Sample virtual program for Stage 5.2 Mathematics:

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| Guiding question |  |
| What are your students going to learn? (Learning intentions) | Students will learn how to calculate quartiles and the interquartile range to represent data sets. |
| How are they going to learn it? (Resources and Strategies) | It is envisaged that all concepts will be introduced by the staff member via video conferencing using Microsoft Teams or Zoom; however, materials to supplement learning and independent learning activities have been provided for self-paced study. |
| How are you going to know that they learned it? (Success criteria) | 1. Students use and interpret the terminology of quartiles, interquartile range and five numbers summary 2. Students are able to determine the upper and lower extremes, median, and upper and lower quartiles i.e. ‘a five number summary’ |
| Collecting evidence of student learning (Verification) | Activities provide formative assessment opportunities as student responses are collected. Students are provided with assessment as learning opportunities during interactive activities. |
| Feedback (Evaluation) | Staff can use video conferencing such as Microsoft Teams or Zoom to lead student discussion and pose assessing and advancing questions. Staff can use these platforms to respond to student misconceptions identified through the formative assessment activities. |
| Communication | Staff can facilitate discussion, collaboration and sharing of files through platforms like Microsoft Teams or Google Classroom. Or via video conferencing software such as Zoom or Microsoft Teams |

### Model 2 – Sharing resources for students to view/read and reflect on.

It is envisaged that the following sequence of lessons would be facilitated by the peer discussion and conferencing, asynchronous discussion and mini-whiteboard activities from the [Digital learning selector – Learning activities](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Browser?cache_id=240cd).

### Single variable data analysis

Stage 5.2 Mathematics

* selects appropriate notations and conventions to communicate mathematical ideas and solutions **MA5.2-1WM**
* constructs arguments to prove and justify results **MA5.2-3WM**
* uses quartiles and box plots to compare sets of data, and evaluates sources of data **MA5.2-15SP**

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| Lesson sequence |  |  |
| 1 | 1. Students attempt the open middle activity to review the difference between mean and median. 2. Students are introduced to quartiles and the interquartile range. The staff member may like to use Microsoft Teams to facilitate discourse and share their screen to demonstrate concepts. The mathsisfun.com activity can supplement students’ understanding. 3. Students could practise finding quartiles by completing the questions at the bottom of the Maths is Fun website, or by completing the [MangaHigh activity](https://www.mangahigh.com/en-au/activities/statistics). | Students could watch the video to review the difference between mean and median  <https://stattrek.com/descriptive-statistics/mean-median.aspx?Tutorial=AP>  Students attempt this open middle activity <https://www.openmiddle.com/mean-median-and-range/>  Students could read the article on Quartiles and Interquartile range <https://www.mathsisfun.com/data/quartiles.html> website.  Students could practise finding the median and quartiles by completing this MangaHigh activity  https://www.mangahigh.com/en-au/activities/statistics |
| 2 | 1. Students research a data set of interest to them, and then calculate statistics including mean, mode, range, quartiles and inter-quartile range; e.g. local prices of recently sold houses or prices of a car they are interested in buying. 2. Teacher to then lead a discussion on possible causes for the variability between prices. The staff member may like to use Microsoft Teams or other video conferencing facilities such as zoom to facilitate discourse. | Possible sources of data  <https://www.realestate.com.au/buy>  <https://www.carsales.com.au/>  <https://www.gumtree.com.au/> |
| 3 | 1. Students visit a website for a local sporting association and use data from the last season to determine “Who is the best player”. For example, students could visit the [Newcastle District Cricket Association](http://mycricket.cricket.com.au/common/pages/asphost.aspx?id=HBA&entityid=2975) website and visit the Hall of Fame section. 2. Students should construct arguments using statistics to justify their choice. The staff member may choose to allow students to present their findings to the rest of the class through video conferencing such as Microsoft Teams, Zoom, or students could record their response using Flipgrid | Students could use https://info.flipgrid.com/ to record their response to “Who is the best player?” |
| 4 | 1. Students are introduced to a Box Plot as a graphical method of displaying the five number summary. The staff member may like to use Microsoft Teams to facilitate discourse and share their screen to demonstrate concepts. The Eddie Woo videos may be used to supplement students’ understanding. 2. Students can practise interpreting and drawing boxplots using this transum activity 3. Students to learn how to draw boxplots in Desmos. The staff member may like to use Microsoft Teams or other video conferencing software to demonstrate this. The Boxplots in Desmos video can supplement students’ understanding. 4. Students can then draw boxplots for the data they investigated in the previous lessons. (Note: values can be copied and pasted in Desmos, instead of typing them individually into a list) | Boxplots (1 of 2) – Eddie Woo  <https://www.youtube.com/watch?v=drKEoMcYW3Q>  Boxplots (2 of 2) – Eddie Woo  <https://www.youtube.com/watch?v=c0cTHthV5GM>  Boxplot interpretation practice – transum activity  <https://www.transum.org/Maths/Exercise/Box_Plots.asp?Level=1>  Boxplots in Desmos  <https://www.youtube.com/watch?v=JQNKwUP-a6s>  <https://www.desmos.com/calculator> |