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Video Card Game as a learning design for teacher education

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Abstract

In this study Video Card Game, a method originating in user-centred design, is studied as a learning design for teacher education. An experiment with second-year students of educational psychology is analysed on the basis of a dialogic view of collaborative knowledge construction, which integrates the perspectives of individuals, tools, and social situation in the study of learning (Hakkarainen, 2009). The analysis suggests that Video Card Game serves to promote learning, bridging the gap between theory and practice in teacher education.

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1. Introduction

Resting upon a situated view on learning (e.g. Lave, 1993; Lave & Wenger, 1991), we understand learning to emerge in interaction when participants collectively share their interpretation of reality, and, more concretely, when they participate in a relevant manner (Lave & Wenger, 1991, 51-52; Hutchins, 1995, 262, 287; Melander, 2009, 17). For instance, when a pre-service teacher claims knowledge of (particular) instructional practices we do not acknowledge the skill unless we see that s/he applies the knowledge into interpretations or instantiations of pedagogic events. Student teachers are known to wrestle with the distance between pedagogic theories and instructional practice (Dewey, 1904; Korthagen, 2007). To address this gap, we will explore Video Card Game as a design for collaborative learning that may bridge the jump from reading to doing. By collaborative learning we refer to situated

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practices where participants share and develop their understandings of a subject – in this case early literacy instruction.

Teacher education in Finland rests on four cornerstones: content knowledge, expertise in learning and teaching, social and moral competences, and the multi-faceted skills involved in practical school work. Integrating these basics is a challenge for teacher students. One approach to the challenge is supervised teaching practice, where experienced professionals support students in their efforts to acquire professional skill (Jyrhämä, 2006; Mikkola, 2012; Niemi, 2012). This form of situated novice–expert interaction is fundamental to the process of learning how to be a teacher. However, pedagogical moments proceed rapidly, perceptions are biased due to a learner’s selective attention and personal position in the situation, and reconstruction of memories from the decaying traces of these events become more difficult as time passes. Where the recollection of what happened may be misleading, video records sustain interactional detail (Sherin, 2007a). Even so, it would be naïve to anticipate that watching video materials in itself would facilitate the development of students’ professional skill and integration of theory and practice. Rather, accessible video technologies afford and enable innovative instructional designs in teacher education. We wish to emphasise the design of the instructional events, including the social script of the event as well as its physical environment.

In this article, the notions of design and learning will be combined in two senses. Firstly, we understand learning design in terms of the set-up of teaching and learning settings. These settings include, in addition to learners and teachers, a variety of material artefacts. Many such designs result from a social tradition and thus it is not possible to name the designer. However, more recent models are a product of intentional design by individual designers or collectives (Seitamaa-Hakkarainen, 2011; Sherin, 2007b). Secondly, we use the notion of design learning in the current article with particular reference to the use of a design tool, Video Card Game, as a pedagogical instrument in teachers’ professional development.

1.1. Teacher education through video

We join a growing number of scholars who endorse the use of interactive video in professional teacher development and research. The field is diverse, and it is not reasonable to attempt a summary here. These undertakings have focussed on the organisation of interactional practices in the classroom, leading up to cross-cultural comparisons of trends in instructional practices, and finally using video recordings and edits as a mediator in teacher development and education. (See Brophy, 2004; Goldman, 2007; Melander, 2009; Sahlström, 2011; Stigler, et al., 2000; Stigler & Hiebert, 2009; Tainio, 2007.) Derry (2007) distinguished between these approaches with respect to the role a learning scientist takes in practice. Following de Bono’s (1999) idea of six thinking hats Derry outlined the researcher’s, producer’s, teacher’s, editor’s, technologist’s and designer’s video hats. According to Sherin (2007a, b) the purpose and manner of video use has changed over time from “microteaching” (records of student teaching simulations) to the hypermedia resources of today. What has remained constant on a more general level are the following affordances: 1. videos form a lasting medium; 2. they can be collected, edited and recombined; and 3. they cater for diverse approaches. Our experiment with Video Card Game will draw on these three characteristics.

Critical to the pedagogical value of video is how video recordings are exploited. Schwartz and Hartmann (2007) address the importance of spelling out the subtleties of issues with which students are already familiar. Garfinkel (e.g. Domke & Holly, 2011, 264) referred to this as paying attention to the “seen but unnoticed” character of our (normalised) living world. Schwartz and Hartmann (ibid) employ Goodwin’s notion of professional vision (1994), which, in a nutshell, is about the ability to competently see relevant structure in a context (Goodwin, 2000).

Video methods have proven effective for teacher training in three respects. When pre-service teachers are exposed to video-recorded lessons they learn 1. to reflect on pedagogical events and develop specific analytical skills, 2. to focus on pupil thinking, and 3. to bridge theory and practice, i.e. to align pedagogical recommendations to actual classroom practice (Santagata & Angelici, 2010). Nonetheless, technology alone does not provide for an automatic change in the students' practice (Hakkarainen, 2009; Hakkarainen-Seitamaa, 2011); dedicated effort is required to develop new pedagogical and social infrastructure for a new technology to serve its purpose. Here we introduce Video Card Game as a learning design to address the challenges outlined.

1.2. Video Card Game in a nutshell

Video Card Game is a design tool taking inspiration from the "Happy Families" children's card game (Buur and Søndergaard, 2000). The game was originally developed in the User Centred Design Group at the Danish component manufacturer Danfoss A/S for design purposes to address a recurrent challenge in user-centred innovation design: to discover and refine the focus of a project (Buur & Søndergaard, 2000). Because design problems are often recognised as 'wicked' in their character, a core challenge is the process of formulating the problem rather than the problem itself (Rittel and Webber, 1973). In teacher education, a related challenge is to identify critical moments in pedagogical conduct.

Due to its concreteness video material is easily made open for people from diverse backgrounds to interpret. In design, developers, users, and managers can work effectively on video material in the Video Card Game and make their different ways to see the material visible to the others in a project through the translation of activities into verbal themes. Likewise, a facilitated use of video materials may provide grounds to develop pedagogical insight and professional vision. These themes can become useful for teacher professional development in that they highlight new potential for reflection or illustrate areas of pedagogical interest.

Empirical video footage comprises a very detailed account of a living practice. Such material is much valued in user-centred design, where the use of observational and participatory methods is often encouraged to ensure a good fit of novel designs into the settings of use (see e.g. Blomberg et al., 1993). The problem with such detailed materials is that analysing it is slow and arduous. A key incentive behind Video Card Game was to make the use of video material 'lighter'. At the same time the method also aspires to transform the analysis to be more engaging and collaborative and retain an intimate connection to the interests of a particular project. The game has proven to be valuable in diverse areas, such as in the design of gestural interfaces (Brereton et al., 2003), usability of process control devices (Buur & Søndergaard, 2000) and discovering opportunities for workplaces (Johansson et al., 2002).

In design as well as in teacher education video materials need to be interpreted in a way that renders the material relevant for the emergent agendas that arise during the process. The Video Card Game banks on shared exploration and sense-making that is grounded in brief video excerpts and a particular project agenda. For a game session a set of video snippets are extracted from the overall footage on the basis of what is found interesting for the current project. Each snippet will be accompanied with a video card on which the participants can write notes. The game is played through several rounds, where teams begin with initial verbalisations on what can be observed in the video snippets. The cards are sorted according to the observations written on them: similar snippets go together. The thematic groups are labelled and further observations will be made collaboratively. (Ylirisku & Buur, 2007.)

Towards the end of the game the participants will move increasingly away from factual observations towards interpretations that relate to the theme of the project in question. The overall clustering of the themes may be broken up if needed. Duplicate cards can be crafted in order to accommodate newly

constructed discoveries. At the end of the game the discoveries will be evaluated against the project's agenda. (Ibid.)

Video Card Game can be seen as a means to construct a collaboratively negotiated conceptual context for a project on the basis of empirical records. The Video Card Game can contribute to the development of the necessary conditions in a project, i.e. to the development of the relevant conceptual context, so that particular novel ideas may be interpreted as sensible. From the fundamentals of the method as outlined above, it could be anticipated that Video Card Game could function effectively as an epistemic mediator (see section 1.3.) also in teacher education.

1.3. From design to epistemic mediation in teacher education

Since Video Card Game emphasises collaborative interaction within and between peers or teams, it relates to the Learning by Collaborative Design model (LCD model) (Seitamaa-Hakkarainen, 2011). Both methods depict designing as an iterative process where physical artefacts, i.e. material objects, are used to facilitate collaboration, distribution of expertise, and externalisation of ideas. We shall approach this implementation through the notion of epistemic mediation. Epistemic mediation involves cultivating shared knowledge practices. Particular attention is focused on the role of shareable epistemic artefacts in practices. (Hakkarainen, 2009; Hakkarainen et al., 2011.) We will claim that Video Card Game affords such mediation by providing a social script of conduct plus a specific set of mediating artefacts, i.e. laptops, headphones, video clips, paper cards, etc. The analysis attempts to unveil how the social script fosters the making of analytical observations in a sensitive manner. In addition, it will be investigated how a systematic procedure from individual observations towards project-relevant discoveries with all the material artefacts involved is geared to give rise to generic understandings of particular issues.

2. Video Card Game as a design for research and learning

We see learning being situated and dependent on tools and representational media. In setting our research frame we take inspiration from Hakkarainen's (2009) trialogic view of collaborative knowledge construction, which integrates the perspectives of individuals, tools, and community in the study of learning. Hakkarainen (2009) argues for the importance of social practices and externalisation of ideas for learning. Where social practices on one hand have the capacity to channel individuals' intellectual efforts, externalisation on the other hand enables the individuals to ground their learning on shareable artefacts. The shareable artefacts are seen as epistemic mediators due to their role as instruments for learning. Following this view we will be investigating Video Card Game as a learning design with these questions:

- What do students see in video snippets in a Video Card Game?
- How do they externalise and verbalise their findings?
- How does Video Card Game contribute to relevant participation?

2.1. Data and method

The data analysed is video data recorded from a Video Card Game session. The session was organised upon the participants' request: a group of nine second-year students in educational psychology. The students contacted the first author, since the subject under investigation, beginning literacy, is one of her course subjects. The study group agreed to try Video Card Game as a learning design on the subject. Before the game session, the students acquainted themselves with the assigned course literature.

The game was organised around 60 video clips on first graders' in-class literacy education. Each video clip consisted of a 40- to 80-second literacy event in grade 1 (year 1). Although the clips were

thematically related to beginning literacy, no correct disposition of how to interpret or categorise them existed. In this sense, the Video Card Game established a setting for genuine knowledge building without pre-defined solutions. The game session lasted for three hours.

Methodologically, the study draws on Conversation Analysis (CA) (e.g. Sidnell, 2010). We analysed video data from two stationary cameras placed in opposite corners of the (game) room. The analysis was constrained to particular sequences of action where the participants discussed and negotiated their understandings of the video materials to which they were exposed. These sequences were transcribed following roughly the conventions in CA.

2.2. What do students see in video snippets?

We found that Video Card Game facilitated the students' participation in collaborative knowledge building in several respects. Firstly, the students adopted an orientation towards making sense of the process of beginning literacy and how it is taught. Moreover, the students were able to identify relevant phenomena in the video clips even without any detailed instruction on which issues to address. In the initial phase of "reading" the video material the students rehearse how to differentiate between interpretation and observation (see Excerpt 1). This part of the exercise functions to sensitise the participants to the relevant "seen but unnoticed" issues, which could pass by unobserved. The students' names throughout this article are pseudonyms.

Ex. 1 [Rehearsal]

- 01 Sara: What are the observations that allow you to make that interpretation?
- 02 Jimi: ((unclear))
- 03 Kaisa: The boy is trying to get attention. He goes "look, look"
- 04 Sara: "Is trying to get" is a mental state but good, he says "look", that's an observation
- 05 Helena: The children are discussing amongst themselves.

In Ex.1 Kaisa reports her interpretation of the intentions of a boy she has observed on the video (line 3). An intention is a mental state that cannot be observed directly. Kaisa's verbalisation of what happens on the video is actually an interpretation that requires resorting to assumptions beyond what can be verified on the video. The level of making observations is a level of minimal interpretation where there is no "pick-pocketing" but rather "putting of hands into others' pockets"; no "cries for attention" but "cries and turning of heads". Making observations rather than interpretations is important to ensure that the original character of action is properly incorporated into later interpretations. Furthermore, it functions to minimise interpretative bias from the outset.

2.3. How do students externalise and verbalise their findings?

In the second phase the students "read" six to seven video clips. They externalised their observations by writing on the cards representing these clips. Since each student was working with a different collection of clips they became familiar with only a subset of the overall material. The group as a whole was dependent on each participant's share of knowledge. In addition, since it was known to everyone that everyone else worked with a different set of clips, the students designed their reports to inform their peers about what they had observed.

Before informing the others in the group the students organised their "hands" of cards. In this task, the students worked from individual observations towards more generic categories, while at the same time establishing novel category boundaries. Abstraction and category building are fundamental to bridging the gap between practice and theory. During the activity the students externalised their emergent

understandings by physically arranging their video cards. The cards hence functioned as epistemic artefacts in the situation.

During the sharing of their observations the students also became able to relate the observations reported by the others to their own set of material and to the initial themes they had constructed. Excerpt 2 displays interactions where a student suggests a name for a theme and a fellow student responds according to what she sees as related in her own hand.

Ex. 2. [Grouping]

- 01 Noora: I'd like to suggest a new theme there.
 02 (.)
 03 Sara: Right
 04 Noora: Well u:hm (.) embodiment or like there was the magic pen,
 05 Anni: I was just about to say if we could start a group on drawing letters and more,
 06 Sara: It goes here at least,
 07 Anni: the children were given these little blackboards and chalks.

The themes expressed by the students varied in their level of abstraction; nevertheless they were able to share their findings and construct categories. When sharing their observations the students worked both on the basis of what was relevant for beginning literacy in the materials at hand as well as on the basis of their expectations regarding how to make their observations accessible to the others in the session. The game design thus encouraged genuine information exchange instead of pedagogical interrogation, where accuracy of perception might have become the issue. The students came up with twelve themes.

2.4. How does Video Card Game contribute to relevant participation?

In the third phase, the students were encouraged to pair up and choose a theme from amongst the twelve they would like to “own” and develop further. (The nine students formed three pairs and a group of three). The chosen themes were: 1. syllable reading, 2. embodiment and drawing of letters, 3. extra-curricular activities, and 4. linguistic awareness. In this phase the game design functioned to set up a context for learning, where the students were forced to relate their articulations a) to the chosen theme, b) to their own observations of the video, and c) to the other(s) in the pair/team. In this context the students made their contributions in each group both verbally as well as through bodily expressions. Furthermore, the students were working on different levels of abstraction simultaneously, as they addressed the particulars of an event displayed on video and worked to relate their findings to their theme. In this work the students identified novel sub-themes.

In the following we shall focus on how theme 2, *Embodiment and drawing letters*, developed. The students, Leyla, Mira and Rina, have identified a sub-theme they called “motoric skills”. In their elaboration, the students address particular observations by different means: pointing, bodily quotes and verbal description. Quoting is a recurrent phenomenon in speech, and it is frequently used in the service of communication to provide evidence in a project to hand (Holt, 1996). Excerpt 3 illustrates how the students were quoting issues that were nonverbal, thus displaying the ability to translate perceived practice into negotiable epistemic expressions. In the excerpt Mira has made a visual observation on a video clip and she ties it to her remark on inter-student differences, i.e. differentiation for left-handed children.

Ex. 3. [Left-handed ones]

- 01 Mira: Then u:hm (.) then it was (.) u: it was demonstrated differently to the left-handed (ones) the model? ((Fig. 1.a))
 02 Mira: like it should also be modelled to the left-handed (ones) how to do it
 03 Mira: I mean [be taken into consideration that (- -)
 04 Rina: [(- -) ((b))
 05 Mira: draw similarly ((drawing pause, Fig. 1.b b)) (1.0) however like
 06 Leyla: where are they writing something ((Fig 1.c b))

In Excerpt 3, Mira elaborates upon her observations regarding letter drawing: In addition to speech and in line with her observation, she makes a left-handed gesture in the air (in line 1, see Fig. 1.a). This gesture is a bodily quote, which is a means of referring to particular phenomena without the need to invent words for making the reference. It also enables making reference without the immediate presence of the referent thing. Bodily quoting is recognised as one of the means that, for example, dance teachers use in teaching (Keevallik, 2010). The bodily quotes in the Video Card Game originated from the observed video clips. The students had observed an episode where the teacher provides an embodied model for the children to draw the letter “u” repeatedly in the air with a “magic pen”, namely their fingers.



Fig. 1. Bodily quotes of drawing in the air: (a) Mira (in the middle) begins the quote, (b) Rina (on the right in the illustration) takes up the quote, (c) Leyla (on the left in the illustration), Mira and Rina quote together

In Excerpt 3 the bodily gesture of drawing in the air serves multiple interactional purposes. Firstly, the bodily quotes express what is seen on video and serve to topicalise interaction, which is not verbal in character. Secondly, it enables the students to experience what it feels like to do what is being addressed, here to draw in the air, since they incorporate the visual observation into their bodily enactment. As the result of this incorporation, the students recognised the need to differentiate instruction for left- and right-handed children.

Thus the Video Card Game progressed through the making of observations, constructing themes, verbalising and expressing the substance for learning, during which the students took steps towards expertise in early literacy education. When seen through the triologic lens as proposed by Hakkarainen (2009) the exercise displays characteristics that let us anticipate that Video Card Game functions effectively as a learning design, bridging the gap between content knowledge and the social competences and many-sided skills involved in practical school work.

3. Conclusion

In this article we examined Video Card Game as a learning design in the context of teacher education. The analysis provides encouraging evidence that the game serves as an effective infrastructure for learning. Essentially this is due to three features: Firstly, the game outlines a social script for participants to come together and process materials about a relevant topic. Secondly the game also facilitates grounded generation of new knowledge with specifically tailored epistemic artefacts: video clips and cards representing the clips and enabling note-taking. Thirdly, the game encourages sharing, since each player begins to work on a small subset of the overall material. In order for the participants to develop a more complete view of the topic, they must express and relate their individual observations to the rest.

The analysis illustrated how teacher students were able to identify pedagogical themes and develop them on the basis of their own observations of a living education practice captured on short video clips. They were able to raise relevant themes and questions themselves, instead of being subjected to ready-made pedagogical questions. They also sought the answers themselves. The extracts drawn from the

Video Card Game showed that the students develop the skill to make observations on pedagogical practices and reflectively connect them to professional conduct. They also seemed to display sensitivity to inter-student differences as part of the reflective activity. The students were able to refer to what they had read, they were able to connect it to what they see, and they developed ways of doing things we, as teacher educators and researchers, interpret as instantiations of professional skill. These discoveries support the assumption that the Video Card Game, as a learning design, may actively contribute to bridging the gap between theory and practice.

The experiment reported here was only a snapshot of a single, short learning event. It is hence not possible to draw any conclusions on long-term transformation (or lack of it) in students' thinking and knowledge. A longitudinal research design with complementary measurements and participant interviews would be warranted to gain a broader picture of the learning design. The effects of the chosen set of video clips on learning also remains a topic to be investigated further.

To conclude, Video Card Game enabled the students to use the video materials as a source for the emergent agendas that arose during the process. The epistemic mediation that can be supported with Video Card Game appears to enable the participants of educative sessions to move beyond mere "legitimate peripheral participation" (as Lave and Wenger, 1991, describe situated learning) to a level where they contribute to the emergence of dialogically infused knowledge that transgresses strict curricular boundaries of traditional education. Based on this initial analysis, we propose Video Card Game as a learning design for teacher education and reflection on the profession of teacher.

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Appendix A. Key to transcript

- (.) pause
- (-) parentheses indicate hesitant hearing
- ((nods)) transcriber's comments within double parentheses
- u:hm colons indicate sound stretch
- [] brackets indicate overlapping, simultaneous talk