Large-scale team card games

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What is the idea?

To encourage students to apply their understanding of cellular components within an active learning context, I have designed cards for an activity that works within large and small teaching spaces. The task involves students acquiring a complete set of cards, which accurately make up the components of something through swapping and negotiating. It requires students to think, problem solve, apply their learning and interact with others. I use several sets within sessions designed with different questions in mind: one set requires students to design a cell – different groups have different cellular components and need to discuss in their team, design and collaborate with others to make a realistic cell. Students are out of
their seats, talking, engaging, competing with each other. It is noisy, energetic and fun!

Why this idea?

The challenge was to develop an active learning strategy that would meet the needs of a large number of students (e.g. > 100) within large teaching spaces, such as lecture theatres.

Biology has many challenging concepts and tricky terminology, and it has been demonstrated that active learning can support and develop understanding within this discipline better than didactic delivery of information (Armbruster et al., 2009). The use of play, and in particular the use of games, has also been demonstrated to be effective within active learning in HE (Nørård et al., 2017). From experience I know that using games within small classes is productive in stimulating and engaging students, so why not in large classes? This led me to develop several games specifically for use within large spaces.

How could others implement this idea?

This works well, building on students' understanding of a topic that would involve a synoptic or applied element to it. For example, students could learn about aspects of a business and the cards could show different elements of different businesses, where students must choose the business type and collect the cards appropriate to that. Here I have used elements of different cell structure, with students choosing which type of cell to build, and their task was to build a particular cell type through swapping cell components. See figure 2 for example cards.
Find images that represent the components that students will be choosing between. Here I included all features that were found within a variety of cell types, and students must choose the correct ones depending on which type of cell they are building.

Create each card with the name of the feature, an image of the structure and some descriptive information that should help students to recall where and why this feature is important.

Print the cards and sort into piles: eg a) features within all cells b) features shared between several cell types c) unique features within a particular cell type

Sort cards into packs for student groups: Packs should have between 6-8 cards. If groups decide to merge with another group they must submit ALL cards and will have penalties if they have duplicates or wrong components.

Set up the groups: in a lecture theatre: I assign students into groups of six, give them a moment to introduce themselves then hand out a pack of cards to each group.

Set the ground rules: choose a cell type to collect for; set a time limit for swapping (20 min was sufficient for this); set swapping rules (eg swap 3 times from other teams / swap from a bag like
scrabble); set a cell card limit per cell (e.g. 12 or 16 so that only two groups can merge).

Use Padlet or similar to gather information about the cell types – each group must submit details of their final card selection (all cards need to be submitted).

Go through each submission collectively and encourage students to explain why most would not be viable (e.g. animal component in a plant cell). Students rate the most realistic cell type and they are congratulated by everyone else.

Transferability to different contexts

The main idea behind this game is to encourage students to apply their knowledge into a ‘creation’ game. The concept is to demonstrate which features are shared between most examples you are comparing and which features are unique to one type – this can be transferred to many disciplines. If you have a topic that you can create Venn diagrams from you can apply this game to it.

Links to tools and resources

Padlet: https://en-gb.padlet.com/

References

Sciences Education 8, 203–213. https://doi.org/10.1187/cbe.09-03-0025

Image Attributions

Figure 1. Cells under a microscope by National Cancer Institute is used under Unsplash licence
Figure 2. Cards representing two different cellular components, created Using BioRender by Lorraine Smith, is used under CC-BY 4.0 license

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