

Students' decision-making during playing educational games.

Abstract

The current research paper focuses on analysis of video recordings of students playing a card game about fractions. The analysis focuses on the students' social interactions and decision-making. The results indicate that decision-making and negotiation are not straightforward practices when students are playing games. Based on different situations when students make decisions when playing the fraction game, they express their knowledge and assumptions regarding who has the bigger fraction, and hence affect the decision-making process. Focus is on describing and exemplifying how students organize their social interaction as they make decisions. When studying the situations closely we find recurring patterns regarding how students express their knowledge and how decisions are made when playing the card game. For negotiations to start, there needs to be some tension or disagreement about the decision. When there is disagreement students either express explanations and strategies about how they think, or they make use of available learning resources. When explanations are not accepted by the other student, the turn to the learning resources to settle the disagreement. Also, findings indicate that preconceived epistemic status does not seem to influence students' ability to express disagreement and take the initiative to make a decision.

Keywords: learning approaches, educational card game, decision-making, social interaction, students' negotiations, problem solving

Extended summary

Decision-making skills are important to explore and gain knowledge about since decision-making is rarely taught explicitly, even though it is described as one of the 21st century skills needed in future society and workplaces (National Research Council, 2012, p. 185). The current paper aims to describe how students make decisions when playing a card game in pairs and discuss what learning opportunities such decision-making may potentially afford.

The research approach used is video observations and applied conversation analysis (CA). Video recording permits systematic investigation of social interaction patterns (Blikstad-Balas, 2017). Analysing video recordings by way of applied CA aims to: "deliver some news about the organization of valued activities, which may help to generate ideas as to how things may be done differently" (Ten Have, 2007, p. 196). Researchers using CA aim to discover new phenomena rather than searching the data with preconceived notions (Seedhouse, 2004) and construct the analysis by way of empirical findings in the data (Rusk & Rønning, 2020). In CA research transcripts are used to aid the analysis, something which makes data available to others.

The activity analysed in the current research is a game where students (10-11 years old) draw playing cards that represent fractions, and they need to decide who has the bigger fraction. Video observations of students playing games allow for studying decision-making processes since games involve numerous decisions. Video recordings of 102 decisions were analysed, focus is put on situations where students explicitly negotiate about how to move forward since, they are both unsure or have differing opinions about who has the bigger fraction. Situations where students have differing opinions open up for negotiations, and in these negotiations lie potential learning opportunities. If students agree about who has the bigger fraction, there is nothing to talk about.

Findings indicate that students use different strategies to make decisions when playing the fraction game. If one student has a reasonable argument for which fraction is the bigger one, the two

students may agree. If the student cannot articulate reasonable arguments, the fractions can be compared by using available physical learning recourses.

To make a decision, one student needs to take the initiative to indicate who has the bigger fraction. This can be done verbally by saying “you win!”, “I win!”, or by actions like taking the other students’ cards, gesturing that the other student should hand over the cards, or sliding cards to the other student, indicating that the other student should take the cards. Findings indicate that students’ situated epistemic status does not influence students’ aptness to take the first step. After one student (student A) indicates the direction of the decision, the other student (student B) agrees or disagrees. In case of agreement, this may be expressed through verbal or embodied means, or both. Verbally, student B may express his/her agreement with “okay!”, combined with an embodied action, such as handing over or taking the cards. Sometimes, student B makes no attempt neither to confirm the proposed decision, nor show disagreement. In such cases, responsibility for decision-making falls on student A. In some cases, student A may express arguments verbally to get student B agree or disagree about the proposed decision.

Student B may disagree with student A’s assessment of who has the bigger fraction. Findings indicate that the student’s situated epistemic status does not influence whether student B decides to disagree with student A. Student B can express disagreement verbally by uttering statements like “wait!” or “no!”, but also through actions such as not handing over the cards or not taking the cards that student A offers. In such cases, the students need to negotiate to arrive at a decision they both can accept. In these negotiations lie a potential for learning since this opens up for students’ expressing ideas and assessing each others’ ideas. Findings indicate that there is no pattern regarding who is responsible for justifying his/her reasoning. However, a decision on how to solve disagreement needs to be taken for the game to move forward. Strategies used for arriving at a decision include asking the teacher, stating an argument and trying to explain one’s position to the other student, or making use of available learning recourses that offer a physical expression of the fractions involved. When the teacher is approached, students are supported to construct arguments for their views, or to make use of available learning recourses, or both. Students may express arguments about who has the bigger fraction. In cases where one student is not convinced, they tend to turn to the learning resources as an objective means of checking who is right. Even if one of the students is not completely convinced, the decision is accepted when the student is faced with the physical expression of the fractions through the physical learning resources.

Findings zoom in on decision-making processes when students play a card game, and show how decisions are made, and the authors discuss how negotiations in card games may create potential learning opportunities for students. Furthermore, findings indicate that decision-making when playing games may create an environment that allows students, regardless of their epistemic status, to engage themselves in decision-making in a way more traditional classroom activities may not open up for. Decision-making in games may therefore not only offer potential learning opportunities for students but may also contribute to the more overarching goal of education about equitable opportunities for all students.

References

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