

# Playing to Collaborate: Using Cooperative Board Games to Experience and Reflect on Collaboration in Upper Secondary Education

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**Abstract :** There is a growing interest among researchers in using board games for supporting learning in school contexts. Co-op board games is a relatively new and promising type of games, which seems well-suited for improving students' collaboration skills. In this paper, we explore how two groups of Danish high school students interact when playing two different co-op games, *The Mind* and *Forbidden Island*, and how they reflect upon their shared game experiences. The data collection is based on video observations of group interaction and student interviews, which use stimulated video recall. In this way, we are able not only to describe the students' perceived outcomes of the gaming activities, but also their in-game practices. Our data analysis is informed by microsociological perspectives (Goffman and Collins), which are used to map the group interaction rituals and social norms of the students' gaming encounters. Based on the data analysis, we identify two analytical themes, which concern the students' use of verbal and non-verbal communication practices as well as their socialisation processes. The findings suggest that co-op games may be used as a valuable educational tool for qualifying high school students' collaboration skills as well as strengthening their group relations. The students especially valued playing *The Mind*, which they tried playing for multiple game rounds. Based on these findings, we discuss recommendations for the further use and study of co-op board games in educational settings.

**Keywords:** Co-op; Board Games; Microsociology; Collaboration; Communication; Socialisation.

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## 1. Introduction

There is a growing interest among researchers in using board games for supporting learning in school contexts (Bayeck, 2020). This rising interest in the educational use of games can partly be explained by the fact that board games have developed from being a niche interest with few well-known titles such as *Chess* or *Tic-tac-toe* into a mainstream global market with thousands of new titles coming out each year (Naghikhani, 2024). Paradoxically, this wide variety of games may also make it difficult for educators to use board games to get an overview of what games to be used, how to use them, with what groups of students, and for what educational purposes.

In this paper, we wish to focus on the use of leisure co-op (cooperative) board games as a particular game format, which may have learning potential for improving student collaboration. We have chosen this focus for two reasons. First of all, we believe that the use of board games, and co-op board games in particular, offer a rich and focused approach to learning and reflecting on complex aspects of collaboration and communication, which are key skills in most educational systems (Bayeck, 2020). Moreover, we believe that leisure games may offer more engaging forms of learning than what can often be achieved through educational games.

Despite the growing interest in using board games in education, we lack more detailed knowledge on how such games are enacted and experienced by students. Consequently, this study pursues a microsociological approach to understanding how students interact during co-op board gameplay, and how they reflect upon their game experiences in relation to the norms and roles of everyday school collaboration. This brings us to our research question: How do upper secondary students interact, negotiate, and reflect upon co-op board games as a tool and activity for qualifying collaboration?

## 2. Cooperative Board Games and Student Collaboration

According to an international survey conducted among teachers, Danish school children are among the most frequent collaborators in terms of working in groups or in pairs (OECD, 2019). There may be many benefits from student collaboration in school contexts such as shared knowledge construction or possibilities for exploring multiple perspectives through group dialogue. At the same time, there also exist several challenges in student collaboration such as asymmetric participation or difference in communication and collaboration skills. Consequently, groups of students often end up working together more *in* groups than *as* groups (Howe & Abedin, 2013).

Parallel with the widespread practice of student collaboration, there is a high interest among Danish children and youth in playing analogue and digital games, both inside and outside school contexts. According to a large-scale survey of Danish students (N=3000) in grades 5 and 7, one of the primary reasons for playing together is linked with social relations and friendships (Hanghøj & Ejning-Duun, 2023). This demonstrates how social aspects are crucial to most gaming experiences (Gonçalves et al., 2023).

Despite these overlapping tendencies, there exists relatively few studies on the use of co-op board games in school contexts. A recent study by Sousa et al. (2023) offers a quantitative analysis of 25 Portuguese high-school students' experiences of 5 different co-op board games. However, this study only provides limited insight into how the games were played, and how the students reflected on their game experiences in relation to everyday school practices. This calls for more qualitative approaches to the process of playing and reflecting on co-op games in educational settings.

### 3. Case Description

In this section we will briefly describe the two co-op games, *The Mind* and *Forbidden Island*, used in the study as well as the context for the study. The two games were studied as a part of a municipal development project entitled "Conquer the Cooperation" (in Danish: "Spil Samarbejdet Stærkt"). The aim of the project was to investigate the extent to which cooperative board games can strengthen students' understanding of academic cooperation at upper secondary school. The project is based on a collaboration between researchers from Aalborg University, the non-profit organisation The Board Game Bureau (BrætspilsBureauet), and two high schools in Copenhagen. The financial support comes from the Frederiksberg Foundation, a fund under Frederiksberg Municipality.

The project was carried out in spring 2024 in 6 classes with a total of 167 students (ages 17-19). The main activity in the project involved a visit to a class by a game facilitator, who conducted a 90-minute workshop, which divided the students into groups of four. Each group played the two co-op board games. After finishing each game, the groups discussed their game experiences and how they related to everyday cooperation in class.

The workshop's first co-op game was *The Mind* (Figure 1), which is a card game with 100 cards, each of which has a number from 1-100. In the first round, each player gets one card, so in groups of four students, there will be four cards in total. The players must lay down the cards without communicating, so that the lowest comes first and then they follow chronologically. In round 2, each player gets 2 cards, so the group now has 8 cards in total. In each round, the players get an extra card, and the players win if they manage to complete round 8 using 8 cards each. The game invites the students to develop non-verbal forms of communication to sense each other.



**Figure 1: *The Mind* (Copyright: Pandasaurus Games).**

The second game, *Forbidden Island* (Figure 2), is a turn-based tactical game in which players can communicate verbally. In the scenario, players must try to escape from an island that is constantly in danger of being flooded. All the players flee together or drown together. The players can escape only when they have collected four treasures. The treasures are claimed by redeeming five identical treasure cards. Along the way, the players can give each other treasure cards, ensuring that single players acquire cards faster to redeem a treasure. It does not matter who collects the treasures. During the game, players can choose to give cards to each other or counteract the flood. Each player is given a role from the start, which possesses some special abilities. The game calls for joint discussions of each player's actions and what might be the best tactical action to take.



**Figure 2: *Forbidden Island* (Copyright: Gamewright).**

In summary, the two games were chosen according to three criteria. First, the games had to be simple, as there was limited time for learning how to play them. Secondly, the games were chosen to explore *different game mechanics* – e.g. *The Mind* requires individual players to co-create a linear number sequence with direct consequences if they succeed or fail, whereas *Forbidden Island* relies on several different mechanics when drawing cards and moving player tokens, where it is harder to detect direct consequences of the individual player's actions. Thirdly, the two games enabled quite *different communication patterns* as *The Mind* relied on non-verbal group communication, whereas *Forbidden Island* required the players to verbally communicate and agree on shared decisions.

#### **4. Theoretical Perspectives**

In order to study the interaction and situated norms of cooperative board gaming, we will pursue microsociological perspectives on gaming (Kirschner, 2021). Microsociology focuses on small-scale, everyday interactions between individuals or small groups, interpreting how these interactions influence larger societal patterns. More specifically, we will draw on the work of Goffman (1961, 1974) on gaming encounters, and Collins' (2005) theory of interaction rituals.

According to Goffman (1961), gaming encounters can be seen as a particular form of *focused gatherings*, where gaming participants orient themselves toward each and follow the norms and rules of the specific gaming situation. Goffman (1961) also describes the *interaction tension* in gaming encounters as the game participants may be engaged in different ways during gameplay – e.g. some may be spontaneously engrossed, whereas others may be bored. Moreover, games often involve a risk of losing *face* (Goffman, 1955), e.g. when the individual player, either through his action or that of people closely related to him, fails to meet essential requirements placed upon him by virtue of the social position he occupies.

Furthermore, gaming encounters always involve specific *framings* (Goffman, 1974), which refer to the participants' mutually negotiated experiences and social norms of the game. As an example, a game session may be framed by the participants as being casual or serious. Similarly, game activities imply different framings (involving different norms and meanings), when enacted inside and outside school contexts (Hanghøj et al., 2018).

Building upon the insights of Goffman, Collins (2005) has developed a theory of *Interaction Ritual Chains*, which assumes that successful rituals create symbols of group membership and pump up individuals with emotional energy, while failed rituals drain emotional energy. Collins identifies four key ingredients for successful social interactions: *bodily co-presence* (physically assembling in the same space); *barrier to outsiders* (a sense of who is taking part and who is excluded); *mutual focus of attention* (awareness of each other's attention, focusing on a common object); and *synchronisation* (common mood or emotional experience) (Collins 2004). Correspondingly, Collins emphasises four outcomes of interaction rituals: *group solidarity* (a strengthened

feeling of group membership through shared experiences), *emotional energy* of a group (the positive or negative feeling that motivates a ritual participant toward action), *group symbols* (actions, artefacts or jargon that act as symbol carriers), and *moral standards* (shared norms and values that promote a sense of “rightness” in adhering to the group). Even though Collins does not write about board games, we agree with Stromberg (2009) that his theory of interaction rituals can also be used to describe how game participants may be able to create emotional energy through group interaction.

## 5. Methodological Approach

The study adopted focused ethnography as our methodological approach to documenting the students’ interaction during gameplay and their following evaluation (Knoblauch, 2005). Focused ethnography is an applied and pragmatic form of ethnography that explores a specific social phenomenon as it occurs in everyday life. The focused ethnographic approach is characterised by limiting itself to a short time frame, relying on audiovisual collection techniques, gathering a large amount of data, and focusing on communicative elements. This approach seemed relevant as it was not the project’s intention to follow the everyday life of a high school class over a longer period. Instead, we wanted to focus on very specific, limited elements, namely the students’ game practices and their considerations about the potential of board games to enhance collaboration. We ensured focused data through our video observation of the game sessions as well as the subsequent interviews.

Our study was conducted in one of the 6 classes in the development project, where 8 students gave consent and volunteered to participate in video observations and interviews. A researcher had visited the class two weeks before the project and informed them about the upcoming workshop and the possibility of participating as informants. The 8 students were divided into two groups with an equal number of women and men. Figure 3 provides an overview of the informants’ anonymized names. Students at the same line were interviewed together.

**Table 1: Overview of informants.**

|                |            |              |
|----------------|------------|--------------|
| <b>Group A</b> | Adam (M)   | Beate (F)    |
|                | Chris (M)  | Diana (F)    |
| <b>Group B</b> | Elin (F)   | Frederik (M) |
|                | Gustav (M) | Hannah (F)   |

The eight students, as well as the rest of the class, conducted the workshop in the same room, which was also their usual classroom. The two groups that we observed were placed at the back of the room, where the cameras were set up (Figure 4). One camera filmed the tabletop where the game was placed, and the other two cameras filmed two students from each group.



**Figure 4: Camera setup. Two cameras each focusing on a couple of the plates. One camera aiming at the table.**

The video observation gave essential insights into how the students negotiated the collaboration during the game as well as their post-game discussion. The analysis was inspired by a multimodal approach, where both the spoken word as well as gestures and the role of the artefacts can give insight in the social relations (Davidsen & Ryberg, 2017). The multimodal understanding of communication was especially important in relation to the game *The Mind*, where the students were not allowed to communicate verbally. In our analysis, the verbal as well as non-verbal communication were included in our understanding of the collaboration.

After the workshop we processed the video data and began the analysis. We decided the topics for the student interviews and chose video sequences to play at the interviews. Two weeks after the workshop, we conducted the interview. The informants were asked the same questions, which were divided into three themes: 1) their experience of playing *The Mind*, 2) their experience of playing *Forbidden Island*, and 3) their thoughts about what they might learn about collaboration from the boardgames.

We choose to interview the students in mixed gender couples. We hoped that hearing each other's thoughts would inspire further reflections. To help facilitate the recall of events and reflections, the interviewer had placed the two board games on the table. At the interview, the students saw a two-minute scene of themselves playing the board game, prior to questions about the experiences related to the board game.

When addressing the third topic – what they might learn from the board games – we had written down quotes from the students during their post-game discussions, which reflected their game experiences. In the interviews, each student had to select a quote, which he or she thought came the closest to their own experience and then comment on it. Examples of the quotations: “The games can help us get used to each other's way of collaborating” and “In the game, no one knows the answer, but if you are confident in your answer, you can convince the others, even though no one actually knows what is correct.”

The combination of video observation and interviews allowed us to both follow the players' negotiations as it happened and return to scenes that the students discussed post-game and in the interviews. This enabled us to compare observed behaviour with expressed reflections. Having transcribed and coded the data, we performed a thematic analysis that identified analytical themes through patterns of variation across the different data types (Braun & Clarke, 2006).

## 6. Analysis

Based on our thematic analysis, we identified two analytical themes: 1) *Learning to collaborate: Verbal and non-verbal communication*, and 2) *Learning to socialise: Make or break for all*. Each theme is based on data from the video observations as well as interview data.

### 6.1 Learning to Collaborate: Verbal and Non-Verbal Communication

The first analytical theme concerns the students' verbal and non-verbal communication during gameplay as well as their post-game reflections on the same topic. More specifically, the theme concerns the communicative skills that the students needed to use during gameplay, and how this related to everyday forms of student collaboration.

Based on the different mechanics of the two games, the students' communication patterns differed substantially across the two game sessions. When playing *The Mind*, the students had to be silent as the game only allowed them to communicate through eye contact and bodily gestures when gradually putting their handheld cards on the table in varying tempos. During the game, Elin laughingly encouraged the others to read the number in her eyes, and then she tried to draw the number with her eyes by moving her pupils. The others gave up laughing at their attempts to read the number she visualized. In this way, each student group's interaction ritual relied heavily on bodily co-presence and mutual awareness (cf. Collins, 2005). Moreover, the students' focused group interaction created high emotional intensity. Once a game round had been won or lost, this could be seen in loud emotional outbursts among group members – e.g. by spontaneously clapping their hands or making whooping sounds that reflected their wins and losses (cf. Figure 5).



**Figure 5: Players clapping and cheering after completing a game round in *The Mind*.**

When playing *Forbidden Island*, the interaction and communication patterns in the groups were quite different. In contrast to the rhythmic patterns in *The Mind*, where group members shifted between being silent and engaging in loud outbursts after each game round, the students would talk more or less constantly when playing *FI*, which lasted for about 30-40 minutes. Even though the game was turn-based, the group members discussed collaboratively before agreeing on the best move for each player (cf. Figure 6). In this way, there was less emotional intensity in the room, but constant verbal negotiation, which weighed different strategies, possible moves, and their consequences.



**Figure 6: Players discussing and instructing the next player's move in *Forbidden Island*.**

In the post-game interviews, the students commented on how their game experiences (especially from playing *The Mind*) required them to “read the other players’ body language and eyes” (Elin) to avoid losses. Moreover, the students also described how the games made them reflect on their everyday communication and collaboration in school. One student, Elin, described how the game made her think about her own approach to collaboration, where she would often be (too) talkative:

*So, normally I talk a lot, so the thing about not being allowed to say anything, I just had to get used to that, where there are others who might be used to being completely silent. In other games, you must communicate a lot verbally. And then it can be a challenge for them, so you can also develop those skills and get used to the fact that it is not dangerous to say something, nor is it dangerous to say a little less.*

This example shows how the students used their game experiences to reflect on different forms of “interaction tension” (cf. Goffman, 1961) and social norms that accompany different types of collaboration, both during gameplay and student work. Student collaboration as well as co-op gaming both require participants to align their social norms and find ways to reduce tensions in their interaction to make sure that the communication flows. As the quote shows, this implies that group members should neither be allowed to take too much space nor be too passive. Through such reflections, the students pointed out a learning potential in co-op board games in terms of becoming more aware of how and when group members should take the floor in student collaboration. Moreover, another student mentioned how co-op games could be used for “tuning in” to each other when doing group work or help to prepare for oral group exams (Chris). In this way, the co-op games could

be used to learn communicative and social skills, which was not only relevant to the game, but also everyday forms of student collaboration in upper secondary education.

## 6.2 Learning to Socialise: Make or Break for all

Playing co-op games provides the participants a way of socialising which is different compared to other game types. Many games include a clear distinction between winners and losers among players. Co-op-games are unique in the sense that there seldom is an internal division. Instead, the players participate as an entire group, who will make it to the victory or break and loose. In this analytical theme, we will investigate how the group participants socialise and contribute to a shared mood (cf. Collins, 2005) in the groups, and afterwards how the co-op-setup reflects the individual player's facework.

Even though co-op games do not encourage internal competition, locked situations can still arise, where the players' mutual assessments and decision-making may come into conflict. Such a situation arises at one point during the game session with *The Mind* (cf. Figure 7). The three players Elin, Frederik, and Hannah are in a situation where one of them must play the next card, but none of them want to. Elin and Frederik sit next to each other. Frederik puts his card on the table, presses his lips together in a smile, stares at Hannah, and folds his arms. Elin glances sideways at Frederik, presses her lips together, places her card on the table, puts her hands under the table, and smiles at Hannah. From Hannah's perspective, she sees two smiling teammates across from her, who have put down their cards on the table without showing any initiative to place their cards on the pile. Seconds pass. Hannah laughs. Elin and Frederik smile. Visibly pressured, Hannah throws her card onto the pile. It turns out to be the right move. Seconds later, the remaining players place their cards on the pile in the correct order, and the game round is won.



**Figure 7: Elin with her arms crossed. Frederik with hands under the table. Hannah must take the next move.**

The preceding tense situation triggered a shared mood, which in some games could have been a negative experience or cause tension. But with Elin and Frederik's comical imitation of each other's refusal to play their cards, they ease the situation's potential serious pressure on Hannah. In other situations, Hannah's action could be seen as a loss, as she is pressured to act against what she thinks is in their common interest. However, within the contexts of the co-op game, Hannah's yielding to the pressure turns out to be in the group's common interest in terms of making progress in the game. Her action triggers a positive shared energy that has a group-building effect (cf. Collins, 2005). So, what in other games could be seen as Hannah's individual defeat ends up being a collective victory; also for Hannah, who is celebrated for having yielded at the right moment.

During *The Mind* game sessions, the groups often found themselves locked in situations like the one mentioned between Hannah and her teammates. In the succeeding interviews, the students commented on these situations. Chris explains that as a player you can only see your own card, which makes you believe you know how the cards should be played. However, the individual player does not have all the facts. Other players have their own cards and information exclusive to them. As a player, you need to count on the other players' insights. Diana and Chris elaborate further on this:

*Diana: Everyone needs to participate for us to move forward. So, you have to look, okay, Chris is just sitting back completely, and Beate, she's ready, and if you also have low cards yourself, then you have to follow along. This is also generally true in group work, where you can see that some people might be more reserved with their answers, and then there are those, who just say something even if they have no idea whether it's right or wrong, just to say something. So, actually it is important to get everyone to speak up.*

*Chris: I also think exactly what you said about being reserved. If you think about it in the context where Beate has low cards, but you also have low cards yourself. But you still have to make a decision about whether to wait or not, because you can sense that we are somewhat in the same number range, so you don't know, you have to either break through or hold back a bit.*

*Diana: It's about actually daring to come forward with your point and without it being at the wrong time.*

As Diana and Chris explains, you cannot choose to not play your cards in *The Mind* as this will make the entire team lose. Everything depends on each player's active throwing of cards on the pile. Transferring the situation to group work, Diana and Chris also explain that when you work together, you need to dare to continue even though you get stuck.

As the locked situation with Hannah and the game-enhanced participation explained by Diana and Chris suggest, the students experience that playing co-op games may both have a group building effect and being able to support the development of group solidarity (cf. Collins, 2005). According to Diana and Chris, there are a lot of competitive persons in their class. In this way, they perceive co-op games as being particularly relevant in a high school setting to counterbalance the high focus on competition.

The discussion of competitiveness recurs in other interviews. Interestingly, several of the informants begin by stating that they are not competitive people, only to later change their statements to say that they are competitive people. This shows how there was a tendency for the informants in their facework (cf. Goffman, 1955) to distance themselves from the role of a competitive person. Being competitive is not perceived positively by the informants, as the role is associated with behaviour that can seem exclusionary and demoralising. Normally when playing board games, the competition might cause tension between the playing students. Hannah says:

*Playing might be more fun, when there is a winner and a loser, but it can also quickly get out of hand. Some people get upset, or it ends badly, especially if you're in a class with many competitive people".*

Here Hannah emphasises that playing games involves a risk of reducing the sense of security within the group. From this perspective any board game might not necessarily support the development of group solidarity. However, the co-op games are *framed* (cf. Goffman, 1974) differently, as the players' competitiveness do not seem to be triggered when they are playing against the game itself. In Gustav's words: "You are not face to face against another person. The co-op board game is just pieces and cards." Thus, this game format does not trigger what he describes as his competitive mentality. According to Chris, he is a competitive person and is eager in securing that he or his teammates are making the best moves. However, he finds that his competitive nature is not triggered in the same way in the two games:

*When it comes to competitive people, in Forbidden Island you wouldn't notice mistakes right away. If you spend the wrong card, it will bite you later, whereas in The Mind you can more directly and concretely see if you played a card too late or too early.*

Chris had to put more effort into facework and tolerate his own or others' unfortunate moves in *The Mind*, whereas in *Forbidden Island*, he finds himself being a bit more reserved.

On the one side, the students experience how competition may spark competitive energy and excitement. On the other side, competition also comes with a risk of damaging the relationship in the group. When Hannah is asked whether she would prefer to put the co-op games aside in favour of more risky and fun competitive games, she answers:

*No, I don't think so. I think it (co-op-games) provides something different. I may not find it as exciting, but it contributes to cooperation and communication. I believe it offers many more positive qualities than if we were playing against each other.*

From Hannah's perspective the goal of playing co-op games is not simply having a fun time in class, but just as much as a way of learning to cooperate. In this way, she frames co-op games as having a clear educational value, even though they may be less fun than competitive games. In summary, the findings of this analytical theme indicates that co-op-games can serve as a tool for supporting group solidarity through shared moods and increased emotional energy. Using co-op-games may diminish the risk of conflict. Moreover, competitive players might have an easier time controlling possible losses.

## 7. Discussion

The analysis shows how the students actively engaged in the co-op games by interacting verbally and non-verbally with each other during the game sessions when negotiating their moves. Through mutual awareness, the students contributed with high emotional energy to the shared non-competitive mood of playing together as groups against the co-op games. The emotional intensity among group members was particularly high when the students played *The Mind*. Moreover, the analytical themes show how the students' reflected on their gaming activities in relation to the skills needed for everyday forms of student collaboration as well as different possibilities of supporting group socialisation in upper secondary education. Taken together, these findings indicate how the students frame co-op board games as valuable pedagogical tools, which can create mutual engagement among group members, which may potentially both support collaboration and socialisation processes.

Our study is based on a microsociological approach to mapping students' gaming interaction patterns as well as contextualising their post-game reflections. This approach allowed us to document detailed aspects of the student group's in-game communication patterns, and how the students related their gaming experiences to their everyday collaboration and socialisation practices in upper secondary education. There exist relatively few studies, which maps students' gaming practices through a microsociological lens – for exceptions, cf. Wisittanawat & Gresalfi (2021) and Hanghøj (2008). In this way, our study provides new microsociological findings and perspectives on how local gaming processes and interaction norms can be linked to everyday study practices.

However, there are also obvious limitations to our study. First, the students were only allowed to play the two co-op games for a relatively short time. This was particularly problematic with *Forbidden Island*, which the students were barely able to finish, before being asked to discuss the game. Based on the students' excitement with playing *The Mind* several times, which allowed them to discuss, reflect on and improve their strategies, it is highly likely that the students would also have benefitted from replaying *Forbidden Island*. Moreover, we were not able to explore how the games could have been adopted in everyday educational practice as this was beyond the scope of the development project, which formed the context of our study. In this way, we have not been able to validate the students' claims regarding the potentials of the co-op board games in terms of supporting collaboration and socialisation. This points to the need for more longitudinal studies of how co-op games may help to develop local practices.

## 8. Conclusion

The aim of this paper was to explore how upper secondary students interact, negotiate, and reflect upon co-op board games as a tool and activity for qualifying everyday forms of student collaboration. Analysis revealed that the students became actively engaged in playing the co-op games, employing different strategies and modes of verbal and non-verbal communication. Moreover, they reflected on how the gaming experiences related to their own roles during student collaboration, and how co-op games may be especially suited for socialising students into new classes, which is a vulnerable and mandatory process for all Danish upper secondary students. Based on these findings, our paper points to the need for more research on the process of playing co-op games, and how this may help qualify everyday forms of student collaboration and group formation.

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