

Spiraling the Math Curriculum 2021-2022 PDIG Final Report

Project Description

This project began at the beginning of the year with high hopes. The intention was to have math teachers at different grade levels working independently to each produce a spiraled curriculum plan, and to be able to collaborate and share their efforts with the others on the team. Since there are different models for how to spiral a curriculum that depend on the teacher's level of comfort and desire to change their teaching style, it would have been interesting to see different models of completed, spiraled courses. However, due to evolving nature of the COVID-19 pandemic during this year, the project was not able to be completed.

Teachers were able to begin their research with reviewing their curriculum documents as planned, to think of a place to start. Some made concept maps or highlighted important themes in their curriculum as it currently exists. From there, many teachers began to implement spiraling techniques. One commonality across journal entries mentioned finding big ideas, important and recurring topics, whether from previous years or their own, and beginning with these topics as a place to begin spiraling. Some teachers, having decided on a method of focus for spiraling, started creating content that they could put into action.

Unfortunately, no teacher was able to complete their work. Most teachers were only able to find time for two release days. There were many weeks where teachers were not allowed to take project days, this year, because of a lack of supply teachers and very high number of COVID-19 cases in staff and students. Because of this, and the overall challenge of teaching the second year through a pandemic, several of us were only at the beginning of our work by the time this project was due to be completed.

Project Goals

Despite only having limited opportunity to work, progress toward our goals was made. We were able to independently review the research around spiraling curriculum and use that to inform an approach that worked for how we envisioned our classroom practice. Several teachers felt that reviewing material in small pieces, at the beginning of lessons in the form of bellwork or short questions to begin a lesson, was an appropriate way to remind students of content from previous units and review it with them consistently over time. According to current research and practice of spiraling, this means adjusting the depth or complexity of a theme each time it was seen again. Once that short question was complete, the unit's lesson would begin. Other teachers began looking into the possibility of spiraling the whole course, meaning not teaching in discrete units at all. Teachers had the flexibility to develop a model for spiraling according to what they were most comfortable with, which was an important part of our goal setting.

Again, however, due to the pandemic, we were not able to complete our goals. Teachers were not able to develop enough bellwork for each course topic, or a fully spiraled course

plan, as they set out to. However, it should be noted that had this been a regular year, with more time and fewer challenges, we feel that this would have been able to be accomplished.

Project outcomes

Firstly, that our teachers were able to spend time researching this new model for teaching was an important achievement for them. If nothing else, it provided a starting point for reflection on current teaching, and a direction to move if we decide to continue with spiraling in the future. Some teachers were able to use time to create problems that were able to be used in classes this year, which is always beneficial, and provided a secondary means of reflection on the model.

Reinvestment

We feel that even though we did not get to complete this project, the English educational community, especially the math teaching community, can benefit from reading into the subject of spiraling the curriculum, starting from the research that we share below. As our teaching careers progress, we too often become complacent with the structures in place in our classroom. It is helpful to read about progressive measures that are taking place elsewhere and see how they might benefit our students.

We absolutely believe that this project should be carried out by other teams of teachers. Given that there is no singular model of spiraling, having other Quebec math teachers develop and promote their own models can only enrich the practice of the larger community of math teachers. Further, any findings borne out of practical application of the techniques of spiraling should equally be disseminated, whether the result of such experiments are positive or negative. The more reflection on spiraling and interleaving that exists only serves to provide the community with a more balanced understanding of this approach, leading others to decide whether it makes sense in their context.

Further reading

Barton, Craig. "SSDD Problems Same Surface, Different Deep Structure Maths Problems." SSDD Problems, 7 May 2021, <https://ssddproblems.com/pie-chart-favourite-activity/>.

Johnston, H. (2012). The spiral curriculum: Research into practice. <https://eric.ed.gov/?id=ED538282>

Koblin, Jonas. "Bruner's 3 Steps of Learning in a Spiral Curriculum." Sprouts Free Videos for Schools and Learning, 28 Oct. 2021, <https://sproutsschools.com/bruners-spiral-curriculum/#:~:text=Jerome%20Bruner's%20Theory%20of%20Development,ve%20learne d%20into%20%E2%80%9CLanguage%E2%80%9D>.

Pearce, Kyle. The Complete Guide to Spiralling Your Math Curriculum, 18 Apr. 27AD, <https://makemathmoments.com/spiralling-guide/>.

Other Resources

[Google Sheets Spiraled Curriculum template](#). Copying permission granted. (Incomplete Grade 7 math course example presented.)

[“Big Ideas in Grade 7 Math.”](#) Whiteboard brainstorm. Effective way of developing big ideas and making connections between different themes, as a prelude to spiraling a whole year’s curriculum.