially designed space of informal learning, but in a space of everyday life – the city. Moreover, people have to fill the “gaps” between objects/stops in the tour with walking, navigation, street crossing, and other mundane activities. So there is a need for a user to deal with many tasks at once. I wanted to understand how this experience is organized, and what users’ ways to manage balancing different activities throughout the walk are.

First, let me provide some information on the subject of research, izi.TRAVEL, the app that provides multimedia tours, and Memorial, organisation that created tours that are in focus of this study.

izi.TRAVEL is a platform for creating and using audio/multimedia tours, founded several years ago in Netherlands by Russian entrepreneurs (1). As for now, it is free, and anyone can create, upload and make one’s own tour accessible for public, or just for the group of friends or family members. The company took a lot of effort to engage and persuade Russian museums and other cultural organisations participate. They offer help, advice and professional technology for sound recording. The app is free for all users as well. They just have to download it on their device and then use it online or download whichever tours they like. Each tour connects a number of objects in either a museum or a city, and geolocation on mobile devices tracks movement of a user, switching to the story about the next object as soon as you approach it. User can also read the stories in a (usually shorter) textual form as well as view pictures (paintings and photos associated with the object, portraits of characters mentioned in the narratives, views of the same place years ago, etc.).

The research was started as initiative of the team of “Topography of Terror” (2), a project of International Memorial in Moscow that explores relations of the man and soviet state in the city space, by researching and mapping prisons, former labour camps, places of executions, and many other sites that once belonged to the GULAG and system of repression. Team of “Topography of Terror”, amongst other things, organizes free guided tours, which are quite popular and are loved by many. They turned some of these into multimedia tours available through izi.TRAVEL app (3), and wanted me to help them understand motives, attitudes and expectations of both users and non-users, and experiences of users, - to get

feedback, improve and tailor their future digital tours to the needs of the audience. Notably, while ordinary tours of Memorial are in demand, only few people listen to their audio tours. In a survey of guided tours participants that I have carried out, 78% have not heard about audio tours, 15% have heard something, only 7% have looked at website or an app, and no one at all ever used an audio tour.

Research approach and methodology

In my research, I follow social interactionist perspective. The approach was founded by classical sociologists Erving Goffman (1963) and Harold Garfinkel (1967). Contemporary studies are mostly based qualitative research, “microethnography” of social life, relying largely on observation and videoanalysis (analyzing naturally occurring social situations and not participants’ verbal accounts). Interactionist perspective emphasizes situated, contingent, contextual nature of action, and embodied, sociomaterial, multimodal aspects of social practice. Recently the approach has become more present in museum studies, regarding both individual visitors (e.g., Heath, vom Lehn; Meisner et al.; Laursen; Christidou, Diamantopoulou), and guided tours (Best). It accounts for spontaneous interaction, emerging forms of sociability, usability issues, ways of sense making, and nonformal learning.

The data for now consists of materials of a focus group with non-users (and testing short fragments of existing tours), two interviews with users, and participant observation of four walks with an audio guide. Observation is the main source of information for this presentation. Interviews and focus group were transcribed and then coded, and observation field notes were analysed through elicitation of problems, highlights and typical social situations that unfolded during the walk. By carrying out both research methods that were naturalistic and unobtrusive and those involving asking participants questions, triangulation of the data became possible.

Preliminary results

User expectations and tour content

The tag line of “Topography of Terror” project says “This is right here”. People are ready to discover the tragic past of the city they live in and to be moved by stories of the people who suffered in soviet times. Nevertheless, the app does not meet all of their expectations. Participants were surprised to find that there is little “local historical”, art- or architecture-related narrative. There is little information on style or time of construction of objects. This is what by default is expected from a walking tour. There is some, but not enough, historical aura of the objects included in tours: users ask how old the object is, what it was before the 20th century, why it looks the way it does. Some informants recalled other guided tours they participated in before to tell me about the neighborhood or buildings we were looking at.

Navigation problems and visual cues

There was an evident discrepancy between focus group and observation. While non-users were sure that they do not need spoken descriptions of objects in the beginning of each track, these are not “extra” information, annoying the listener, but rather an important feature. It helps locate the objects, find them, and it also serves as an experiential device of transition from walking and talking to focused listening, eyes fixed on the object. Because of the lack of such descriptions, pictures often serve as navigation tools, not just as a means to build a multimedia story.

Walking together, listening alone?

The app is designed for users to wear headphones when listening to the tour. Headphones create a sort of sound “bubble”, muting most of the surrounding noises. This, on the one hand, is isolating, and hinders communication between participants. Yet, on the other hand, it creates a special, more engaging experience, enables richer perception of a new layer of otherwise familiar and mundane city space.

Concerning “sociability” of exploring city with an app, analysis of participant observation reveals three modes of using audio guide: separate, synchronous, and joint modes.

1. Separate mode implies that each participant turns to the audio narrative whenever she prefers. This mode presupposes the greatest degree of freedom. People can control the own device as they want (read the text, watch images, switch to other applications), physically move to another place near the object (look at it from the other side, for example), stop or interrupt the track if it feels too long or boring. At the same time, the participant who has finished listening first, has to wait, and the second, who is listening, finds herself in an embarrassing situation of slowing down the walk.

2. Synchronous mode is an intermediate mode when participants listen to the tour on their own devices, but try to synchronize the moment of pressing “play” with each other. It roughly synchronizes the length of time of listening to each track, and renders possible shared understanding of approximately a part of the narrative is heard at the moment. However, one does not experience a situation of listening together. Discussion of the content and details heard after the end of the fragment often requires clarification of when the phrase was spoken, what exactly is being referred to. When listening is done separately, most likely things to be subject of talk are the obvious or outstanding ones, such as unexpected, shocking facts, or practical problems, such as inability to understand or follow the narrative.

3. Joint mode is a fully collaborative mode when the application is used on the same device and a headphone splitter is employed. Joint listening creates a shared auditory space. Although discussing while listening is not convenient, participants can - and according to observations they do - smile, make a sad or concerned face, exchange glances, point at various parts of the object, react to another participant’s changing the focus of attention. A detailed spontaneous discussion of the content is facilitated, since already during the audition both participants are able to mark interesting details for each other. During the transition to the next point or conversation at the end of the track, they continue to develop the reactions that have arisen in the joint non-verbal communication at the time of listening. There are thus more opportunities for learning, reactions, remembering communal experience.

Endnotes

(1) izi.TRAVEL <URL> <https://izi.travel/en> See also some statistical data on the app use (November 2017), provided by the company: <URL> https://drive.google.com/file/d/1__Q_zeuYl75uk2WiZ_b5OKo-8-VJbD4f/view

(2) Topography of Terror. <URL> <https://www.memo.ru/en-us/projects/topos>

(3) Existing tours include ones on the history of system of state care for orphaned children, Stalin’s purges and repressions in 20th century in general, political protest, revolution and early soviet years in Moscow.

References

Best, K.-A. The Interactional Organisation of the Guided Tour: the Work of Tour Guides in Museums, Galleries and Historic Houses. King’s College London, 2008. Unpublished PhD dissertation.

Christidou, D. and S. Diamantopoulou. "Seeing and Being Seen: The Multimodality of Museum Spectatorship." *Museum & Society* (2016) Vol. 14. No 1. P. 12–32.

Garfinkel, H. *Studies in Ethnomethodology*. Los Angeles: Blackwell, 1967.

Goffman, E. *Behavior in Public Places: Notes on the Social Organization of Gathering*. New York: Free Press, 1963.

Heath, C. and D. vom Lehn. "Configuring 'interactivity'". *Social Studies of Science* (2008), 38(1): 63–91.

Laursen, D. "Co-participation Among School Children Around a Computer-based Exhibit." *Social Studies of Science* (2012), 43(1): 97–117.

Meisner, R., vom Lehn, D., Heath, C., Burch, A., Gammon, B., Reisman, M. "Exhibiting Performance: Co-participation in Science Centres and Museums." *International Journal of Science Education* (2007), 29(12).

Improving questioning/answering strategies in learning from texts: Effects of an intervention on teachers' practices in students' performance

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(A Full Abstract will be submitted after the conference took place)

Introduction

- One of the most common ways of assessing text comprehension and learning in the school context is question answering. The analysis of questions formulated by teachers and of those in text books reveals that the overwhelming majority are literal questions (e.g., Daines, 1986; Guszak, 1967).
- The type of question that readers must answer may influence their approach to reading (Raphael & Au, 2005; Rouet, 2006). Whereas literal comprehension questions may lead to more superficial understanding, it is agreed that questions requiring the integration of information contained in one or multiple texts have greater potential to foster deeper understanding and learning (e.g., Rosenshine, Meister, & Chapman, 1996).
- Research shows that students usually perform better when responding to literal as opposed to integration questions, and run into greater difficulty when asked to answer questions requiring intra- or intertextual integration (Muijselaar, Swart, Steenbeek-Planting, Droop, Verhoeven, & de Jong, 2017).

Aim

To design, implement and evaluate a training program for teachers to promote the use of questions that require intra- and intertextual integration and improving the way they help their students resolve them.

In terms of the impact of the training on students' performance, we sought to answer the following questions:

- Do students in the experimental group (EG) perform better than those in the control group (CG) when required to answer intra- or intertextual integration questions?
- Do students in the EG learn and retain better the content than those in the CG?

Method

A quasi-experimental intervention study with pre-test, post-test and follow-up measures and two groups: experimental (EG) and control group (CG).

- IV: participation/non-participation in the training programme during the development of a teaching unit.
- DV: students' answers to literal/integration questions (intra- and intertextual); students learning and retention of the content presented in the teaching unit.

Participants

11 social science teachers, 369 students (13-14 years old)

- EG: 5 teachers and 237 students
- CG: 6 teachers, 132 students

Students in the EG and CG did not differ significantly in their general comprehension ability, prior knowledge, and performance in literal, intra- and intertextual integration comprehension questions.

Materials⁸

- Three pairs of texts that presented content from a teaching unit in the subject of Social Sciences.
- Pre-test, post-test, and follow-up measures (each test included a pair of texts containing complementary information and literal, intra- and intertextual integration comprehension questions about the content of these texts).
- Test of learning and test of retention: multiple-choice tests about the content of the teaching unit that have been studied during the implementation of the intervention.

Procedure

Teachers in the EG took part in a training program designed to aid and scaffold their implementation of the intervention, aimed at (a) increasing the presence of intra- and intertextual inferential comprehension questions in their classroom, and (b) providing students with strategies to solve this kind of questions. Concomitant with the training program, each teacher in the EG imparted the content of one specific teaching unit using the materials developed for this purpose and the strategies that had been agreed on during the training program. After the intervention, the post-test assessment and the learning test was administered to all participating students. Two months later students sat the follow-up and the retention tests.

Results and conclusions

Although analysis are still being performed, preliminary results show that students in the EG performed better than those in the CG in all measures of reading comprehension (literal, intra- and intertextual integration questions) after the intervention and at follow-up. Participants in the EG outperformed those in the CG in the learning and retention tests as well.

These results emphasize the need for teaching students read texts in ways that promote understanding and learning, rather than merely identifying information in secondary education, and show that this can be done in the context of the subject areas by getting teachers involved in improving their practice.

References

- Daines, D. (1986). Are teachers asking higher-level questions? *Education*, 106, 368-374.
Guszak, F. J. (1967). Teacher questioning and reading. *Reading Teacher*, 21, 227-234.

⁸ For the purposes of this poster presentation we focus on the effects of the intervention on students' results. Therefore, we present only the materials used with them and the results they obtained. However, we would like to point out that teachers were provided with three short dossiers containing ideas and suggestions for classroom practice in relation to reading. The development of the teaching unit in classrooms was controlled for participants in the EG and the CG, as well as the kind of questions teachers asked about learning material prior to the training program and once teachers in the EG had completed their training.

Muijselaar, M. M., Swart, N. M., Steenbeek-Planting, E. G., Droop, M., Verhoeven, L., & de Jong, P. F. (2017). The dimensions of reading comprehension in Dutch children: Is differentiation by text and question type necessary? *Journal of Educational Psychology, 109*, 70-83. <http://dx.doi.org/10.1037/edu0000120>

Raphael, T. E., & Au, K. H. (2005). QAR: Enhancing comprehension and test taking across grades and content areas. *The Reading Teacher, 59*, 206-221. <http://dx.doi.org/10.1598/RT.59.3.1>

Rosenshine, B., Meister, C., & Chapman, S. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Educational Research, 66*, 181-221. <http://dx.doi.org/10.3102/00346543066002181>

Rouet, J. F. (2006). *The skills of document use: From text comprehension to Web-based learning*. Mahwah, NJ: Erlbaum.

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