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Table of Contents

SHORT PAPERS

INNOVATIVE FORMAT PROPOSALS

POSTERS

Long Papers

ViSuAl
The Video supported collaborative learning knowledge alliance Erasmus+ (EU)-project.

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Abstract

YouTube, Vlogging, SnapChat, Skype, smartphones and video in WhatsApp etc. is what youth and adults use in their daily and working life to communicate. We are visual thinkers, observational learners and thus social learners (Bruner, 1961), so using visuals in education has many benefits. However, most teachers do not know how to use videos systematically in teaching (OECD, 2017). Europe-wide, there is a need for competent teachers in utilizing e-learning with leading digital collaboration solutions. The same holds true for pedagogical knowledge of designers in educational technology companies. The potential of video-supported learning has not been opened in teacher education (Hobbs, 2006). Education and companies alike lack pedagogical models and structures to promote learning from and with videos (Krauskopf, Zahn, Hesse, & Pea, 2014)

Video-based e-learning in particular is one of the most emphasized 21st century teaching-and-learning approaches. Showing a video is not enough (Van Gog, Verveer, & Verveer, 2014). However, most teachers do not use video tools in a way that contributes to developing conceptual thinking and problem solving skills as relevant work-life competences of the knowledge worker (Bereiter, 2002). The modernization of European Higher Education Institutes (HEIs) calls for a workable pedagogy and skilled teachers to take on the up-to-date video-supported collaboration solutions for creative teamwork in online environments.

In this contribution we want to explain the ViSuAl-project, which tries to address the previous challenges. In particular, after introducing the project and its reference framework, we will present the first ViSuAl milestone: a state of the art review on video use and collaborative learning.

Introduction

YouTube, Vlogging, SnapChat, Skype, smartphones and video in WhatsApp etc. is what youth and adults use in their daily and working life to communicate. We are visual thinkers, observational learners and thus social learners (Bruner, 1961), so using visuals in education has many benefits. However, it is not the practice. Company partners' product user analysis (150,000 users in European context) shows that majority of teachers use PowerPoint like transparencies with a lot of text while only few use video for reflecting practice. Also, a need analysis by the Alliance and our work with teachers' professional learning groups on e-learning, shows that most teachers do not know how to use videos systematically in teaching (OECD, 2017). Deep understanding of using videos is missing. Showing a video is not enough (Van Gog et al., 2014). The potential of video-supported learning has not been opened in teacher education(Hobbs, 2006). Education and companies alike lack pedagogical models and structures to promote learning from and with videos (Krauskopf et al., 2014).

One structure is given by learning sciences scholars (R. K. [Ed] Sawyer, 2014) showing evidence that students who learn together, in pedagogical approaches such as 'knowledge building' (Scardamalia & Bereiter, 2014)**,** computer supported collaborative learning (CSCL) (Stahl, Koschmann, & Suthers, 2014) and responsive learning (De Jong, 2015), outperform students whose teachers use frontal, 'knowledge telling' pedagogy. However, this does not make CSCL a favorite pedagogy in practice (NMC Horizon Report, 2014). Why? Because of lacking practices in the use of modern ITC technology (Carmen Zahn, Krauskopf, Hesse, & Pea, 2012).

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A second structure (Grossman et al., 2009) identified three key concepts for understanding the pedagogies of practice in professional education: representations, decomposition, and approximations of practice**.** Today, the use of videos remains mainly on the representations level but efficient models for decomposition and approximations of the practices are needed, e.g. opportunities to engage in practices of a profession. Video visualize various praxis to novices but it needs a breakdown of practice into constituent parts for teaching and learning; The ViSuAL project aims to fill this gap by engaging HEI-research, teachers and companies in developing innovative teaching methods.

Our solution combines two tools: evidence-based pedagogical video use and CSCL into Video-Supported Collaborative Learning. We argue that video can be an excellent tool when combined with collaborative learning(Carmen Zahn, Krauskopf, Hesse, & Pea, 2010)**.** It develops students' critical thinking and problem solving skills that are important for a development of entrepreneurial skills and aptitudes(UNESCO, 2017). Video bridges school and practice, which is important for vocational education and training (VET) and teacher-educators (TE)[5]. The models can be used and taught in TE so that teacher-students become familiar with Video-Supported Collaborative Learning as an educational tool (Gaudin, Chaliès, & Chalies, 2015). Here development together with companies is needed (European-Comission, 2014)[6] to capitalize on the latest video solutions and tools together with workable pedagogical insight.

Working together, HEIs–Teacher Education (HEIs-TE) with companies providing modern educational technology, ViSuAL will give the companies pedagogical insight, models and teaching methods to accompany their products**.** The information exchange and use of each other's knowledge and expertise in this co-creating alliance modernizes[15] teaching and learning of HEI&VET teacher education and thereafter HEI&VET education.

The experimentations carried out in ViSuAL provide workable practices for transforming education. The capacitated teachers are spreading the impact as pedagogical agents throughout their institutions with the help of the educational resources. Moreover, the MESH guide, hyper-video MOOC and Teachers' Manual will provide an easy-start for any teacher education institute looking for workable pedagogical model and practices on video-supported collaborative learning.

In long run, ViSuAL will contribute to meeting the modernization needs of European HEIs by advancing digital skills for learning and teaching. On the pedagogical point of view, we hope to offer the HEIs a vision for modernizing education by exploiting the new technologies in the learning and teaching practice. By supporting the development of digital communication competences of European professionals, ViSuAL will take part in the building of the knowledge-intensive society and competitive digital economy that EU aspires for.

Video-Supported Education Alliance (ViSuAL) is an Alliance of 6 Higher Education institutes Teacher Education (HEIs-TE) and 6 Educational Technology Designers (ETDs). During the three-year project they aim a process of co-creating an evidence-based pedagogical model for Video-Supported Collaborative Learning. Within ViSuAl, video-supported collaborative learning is defined as *the use of video technology, tools and platforms in a way that contributes to developing conceptual thinking and problem solving skills as relevant work-life competences of the knowledge worker.*
In fact, the resulting model will support the development of students' critical thinking and problem solving skills that are important for navigating the increasingly turbulent, knowledge-intensive and entrepreneurial work-life. The model will bridge school and practice, which is important for vocational education and training (VET) and

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[5] "While the majority of countries report embedding entrepreneurship education in their curricula, they rarely recommend teachers any particular teaching/learning methods and consequently leave them with great autonomy in this area. Clear guidelines are important for teachers to have a common understanding of what methods are appropriate for education, and which ones will contribute most effectively to the successful teaching of these skills." (EC, Eurydice, 2016)
https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Publications:Entrepreneurship_Education_at_School_in_Europe_-_2016_Edition
[6] **2a:** (p10); **2b**: (p11); **2c:** recommendation 2 (p28); **2d**: *"it is about acquiring skills that are essential in the labour market and, increasingly, simple for every day life"*(p31); **2e**: Recommendation 2: "promote experimental partnering with specialist service providers"(p28); **2f***: "There is not yet a full understanding of the positive impact that new modes of learning and teaching can have (..).* (P16); **2g**: (pag 19).

teacher-educators (TE) as well. Furthermore, it will encourage video content creation and sharing as a rising work-life competence. The model will be used and taught in TE so that teacher-students become familiar with Video-Supported Collaborative Learning as an effective educational strategy.

Apart from the model, the following additional ViSuAL **outputs** will aim at a sustainable HEIs-TE&ETDs collaboration:

1. **An evidence-based hands-on pedagogy to utilize video-supported collaborative learning.**
2. **Hands-on principles for a sustainable HEIs-TE and ETDs co-creation partnership**.
3. **Pedagogical design principles and workable pedagogy practices for ETDs to enhance use of their products in education.**

The diversity of ways in using videos corresponds to different characteristics and potentialities of the different products, services and technologies. Similarly, it also corresponds to very different pedagogical models and classroom practices. We list some of them:

1. *The informative video:* typical of the lecture capture approach, it is usually an instructional video with the characteristics of being
   a. knowledge broadcasting oriented;
   b. produced by professionals or teachers;
   c. content- and teacher- centered.
2. *The active learning video*: as in the previous category, the video use is designed for teaching purposes and includes teacher talks and explanations, animations, simulations, but also self-learning and evaluation activities as tests and quizzes, or student-made annotations, for educational purposes. This kind of video is generally
   a. knowledge acquisition and reproduction oriented, but can also be semi-collaborative (for instance in case of peer feedback) and can become collaborative when collective or community dialogue is added;
   b. produced by professionals or teachers but finally including materials added by students;
   c. content- and learning-task/assessment- centered.
3. *The (knowledge) experience/building video:* this third category usually takes the form of vlog, narrative, simulation recoding, video-supervision (progressive) inquiry vlog, and it mainly supports reflecting, (collective, community) dialogue and discourse. This kind of video is characterized by being
   a. knowledge building/creating oriented. Aiming at enhancing professional practices and skills through dialogue and reflection after real and/or simulated practices, its use is usually grounded in approaches like experiential learning, collective learning, progressive inquiry learning, collaborative learning.
      To increase its potential of knowledge building, this kind of using video is often associated with sharing mechanisms within professional communities.
   b. (individually or collaboratively) produced directly by learners. The use of video aims at collaborative learning, as for example, video storytelling and interactive video or hyper-video.
   c. conceptual development-, idea improvement-, student- centered.

This third kind of video use is the one the ViSuAL project wants to focus on by strengthening it with the collaborative learning pedagogy and especially with the knowledge building pedagogical approach/model.

The project started January 2018 and one of the first deliverables is a state of the art review on video use in education and collaborative learning. A second paper presentation is dedicated to this specific point.

The literature state of the art review

This literature review is conducted in the context of a *Knowledge Alliance (KA). A KA is an European* partnership (VISUAL project) between higher education institutions and companies in the field of educational technology. In particular in using video technology, tools and platforms to support professional development in different contexts such as teacher education and training, VET education and primary education. This literature review is only one of the procedures that we will use to get a full understanding of the use of video supported for supporting both professional development and video based collaborative learning. The other procedures includes lead users interviews from the different companies' products and services, pre-experimentation interviews and needs analysis. With all these procedures, we intend to identify the gaps related to pedagogical skills and methodologies in order to facilitate collaborative learning and professional development of the target population using the educational video supported materials.
?

The main topics and concepts involved in this study are as following:

Video-supported collaborative learning: for this concept we want to mean the use of video technology, tools and platforms in a way that contributes to developing conceptual thinking and problem solving skills as relevant work-life competences of the knowledge worker.

This diversity of ways in using the video it corresponds to different characteristics and potentialities of the different products, services and technologies. And this also corresponds to a very different modes of using pedagogical use of video technology, in terms of pedagogical models and classroom practices.

1.1 Video recording for professional development. These modes of using video technologies is to enhance professional practices and skills through dialogue and reflection after real and/ or simulated practices and eventually shared within professional communities.

1.2 *Video content creation and sharing* .These modes of video uses are those uses of video for collaborative learning, as, for example, video storytelling and interactive video or hyper video.

*1.3 Interactive video content: these modes of using video are designed for teaching purposes and includes teacher talks a*nd explanations, animations, simulations, self-learning and evaluation as tests and quizzes, for educational purposes.

The main challenge of the project is to understand how these different ways of using video technology and tools can be used and integrated into the pedagogical perspectives as knowledge building and models for collaborative learning. Research Question: How video technologies and tools have been used for supporting collaborative learning in order to facilitate professional development.

Method

The methodological approach includes five stages that guide the review design: (1) problem identification, which ensures that the research question and purpose are clearly defined; (2) literature search, which incorporates a comprehensive search strategy search; 3) data evaluation, which focuses on the authenticity, methodological quality, informational value and representativeness of the available primary studies; (4) data analysis, which includes data reduction, data display, comparison and conclusions; and (5) presentation, which synthesizes findings in a model that comprehensively portrays the integration process and that describes the implications for practice, policy and research as well as the limitations of the review. (Hopia, Latvala, & Liimatainen, 2016, p662/3). A structured literature review procedure was followed, in seven steps, as suggested by Cooper, (2010, p.65). "Step 1: Formulating the problem; Step 2: Searching the literature; Step 3: Gathering information from studies; Step 4: Evaluating the quality of studies; Step 5: Analyzing and integrating the outcomes of studies; Step 6: Interpreting the evidence; Step 7: Presenting the results.

Four main criteria for literature review inclusion were established: content, scientific criteria, language and chronological period. The literature review includes articles, chapters and book/dissertations that refers to pedagogical models for facilitation of professional development via video supported collaborative learning and co-creation processes in development education. In terms of scientific criteria, chronological period and language, and where possible, the papers have been peer-reviewed, published after 2003 and published in English language.

The documents search was limited to the adequate educational databases. The following databases were searched: ERIC (available: https://eric.ed.gov); Educational research complete (available : https://www.ebsco.com/products/research-databases/education-research-complete); Psyndex (available: https://www.psyndex.de/index.php?wahl=PSYNDEX&uwahl=Angebot&lang=EN);

Psychinfo (available: https://www.ebsco.com/products/research-databases/psycinfo

The following search string was used for search the above mentioned databases and is as follow:

(((video) AND ((Collaborative learning) OR (collaboration)) AND ((professional development) OR (teacher education) OR (teacher training) OR (vocational education) OR (professional education))).

Criteria for inclusion

Four main criteria for literature review inclusion were established: content, scientific criteria, language and chronological period. In the content criteria, the literature review to be conducted will includes articles, chapters and book/dissertations that refers to pedagogical models for facilitation of professional development via video supported collaborative learning and co-creation processes in development education.

In terms of scientific criteria, chronological períod and language, and where possible, the papers should have been peer-reviewed, published after 2003 and published in english language.

Analyzing and integrating the outcomes of studies was a task made step by step. First organizing data in order to prepare the collected information in formats that also facilitate data codification and analysis. Then, and in taking in consideration the fields used for data collection, we made a first and exploratory analysis within all the records of the reviewed material. As a result a detailed set of sub-categories and correspondents coding numbers was done in order to get all the material organized in numeric our textual data and facilitate different kinds of analysis. This resulted in 474 publications before discarding duplicates and 363 without duplicates.

The coding operation on the content of the reviews was done by 4 researchers in order to obtain more accurate results.

Coding table

Categories	Description of sub-categories and correspondent coding numbers
Topics and concepts	*Areas of Knowledge* 1. Initial Teacher Education 2. Teacher Training and Professional Development 3. Higher Education 4. Elementary Secondary Education 5. Vocational Professional Training Education 6. Multiple areas of knowledge
Participants	*Type of Participantes* 1. Student Teachers - pre-service/prospective or initial 2. In-Service Teachers - elementary and secondary teachers 3. Teacher trainers - elementary and secondary education 4. Teacher Educators - initial teacher training 5. Teachers/Instructors Vocational education 6. Vocational Students - trainees 7. Student-teachers+teacher educators + in-service teachers 8. Student teachers and teacher educators 9. Instructional designers 10. Higher Education Students 99. Information not available *Region where research took place* 1. Europe 2. America 3. Other 99. Information not available *Number total of participants in the research* 1. <25 2. 26-50 3. 51-75 4. 76-100 5. >100 99. Information not available
Target-groups /areas	1. Student Teachers 2. In-Service Teachers 3. Higher Education Students 4. Teacher trainers 5. Teacher Educators 6. Vocational Students 7. Instructors Vocational Teachers 8. Instructional designers 9. Student Teachers + Teachers Educators 10. Teachers educators + in service-teachers 11. Student Teachers + In Service Teachers + teacher Educators + teacher trainers

	12. Higher education teachers *13. Other* *99. Information not available* *Note: teachers educators=pre-service teachers* *teacher trainers= teachers who train others (teachers but also others* *professionals) in secondary, vocational or other type of education and training* *organizations or corporations*
Research method / *Type of research*	*1. Qualitative research methods* *2. Quantitative research methods* *3. Mixed methods Research*
Data collection	*1. Using video as data collection tool* *2. Interviewing* *3. Observation* *4. Informal conversations* *5. Questionnaires/Surveys* *6. Content analysis* *7. Self-assessment tests* *8. Pre-post tests* *9. Field notes* *10. Multiple quantitative data collection* *11. Multiples qualitative data collection techniques* *12. Logging data and Portfolios* *12. Learners artifacts* *13. Texts and documents* *14. Other data collection tools* *99. Information not available* *[Multiple answers possible]*
Used video *technology*	1. Using web video conference systems 2. Using video recording /display systems 3. Using mobile video systems 4. Using Telephone 2 way 5. Using DVD 6. Using Audio system 7. Other video technology used 99. Information not available
Type of device	1. Using web video conference systems 2. Using video recording /display systems 3. Using mobile video systems 4. Using Telephone 2 way 5. Using DVD 6. Using Audio system 7. Other video technology used 99. Information not available
Vídeo modality of *usage*	1. Video is used for capturing and recording professional/teaching practices [for training and professional learning development - through observation, analysis, discussion and reflections] own or other's. 2.Video is used for teaching/instructional purposes, including interactive/hyper videos, the use of online video platforms and the use of interactive video tools as video annotations tools; 3. Video is used to support learners centered perspectives, through the learning of processes of video creation/production/edition. 4. Video is used to support teaching and learning processes using web based video conference systems

	5. Video is used in a diverse and multiple video modalities to support education, training and professional development. 6. Other video usage modalities
Pedagogical perspective and approach	1. Using video as content resource and material for teaching and learning purposes 2. Using video recording practices - own or others - for teachers professional development including feedback, observation, examination, analysis and reflection, in a individual or group base. 3. Using video recording practices for acquisition and development of professional/ vocational skills and competencies. 4. Using video processes as capturing, recording, creating and editing video in a constructivist perspective, including knowledge building and collaborative learning. 5. Using video for web based conferencing 6. Using real time or streaming video of authentic and learner centered environments 7. Multiple pedagogical perspectives in using video. 8. Using video data collecting for analysis and research 9. Using video in a dialogic peer coaching, including peer critique and collaboration 10. Other pedagogical perspectives 99. Information not available

Results & Conclusion

The first layer of the analysis of literature reviews shows five different ways of using video for support collaborative learning: video recordings, video creation, video content display, video as a communication tool and using video in a combined way, meaning using video in multiple modalities.

A second layer show how video for collaborative learning has been used in four different educational contexts: in-service teacher education, initial teacher education, vocational and professional education and elementary and secondary education.

A third layer of analysis was focused on a deep understanding of how video has been used for supporting collaborative learning, finding what learning designs has been used, through what learning experiences, activities and practices (or what pedagogical models had been used) and how literature review reveals the fundamental learning design principles, contributing to a shared evidence based knowledge which can be used to support possible recommendations for each of the previewed educational contexts where VISUAL project will be developed.

Effective learning designs' and their quality benefits from an understandable and rigorous descriptions within educational contexts, which, in this case, are: teacher education, vocational and professional education and elementary and secondary education.

In this context this literature review thirteen pedagogical models for facilitation of professional development were reported in the literature when using video for support collaborative learning in the identified video modalities of usage.

1. *Model for support collaborative learning through teacher's video clubs:* groups of teachers observe, discuss and reflect about each other's' classroom practice, regularly (Cockburn, 2010).
2. *Model for support collaborative learning through the use of video traces*: video from trainee's classroom practice to view, discuss and analyse collaboratively with their peers, veteran teachers and university teachers (Bier et al., 2012).
3. *Model for support collaborative learning through the use of teaching video cases*: video recordings showing authentic and complex realities of classrooms in ill-structured domains of teacher education and initial teacher education (Goeze, Zottmann, Vogel, Fischer, & Schrader, 2014)
4. *Model for support collaborative learning through teachers video clips*– short videos from reflections of teacher's own teaching practices serve as anchors for collaborative discussions, providing positive and valuable individual conditions for teacher changes of classroom practices (Gröschner, Seidel, Kiemer, & Pehmer, 2015)
5. *Model for support collaborative learning through The Problem Solving Cycle* (Borko, Jacobs, Eiteljorg, & Pittman, 2008) Video recording of teachers' own practices as a model for PD , embedded in the Problem Solving Cycle which is an iterative, long-term PD approach (developed in mathematics education) that focuses on specialized content knowledge and the pedagogical content knowledge of teachers (Bull et al., 2007)

6. *Video Stimulated Recall* model (VSR) which is a collaborative supervision model which involves a supervisor and prospective teachers collegially reviewing a previous video recording lesson or practices - a videotape of a lesson- or particular sections of the lesson, while identifying specific occurrences for discussion(Kelting, Jenkins, & Gaudreault, 2014).

7. *Model for support collaborative learning through the Interconnected Model of Professional* Growth – the model allows to use video-supported collaborative reflections based on the video recordings of teachers own practices.

8. *Model for support collaborative learning through action-research teacher's involvement* - within this model, teachers use video recordings of their teaching practices and engage in a weekly peer group collaborative reflection sessions, collaborate with students, and consult with other sources to identify goals for improving their teaching practices, develop action plans, and analyze the results of their actions. This action research model provided opportunities for self and collaborative critical reflection that challenged each of the teacher's traditional methods. Collaboration with peers and students was crucial at each stage of the action-research process for these science teachers (Tuma, J. M., & Pratt, J. M. (1982). Clinical child psychology practice and training: A survey. \ldots of Clinical Child & Adolescent Psychology, 137(August 2012) et al., 1994) (Lebak & Tinsley, 2010)

9. *Model for supporting collaborative learning through video sharing in an online professional learning community* – within this model teacher is invited to recording their own teaching practices and uploading videos to an online video database in the field of Teacher Education. These videos can be used within an online professional community for sharing, self-observation, collaboration and reflection (Lebak & Tinsley, 2010).

10. *Model to supporting collaborative learning and as data collection instrument model*- within this model teachers, researchers, students and parents learn with each other and collaborate using video technology. Multimodal video analysis, classroom observations, interviews and informal conversations with teachers, children and parents are used for data collection source but also as a source for analyzing teachers own pedagogical practice in the classroom (Davidsen & Vanderlinde, 2014).

11. *Model for supporting collaborative learning and knowledge building using video creation and editing*– this model is best used as a fundamental resource embedded within students' centered pedagogical perspectives – project based learning, inquiry-based learning i.e. where students became producers and collaborators (de Berg, 2016) and also authors and developers in an online community of e-practitioners based on virtual learning environments (Larsen, Sanders, Astray, & Hole, 2008). The model involves different types of learning experiences as "both learning and teaching are considered active processes of constructing and reconstructing knowledge, skills, values and attitudes from previous and new experiences that participants share in the learning environment". Students centered pedagogical approaches as problem-based or task-oriented learning, cooperation, interaction and dialogue among students and teachers, self-reflection on learning as a tool for professional development, transparency and evidence-based writing are some the learning activities reported within this model.

12. 12. *Model for computer supported collaborative learning through content video displaying, and interactive/hyper-video.* Research literature in this area consistently emphasizes these potentials of design projects as an instructional method promising to serve several important educational goals at once: the goal of training skills, the goal of building dynamic social relations and of building knowledge (C Zahn, Hesse, Finke, Pea, & Mills, 2005). Within this pedagogical model, video is used to support collaborative learning and knowledge building through different types of activities using computer systems networks technical affordances allowing a non-linear and interactive uses of the video content for navigation, annotation (using bookmarks, links, anchors, taking notes and comments), sharing and authoring tools to promote social and learning interaction possibilities. Learning to observe and learning to analyze as well as learning to integrate text and video - learning to design non-linear information structures (Krauskopf et al., 2014; C Zahn et al., 2005; Carmen Zahn et al., 2010, 2012). are two special dimensions of this pedagogical model for supporting collaborative learning. Different types of teaching and learning processes can be implemented for students as well as for teachers and pre-service teachers, as self-regulated learning, self-reflection tool and producing digital narratives. For teacher education and initial teacher education video can be used to promote observation skills, analyzing and sharing practices and reflections of teachers' videos of their own teaching using individual case analysis, case based learning and collaborative case discussions(Goeze et al., 2014). Video annotations by beginning teachers in the form of written documents can be used to identify goals for improvement and videos to evidence of their progress. Using video annotation was related to professional development goals (McFadden, Ellis, Anwar, & Roehrig, 2014).

13. *Model for supporting collaborative learning using video as a communication tool in professional contexts.* "There is evidence that video technology used synchronously, and particularly asynchronously, can extend the quantity and quality of classroom observation experience, which in turn

supports the development of observation, analysis and reflection in viewers" (Marshall & Simpson, 2014). Within this model video technology is used by in-service teachers, pre-service teachers, tutors, supervisors and students linking teacher professional contexts – classroom practices - to teacher learning contexts using live video to promote reflection, collaborative discussions and the acquisition of a pedagogical language by trainee teachers ((Marsh et al., 2010). Other learning experiences includes using live video for improving teacher's pedagogical competencies in communication or conducting learning processes, mentoring and feedback on their teaching practices. This pedagogical model of using live video were also reported as *live lessons and remote classroom observation,* web based conferences, video conference assisted group, video based conference lectures for teaching and learning purposes using live video technology. *These video modalities can include multi-person video conversations, lives-streaming /broadcasting real-time, live video footage or video feed to an audience accessing the video stream over the internet. It can be just video, audio or both. Social interactions can happen through voice or webcam, videotext chat and twitter feed. In educational contexts live video can be used for broadcasting live seminars, workshops, live-labs, webinars, short courses, group research activities and others.*

The models extent deliberately the use of video uses as was mention in the three layers of video use as described in the introduction. These there user modes where derived from the presentations at the video and education conference in Leuven, Belgium. June 2018. Especially there is much more available on the video and collaborative learning than the conference did show or suggested.

The 'tentative' conclusions from the review of the literature on video supported collaborative learning can be translated into design learning principles derived from pedagogical models for facilitation of professional development via video supported collaborative learning. These design learning principles for video supported collaborative learning will be published in an article (Ramos, et all, under construction; Visual deliverable (internal research report on the state of the art, 2018)) which is under construction.

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