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Multimodal blame attributions in technology-supported peer interaction

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ABSTRACT

This study investigates the multimodal construction of blame attributions in peer interaction during digital tasks in English as a Foreign Language classrooms. Drawing on multimodal conversation analysis (CA), we examine how the force of blamings is manifested in and through the variety of resources used, and the role of digital devices in the emergence and resolution of blaming sequences. The analysis shows that children's blame attributions can be bold and involve a lamination of several multimodal resources, often without an explicit verbal formulation. Additionally, participants may build on the actions of the digital application to allocate blame, using the affordances of the technology to avoid direct verbal attributions. The study thus elaborates on the sequential structure of blamings and highlights their context-bound and multimodal nature. It contributes to research on multimodality in technology-supported classroom interactions, shedding light on the merging of the embodied and the digital in action formation.

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Blame attributions; multimodal conversation analysis; classroom interaction; peer interaction; technology-supported tasks

1. Introduction

During collaborative learning tasks, pupils need to manage their roles as team members, as parts of a 'we' (Etelämäki 2021), who are accountable to each other for their actions in ensuring task progression and success. Team members need to collaboratively negotiate answers, as non-existent negotiation or individual decision-making may lead to mistakes that affect the performance and assessment of the whole team. In the event of such a mistake, one possible line of action for the team is to negotiate who is to blame for it and therefore for having violated their role as a team member. Through this kind of a blame attribution (Pomerantz 1978), pupils can resolve the matter of the mistake and reorient to task progression.

In conversation analytic research, blame attributions have previously been studied as primarily verbal accomplishments in different mundane (Evaldsson 2007; M. H. Goodwin, C. Goodwin, and Yaeger-Dror 2002; Pomerantz 1978) and institutional contexts (Atkinson and Drew 1979; Evaldsson 2016; Niemi and Bateman 2015). These studies have shed light on the sequential structure of blamings (see Section 1.1) and the verbal resources used in their formation. Within educational contexts and in interaction among children, blamings and

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accusations have also been shown to be intricately related to the moral order of a peer group and to participants' identity work as group members (Evaldsson 2007, 2016; Niemi and Bateman 2015). What is still lacking, however, is a multimodal analysis of how embodied, material, and technological resources may intertwine in the action formation of blame attributions as well as an inspection of how the ecology of modern, technology-infused classrooms may be reflected in the structure of blaming sequences.

Our aim is to further an understanding of how blame attributions are accomplished in social interaction, particularly in task-based peer interaction around technology. Using multimodal conversation analysis, we investigate data from English as a Foreign Language (EFL) classrooms where mobile devices are used for performing learning tasks in small teams. In these settings, mistakes by peers are often oriented to through blame attributions, which are used to allude to participants' roles as team members. We show the multimodal nature of blame attributions, by which we refer to the fact that they can be built from both verbal and embodied resources as well as rely on varied socio-material and digital affordances. In particular, we show that the actions on screens of digital applications can be used by pupils as resources in designing social actions (see Greiffenhagen and Watson 2009; Norén, Melander Bowden, and Evaldsson 2022), specifically blamings. Our research questions are: (1) How are multimodal resources used to construct blame attributions, and how is the force of the attributions manifested in and through these resources? (2) What is the role of technology in the emergence and resolution of the blaming sequence? The findings show that blame attributions are built in locally contingent ways, drawing on embodied resources and the rejections of answers by the digital application, and that the technology offers students a way to avoid making verbal announcements of peers' mistakes. In addition, we address the issues related to negotiations of roles and responsibilities that emerge during collaborative digital tasks. Our study thus builds on and contributes to research on blaming and disagreement sequences and multimodality in technology-supported classroom interaction, offering novel insights into how multimodal and technological resources blend into a single 'phygital' entity (Due and Toft 2021).

1.1. Blaming sequences in institutional and everyday contexts

With the seminal 1978 paper, Pomerantz described the mechanisms of blame attributions in everyday conversations and suggested that blame can be attributed either to self or the other so that apologies, admissions, and confessions are attributed to the self, while blamings, accusations, and complaints target the other. More importantly, Pomerantz showed that blame attributions occur as subsequent parts, or second segments, in sequences of talk-in-interaction, where the first segments are reports of 'unhappy incidents'. Extract 1, taken from Pomerantz's paper, shows how A reports the destruction of a car, that is, an unhappy incident.

Extract 1. It blew up (Pomerantz 1978, 118).

```
1   A     It blew up.
          .
          .
2   R     Whadju do to it?
```

In the second segment, R explicitly attributes the blame to A by asking what they have done to it, thus assuming that A is responsible. Notice that the second segment need not

immediately follow the report, and it may be uttered by either the producer of the report or another participant, as research on accusations in different settings has also shown (e.g. Atkinson and Drew 1979; Niemi and Bateman 2015).

Later studies have illustrated how blamings and accusations are built sequentially and formulated verbally. In the context of courtrooms, Atkinson and Drew (1979) have shown how counsels design question-answer sequences in such a way that leads to inferences about a person's blameworthiness and ultimately forms an accusation. The attribution of responsibility is in such cases built through several turns. In a classroom context, Niemi and Bateman (2015) offer insights into how pupils collaboratively accomplish accusations by invoking classroom rules and membership categories. Such category work can also be found in the accusations in Evaldsson's studies on preadolescents' talk about friendship (2007) and on children's and teachers' accounts for misconduct (2016). Similarly, M. H. Goodwin (1990) describes children engaging in 'he-said-she-said' disputes, where a peer is accused of having talked about another behind their back and, thus, of having violated the group's moral order. Together, these studies on children show how blamings, accusations, and disagreements in peer interaction are often expressed in an unmitigated manner (also M. H. Goodwin 1983). Whereas adults' disagreeing turns may generally be shaped as dispreferred (e.g. Sacks 1987), those of children seem to bear characteristics of preferred turns, in that they are direct, short, and produced with no delay (Church 2009). The present study will show that, while young pupils often attribute blame in a bold manner and with few mitigating resources, they can also avoid being verbally direct through the affordances of the context, such as technology.

While Pomerantz (1978) offers a useful basis for investigating verbal blaming structures, the nature of the audio-recorded data inhibits an inspection of embodied and material resources in constructing blame attributions. To our knowledge, the only study to specifically address the multimodal design of blamings is that by Goodwin, Goodwin, and Yaeger-Dror (2002), who explored disagreement turns during children's games, focusing especially on prosody. The blame attributions, however, were only discussed as part of larger activities, not detailing their multimodal construction and sequential organisation. Moreover, previous studies on blamings have generally focused on sequences where blame is attributed for incidents that have occurred prior to and separately from the ongoing interaction (see, however, M. H. Goodwin 2006; Goodwin, Goodwin, and Yaeger-Dror 2002, on disputes during games). To bridge these gaps, we aim at delineating the role of embodiment and technology in the emergence and resolution of blame attributions during second language (L2) task interaction, a hitherto unexplored context in research on blaming. Specifically, we describe how blame is attributed for a mistake made by a peer on a mobile device as soon as it has occurred, and how the blaming action is 'built out of the details of the particular social [setting]' (Sidnell 2017, 321). Some of these details are the actions occurring on the screens of digital devices, which, we argue, participants draw on in constructing blame attributions.

1.2. Multimodality in device-centred interactions

Research on social interaction has for decades been interested in objects in human interaction (e.g. C. Goodwin 1994; Hindmarsh and Christian 2003; Tuncer, Licoppe, and Haddington 2019). The rapidly expanding interest in technology and the rise of the concept of multimodality within conversation analysis (e.g. Mondada 2019) have

generated a burgeoning body of studies concerned with how verbal and embodied resources are organised while using technological devices (e.g. Brown, McGregor, and Laurier 2013; Due and Toft 2021; Haddington and Rauniomaa 2011; Thorne et al. 2015). These studies illustrate how interaction can be organised around technology and how technology and embodiment may merge in action formation.

Studies focusing on interaction around technology illustrate how different resources are used to manage tasks performed on or with the help of technology. In these contexts, the embeddedness of the use of technology in social interaction requires a constant (re) negotiation of interactional space, that is, of the space of mutual orientation formed through the arrangement of participants' bodies (Mondada 2013) or through their orientation to and usage of technological devices (Oittinen 2020). In mobile-supported educational contexts, participants have been shown to use resources such as gaze, body movements, talk, and touch to maintain group cohesiveness (Thorne et al. 2015), organise turn-taking around mobile devices (Theobald et al. 2016), modify interactional spaces to solve trouble during digital tasks (Vänttinen 2022), and resist a change in the participation framework by blocking a peer from accessing a device (Jakonen and Niemi 2020). Studies on collaborative digital tasks have also shown that pupils use the affordances of technology, such as spellcheckers and synthetic voicing, as resources in correcting spelling (e.g. Musk 2016; Norén, Melander Bowden, and Evaldsson 2022). However, blame attributions have not been discussed in this research.

Within the line of research investigating the merging of technology and embodiment in the production of (inter)action, Due and Toft (2021) show how the embodied action of highlighting text on a computer screen (through pointing, talk, moving the mouse) is intertwined with the digital actions of the cursor on the screen (see also Olbertz-Siitonen and Piirainen-Marsh 2021). They suggest abandoning the dichotomy between embodiment and digital technology and instead argue that these modalities together form a single, 'phygital' entity. In a somewhat similar vein, we consider how an action, such as a notification of an error, performed by a digital application can be treated by participants as a resource in designing blame attributions during game-based tasks. By relying on the actions on the mobile device, pupils can allocate responsibility to their peers even without verbally announcing the mistake. Thus, the blaming sequences are constructed through the interplay between the embodied and the digital and are understood as such due to the local, sequential contingencies of the ongoing task activity. Thus, our study offers novel insights into how participants utilise technology as a resource in action formation and ascription during digital tasks.

2. Data and methods

The data come from a collection of audio- and video-recordings as well as screen recordings from 19 EFL lessons in four comprehensive schools in Finland in 2020 and 2021. The recordings were made in seven classrooms, with pupils aged 10 to 15 years (grades 4 to 9). All teachers and the guardians of the participating pupils gave their informed written consent, and the participants had the freedom to withdraw from the study at any time. No ethics approval for the study was required by the University of Jyväskylä.

From the beginning, our analytic attention was on peer interactions around mobile devices used in collaborative language learning tasks. Screen recordings proved particularly

useful for analysing these interactions, as they afforded us a window to the tasks and enabled us to investigate how the actions on screens were used by participants to produce social actions. We noticed that when pupils made mistakes in tasks by choosing incorrect answers, their team members tended to design blame attributions by building on the rejections of answers by the digital application. We zoomed in on such blaming sequences to analyse their multimodal construction. The final collection comprises 19 sequences from two classrooms, 4th and 5th grade, where pupils worked in pairs or groups and used such game applications as Kahoot!, Blooket, and Socrative. Tasks on these applications can entail competition since points are awarded for correct answers. While competition was not part of the teachers' task goals, the pupils demonstrably oriented to the tasks as such by verbally commenting on their points and position in the games, for instance.

Drawing on multimodal conversation analysis (CA), we illustrate how interaction is collaboratively built through the dynamic use of multimodal resources, which are adapted to the local sequential and temporal circumstances (Mondada 2013). The emic approach accounts for what is relevant for the pupils themselves in interaction and reveals the situated design of blame attributions. It also shows that, while technology can be given a participation status in dynamic and situated ways in interaction (Krummheuer 2015), the pupils in our data orient to it as an interactional resource not only for the scripted learning activity but also for designing blame attributions. The data have been transcribed using the Jeffersonian conventions of CA for participants' talk and the multimodal conventions developed by Mondada (2022) to illustrate embodied actions. The transcripts have been pseudonymised, and drawings have been used instead of images to protect the participants' identity.

3. Analysis

The analysis will illustrate the local, multimodal tailoring of pupils' blame attributions. The blaming sequences are intertwined with the scripted initiation-response-evaluation (IRE; Mehan 1979) sequences between the pupils and the device (see Figure 1), where the automated multiple-choice questions on the digital application can be conceived of as initiations, triggered by a pupil's manual action of pressing a button on the screen. This is followed by the pupils' response as they choose an answer option. When the answer is incorrect, it becomes relevant for the design of a blame attribution whether the mistake is first flagged by a peer or by the application. In a subcollection of cases (5/19), the blame attributions are produced just before the digital application rejects the chosen answer and designed as verbally explicit. An illustrative example is discussed in Section 3.1.

In most cases, however, the recurring structure of blaming sequences is as follows: First, a pupil makes a mistake, and the incorrect answer is rejected by the application. A peer then builds on this rejection to multimodally attribute the blame to the participant that made the mistake. The 'guilty' party may accept the blame (Extract 3), account for the mistake (Extract 4), or downplay the gravity of the mistake (Extract 5). The blaming sequence is then concluded as the pupils continue with the game, mostly without further discussion on what happened (although see Extract 5). The three extracts in Section 3.2 demonstrate this structure and show different degrees of force from mild to bold blame attributions. We argue that the blame attributions in these cases derive their force from the lamination of multimodal resources rather than relying merely on verbal attributions and that their stance varies depending on the manner different resources are used.

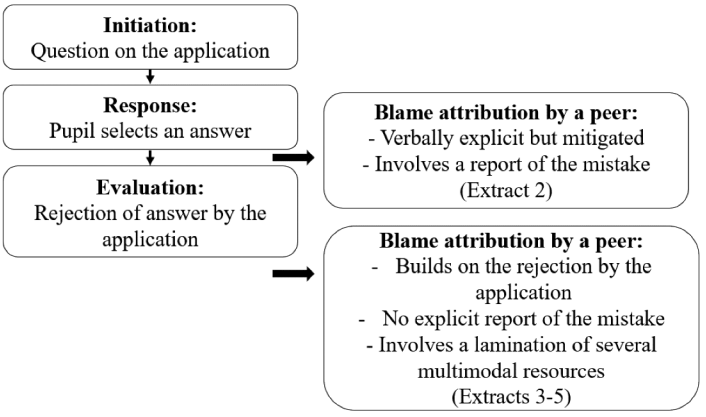

Figure 1. Sequential organisation of the task and the blame attributions.

In addition, we will demonstrate how the pupils' orientation to the mistake influences the interactional space (Mondada 2013) created between the team members and how this is intertwined with the management of participants' roles as parts of a 'we' (Etelämäki 2021) who are accountable for their actions in the game. When pupils negotiate the answer together, and thus potentially share the blame for a mistake, they display joint orientation to the device and solving the issue. In cases where negotiation is non-existent or overridden by an individual, the interactional space is remodified: the blamer disengages from the device and persists in solving the issue, whereas the 'guilty' party mainly orients to the game and tries to avoid further confrontation or resist the blame.

3.1. Attributing blame explicitly

Extract 2 comes from a 4th grade EFL lesson, where pupils practise irregular plural forms of nouns with a Kahoot!. It illustrates the relevance of whether the mistake is flagged by a pupil or the digital application. Namely, one of the pairs (Mea and Paula) in the data often noticed the mistake before the application reported it, after which the blame was attributed to the 'guilty' party explicitly through an address term (or a reference pronoun) and stating what the mistake was. The explicitness of the attribution led to the pupils using fewer embodied resources in action formation, as Extract 2 illustrates.

Mea and Paula are sitting side by side at Mea's desk and use a single tablet computer placed on the desk (Figure 2). The extract begins as the noun *foot* appears on the screen (l. 1). Both pupils react to it by simultaneously reading it aloud (l. 3 & 4) and then offering a candidate answer in overlap (l. 6 & 7). They thus agree on the correct answer without explicitly negotiating it together before the answer options appear on screen.

Extract 2.

```
1    Mea        (okei)#
                (okay)
     paulaG     >>on tablet->
     meaG       >>on tablet->
     tablet     >>the word 'a foot' on screen
     fig.             #Fig.2
```

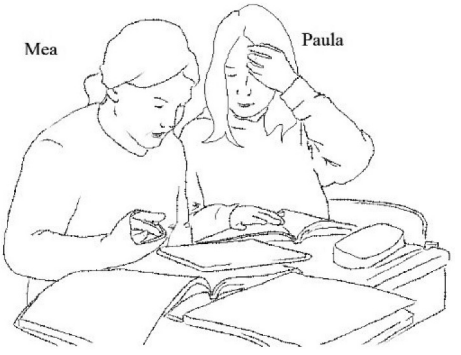

Figure 2. Participants gaze at device.

```
2                (0.6)

3     Mea        [foot].

4     Paula      [ foo]:t,•
      paula              •...->

5                (0.2)*(0.2)*
      paulaG       ->*.....*to book->

6     Paula      [se on•       f*ee•t ].
                 it is feet

7     Mea        [se on•       f*ee•t:]h,
                  it is feet
      paula          ->•grabs book•hand toward tablet->
      paulaG                 ->*to tablet->>

8                (0.5)•÷(0.4)
      paula        ->•hand hovers above device,
                      leans toward tablet->
      mea             ÷leans toward tablet->

9     Paula      se on ▶#÷feet,•÷
                 it is feet
      tablet           ▶answer options appear
      mea              ->÷      ÷hand toward tablet->
      paula                  ->•hand toward tablet->
      fig.              #Fig.3
```

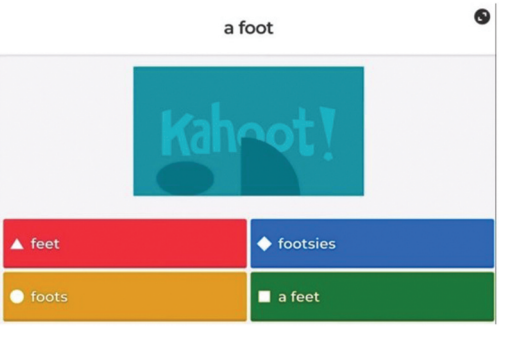

Figure 3. Answer options.

```
10  Mea       feet ÷feet          ÷•feet?+%÷=
    mea          ->÷taps 'a feet'÷,,,,,,,,÷...->
    paula                      ->•retracts hand->
    meaG                            ->+
    meaF                               %closes eyes,
                                        round mouth->

11              =↑A::%÷↓A:[:: ]=

12  Paula                [↑ei]=
                           no
    meaF           ->%
    mea             ->÷hands cover face, throws herself back->

13  Mea         =[ me÷%+♥ni ]=

14  Paula       =[mea÷%+♥ sä]=
                  mea     you
    mea              ÷leans forward, hands cover mouth->
    meaF              %open eyes->
    meaG               +to tablet->>
    paulaF             ♥smiles->

15  Mea         =[(x)]

16  Paula       =[lai]▶#toit÷ a• fee(h):::(h)t.#
                 put a feet
    mea                    ->÷leans toward tablet,
                              hands cover mouth->
    paula                  ->•
    tablet              ▶answer marked incorrect
    fig.                 #Fig.4                #Fig.5
```

Figure 4. Mea reacts to mistake.

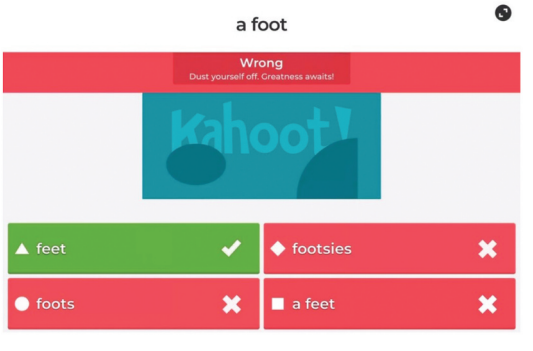

Figure 5. Application marks answer incorrect.

```
17              (0.2)•(0.6)
     paula           •...->

18   Paula      ne•x:          •t,♥
     paula      ->•taps 'next'•,,,->
     paulaF                     ->♥

19              (0.2)•(0.4)÷%(0.3)
     paula         ->•taps 'next' twice->
     mea                ->÷lowers hands from face->
     meaF                  %smiles->

20   Paula      ne•▶x:÷t:
     paula      ->•
     tablet        ▶scoreboard appears
     mea            ->÷

21   Mea        me ollaa• iha       •=
                we are just
     paula             •taps 'next'•,,,->

22   Mea        =[h:uippu]▶sur•keita;%
                  truly    lousy

23   Paula      =[nex:t ,]▶
     tablet               ▶new question appears
     paula                  ->•
     meaF                          ->%
```

Before and during the answer options appear, both pupils bring their body and hand closer to the device in preparation to touch the screen (l. 8–9). There thus seems to be competition as to who gets to select the answer. When the answer options appear towards the end of Paula's repetition of the candidate answer (l. 9, Figure 3), Mea is the first to press the option closest to her right hand: *a feet*. Simultaneously, she is repeating the correct answer in quick succession (l. 10). Immediately after having pressed *a feet*, however, Mea covers her face with her hands, throws her body backwards (l. 12; Figure 4), and produces a loud, elongated response cry (l. 11) that serves as a non-lexical affect display (cf. Hofstetter 2020). Her embodied actions together with the cry can be described as an 'embodied extreme-case expression' (Skogmyr Marian 2021), a bold lamination (C. Goodwin 2013) of multiple resources, that visibly manifests her realisation of the mistake. Mea also verbally comments on the mistake (l. 13), but the turn is inaudible due to overlapping talk.

In overlap with Mea's reaction, Paula interjects *no* in Finnish (l. 12) as a response cry and then attributes blame to Mea by addressing her by name and stating the mistake (l. 14 & 16). Paula also underlines the mistake by emphasising the indefinite article *a* that is not part of the plural form. Although Paula's blame attribution is verbally straightforward, it does not involve a lamination of several resources and her smile mitigates it (Figure 4). The smile and the tone and pitch of voice that mimic Mea's cry, can also signal alignment and affiliation with Mea's affect display, marking Mea's mistake as non-serious and as a central part of the game where there is a possibility of losing (Hofstetter 2020). Furthermore, as pupils can signal trouble through a gaze shift to a co-participant during technology-mediated tasks (Vänttinen 2022), the lack of a gaze shift by Paula may here indicate the non-seriousness of the mistake or an avoidance of confrontation.

Amidst the blaming, the application rejects the answer (l. 16; Figure 5). The pupils, however, no longer pay attention to it; instead, they move on in the game. When Paula presses the 'next' button, the overall scoreboard appears on screen (l. 20). Mea's we-deprecation (l. 21–22; cf. Pomerantz' concept of self-deprecation Pomerantz 1984) orients to it as she comments that their team is 'truly lousy' at the game. She thus highlights their joint accountability of working and succeeding as a team (also Etelämäki 2021).

In this extract, Paula's turn explicitly assigns blame to Mea before the application signals the mistake. It is thus not built on the rejection by the application but emerges from Mea's action on screen as a type of a multipurpose turn, which verbally initiates repair by reporting Mea's mistake (notice, however, that once an answer is selected, it cannot be corrected in the game) and attributes blame. Although explicit, the attribution is mitigated by Paula's affect display that aligns with Mea's embodied expression, rendering the experience as shared. Paula's orientation to the mistake as non-serious and her avoidance of confrontation is further underlined by her continued focus on the device (l. 18). Thus, the existing interactional space of mutual orientation towards the device and the game is sustained. Moreover, Mea's embodied self-attribution in its extreme form pre-empts further delving on the matter.

3.2. Attributing blame multimodally by building on actions on the device

Most blame attributions in the data involve verbally more indirect blaming than Extract 2, accompanied by a lamination of embodied resources and directly building on rejections by the digital application. Despite the lack of an explicit verbal report of the mistake, many blame attributions are bold, deriving much of their meaning and force from the lamination of multimodal resources. To illustrate this interplay of verbal, embodied, and digital resources, we present three examples in this section. In Extract 3, the blame attribution is noticeably mild and hinted at rather than explicitly expressed. With Extracts 4–5, the blame attributions become more aggravated, yet are somewhat quickly resolved as the pupils prioritise task progression.

In Extract 3, the combination of subtle prosodic and embodied cues together with a verbal formulation pointing at the basis for the mistake indicate that blame may be attributed. It originates from a reading comprehension activity in a 5th grade lesson, where the Socrative application is used to answer questions about a book chapter they have read. Markus and Aron are working together, using a device that Markus handles on his desk (Figure 6). Here, they need to answer the question already visible on screen: *Where did Mike learn French?* (Fin. 'Missä Mike oppi ranskaa?'). Out of three options (A 'at home', B 'when travelling', and C 'at school'), option A is correct, but Markus selects option C.

The sequence begins with Markus reading aloud to himself (l. 1) and skimming part of the text in the book (*mh mh*) before reading aloud the part he considers as providing the correct answer, emphasising the word *school* (l. 2). As he turns to the device (l. 2–3), he first checks with Aron in Finnish whether he agrees with the candidate suggestion (l. 4). Aron, gazing at his book, somewhat absent-mindedly confirms it (l. 6).

Extract 3.

```
1    Markus     >welcome to# petit café< (.) france=
     aronG      >>on his book->
     markusG    >>on his book->
     fig.                  #Fig.6
```

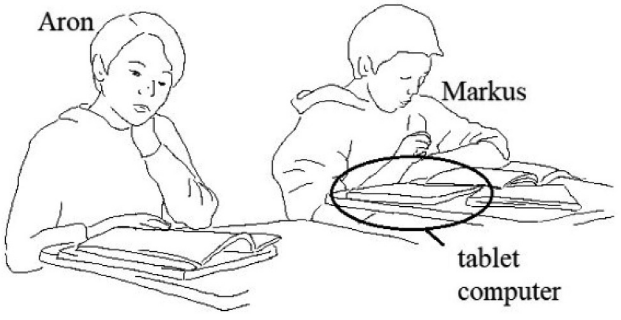

Figure 6. Participants gaze at books.

```
2                  =mh mh learnt (.) english+ at+ school;
     markusG                                ->+...+to tablet->

3                  ÷(0.3)
     markus        ÷hand moves toward screen->

4    Markus        koulussa,+÷
                   at school
     markusG              ->+...->
     markus                ->÷hand hovers above screen->

5                  (0.1)+(0.2)
     markusG          ->+to aron's book->

6    Aron          jep
                   yup

7                  (0.2)+÷(0.2)+(0.1)÷
     markusG          ->+......+to tablet->
     markus            ->÷...........÷taps C->

8                  (0.2)÷(0.6)        ÷(0.7)        ÷(0.2)
     markus          ->÷taps 'submit'÷retracts hand÷...->

9    Markus        näh;÷
                   nuh
     markus          ->÷touches screen->

10                 (0.4)÷►(0.6)
     markus          ->÷
     tablet             ►answer marked incorrect,
                        correct answer shown

11   Markus        hä?
                   huh

12                 (2.0)+(0.2)+•
     markusG         ->+.....+to book->
     aron                    •turns toward markus->

13                 (0.8)*(0.5)•(0.2)*÷
     aronG           ->*...........*toward markus->
     aron                 ->•leans toward tablet->
     markus                      ÷retracts hand->

14                 (0.3)*÷#
     aronG           ->*to tablet->
     markus           ->÷...->
     fig.                #Fig.7
```

Figure 7. Aron gazes at device.

```
15              (0.7)÷(0.2)•
     markus        ->÷touches book->
     aron                ->•

16              (0.4)•(0.6)*(0.6)*
     aron             •leans back against chair->
     aronG               ->*.....*down->

17              (0.3)•*(0.4)*(0.4)
     aron          ->•
     aronG          ->*.....*to book->

18   Aron       I +÷learned+ en*glish=
     markusG    ->+........+to tablet->
     markus      ->÷hand moves toward screen->
     aronG                  ->*...->

19              =at *•÷[s+cho+#ol; ]=

20   Markus          *•÷[ä+ä
     aronG         ->*to markus->
     aron             •tilts head left->
     markus         ->÷
     markusG           ->+..+to aron->
     markusF                  %smiles->
     fig.                  #Fig.8
```

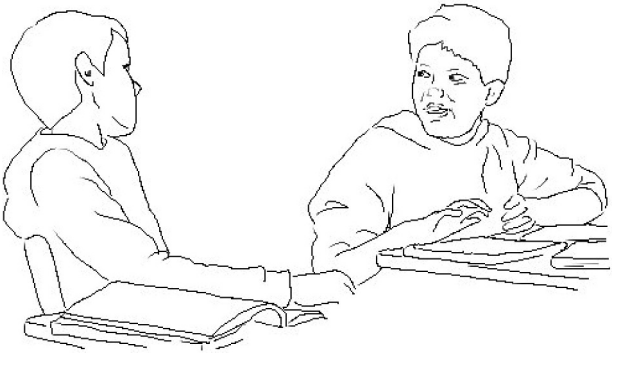

Figure 8. Mutual gaze.

```
21   Aron       hh•*h+h♥ £(mh h +h)£÷%♥
     aron       ->•
     aronG       ->*down->
     markusG       ->+.........+to tablet->>
     aronF              ♥smiles--------♥
     markus                          ÷taps 'ok'->
     markusF                        ->%

22                (0.4)*%(0.1)÷►
     aronG           ->*...->
     markusF            %smiles->>
     markus                ->÷
     tablet                   ►new question appears

23   Markus     £yeah* hmh£
     aronG           ->*to book->>
```

After Aron's confirmation, Markus selects option C (l. 7) and presses the submit button (l. 8). There seems to be trouble with the device, however, as Markus produces a nasalised non-lexical vocalisation and touches the screen again (l. 9). When the application signals the mistake (l. 10), he performs another vocalisation with higher pitch and questioning intonation (l. 11) that serves as a trouble-alert (Kendrick and Drew 2016) and demonstrates Markus' surprise. Although Aron has been reading his book, the alert draws his attention as he slowly leans closer to the device (l. 13–15, Figure 7). He then resumes his home position (l. 16–17). The embodied shift in Aron's orientation towards the device indicates a change in the interactional space and establishes a joint focus towards solving the problem. This becomes evident when both pupils direct their gaze at their books (lines 12 and 17, respectively).

Aron's turn in line 18 can then be seen as a multipurpose turn that verbally corrects the answer and implies blame. It builds on the rejection by the application and the chapter text as Aron repeats the sentence Markus read earlier (l. 18–19). Aron's tone of voice is slightly marked, however, and he emphasises two key words in the sentence: *English* and *school*. Moreover, he shifts gaze towards Markus and tilts his head slightly. Together these actions mark the mistake in relation to the task question as an obvious one that should have been avoided. In overlap with the end of Aron's turn, Markus performs a vocalisation and gazes towards Aron, and the two establish mutual gaze (l. 20, Figure 8). Markus also begins to smile (l. 20), which together with the gaze serves as an acknowledgement and mitigation of his mistake. Aron aligns and returns the smile (l. 21), which can also manifest their shared understanding of the 'silliness' of the mistake. Withdrawing their gazes and reorienting to the book and the device, respectively, both mark the trouble resolved.

Aron's blame attribution is mild and verbally indirect, yet its prosodic and embodied features indicate that blame is attributed. A reason for the mildness could be that Aron has not paid attention to the question and has confirmed Markus' candidate answer without further consideration, which makes them both responsible. The reciprocal smile and the lack of an account for the mistake by either participant seem to display a shared sense of moral accountability and acknowledgement of the mistake.

In comparison, the combination of verbal, prosodic, and embodied resources in Extract 4 offers us a clearer case of blaming, where the rejection of the answer by the application is harnessed to construct the blame attribution. Verbally, the blame attribution is again indirect. The extract features Heidi and Ella, who are playing a Kahoot! as a team on a tablet computer (Figure 9). As their next task, they are to pick the correct English translation of the Finnish question *Söitkö eilen suklaata?* ('Did you eat chocolate yesterday?') out of four options (Figure 10). Heidi starts producing a verbal candidate translation before seeing the answer options (l. 1). As the options appear on screen, she cuts off her turn.

Extract 4.

```
1    Heidi     did ↑you (.) ea:t (.) ►las:::#t,
     heidiG    >>on tablet->
     ellaG     >>ontablet->
     tablet                          ►answer options appear
     fig.                                  #Fig.9&10
```

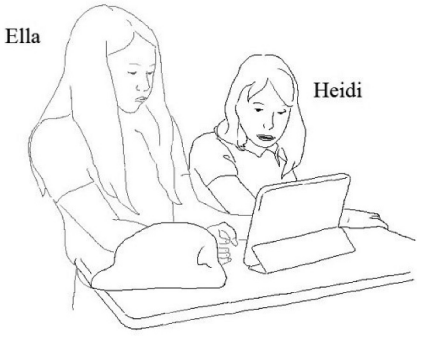

Figure 9. Participants gaze at device.

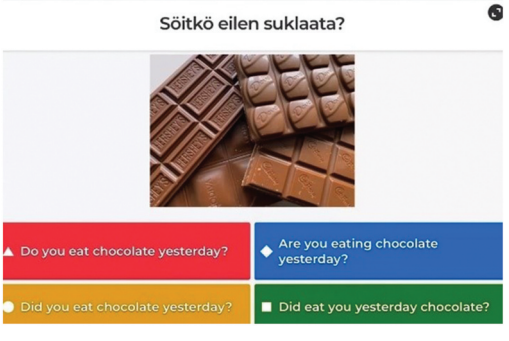

Figure 10. Answer options.

```
2                (1.9)÷(0.7)÷ (.)        ÷(0.6)
     ella             ÷.....÷taps screen÷

3    Heidi       @do you eat@►
     tablet                   ►sound for incorrect answer

4                (.)÷►
     ella           ÷,,,->
     tablet          ►answer marked incorrect,
                      correct answer shown

5    Heidi       chocolate÷ yester-÷
     ella                ->÷adjusts posture÷

6                (1.0)÷*(0.2)♥(0.2)*
     ella             ÷adjusts posture->
     heidiG          ->*...........*to ella->
     heidiF                   ♥smiles, eyes half-closed->

7                #(0.5)*♥
     heidiG          ->*to tablet->
     heidiF           ->♥
     fig.        #Fig.11

8    Heidi       n%ii.♥
                 yeah
     ellaF        %smiles->>
     heidiF           ♥presses lips together->

9                (0.3)#(0.3)♥*(0.3)*
     heidiF                ->♥upper lip rolled up on teeth->>
     heidiG                 ->*.....*up->
     fig.             #Fig.12
```

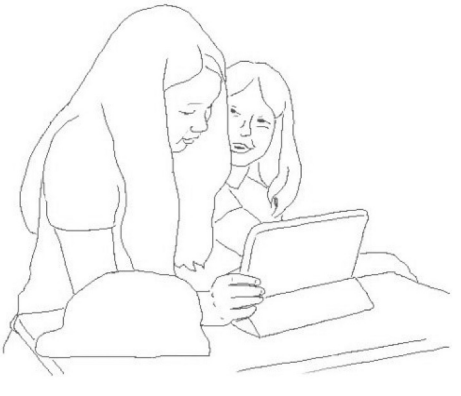

Figure 11. Heidi gazes at Ella.

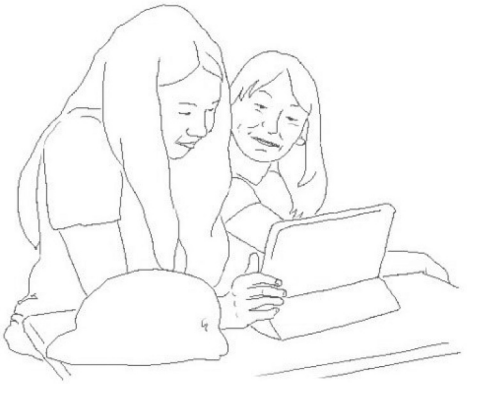

Figure 12. Heidi presses lips together.

```
10   Ella        (no ku ÷mä) (xx)=
                 (well cause I)
     ella             ->÷taps 'next´->

11               =(näh÷*ny sieltä)*(.)(ku-)
                  (see there)          (cause)
     ella          ->÷
     heidiG         ->*to tablet--*right->>
```

Heidi's candidate translation is followed by a gap (l. 2), during which Ella picks the answer *Do you eat chocolate yesterday?* While Heidi aligns with the choice by beginning to read it aloud (l. 3–5), the application marks the answer incorrect first through a sound (l. 3) and then visually with a cross next to the selected answer and highlighting the correct answer in green (l. 4). Heidi builds on this rejection to perform a blame attribution by shifting her gaze to Ella (Figure 11) and smiling 'smugly' with her eyes half-closed and chin slightly up. The gaze shift becomes particularly relevant in this side-by-side formation (Auer and Zima 2021), indicating trouble (Vänttinen 2022), while the facial expression and the position of her head explicitly assign the blame to Ella. Verbally the attribution includes a short response particle *nii* ('yeah') that is prosodically emphasised and loaded with meaning: it not only underlines the rejection of the answer by the application by aligning with it (cf. VISK 2004, §798) but also reasserts the fact that Heidi provided the correct answer, whereas Ella chose the wrong one (cf. Sorjonen 2001, 197). Heidi also presses her lips together (l. 8–9; Figure 12) and grimaces with her upper lip rolled up on her teeth (l. 9), displaying annoyance or disappointment.

In response to the application signalling the mistake, and potentially to seeing Heidi's embodied expression from her peripheral vision, Ella smiles (l. 8) and accounts for the mistake by referring to not having seen, most likely, the correct option (l. 10). The account together with the smile function in two ways: acknowledging Ella's responsibility for the mistake while also mitigating it. Simultaneously, Ella presses the 'next' button, prioritising task progression. Interestingly, the pupils do not establish mutual gaze, which enables Ella to avoid further confrontation. It also ostensibly shows how the interactional space gets modified when Heidi orients towards Ella to blame her, whereas Ella continues to focus on the device.

Our final example, Extract 5 illustrates a blame attribution realised as an embodied extreme-case expression through a notably extensive variety of resources. In a 4th grade lesson, Ellen and Fiona are playing a Kahoot! on a single tablet computer. They are shown hidden pictures of animals that are revealed piece by piece, and they need to pick the right English name for each out of four alternatives (Figure 13). Ellen is handling the tablet, holding it on Fiona's desk with the screen facing herself. Fiona is on her knees on a chair, leaning over the desk to have visual access to the screen (Figure 14).

Extract 5.

```
1    Ellen      [mikä? ]#
                 what

2    Fiona      [toi on]# •kotka,
                 that is an eagle
     fionaG     >>on tablet->
     ellenG     >>on tablet->
     ellen                •taps 'a hen'->
     tablet     >>piece of hidden picture shown->
     fig.               #Fig.13&14
```

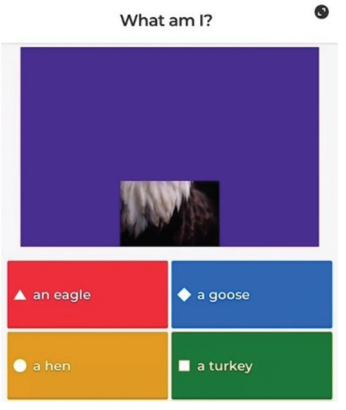

Figure 13. Hidden picture on screen.

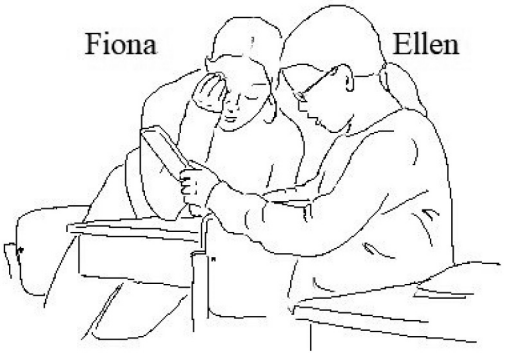

Figure 14. Participants gaze at device.

```
3                (0.2)►•(0.2)±
      ellen          ->•
      tablet         ->►2nd piece of picture revealed

4     Ellen      ei► oo ku-
                 no it's not but-
      tablet       ►picture of an eagle revealed

5                (0.2)

6     Ellen      mi↑tä!♥►
                 what
      ellenF           ♥mouth open, frowns->
      tablet            ►answer marked incorrect

7                (0.4)÷(0.3)
      fiona           ÷straightens back->

8     Fiona      ↑KOT÷KA;=
                 eagle
      Fiona        ->÷pounds at desk 4 times with fist
                     in rhythm with talk->

9                =#MÄÄ SA÷NOIN ÷ETTÄ♥ se oli=
                  I said        that it was
      fiona            ->÷.....÷rests arms on desk->
      ellenF                      ->♥lips pressed together->
      fig.         #Fig.15

10               =÷↑KOT+♥KA;      ÷%•#
                    an eagle
      fiona       ÷nods in rhythm÷
      fionaG         ->+to ellen->
      ellenF          ->♥smiles->
      fionaF                      %mouth open->
      ellen                        •taps 'next'->
      fig.                          #Fig.16
```

Figure 15. Fiona pounds desk with fist.

Figure 16. Fiona gazes at Ellen with open mouth.

```
11              (0.4) •(0.4)▶(0.3)+(0.4)+ •(0.3)%      •
      ellenF       ->♥grimaces->
      ellen         ->•shrugs, shakes head•taps 'next'•
      fionaG                    ->+.....+to tablet->
      fionaF                                  ->%
      tablet                 ▶scoreboard appears

11    Fiona     oikeesti el♥[len virtanen.      ]♠
                seriously ellen virtanen

12    Ellen                  ♥[ei se meitä▶ tapa.]♠
                               it won't kill us
      ellenF              ->♥
      miloG                                      ♠...->
      tablet                               ▶new question

13              (0.2)♠(0.1)
      miloG       ->♠to fiona->

14    Fiona     ↑TAP+PAA!=
                yes it will ((lit. 'kills'))
      fionaG     ->+toward milo->

15              =↑YKS+♠*♥•        ÷VÄÄ*  ♥•RI=
                  one incorrect
      fionaG       ->+to tablet->
      miloG         ->♠
      ellenG         ->*left---------*to tablet->>
      ellenF            ♥raised eyebrows♥smiles->>
      ellen              •shrugs---------•
      fiona                        ÷pounds fist on desk->

16              =ja KAIKKI ME+nee pieleen%+
                and everything goes wrong
      fionaG                ->+toward milo-+...->
      fionaF                               %smiles->

17              (0.5)÷+
      fiona          ÷pounds fist on desk->
      fionaG          ->+to tablet->>

18    Fiona     el▶le:n ÷(.)% ä•
                ellen (.)    uh
      fiona           ->÷
      fionaF               ->%
      ellen                     •taps 'a cow'->
      tablet      ▶piece of hidden picture revealed

19              (.)•
      ellen      ->•
```

```
20   Fiona     lehmä;►
               cow
     tablet          ►picture of a cow revealed
```

The mistake occurs when Ellen presses the option *a hen* (l. 2–3) and verbally rejects (l. 4) Fiona's candidate answer ('an eagle'; l. 2). The mistake is revealed as a picture of an eagle appears on screen (l. 4). Ellen displays her surprise through a response cry, or a surprise token (Wilkinson and Kitzinger 2006), *mitä!* ('what'), and by frowning with her mouth open (see e.g. Heath et al. 2012) as the answer is marked incorrect (l. 6). After a short gap and staring at the device, Fiona produces a highly marked blame attribution (l. 7–11). Verbally the turn is designed to underline her having offered the correct answer (*mää sanoin*, 'I said'), which Ellen rejected. The embodied extreme-case expression is manifested in the lamination of several embodied resources: the changes in body posture (l. 7 and 9), the raised volume and higher pitch of voice (l. 8–10), the pounding on the desk (l. 8 and 9; Figure 15), the gaze shift and sustained gaze to Ellen (l. 10–11), the nods emphasising each syllable in the word *kotka* ('eagle'; l. 10), and the wide open mouth displaying disbelief (l. 10–11; Figure 16). Fiona's embodied actions signal a strong emotional reaction and display the urgency of accounting for the mistake. She orients away from the game, giving priority to finding the 'guilty' party. She thus modifies the interactional space, as they move from a shared focus on the device to only Ellen orienting to it, while Fiona's attention shifts to Ellen and dealing with the mistake.

Ellen's embodied response in the form of a smile (l. 10), a mischievous grimace (l. 11), a shrug, and headshakes (l. 11) downgrades the gravity of the mistake. By maintaining her gaze on the tablet and pressing 'next' (l. 10–11), she displays a continued orientation to the game and resists taking the blame. Consequently, Fiona expands the blaming sequence, more explicitly allocating the blame by uttering *oikeesti* ('seriously') and Ellen's whole name (l. 11). In overlap, Ellen further downplays the situation by stating 'it won't kill' them (l. 12), which Fiona objects to (l. 14–16). Interestingly, Fiona glances at another student close by and starts smiling at the end of her turn (l. 16), as if to mitigate the otherwise emotional turn or to add a humorous aspect to it for overhearers. Nevertheless, she once more pounds her fist on the desk (l. 17) and repeats Ellen's name (l. 18). Ellen's persistent focus on the game finally defuses the situation: when a piece of another hidden picture appears on screen (l. 18), Fiona offers a candidate answer (l. 20).

Again, the application's rejection of the answer enables the blamer to avoid announcing the mistake as this is visible to both participants on the screen. Fiona produces the blame attribution by verbally referring to the correct answer she had given and by implying the perpetrator and the severity of the mistake through embodied conduct. The downplay of the situation by Ellen and her disregard for their roles as team members lead to an expansion of the blaming sequence by Fiona. In this way, Extract 5 differs from Extracts 2–4, where the blamed participant displays an orientation to having made a mistake.

While the blame attributions in Extracts 3 to 5 differ in terms of their force, they share some important characteristics. First, they involve an intertwinement of the embodied with the technological in that the notifications of mistakes by the application are used as

parts of the blaming sequence, whereby explicit verbal reports of mistakes become unnecessary. Second, they are formed as combinations of verbal formulations that do not directly attribute blame and embodied resources, which are tailored according to each context. Action formation relies on gaze shifts, facial expressions, and tone of voice, for instance, with gestures and movements of the head and body emphasising the conveyed message. Finally, the conduct of the blamed participant affects the organisation of the blaming sequence: accepting the blame and accounting for the mistake result in a quicker closure (Extracts 3–4) whereas downplaying the situation may lead to bolder actions and sequence expansions (Extract 5).

4. Discussion and conclusion

This study has investigated blame attributions in classroom peer interactions during digital collaborative tasks. We have used multimodal conversation analysis to elaborate on the structure of blamings suggested by Pomerantz (1978), illustrating their context-sensitive and multimodal nature. We have shown that blame attributions can be produced immediately after the 'unhappy incident' (cf. Atkinson and Drew 1979; Evaldsson 2007; Pomerantz 1978), and more importantly, that rejections of answers by digital applications can be built on by participants to attribute blame for a mistake without verbally announcing that mistake. This has been highlighted in the analysis of the two types of blame attributions found in the data. The first are the few cases where blame is attributed to a participant before the digital application rejects an answer and where, consequently, the attribution is verbally direct and involves fewer embodied resources. The main data set, on the other hand, consists of verbally indirect blame attributions where action formation and ascription rely more on embodied resources and the digital notification of a mistake by the application. The visibility of the 'unhappy incident' (Pomerantz 1978) to all participants, then, renders an explicit verbal report redundant. The digital therefore becomes a powerful resource for the maintenance of social cohesion – the participants avoid having to explicitly announce the mistake and who is to blame for it since the application has already indicated the mistake.

The findings contribute to conversation analytic research investigating interaction among children. It is in line with such studies as M. H. Goodwin (1983) and Church (2009) that have shown the unmitigated and bold nature of children's disagreements. In addition, however, we have offered new insights into how this boldness results from a lamination of varied multimodal resources (C. Goodwin 2013) rather than from direct verbal actions. Moreover, we have shown that children's blame attributions can also be mitigated: in particular, the verbally explicit blame attributions in the data were rather mild and mitigated, perhaps to avoid confrontation (Extract 2).

By exploring blaming sequences during technology-supported tasks, the study has shed light on the role of the digital in social interaction. It has revealed how the dualism between the digital and the physical becomes blurred, and how the actions on screen are treated by participants as interactional resources, seamlessly intertwining with talk, embodiment, and material resources. Thus, the merging of the embodied and the digital as a 'phygital' entity can 'make possible new kinds of meaning-making processes' (Due and Toft 2021, 14), but not only in the form of single actions but also on the sequential level, where verbal, embodied, and digital actions alternate and co-occur. In this way, the

participants harness the affordances of technology as resources for action formation in context-sensitive ways.

In addition to highlighting the role of technology as a resource, the analysis has revealed the relevance of blamings for managing the moral order of the classroom (see also Evaldsson 2016; Niemi and Bateman 2015). A key issue impacting the interactions in the data is the pupils' shared responsibility as team members, particularly when they orient to tasks as competition against others. The shared as well as the individual responsibility of each participant for their actions (including mistakes) can be alluded to in the dynamic, local tailoring of blame attributions: milder, mitigated attributions occur after participants accidentally choose incorrect options (Extract 2) or when team members agree on the answer (Extract 3), whereas individuals' faulty actions that result from ignoring a peer's suggestion can lead to multimodally bolder blame attributions (Extracts 4 and 5). Furthermore, while mobile devices only afford haptic access to one person at a time, whereby that participant becomes responsible for answering on behalf of the team, it does not eliminate the need to negotiate joint decisions. This is visible in the aggravated blame attributions that occur when negotiation has been ignored. Similarly, if a pupil downplays the mistake and resists taking the blame (Extract 5), the blame attribution tends to be expanded, whereby the existing interactional space is also remodified. Finally, even though the orientation to the games as competition may be a reason for why the blaming sequences tend to be resolved quickly – since the participants prioritise completing the tasks – the game-like nature of the tasks may also make questions of responsibility and blame relevant.

Overall, our study has investigated blame attributions in a hitherto unexplored context, namely that of collaborative digital tasks in EFL classrooms. It has provided new insights into the multimodal accomplishment of attributions of responsibility and how their design may be built on digital actions. It has therefore significantly contributed to our understanding of blaming as an interactional phenomenon, particularly in a classroom context with young learners. Moreover, while the study has shown that pupils can creatively use technology as a resource for peer interaction, it has also revealed how collaborating on a device not originally designed for teamwork in classrooms can lead to intricate negotiations of rights and responsibilities – issues that future research on classroom interaction needs to investigate in more detail.

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Appendix

The conventions for transcribing participants' talk and embodiment (see e.g., Mondada 2022).

.	final falling intonation
	continuing intonation
;	slightly falling intonation
?	interrogative intonation
!	animated speech tone
↑	rising intonation
↓	falling intonation
hhh	outbreath
.hhh	inbreath
what	word emphasis
>what<	speech that is quicker than the surrounding talk
<what>	speech that is slower than the surrounding talk
WHAT	speech that is louder than the surrounding talk
wha:t	prolonged vowel or consonant
wha-	cut-off word
(what)	uncertain hearing
[what]	overlapping talk
=	no break between utterances or units of talk
((incorrect))	transcriber's comments
(1.5)	silence in seconds
(.)	micro pause
*•♥+%÷	Each participant in an extract is assigned a symbol. The symbol in a line of talk indicates the beginning/end of a focal embodied action that is explained underneath the line for talk.
ellenG	Gaze of the participant is marked in this line.
ellenF	Facial expressions of the participant are marked in this line
ellen	Other embodied actions of the participant are marked in this line.
-> ->	Action continues across subsequent lines until the same symbol is reached.
>>	Action begins before the beginning of the extract.
->>	Action continues after the extract ends.
. . .	Action's preparation.
	Action's retraction.
#	Indicates the temporal placement of a figure in a line of talk.