Activity: simulate the Aloha network

Simulating the Aloha network in the classroom is a valuable activity to illustrate some of the problems inherent in building a communications network.

Scenario

We have a group of people in a large room all wanting to have a conversation with each of the other people. They are not allowed to move. They want to easily swap who they are talking to and choose when they want to talk. Without rules, it would be chaos, as everyone would attempt to shout.

Instructions

1. Draw up a plan in which you pair your learners up. Do not tell the learners who they are paired with.
2. Give one learner of each pair an envelope containing a short message (a few words) and the name of the second learner.
3. The other learner in the pair only knows someone will try and give them a message.
4. Make it clear that this is not an competition for who can be the fastest pair — it's the total time that counts.
5. Get everyone to walk around randomly.
6. When you say "Stop", the learners have to stop walking, open the envelope, and, without moving, get their message to the other person in their pair.
7. When the message has been successfully received, the pair sits down.
8. Time how long it takes for all the messages to be received.

It should be loud and chaotic for the first few goes.

> Explore with your learners what rules you could use to make transmission more efficient.

Try these rules:

- Do not talk over anyone else.
- If two people are talking at the same time, BOTH stop and wait a random time before retrying.
- After a silence, wait a random time before trying to speak.

If suggestions arise to use a token which is passed around and confers the right to speak, this is perfectly valid: there are token bus and token ring systems that use this concept.

Outcomes

You should be able to demonstrate that rules are need to communicate when we have several people (or devices) and a shared space (media) in which we are trying to communicate.

You should also be able to illustrate that with central control and a simple set of rules that all participants follow, effective communication is achievable.