Tracing back materialized ideas to embodied and verbal dialogues: Analyzing documents and videofootage of crafts and design lessons

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Abstract
This article discusses a case study combining the qualitative analysis of documents and videofootage. The data was collected during a short collaborative task within an ideation phase with 9-10 year old pupils customizing a store-bought t-shirt. The combination of video and document analysis allows tracing back the emergence of some of the kernel ideas visible in prototypes and final designs. The analysis also shows that the pupils in the case study have developed a pool of ideas during several collaborative phases that they could draw back on for their final designs. The close observation of both verbal and embodied dialogue in video analysis shows that the individual, simultaneous and conjoint handling of materials in an exploratory way -— touching and examining, arranging and rearranging – as well as the verbal dialogue taking place during the design process plays an important role within the ideation phase in Crafts and Design lessons. Thus, the article supports previous studies in this area. This small-scale case study can also be taken as an example for how to practice studying subject-specific learning and teaching for students in teacher education with documents and videofootage providing a rich resource. Additional materials available on an online-portal as of June 2020 serve as a starting point for this endeavor.

Keywords
Collaborative Design, Video Analysis, Document Analysis, Ideation, Embodied Dialogue, Primary Design Education

Introduction
The aim of the case study in this article is to examine aspects of verbal and embodied dialogue of pupils in an ideation phase and link them to collaboratively developed kernel ideas made visible and tangible in prototypes and in the final design of the product. The study is based on the working hypothesis that providing a rich variety of readily available and well organized materials for designing prototypes can inspire both embodied and verbal dialogue among pupils while handling materials exploratively and help them generate a shared pool of ideas that they can draw upon when designing their individual products. The following analysis aims at reinforcing this approach by taking a close look at selected data of 9-10 year old pupils – 4th grade in Switzerland – customizing a store-bought t-shirt on a microlevel.

The study is based on data collected for the project "Developing Textile Products Cooperatively" (DTPC) (Eichelberger & Huber Nievergelt 2020a; Eichelberger & Huber Nievergelt 2020b). The project was part of the larger endeavor "Competence-oriented, subject-specific development of classroom teaching" (KfUE) that included a range of other subjects besides TTG (Adamina et al. 2020). The main goal was to develop, put into practice and document teaching units to generate materials for a web-based, password-protected portal

"KfUE" (Adamina et al. 2020) to be used in teachers education to further students' professional knowledge (Harms & Riese 2018; Frommelt, Fürrer Auf der Maur, Biaggi, Hugener & Krammer 2016).

Based on the paradgims of design-based research (Anderson & Shattuk 2012; Prediger, Gravemeijer & Confrey 2015; The Design-Based Research Collective 2003), DTPC stressed the close collaboration of teachers and researchers in the design of teaching units. However, the goal was neither the perfection of the lessons for reproduction nor the development of universal design principles for learning units within the subject, but rather to focus on the challenges and opportunities of an everyday, authentic, sometimes messy school practice. The data-pool deriving from DTCP forms a rich "ethnographic collage" (Friebertshäuser, Richter & Boller 2010), comprising of videofootage, photographs of prototypes, final products, learning journals and portfolios, teaching materials and lesson plans as well as field notes taken while observing the recorded lessons, making it possible to combine analysis of documents and videofootage, similar in part to the proceedings in Lahti, Seitamaa-Hakkarainen, et al. (2016).

Handling materials as a subject specific aspect of dialogic learning

Embodied and verbal dialogues between pupils and the materials at hand during the design process, especially in ideation phases, are crucial for the subject design and technology/crafts and design/sloyd, or "Textiles und Technisches Gestalten" (TTG) as the subject is called in Switzerland – roughly translated as "Textile and Technical Crafts and Design". Studies show that embodied practices play an important role within a subject specific learning process (Lahti, Kangas, Koponen & Seitamaa-Hakkarainen 2016; Koskinen, Seitamaa-Hakkarainen & Hakkarainen 2015; Lahti, Seitamaa-Hakkarainen, Kangas, Härkki & Hakkarainen 2016; Mehto, Riikonen, Hakkarainen, Kangas, Seitamaa-Hakkarainen 2020). The mentioned authors describe manipulating materials as a means of externalizing ideas, thus also providing a starting point for verbal dialogue (Yliverronen, Marjanen & Seitamaa-Hakkarainen 2018; Yrjönsuuri, Kangas, Hakkarainen & Seitamaa-Hakkarainen 2019). Closely related to this take is a so-called "trialogic" approach by Hakkarainen, Seitamaa-Hakkarainen, Paavola & Kangas (2013), stressing the importance of handling materials in collaborative learning while developing design ideas and solutions. The studies mentioned repeatedly state that despite the high relevance of these issues, they are not yet examined thoroughly and in detail so far. This article tries to help filling part of this gap by asking what connections can be drawn between the visible results of the pupils' design processes (prototypes and final products) and the verbal and embodied dialogue between pupils and materials in a phase of collaborative ideation.

In the context of our project DTPC, it also seems crucial to heighten the awareness in teacher education regarding these issues. This is why dialogic learning was one of the main issues in DTPC. Furthermore, the project focused on collaborative and process-oriented learning aiming at changing a current practice often showing a strong emphasis on manual and technical skills and on the execution of products (Eichelberger 2014; Huber Nievergelt 2015; Huber Nievergelt 2017; Kimbell & Stables 2007). In contrast to that, the current curriculum for TTG for most of the swiss cantons stresses dialogic, collaborative and process-oriented approaches (Deutschschweizer Erziehungsdirektoren-Konferenz 2016; Deutschschweizer Konferenz der Erziehungsdirektoren 2020).

Regarding dialogic learning, we first based the development of the teaching units in DTPC on an existing model that emphasizes the importance of authentic dialogue between teachers and pupils (Ruf, Keller & Winter 2008). However, this and other concepts and studies within the paradigm of dialogic learning focus mainly on language (Wells 1999; Resnick, Asterhan, Clarke & Schantz 2018; Fox-Turnbull 2016), which is only part of the dialogue relevant in TTG, as has been shown in the introductory paragraphs. Therefore, we suggested an extension of language-based models considering dialogues with materials, for the pupils as well as for the teachers (Eichelberger & Huber Nievergelt 2020b). The dialogue with materials is viewed both on an individual and on a collaborative level, which means that embodied interaction is of essence when handling materials individually as well as conjointly. We understand the term collaborative according to O'Donnell and Hmelo-Silver (2013) as an activity that fosters "mutual influence and equality of participation".

The statements show that our understanding of dialogue is closely related to studies on embodied aspects of teaching and learning crafts and design (Lahti, Kangas, et al. 2016; Riikonen, Seitamaa-Hakkarainen & Hakkarainen 2020; Yrjönsuuri et al. 2018; Huotilainen, Rankanen, Groth, Seitamaa-Hakkarainen & Mäkelä 2018). Huotilainen, Rankanen, Groth, Seitamaa-Hakkarainen & Mäkelä (2018) for example mention "embodied cognition" (4) as a basic form of learning that can be achieved in arts and crafts specifically. The same authors also emphasize the importance of providing different kinds of materials to give "a rich variety of somatosensory stimulation" (4-5) which has proven to be an essential factor in all of the teaching units. Providing a variety of inspiring materials to encourage a dialogue of the pupils with materials is further supported by findings of Lahti, Kangas, et al. (2016) and Kangas & Seitamaa-Hakkarainen (2016), the latter mentioning the importance of modelling materials for younger children (8). Other studies support these findings and show that there are different possible ways for pupils to deal with materials (Wyss 2018; Marti, Bühler & Brunner 2010; Gaus-Hegner 2004).

Last but not least, the inclusion of both verbal and embodied dialogue while handling materials is closely connected to the concept of design processes as a constant shift between thinking and doing, as Kimbell & Stables state in several publications (Kimbell & Stables 2007; Technology Education Research Unit (TERU) et al. 2004; Kimbell 2008). The same authors also stress that the making of a final product is not necessarily the most important part for the subject at hand, but the ideation phase and therein the modeling with different materials has value in itself (Kimbell & Stables 2007).

Situation and Task of Analyzed Data

The situation examined in this article can be described as follows: A group of eight 9-10 year old pupils – names altered to provide anonymity – were given the task of personalizing a store-bought t-shirt in a teaching unit encompassing 8 weeks, each week comprising of 2 lessons. According to Heuflers functions of a product (Heufler 2012), the design task comprised of the following constraints: Regarding the aesthetic function of the product, the t-shirt must signal a visible and/or haptic customization that makes the plain, store-bought product unique; regarding its practical function, the t-shirt had to be wearable and washable. During the ideation phase, the pupils repeatedly worked in small teams to develop a pool of ideas regarding the use and alteration of colors, shapes and material surfaces to draw upon for their individual designs, thus representing phases of "creating conceptual and visual design ideas"

and "experimenting and testing design ideas" according to the model "learning by collaborative design" (Hakkarainen et al. 2013, 61).

The task for the sequence analyzed took part during the fourth week. The pupils had already worked on the themes of color and form previously. Now, the teacher had arranged three tables with learning stations to explore different possibilities for altering the surface of a t-shirt with colors or added material by 1) printing with stamps, 2) mask and stencil printing and 3) application of various materials. The pupils were to associate and use materials freely, not yet hampered by the final outcome of the product. As an additional possibility, the teacher had also provided old t-shirts whose surfaces could be altered by cutting into them. However, this possibility lead to some difficulties in classroom management and had no impact on the final design of the products, it is therefore not further examined in this article. The video camera was focused on learning station number 3) since we expected the dialogue with the provided array of fabrics, yarns, ribbons, buttons, beads, and sequins to be promising regarding the handling of materials.

The pupils were working in three teams – called *Mustache*, *Sparkle* and *Smile*, after the results of their prototypes – and were encouraged, but not strictly obligated to cooperate, sometimes leading to the splitting of teams (see table 1). The teams worked at the task one after the other, thus picking up where the previous team had left off. As the last team, team *Smile* showed signs of declining concentration resulting in a high amount of non-task-related activity, possibly furthered by a difficult social setting (O'Donnell & Hmelo-Silver 2013, 5). After the activities at the learning stations, the whole group exchanged experiences in a discussion led by the teacher and all pupils had to sketch a draft and jot down what techniques they intended to use as well as what materials they needed for the elaboration of their design in the following weeks.

Table 1: Overview of teams

	Team Mustache	Team Sparkle	Team Smile
Time on task in minutes and seconds, starting and ending with teachers' instructions to start and finish the task	11:08	15:16	15:35
Members and organizing of teams	Alan, Bianca, Cyril (Alan working only at cutting a t-shirt, activities are not further analyzed)	Dario, Elena	Fiona, Gerard, Henry (Fiona working mostly individually, activities are not further analyzed)

Method

In a first step, photographs of prototypes and final products were examined using basic elements of thematic content analysis for documents, in which a detailed description led to the definition of visual themes and, in case of the final products, a typology could be constructed (Kuckartz & Rädiker 2019b). In a second step, videoanalysis served as a tool for both embodied and verbal dialogue (Rauin, Herrle & Engartner 2016). The videoclips originate from one of three cameras used in the project DTPC, reacting flexibly in order to focus on emerging collaborative processes in small groups – the other two being a static overview camera and a dynamic camera following the actions of the teacher. Despite a sometimes slightly changing angle on the pupils' activities and short interruptions of visibility, the videoclips at hand

constitute a rich source for analysis. Additional audio feed has made the translation of the verbal dialogue possible.

Regarding the selection of outtakes from the footage for the whole project DTPC, we followed qualitative-reconstructive proceedings suggested in Herrle & Dinkelaker (2018) in order to cope with the huge amount of material. The selected videofootage for this article has been coded in the application MAXQDA (Kuckartz & Rädiker 2019a). The embodied dialogue handling materials exploratively and the verbal dialogue have been examined from two perspectives: 1) The transcripts and the actions visible in the videofootage were scanned for connections to motifs and material characteristics of the prototypes and final designs. 2) Sequences where pupils were feeling materials or testing arrangements of materials with both focused gaze and touch were coded as "handling materials exploratively" in the videofootage, thus marking relevant embodied dialogue for the study. Sequences in which pupils are handling materials goal-oriented in the context of the task at hand – cutting with scissors, fixing materials with pins and sewing, opening and closing containers, preparing or putting away materials before or after work – have been excluded, as well as not-on-task activities. It has to be stressed that it is not the goal of this article to define the activity of "handling material exploratively" ontologically – the codes are specifically referring to the context of the task at hand.

In some of the sequences coded as "handling materials exploratively", the actions of the two pupils forming a team overlap, which means they are performing these actions simultaneously. These overlapping sequences proved to be especially interesting, since the simultaneousness sometimes led to collaborative actions. Thus, these sequences were analyzed regarding their frequency and the point in time of occurrence as well as regarding their contents by paraphrasing the occurring embodied and verbal dialogue. Interventions by the teacher – visible in the frame, talking and/or handling materials – have been tagged but are not further examined. Actions shorter than 5 seconds as well as interruptions of continuous actions or of visibility shorter than 5 seconds were not taken into account so as not to fragment actions into too small units and to break the narrative cohesion of the activities. Invisible actions longer than 5 seconds were marked as such and not taken into account, unless they could clearly be defined according to their context.

While the first perspective mentioned has been coded individually by the author, since assignment to motifs is clearly visible, the coding for the second perspective mentioned in the previous paragraph has been tested, discussed and optimized in two rounds for one of the teams, to improve intersubjective reliability. However, it has to be stressed that the data is not standardized and the definition of the codes can only be understood as an approximation of intersubjective intelligibility in a qualitative-reconstructive methodological sense.

Document Analysis: Prototypes and final products

The ideation phase described in the paragraph regarding situation and task resulted in 4 different designs (table 2). Regarding the aspect of shape as a design element, all results show a smiling face and round-edged rectangles symbolizing eyes. While teams *Mustache* and *Sparkle* arranged the rectangles vertically, team *Smile* used them horizontally. The face as a motif had started with the activities of team *Mustache* and was further developed by all groups. All faces have small noses, one face contains a mustache, as the team name suggests. Team *Sparkle* complemented the face with a rectangular shape covering the lower two thirds of the t-shirt,

sprinkled with a variety of small forms. This part forms the only non-representational part of all the results – team *Smile* shows only rudiments of scattered small forms.

Table 2: Result of ideation phase with materials

Team Mustache	Team Sparkle	Team Smile
Bianca, Cyrill	Dario, Elena	Left: Fiona, right: Gerard, Henry

Regarding materials and surface as a design element, the eyes all consist of denim patches, the pupils inside them are made of buttons, beads and bead-like parts or fabric swatches, the eyebrows (team *Mustache* and *Sparkle* only) of furry ribbons, also the mustache. The noses consist of buttons, beads or sequins, the mouths of fabric swatches, wadding, ribbons or buttons. The non-representational rectangle of team *Sparkle* is made of dark fabric, sprinkled with a variety of sequins and beads and covered with blue net lace in a first version, in a second version there were more sequins and beads added on top of the blue net lace. Regarding color, the prevailing use of contrasting effects of dark or blazing colors on a white base are remarkable. A striking contrast can also be observed in the glittering scattered small shapes on the dark rectangular base in team *Sparkle*.

Regarding the final designs of the t-shirts, five types can be distinguished, three of them using a face or parts of it as a main motif (table 3). The aspect of contrasting colors is striking in all of the t-shirt designs. A first group of pupils, typed as "Big eyes", put white eyes in the upper third, chose white and red pupils, outstanding eyebrows in turquoise fake fur, combining techniques of stencil printing and application. Parts of fake fur can also be detected in the shirt of Bianca in the group "Faces and blobs". A second group of pupils, "Devils", used heads with devil-like horns or ears, situated slightly below the center, with bright red pupils, combining techniques of stencil printing and stamping. A third group, "Faces and blobs", placed elements of a face within an array of multicolored blob-like motifs scattered on the whole surface of the t-shirt. The types "Scattered blobs" and "Stars" do not use faces. Both show scattered motifs, either blob-like like the ones surrounding the face-elements in "Faces and blobs" or stars and dots. Cyrill in "Stars" combines these elements with an individual motif of geometric blocks that he had developed during a former ideation phase and complements it with a comets' tail.

Table 3: Types of final designs of t-shirts

Big Eyes	Devils	Faces and Blobs	Scattered Blobs	Stars
Dario	Alan	Bianca	Elena	Cyrill
Gerard	Henry	Fiona		

Video Analysis I: Connections of Dialogues to Prototypes and Final Designs

The analysis of selected elements of verbal and embodied dialogue regarding motifs and characteristics of materials shows connections to prototypes and final designs described above. The transcripts show that all the main elements of motifs occurring in the final designs were being talked about in the ideation process (table 4).

Table 4: Verbal dialogues related to motifs in prototypes and final designs in order of observed frequency in the transcript, overall frequency below 5% with the exceptions mentioned

Team Mustache	Team Sparkle	Team Smile
☐ Furry materials	☐ Shiny materials (7%)	☐ Mouth (7%)
☐ Eyebrows	☐ Stars	☐ Mustache
☐ Eyes	☐ Mouth	☐ Eyes
☐ Mouth	☐ "mess"	☐ Pupil
☐ Smiley-face	☐ Nose	☐ Devils
☐ Nose	☐ Eyes	(mentioned, but not identifiable in prototypes and final designs: pattern, spear, sheriff, person, shirt)
(mentioned, but not identifiable in prototypes and final designs: ninja, sleeping person, ribbon, clown)	☐ smiley-face	
	☐ eyebrows	
	(mentioned, but not identifiable in prototypes and final designs: O-shape)	

As a main theme, faces or elements thereof occur in the verbal dialogues of all three teams, team *Mustache* and team *Sparkle* additionally talk about characteristics of materials. A remarkable incident can be identified within the verbal dialogue of team *Smile*, when Gerard exclaims "Look, we are devils!" while cutting t-shirts, and a little later on, Henry states "We are making a sheriff, with red eyes!" when placing beads as pupils. Alan, who was not part of this team, seems to have drawn upon these motifs from the common pool of ideas, since his final

design belongs to the type of "Devils", together with Henry's. On the whole, it is remarkable that in all teams, motifs are being discussed that are visible neither in prototypes nor products, thus indicating that the design pool generated in the ideation phase encompasses the used solutions.

A closer look at the embodied dialogue also shows connections to motifs and materials used in the final designs (table 5). Two main themes can be observed: Team *Sparkle* shows an intense engagement in creating what they sometimes called a "mess", scattering an array of small, often shiny objects on the area of the dark rectangle on their white t-shirt. This embodied dialogue amounts to almost half of the total time and encompasses long stretches of activities, in which Elena was repeatedly talking about shiny materials, while Dario was more concerned with handling these materials, especially with scattering them on the whole surface with distinct movements. These distinct movements seemed to mark these sequences intersubjectively as explorative handling. The scattered elements in the design types "Faces and Blobs", "Scattered Blobs" and "Stars" can be interpreted as traces of these activities. Furthermore, the inclusion of glitter paint in the final products by Bianca and Elena could be argued to emulate the shimmering effect of the prototype of team *Sparkle*, without the time-consuming effort of attaching sequins and beads to the t-shirt. It has to be noted that during the process described above, Elena was working more at the margins of the t-shirt and was sometimes being pushed aside by Dario, who took up a more central space at the table.

Table 5: Embodied dialogue handling materials by either one or both members of a team related to motifs in prototypes and final designs in percent of total time of videofootage

Team Mustache	Team Sparkle	Team Smile
☐ Eyebrows (11%) ☐ Mouth (8%) ☐ Mustache (8%) ☐ eyes and mouth (4%) (assumed, partly invisible)	☐ "mess" (49%) ☐ Mouth (7%) ☐ eyes and eyebrows (2%) ☐ nose (1%)	☐ eyes and mouth (35%) (assumed, partly invisible)

The second motif taken up was the face as a whole or of certain features of it that has been taken up by all three teams. The design types "Big Eyes", "Devils", and "Faces and Blobs" can thus be traced to verbal as well as embodied dialogue. Furthermore, in connection to the outstanding eyebrows in the type "Big Eyes" and in Bianca's product of the type "Faces and Blobs", the haptic fascination with furry materials that has been discussed in Team *Mustache* is of interest. For this team, eyebrows, mouth and mustache as single elements were especially relevant and the engagement with them was clearly discernible within the activities. For team *Smile*, the embodied dialogue regarding motifs is only partly visible due to their moving around and due to repeated interventions by the teacher. From the context and their verbal dialogue, it can be assumed that they were mainly concerned with eyes and mouth.

Video Analysis II: Embodied and Verbal Dialogue while Handling Materials Exploratively

To gain insight into the phases of the embodied dialogue while handling of materials exploratively, an approximate quantification provides interesting results (table 6). Individual and simultaneous explorative handling occurred in the activities of every pupil and every team. The lengths of the single simultaneous phases range from 5 or 8 seconds to around 40 seconds,

combined, they are covering roughly one quarter of the whole time for team *Mustache* and *Sparkle*, team *Sparkle* showing a more scattered distribution, and around one tenth for team *Smile*. Within these phases there are tendencies to conjoint explorative handling when the pupils were focusing on the same materials or on the same area of the t-shirt. However, an exact definition has been difficult to achieve and therefore these phases have not been quantified.

Table 6: Overview of explorative activities of pupils, in approximate percentage of the whole time

	Team Mustache	Team Sparkle	Team Smile
Individual explorative handling of materials	Bianca 33 % (of which 3 % assumed only because of invisibility) Cyril 65 % (of which 3 % assumed only because of invisibility)	Dario 50 % Elena 39 %	Gerard 16 % (of which 2 % assumed only because of invisibility) Henry 37 % (of which 3 % assumed only because of invisibility)
Simultaneous explorative handling of materials	24 % (6 % with teacher present) ☐ 7 phases ☐ duration 5 to 38 sec. ☐ focused verbal dialogue in phases 1, 6, 7 (3 of 7) ☐ tendency for conjoint activities in phase 6, 7 (2 of 7)	24 % (3 % with teacher present) ☐ 16 phases ☐ duration 5 to 40 sec. ☐ focused verbal dialogue in all phases ☐ tendency for conjoint activities in phases 4, 5, 7, 8, 9, 10, 14, 16 (8 of 16)	11 % (6 % with teacher present) ☐ 4 phases ☐ duration 8 to 44 sec. ☐ focused verbal dialogue in phase 1, 4 (2 of 4) ☐ Tendency for conjoint activities in phases 1, 3, 4 (3 of 4)
Interventions of the teacher	35%	15%	39%

The percentage of time for individual explorative handling differs from 16% (Gerard) to 65% (Cyril). Being a member of team *Smile*, whose difficulties have been mentioned before, Gerard seemed to have been sidetracked with off-task activities most of the time. It can also be observed that in team *Smile*, roughly half of the simultaneous explorative activities were taking place when the teacher was present, leading to the assumption that her help was necessary to concentrate on task. Three pupils show a percentage that amounts to roughly one third of the whole time. Bianca (33%) of team *Mustache* acted exploratively mostly during the first half, arranging and rearranging motifs on the t-shirt, and performed more goal-oriented activities later on, fixing parts with pins or sewing. Elena (39%) of team *Sparkle* shows a similar pattern. Unlike Bianca and Elena, Henry (37%) of team *Smile* spent the rest of the time rather with non-task-related than with goal-oriented activities. It is interesting to see that also Fiona's activities, that are not discussed in this article, since she worked mainly on her own, show a similar pattern to Bianca and Elena. However, there is not enough data to draw gender-related conclusions. The highest amount of time handling materials exploratively can be found in the activities of Dario (50%) and Cyril (65%). Whereas Cyril was more inclined to exploring different materials without arranging them, Dario was concentrating on arranging materials on the t-shirt, often using very specific movements scattering small materials and sometimes pushing Elena aside, as has been mentioned before.

As a last aspect, a closer look at the verbal dialogue during the mentioned phases shows that only team *Sparkle's* dialogue was mostly task-related, whereas team *Mustache* and *Smile* often talked about non-task-related issues. It is interesting to consider that the latter were the teams

with three members each, both splitting up into a group of two and one individually working pupil. Furthermore, team *Sparkle* had the possible advantage of getting to the task in the middle of the whole lesson, already attuned to it but not yet exhausted.

Conclusion

The analysis of embodied and verbal dialogue centered around the explorative handling of materials shows that the materials provided by the teacher offered the opportunity for all pupils to explore individually as well as conjointly. The ideation phase generated a pool of ideas for the final designs of all pupils, even if not everyone was similarly involved in it. In this regard, it is remarkable that the teams working together in the ideation phase do not correspond with the types of the final designs. It can be assumed that the constant dialogue between pupils in the teams but also in the following exchanges within the whole group has led to closely related, yet individual design solutions and some kernel ideas can be traced back to the analyzed part of the ideation phase (Lahti, Seitamaa-Hakkarainen, et al. 2016). Interestingly, the motif of the face or parts of it has emerged in the very beginning of the ideation process and prevailed until the end of it. One of the reasons might be the idea of the first group of pupils to interpret the furry materials as eyebrows and the fabric patches as eyes which seemed to be of interest for the other two groups, too.

In regard to drafting a design task between openness and necessary constraints, it could have been helpful for the pupils to have a guiding theme for motifs to focus on, on the other hand it was interesting to see which motifs the pupils came up with themselves. Interestingly, the teachers' interventions in the design process of the pupils who were focusing closely on the task (Bianca, Cyril, Dario, Elena, Fiona) did not seem to make a substantial difference for their development of ideas, albeit sharpening their own ideas in differentiation to the teachers' suggestions. On the other hand, for the pupils who were mainly cutting t-shirts, thus following a path that was not taken up in the final designs (Alan, Gerard, Henry), the interventions by the teacher helped to focus on the task and develop ideas.

Methodically, the analysis of authentic footage from a project grounded in design-based-research aiming at developing materials for an electronic portal to be used in teacher's education, has been challenging, especially in regard to the videofootage. Whereas the photographs used for the document analysis were taken systematically after the activities, for the recording of the videofootage it was not always possible to follow the planned protocol, thus leading to data that cannot be standardized. However, the section examined in this article can be considered as a rich pool for qualitative analysis, as has been shown in the previous paragraphs. From a broader point of view, the analysis shows that the short sequence is densely packed with key aspects regarding dialogic learning in crafts and design education that have been highlighted in recent studies. Since parts of the videofootage and the documents discussed can be found on the portal KfUE described in the introductory paragraphs, it is possible for students in teacher education to try and conduct exemplary, simplified microanalysis with similar materials that provide ample opportunities to gain insight into subject-specific teaching and learning processes.

Acknowledgements

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