InkluTeach: A Virtual Classroom for Pre-Service Teacher Training

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Keywords
360°video, Virtual Reality, eLearning, Inclusion, Pre-service teacher training, Virtual Classroom

1. SUMMARY

This Paper reports an exploratory project in which we designed the innovative eLearning platform *InkluTeach* for teaching pre-service teachers by implementing 360° videos with real classroom scenarios of inclusive learning of children with and without special education needs. By the use of 360° video in combination with virtual reality (VR) headsets we create a virtual classroom, where the pre-service teachers become part of the situation they have to analyze. The paper gives an overview about possibilities and challenges for new video technologies in the field of pre-service teachers training within this project.

2. INTRODUCTION

Worldwide, the implementation of an inclusive school system, which is prepared for the distinct heterogeneity of pupils - with and without special education needs or intellecutal gifts - is a big challenge. The basement to achieve success in this transformation is a long and significant process of reorientation of the teachers' beliefs and attitudes as well as of their occupational profile and professional ethics. In addition, teacher training at universities has to develop skills for working with heterogeneous learning groups.

Numerous studies show that novices are likely to suffer from a "reality shock" when starting their professional career as teachers (Müller-Fohrbrodt, Cloetta & Dann 1978; Stokking, Leenders, de Jong & van Tartwijk, 2003; Zingg & Grob, 2002). Apparently, novices experience difficulties in transferring theoretical knowledge into school practice. Renkl (1996) spoke about "inert knowledge" - knowledge which is not available for practical use in school. Regarding the pre-service teacher training at universities, Gerstenmaier und Mandl (2001, p. 1) pointed out an immanent abyss between knowledge and action. Thus the current situation of the pre-service teacher training at universities is critical. In this project we try to solve this problem by providing videobased learning.

3. VIDEO-BASED LEARNING

Using videos is a very useful method to train pre-service teachers with educational content. During the sixties and seventies, classroom interaction analysis and video recordings for teacher education became very popular in the USA (Wyss, 2014). Because of the steadily falling costs for camera and audio equipment, new technical improvements and the development of new information and communication technologies (ICT), video based learning became a standard in teacher education from the middle of the 1990s (Helmke, 2012). Until today, video is often used in teacher preparation programs. The medium video provides the huge complexity in real classroom situations so that students can reflect, analyze and evaluate lessons from different prospects. By working with videos

students get an initial practicable access, substantiate theoretical and accumulate practical knowledge (Brophy, 2004; Goldman, Pea, Baron & Denny, 2007; Krammer & Reusser, 2005). These possibilities indicate a flexible and continuous commitment, as well as a practice-related access (Mayring, Gläser-Zikuda & Ziegelbauer, 2005). Several studies showed that working with video offers great potentials to develop and sublimate professional teaching. Mostly these videos focused on the teacher or the class (Digel, Baust & Schrader, 2014).

Irion (2010, p. 141) criticizes that information for the analysis of videotaped teaching processes frequently is missing because it is outside the camera perspective (framing). For objective observation, as well as analysis and assessment of a situation, this circumstance appears to be highly problematic. As a solution, Goldman (2007, p. 4) suggests the use of several cameras. In fact, he claims that the aim of using those video technologies is to embrace diverse points of viewing to prevent the hazards of bias, misrepresentation and missed-representation. The advantages of several perspectives are also embedded in many participatory researches. From these perspectives, several cameras are the preferred option. But on the other side some researcher (e.g. Heath et al., 2010) suggest that the use of multiple cameras is not advisable as they multiply the data collected, can overcomplicate the interaction by using multiple perspectives, can fracture sequences of interaction and present challenges for analysis (Hewitt, 2012, p. 16).

4. INKLUTEACH

To solve this problem, we developed the eLearning platform *InkluTeach*. *InkluTeach* is a video based eLearning environment, framed and complemented by corresponding theoretical knowledge and learning tasks. The platform should be used by pre-service and in-service teacher trainings in preparation for inclusive school practice, managing diversity, inclusive based or special needs educational tasks / materials as well as inclusive school development processes. It can be used for evolving and enhancing competences of observation, analysis and reflection.

The core of *InkluTeach* is the use of 360°videos to show pre-service teachers realistic “classroom practice” (Sago 2003). While in traditional videos, the user is locked to the angle where the camera was pointing to during the capture of the video (framing), 360° videos are video recordings where a view in every direction is recorded at the same time. “With 360º videos, we are able to deliver an even richer and larger quantity of information than before, that can span all over the viewer.“ (Neng & Chamble, 2010, p. 119). A "before and behind the camera" doesn’t exist anymore and multi-perspectives therefore become superfluous.

For watching and analyzing the video content we developed a multiview 360° video player with some additional features for 360° video analysis (e.g. time makers, grid lines and logbook). By the use of 360°video in combination with virtual reality headsets we create a virtual classroom, where the pre-service teachers become a part of the situation. This offers many opportunities. By the use of multiple perspective, it is possible to prevent the “reality shock” of novices. We presume that students will be better prepared for working in inclusive learning settings.

In our presentation we will present the function and the structure of *InkluTeach*. We will show some examples of our 360° video content and player to discuss the opportunities, challenges and the high potential of new ICT´s (e.g. 360° video, VR) in the field of pre-service teacher education.

5. REFERENCES

Brophy, J. (2004). *Using video in teacher education.* Amsterdam: Elsevier.
Goldman, R., Pea, R., Barron, B., & Denny, S. J. (2007). *Video research in the learning sciences.* Mahwah: Lawrence Erlbaum.

Digel, S., Baust, C. & Schrader, J. (2014). *Videofallbasiertes Lernen. Ein innovatives Konzept zur Weiterbildung von Hochschullehrenden.* Hochschule und Weiterbildung, (2), 40-45.

Gerstenmaier, J., & Mandl, H. (2000). *Die Kluft zwischen Wissen und Handeln.* Göttingen: Hogrefe.

Goldman, R., Erickson, F., Lemke, J. and Derry, S. (2007). *Selection in video.* In: Guidelines for Video Research In Education: Recommendations From An Expert Panel, Data Research and Development Center (NORC at the University of Chicago). Retrieved February 16, 2017, from: http://drdc.uchicago.edu/what/video-research.html

Heath, C., Hindmarsh, J., and Luff, P. (2010). *Video in qualitative research: Analysing social interaction in everyday life*. London: Sage.

Helmke, A. (2012). *Unterrichtsqualität und Lehrerprofessionalität: Diagnose, Evaluation und Verbesserung des Unterrichts.* Seelze-Velber: Klett-Kallmeyer.

Irion, T. (2010). *Hypercodierung in der empirischen Lehr-Lern-Forschung. Möglichkeiten der synchronen Analyse multicodaler Datensegmente zur Rekonstruktion subjektiver Perspektiven in Videostudien.* In: Corsten, M., Krug, M., Moritz, C.,Videographie praktizieren. Herangehensweisen, Möglichkeiten und Grenzen, Wiesbaden: Springer.

Jewitt, C. (2012). *An Introduction to Using Video for Research.* NCRM Working Paper. NCRM. Retrieved February 16, 2017, from: http://eprints.ncrm.ac.uk/2259/

Krammer, K., & Reusser, K. (2005). *Unterrichtsvideos als Medium der Aus-und Weiterbildung von Lehrpersonen.* Beiträge zur Lehrerbildung, 23(1), 35-50.

Mayring, P., Gläser-Zikuda, M., & Ziegelbauer, S. (2005). *Auswertung von Videoaufnahmen mit Hilfe der qualitativen Inhaltsanalyse-ein Beispiel aus der Unterrichtsforschung.* MedienPädagogik-Online-Zeitschrift für Theorie und Praxis der Medienbildung, 4(1), 1-17.

Müller-Fohrbrodt, G., Cloetta, B., & Dann, H. D. (1978*). Der Praxisschock bei jungen Lehrern.* Stuttgart: Klett.

Neng, L. A. R. & Chamble, T. (2010). *Get around 360°hypervideo.* In: MindTrek '10 Proceedings of the 14th International Academic MindTrek Conference: Envisioning Future Media Environments. Retrieved February 28, 2017, from http://dl.acm.org/citation.cfm?doid=1930488.1930512

Seago, N. (2003). *Using video as an object of inquiry for mathematics teaching and learning.* Advances in research on teaching, 10, 259-286.

Stokking, K., Leenders, F., De Jong, J., & Van Tartwijk, J. (2003). *From student to teacher: Reducing practice shock and early dropout in the teaching profession.* European Journal of Teacher Education, 26(3), 329-350.

Wyss, C. (2014). *Videobasiert Lehren an Pädagogischen Hochschulen. Videos in der Hochschullehre*, (3), 32-40.

Zingg, C., & Grob, U. (2002). *Belastungswahrnehmungen von Primarlehrpersonen im Kanton Zürich beim Berufseinstieg.* Beiträge zur Lehrerbildung, 20(2), 216-226.
Renkl, A. (1996). *Träges Wissen: Wenn Erlerntes nicht genutzt wird.* Psychologische Rundschau, 47, 78-92.

6. AUTHORS' BIOGRAPHIES

Julian Windscheid is a research assistant at the Department of Media and Communication Management at the Technische Universität Ilmenau (Germany). He is a member of the QualiTeach-Project of the University of Erfurt. The main focus of his work is the conception, implementation and evaluation of new technologies for (video-based) eLearning platforms. Previously, he worked as a research assistant at the Chair of Computer-mediated Communication at the University of Passau (Germany). There, he was mainly concerned with videobased eLearning offers for SMEs as well as the general design of learning videos. Julian Windscheid studied "Media Production and Media Technology" (B.Eng.) at the OTH Amberg/Weiden (Germany) and "Media and Communication" (M.A.) at the University of Passau.

Diana Stoll is a research assistant at the Erfurt School of Education at the University of Erfurt in Germany. She is working as a part of the QualiTeach-Project of the University of Erfurt. Her work focusses on the conception, creation and evaluation of the "classroom practice" (Seago, 2003) videos as well as the educational and didactical content of the (video-based) eLearning platform. Previously she worked as a pedagogue and therapist at "Kleine Wege" Autismus – Zentrum Erfurt. The work was oriented on the comprehensive support of children with autism spectrum disorders, their parents and further supporting systems. Diana Stoll studied pedagogy and social sciences (B.A.) and Special Education Needs (M.A.) at the University of Erfurt.

Andreas Will is professor for Media and Communication Management at the Technische Universität Ilmenau (Germany). His research interest comprises media management, (business models for) digital media offerings, project management, and utilization of novel media technologies for business and social applications. Andreas Will studied Industrial Engineering at the University of Karlsruhe. He holds a Dr.rer.pol. and a habilitation in Business Administation and Information Systems, both from the University of Augsburg (Germany). He is a founding member of the European Media Management Association (EMMA).