TINKERPLOTS

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TARGET AUDIENCE: Intermediate and Senior Phase teachers
DURATION: 2 hours
MAXIMUM NO. OF PARTICIPANTS: 20 participants
VENUE: Computer laboratory

ABSTRACT

TinkerPlots Dynamic Data Exploration is a data analysis program designed specifically for learners in the Intersen Phase. It is a *general data handling* tool that teachers and learners alike will find useful across a large range of subject matter. It is a user-friendly program with a variety of ready-to-analyse data sets, drawn from topics including mathematics, science, geography, sports, etc. The software is not about clever graphics or entertaining games, but learners are likely to be engaged with the content and reflective thought forms a significant part of the correct use of the program in the classroom. Through *TinkerPlots*, learners can enter data they collect themselves or find on the Internet, and can create their own graphs or tables of these data. They can also use the program to produce reports that include graphs, text that explains their findings and even photos they take or from the Internet. *TinkerPlots* differs from other 'graphing' or spread sheet programs because learners can actually design their own graphs, giving them a sense of being in control of what they produce.

THEORETICAL BACKGROUND

The ultimate goal of statistics in the mathematics curriculum is statistical literacy (Franklin, et al. 2005). The *TinkerPlots* software program was designed by Key Curriculum Press as a tool for teachers to use in the endeavour to

- develop statistical literacy and statistical thinking,
- make use of real data,
- promote conceptual understanding and reflective thinking rather than mere knowledge of the procedures in using the program, and
- encourage active learning and discussions in the classroom.

Thoughtful use of the *TinkerPlots* software will help teachers to develop learners' statistical literacy and critical thinking, which is in line with the Curriculum and Assessment Policy Statement (DBE 2011, p. 5) which envisages "... learners who are able to use science and *technology* effectively and critically...". Moreover, teachers generally understand mathematical and statistical concepts better when computer programs are used in their professional development, even though they might not be able to use the software programs with their learners.

Wessels, H. (2013). TinkerPlots. In Z. Davis & S. Jaffer (Eds.), *Proceedings of the 19th Annual Congress of the Association for Mathematics Education of South Africa*, Vol. 2. (pp. 78 – 79). Cape Town: AMESA.

CONTENT OF THE WORKSHOP

The introductory workshop is divided into 3 parts:

- Part A (± 50 min) includes a video clip covering the basics of the program and data exploring activities by participants. The learning goal is to introduce teachers to ways in which *TinkerPlots* can be used to make predictions about the relationship between two characteristics, make graphs to investigate a question, and support a conclusion using information from a graph. The pedagogical reflection questions for this section are: How does the investigation approach used in these activities engage learners with the data (if it does)? What have learners learned at the end of these activities?

- Part B (± 15 min) is about importing data from Word, Excel and the Internet. *TinkerPlots* can import data from many different applications, such as *Microsoft Word*, spreadsheet programs like *Excel*, and websites. There are three ways to import data: by copying and pasting, by importing from a text file, or by downloading from the internet. The learning goal for this part is to help teachers to find and enter data into *TinkerPlots* and make it usable for their learners. The pedagogical reflection questions for this section are: How do the data that learners work with affect what they learn? How do you choose the data that learners will work with?

- Part C (± 50 min) focuses on investigating data. The learning goal for this section is to make teachers aware of ways to foster learners' ability to: identify important (or unusual) aspects of data; justify conclusions based on data; represent data with graphs; summarise variability among data values with some measure of centre; judge when a shift in a group average is probably due to chance and when it is an indicator of real change; and evaluate how well different graphical representations of the same data show important aspects of data.

ACTIVITIES AND NOTES TO BE USED

The notes are based on the TinkerPlots Workshop Guide and permission to copy the workshop notes for participants was granted by the Publisher (Key Curriculum Press). The workshop will only be a basic introduction to *TinkerPlots* as the full training course comprises a number of workshops.

REFERENCES

Franklin, C.; Kader, G.; Moreno, J.; Peck, R.; Perry, M. & Schaeffer, R. (2005). Guidelines for assessment and instruction in Statistics Education (GAISE) Report. A Pre-K – 12 Curriculum Framework. Alexandria, VA: American Statistical Association.

Key Curriculum Press. (2009). Tinkerplots Dynamic Data Exploration. Boston: University of Massachusetts.

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