DP unit planner 1

Teacher(s)	Noel Avellana	**Subject group and course**	Group 5 Math Analysis & Approaches SL		
Course part and topic	Statistics: Normal Probability Distributions (Oxford AASL Chapter 14)	**SL or HL/Year 1 or 2**	SL	**Dates**	Quarter 4
Unit description and texts		**DP assessment(s) for unit**			
Understanding nature & occurrence of normal distribution		LT self-assessment (pre & post); Formative quizzes; Exam style unit assessment			

INQUIRY: establishing the purpose of the unit

Transfer goals *List here one to three big, overarching, long-term goals for this unit. Transfer goals are the major goals that ask students to "transfer" or apply, their knowledge, skills, and concepts at the end of the unit under new/different circumstances, and on their own without scaffolding from the teacher.*
Students will understand the nature of discrete random variables, their properties and how to determine their expected value. (Knowledgeable) Students will understand the nature and properties of data that follows normal distribution, and how to standardize it (Thinkers)

ACTION: teaching and learning through inquiry

Content/skills/concepts—essential understandings	**Learning process** *Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.*
<u>Students will know the following content: (Knowledgeable)</u> How to determine the mean from frequency tables How to use $\binom{n}{r}$nomenclature to evaluation combinations How to solve simple proportions and linear equations Statistical measures and their interpretations (central tendency, quartiles, standard deviation). <u>Students will develop the following skills: (Thinkers)</u> Represent & calculate expected value and create probability distribution tables (Investigation #3) Calculate mean & variance of binomial distribution. (Investigation #4) Normal Distribution & Standardizing normal variables. (Desmos exploration, Investigation #8/9, 10/11, 12) Use GDC to calculate probabilities for normal distributions (Jigsaw activity)	Learning experiences and strategies/planning for self-supporting learning: ☐Lecture ☐Socratic seminar ☒Small group/pair work ☐Powerpoint lecture/notes ☐Individual presentations ☐Group presentations ☐Student lecture/leading ☐Interdisciplinary learning Details: ☒Other/s: Jigsaw approach to GDC practice – Students will work in small groups on practice problems. One student per group sent to teacher to learn a GDC skill; that student relays info to group; group works an example on whiteboard using that particular skill. Rotate through students for several examples. (Communicators)
	Formative assessment:

<u>Students will grasp the following concepts:</u> Representing random variables and their probability distributions Understand the nature of normal distribution, properties, and calculations Representing and understanding Binomial Distribution	Quiz, exit ticket, **Teacher will provide example problems to be done on the whiteboards in groups, making it easy to follow students progress. Students will be given time to write their own notes and examples as needed.** **Students will take 2 quizzes in the unit, designed to check their understanding. (Reflective)**
	Summative assessment: Exam style unit assessment
	Differentiation: ☒Affirm identity—build self-esteem ☒Value prior knowledge ☐Scaffold learning ☐Extend learning Details:

Approaches to learning (ATL) *Check the boxes for any explicit approaches to learning connections made during the unit. For more information on ATL, please see the guide.*
☒ Thinking ☒ Social ☒ Communication ☐ Self-management ☐ Research Details: Much of this chapter will be based on doing investigations in small groups. This allows students to explore the concepts first, discuss them as a small group, then come together as a class to formalize the information. Great activities since they allow opportunities to think on their own, and practice making their own conclusions.

Language and learning *Check the boxes for any explicit language and learning connections made during the unit. For more information on the IB's approach to language and learning, please see the guide.*	**TOK connections** *Check the boxes for any explicit TOK connections made during the unit*	**CAS connections** *Check the boxes for any explicit CAS connections. If you check any of the boxes, provide a brief note in the "details" section explaining how students engaged in CAS for this unit.*
☒ Activating background knowledge ☐ Scaffolding for new learning ☒ Acquisition of new learning through practice ☐ Demonstrating proficiency	☒ Core theme ☐ Optional themes ☐ Areas of knowledge Details:	☒ Creativity ☐ Activity ☐ Service Details:

Details: Activities using Desmos;	Students have been faced with 2-3 questions throughout the unit related to how we know, and how we use acquired knowledge to make predictions, which we can then test and calculate using probability distributions. How easy is it to lie with statistics: Anscombe's Quartet Activity if time allows. (Principled)	Students will work in small groups to create a game that will be played during the days after the IB exams during a class fair. They will need to identify equipment needed, ways to make it exciting, and how to make a profit from a game. They will need to work beyond class time to create the game, as well as analyse it to determine why it was popular, if it was fair, describe the math behind the game. (if time allows) (Inquirers, Thinkers, Principled)
Resources *List and attach (if applicable) any resources used in this unit*		
Most activities for this chapter are provided in the text. Teacher provides resource pages/streamlines activities, so they have them in their hands during class. This also provides a place for students to write their own notes, and generalizations (making sure to include their BIG IDEA for the day).		

Stage 3: Reflection—considering the planning, process and impact of the inquiry

What worked well *List the portions of the unit (content, assessment, planning) that were successful*	**What didn't work well** *List the portions of the unit (content, assessment, planning) that were not as successful as hoped*	**Notes/changes/suggestions:** *List any notes, suggestions, or considerations for the future teaching of this unit*
Using images from real world example of binomial distribution to open discussion of random variables (wordle stats).	Investigation #13 did not go over well because it was time consuming and did not really reinforce the concept. Students spent a large chunk of time collecting data, that was just pretty simple. Although they enjoyed it, the time would've been better spent doing something else. Jigsaw activity for GDC seems great, but time is always an issue. It would be faster to demonstrate skills with doc camera to the entire class. This is still beneficial since they work in small groups, ask questions and replicate the procedure amongst themselves.	Next year I will have students brainstorm ways they see things that would follow binomial/normal distribution, and then allow them to try to think of any potential IA topics that might connect to it. I also plan to move this unit from the end of the year to earlier, perhaps as early as quarter 2 so that this topic would be available for them to use for their IA. Not enough time to do the game creation activity. Will possibly use this as an activity after the IB exams in May.