

At a time when many families worldwide are having to remain at home, K'NEX and Zoom work very well together, allowing children to enjoy home-based interactive activities with their teachers, or with grandparents who are not able to visit them.

They make an ideal combination, because:

- a) K'NEX is the most flexible construction kit available, allowing thousands of different models to be built from a medium-sized set of parts.
- b) The powerful video conferencing app Zoom is used by schools worldwide, but is free of charge for sessions involving only two remote locations.

This document has been written by Andy Shercliff of the K'NEX User Group, a grandfather who enjoys regular "Zoom Club" sessions with his grandchildren.

The sections in this document are as follows:

1. Objectives
2. Equipment and working area
3. Zoom Club projects
4. Preparing for a session
5. During a session
6. After a session
7. Other considerations



1. Objectives

The main objective of a Zoom Club is to provide the children participating with enjoyable interactive activities.

Secondary objectives include:

- a) Selecting activities that have an educational value for the children participating.
- b) Giving grandparents the pleasure of carrying out interactive activities with their grandchildren.
- c) Allowing parents to get on with other tasks whilst their children are taking part in a Zoom Club session.



2. Equipment and working area

The Zoom Club will require each set of participants to have access to:

- a) Computer (PC, laptop, tablet or smartphone) with Zoom installed.
- b) Screen that is large enough to display both the remote participant(s) and also a large, clear picture of the activities that they are doing. Smartphones will need to be able to "cast" to a larger screen.
- c) Speakers.
- d) Microphone.
- e) Main camera.
- f) A second camera (optional).

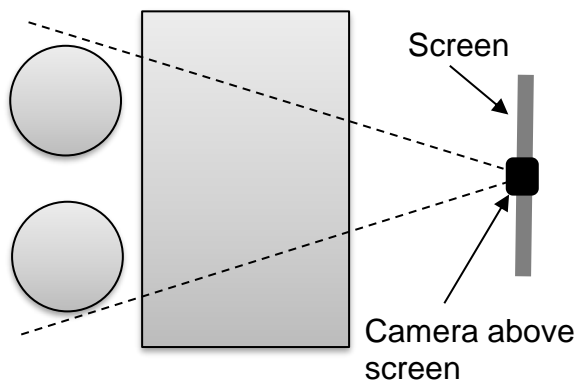
The working area for sessions should comprise a desk or table large enough to hold the materials to be used, and the activities being carried out.

Suggested sizes for the working area are:

- a) A single participant - 60cm (2 feet) wide by 60cm (2 feet) deep
- b) Two participants – 120cm (4 feet) wide x 60cm (2 feet) deep

Please note that, for the remainder of this document, we work on the assumption that one grandparent is carrying out Zoom Club sessions with two grandchildren, as this is our main area of expertise. However, we believe that the approach we propose is equally applicable to online teaching, and would welcome your feedback on this.

Positioning of the main camera is critical to the success of sessions. It should be placed high enough up, and far enough away, that the remote participant can see both the activity being carried out, and the children/grandparent themselves (see overleaf).



The main source of light in the room should be somewhere behind the main camera, so that the faces of the participants are illuminated.

If a second camera is available, this should be positioned closer to the work area, and at right-angles to it, allowing close up views of model-building.

Once the equipment and working area are set up, they should be tested, to ensure that camera positioning, audio quality, lighting etc are satisfactory.

Consideration might also be given to having an outdoor working area (in the shade) in addition to the indoor working area. This could then be used in fine, warm weather.

With regard to the K'NEX set to be used in Zoom Club projects:

- a) General-purpose K'NEX sets (eg a 70-model set) are ideal for Zoom Club projects, but if these are not available, any medium-to-large K'NEX set will work nearly as well.
- b) If possible, the grandparent(s) should have access to the same K'NEX set as the children. This will enable them to fully participate in model-building.
- c) Where possible, the K'NEX parts should be stored in a compartmented tray, allowing any part to be found without having to rummage around in a tub of mixed parts.



3. Zoom Club projects

If any of the participants have not used K'NEX before, it will be helpful if they:

- a) Build a few models using the instruction book provided in their K'NEX set.
- b) Browse the *Free Resources* → *Handy Hints* pages of the K'NEX User Group website.

They will then be ready to start enjoying Zoom Club projects. The following notes may assist:

- a) Projects that are opening-ended generally give greater enjoyment and educational benefit than projects where the children are simply following instructions. For instance, "design and build your own K'NEX castle" is better than "build this K'NEX castle from instructions".
- b) The *Free Resources* → *125 K'NEX challenges* pages will give you ideas for K'NEX challenges for your Zoom Club.
- c) The *Free Resources* → *1000 Models to build* pages may also be of interest.
- d) The schedule of projects might include both projects that the children have chosen, and projects that the grandparent think the children will enjoy.
- e) It is best to start with simpler projects, and then move on to more advanced projects once the necessary experience is gained.

Also, please note if two grandchildren are enjoying Zoom Club sessions together:

- a) Sometimes it will be possible for the younger child and the older child to carry out the same project, with the older child helping the younger child when necessary.
- b) At other times, it may be of benefit to the older child if they carry out a project which is challenging for their age, whilst the younger child carries out a different project.

4. Preparing for a session

It is recommended that the following tasks are completed before every club session:

- a) Check that you are using the latest version of Zoom, and that you have applied all Zoom's latest security recommendations.

- b) The K'NEX parts tray or tub should be placed on the side of the work area, leaving the central part of the work area free for the activity.
- c) Background sound should be reduced to a minimum (eg any television in the room should be turned off).
- d) The equipment should be re-tested for camera angle, lighting and audio quality.

In addition, where relevant to the project:

- a) The children might research the topic being covered in advance (eg finding out about castles before a project to design and build a castle).
- b) If this is the first time a particular type of K'NEX part has been used (eg K'NEX gears), it might be helpful to allow the children to experiment with their use.

5. During a session

Whilst the project is being carried out, it is recommended that:

- a) A parent remains somewhere nearby in the house.
- b) Any queries that any child has should be resolved where possible by the grandparent.
- c) If two children are taking part, they should be encouraged to help each other
- d) b. and c. above should result in parents being interrupted as few times as possible whilst the Zoom Club is in session.
- e) From experience, projects lasting between 30 and 45 minutes work well with children. However, it is difficult to predict exactly how long any particular project will take.
- f) The grandparent may wish to keep some short, enjoyable tasks to hand, which can be carried out if the project finishes unexpectedly early (eg word games, number games, quizzes).
- g) The grandparent should ask the children to tidy up their work area before the session ends.
- h) Occasionally projects may last for multiple sessions, in which case the work-in-progress will need somewhere to be stored safely.

6. After a session

To gain maximum benefit from each session, it is suggested that parents carry out the following actions:

- a) Ask the children to explain and demonstrate the end result of their project.
- b) Check that tidying up has been completed.
- c) Help the children to keep a Zoom Club diary, describing each project they have completed.
- d) Help the children to take a photo of their completed project.
- e) Carry out any follow-on activities that may be relevant (eg following up a Castle project with other history-based activities).

7. Other considerations

The following notes may also assist:

- a) In our view, either classic K'NEX or Micro K'NEX can be used with children aged 6 and upwards. However, younger children may need occasional help from an older child or parent.



- b) There is also a version of K'NEX called Kid K'NEX, which is ideal for Zoom Club projects with children aged 3 to 5.
- c) For more information about setting K'NEX challenges, please visit the *Free Resources* → *Downloads* page.
- d) Our experience is in using Zoom to link the children and grandparents together, but apps such as Facetime, Skype and Google Duo should work just as well.
- e) Once the children have become experienced in Zoom Club sessions, they may wish to set up and lead their own sessions with other family members, or with friends.

Any feedback on improving this document would be very welcome. Many thanks.