Lesson Plan Session 3

Using technology to present a problem solving activity - practical session

General Aspects:

1. *Learning Goals*:

To develop an understanding of the opportunities that technology can afford teachers in exploring problem posing activities

To reflect on the appropriate use of technology when teaching and learning problem posing skills

To develop problem posing skills

2. *General Strategy*:

Working on 2 key problems, alongside discussion of appropriate teaching and learning strategies

3. *Structure*:

Lesson segments include: an introduction (including a warm up activity, and a discussion of problem posing), 2 main problem posing sessions (including, reflection time, individual work, small group work and whole group discussion of strategies), and a concluding discussion.
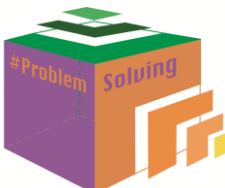
4. Resources:

Worksheet, PowerPoint presentation

Development of the Lesson:

Task and Learning Activities	Expected Duration	Class Activity (potential difficulties)	Instructor Support	Goal and Assessment
Introduction - Mind reading… Warm up activity Pick a number between 1 and 9 Multiply by 9 Add the two digits Take away 4 If 1 represents a, 2 represents b, 3 represents c and so on, use the code to find the letter. Think of an animal that begins with that letter and the colour of the animal. Most people (if they have calculated correctly) will think of a grey elephant. 9 times tables are special in that the digits add to 9 Discussion: What is Problem Posing?	10 mins	Work individually to solve the activity Reflect on the benefits of and challenge of using problem posing in class	Introduce activity explaining that you can read minds and that you will prove it… After activity, explain how it works. Present a definition of problem posing and facilitate discussion on benefits of and challenges of using this approach in class	*Goal* To revise key problem solving strategies To develop an understanding of the opportunities that technology can afford teachers in exploring problem posing activities *Assessment* Peer assessment Group discussion
Discussion The perfect banana ripeness Toasting bread	15 mins	Individually, and then as whole group, consider photographs and reflect on what problems might be posed using the photographs	Explanation of first example and how the teacher used the photograph and Google Forms to pose the problem.	*Goal* To develop an understanding of the opportunities that technology can afford teachers in exploring

#Problem Solving

			Facilitation of group discussion	problem posing activities
		Take notes on examples, categories etc. Possibility for discussion (particularly regarding further examples of various categories, etc.)		*Assessment* group discussion
Problem Posing Task 1 *Developing problem solving/posing ideas* Choose one of the photographs and consider what mathematics is represented in the photograph. Consider what questions you could pose regarding the mathematics How would you develop an activity around this and how would you solve it? Consider the following questions: • What learning you want to promote? • How you would present the task? • What mathematical knowledge the students require to be successful? • What prompts might you provide?	30 mins	Individually and then in small groups reflect on what maths might be explored through the use of each photograph. Then choose one and pose some questions regarding the maths and provide various solutions. At end of segment, share ideas with class as a whole – who came up with similar problems/different, etc. Explore what technologies may be used to support learning and teaching	Allow reflection time, circulate and discuss ideas with groups After 20/25 minutes, facilitate group discussion. Share ideas of both problems posed and strategies used for solving problems including what technologies may be beneficial to support learning.	*Goal* To develop an understanding of the opportunities that technology can afford teachers in exploring problem posing activities. To reflect on the appropriate use of technology when teaching and learning problem posing skills. To develop problem posing skills *Assessment* Peer assessment Group discussion
Problem Posing Task 2 *Developing problem solving/posing ideas* Go for a 10 minute walk around the campus and take some photographs/ video	45 mins	In small groups explore the natural resources around us or online. Either take photographs/video or explore online.	Explain activity Allow time to capture an appropriate photograph/video	*Goal* To develop an understanding of the opportunities that technology can afford teachers in exploring

Alternatively use a short piece of an online video - documentaries may prove useful as they contain many interesting facts that may lead to further questions and developed into an activity. Consider what mathematics is represented in the photograph/video. Consider what questions you could pose regarding the mathematics How would you develop an activity around this and how would you solve it? Consider the following questions: • What learning you want to promote? • How you would present the task? • What mathematical knowledge the students require to be successful? • What prompts might you provide?		Reflect on what maths might be explored through the use of a photograph/video. Choose one and pose some questions regarding the maths and provide various solutions. Explore what technologies may be used to support learning and teaching At end of segment, share ideas with class as a whole. Whole group discussion including suggestions of further questions to be explored and solved (if they can be)	As groups work on their activity, circulate and discuss ideas with groups After 30/35 minutes, facilitate group discussion. Share ideas of both problems posed and strategies used for solving problems including what technologies may be beneficial to support learning.	problem posing activities. To reflect on the appropriate use of technology when teaching and learning problem posing skills. To develop problem posing skills *Assessment* Group discussion
Conclusion Final points and allow for questions	10 mins	Group discussion/questions on problem posing strategies, ideas for implementation in classroom, etc.	Facilitate discussion	*Goal* To recap ideas of the day *Assessment* Group discussion