

**PD18611:**  
**Westpark UDL math project**  
**Final Report**

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**Introduction**

This project is all about creating grade 2 math lessons that incorporate Universal Design for Learning (UDL) approaches, in French. The goals of a UDL classroom are to provide multiple means of engagement (purposeful motivated learners), representation (resourceful, knowledgeable learners) and action and expression (strategic, goal-directed learners) (*udlcenter.org, 2017*). This means changes to our teaching styles and materials as well as additional resources. Since there are few resources available in French with this type of approach, we felt the need to create a variety of lessons to be used going forward. It should also be noted that the project leader, Nathalie LeBrun, did not start the year at school due to a sick leave that was expected to last until the end of January. She actually returned at the end of March. With the permission of the LCEEQ, her substitute, Aviva Mendel, was added to the project until her return. We were fortunate that Nathalie was able to join us for several of the meetings, allowing us to maximise our productivity.

**Project Description**

We had originally planned to create a bank of lessons and activities using the UDL approach and incorporating the strategies learned by Nathalie and Rosalind at the LCEEQ summer math institute over the past 2 summers, in conjunction with the Numérik program our school uses. However, after our first meeting, upon exploring and using the newest version of Numérik (re-made for the 2019 school year, modules received gradually over the first 4 months of the school year), we realized that the publishers of Numérik had, in fact, already created many innovative, interesting and adaptable lessons and games to explore and teach each concept. Upon use, we realized that their suggested lessons, teacher guides and games were exactly what we were working on. Rather than “reinvent the wheel”, we decided to build many of the games/lessons suggested in Numérik and complement them with additional lessons, especially for situational problem solving.

Day 1, Oct 23 (4 teachers + Nathalie)

We discussed the new Numérik program in general since it has changed. Some concepts are taught at different times during the year from before, so we will have to adjust when we work on which concepts to maximize our resources this year (as well as going forward). Using the Numérik "On joue" games as a guide, decide which of those games we will build for each class. From there, we decided which manipulatives needed to be bought to create/use those games as well as other games and activities found or created by teammates. We also decided to each follow the suggested teacher guide in Numérik until the next PDIG meeting date to determine its efficacy.

Day 2, Nov 13 (4 teachers + Nathalie)

Based on our experience with the new Numérik program and the previously discussed plan, we wrote out lesson plans/games/activities for each week of units 1-4 including a "timeline". We discussed and noted suggested introductory lessons to establish prior knowledge of concepts to target class and student needs. We also translated some great activities from English to French.

Day 3, Dec 4 (2 teachers all day, one teacher 0.5 day)

This day started off badly. Aviva was unable to attend and Chelsea's substitute cancelled at the last minute. Admin and other teachers covered her class in the morning, but she needed to be in her classroom for the afternoon. Therefore only 0.5 day of PDIG replacement was used for Chelsea. We decided to use the unused 1.5 days at the end of our PDIG. We still managed to write out lesson plans/games/activities for each week of units 5-8 including a "timeline". We discussed and noted suggested introductory lessons to establish prior knowledge of concepts to target class and student needs for the next lessons.

Day 4, April 3 (4 teachers)

This day was dedicated mostly to scanning, printing and laminating to build the games/activities for units 1-8. As always, we discussed and noted suggested introductory lessons to establish prior knowledge of concepts to target class and student needs for the next lessons.

Day 5, April 10 (4 teachers)

Due to the vast amount of materials we had to put together, we needed this day to continue to build the actual manipulatives needed for many of the activities. As always, we discussed and noted suggested introductory lessons to establish prior knowledge of concepts to target class and student needs for the next lessons. We also began to work

on creating a cohesive bank of situational problems for both teaching and evaluating, to ensure as much consistency among the grade.

Day 6, April 26 (4 teachers)

We completed scanning/cutting/laminating/building the games for activities for units 1-8. We also continued to create a bank of teaching and assessment tools for situational problems, organized by theme/term.

Day 7, May 7 (1 teacher all day, one teacher 0.5 day - unused days from Dec 4th)

Using the feedback from all 5 teachers (including Aviva, Nathalie's substitute), we discussed the overall success of our PDIG and planned the final report.

### **Project Goals**

Our main goal for this project was to create hands-on, innovative, interesting, and class-friendly math lessons and activities, based on the UDL approach, that will reach all types of learners. We wanted to provide learning opportunities that allowed students to collaborate and learn together while still offering a variety of materials/lessons. We also wanted to implement these lessons in our classrooms in order to assess and evaluate their effectiveness and modify as needed. Another goal was to share the knowledge Nathalie and Rosalind had acquired during the Summer Math Institute over the past few summers. Lastly, we wanted to uniformize how and what we were teaching across the grade to offer students the benefits of our combined experience.

Overall, we met all our goals for this project, though not necessarily in the way we had originally planned. The fact that the publishers of Numerik took the feedback from teachers across the province and created lessons and activities in line with the UDL approach made part of our task easier. We were able to focus less on looking for or inventing from scratch the lessons we wanted, and focus more on the pedagogy and implementation of the UDL approach in math across the grade, as well as having the time to actually build the materials needed. While building the manipulatives and physical components of the lessons, we were able to discuss HOW to use them in class (classroom management, observation of understanding pre-evaluation, different ways to reach those struggling students or unconventional learners). These open discussions led to a more cohesive vision of how math can be taught differently, while still obtaining the desired outcomes. These meetings also allowed us the time to share the knowledge acquired by Nathalie and Rosalind at the LCEEQ Summer Math Institute, as well as the information and training each member of our team had received during various other learning opportunities (ESD workshops, online seminars, books read, discussion with

teachers at other schools/levels etc..). We looked at the efficacy of math journals, of working in partners vs alone or in small groups, of using manipulatives vs pencil/paper only, of memorization versus understanding basic facts.

### **Project Outcomes**

As mentioned in the *Project Goals*, the gains we, as teachers, were hoping to attain were to build materials and create lessons to incorporate the UDL approach in Math in grade two, to improve our understanding of the UDL philosophy and how it can be implemented and to become better teachers by learning from our colleagues. Through this Professional Development and Innovation Grant, teachers have achieved the following:

- Continued to develop an expertise in UDL to support their students' learning
- Effectively found and created math lessons, activities, manipulatives and tools
- Compiled a bank of math lessons in French using the UDL guidelines
- Prepared themselves to engage students to be active learners
- Continued to develop skills to help students become lifelong learners by understanding their own learning styles and needs
- Developed teaching material so that all students within a classroom can learn effectively, regardless of differences in ability
- Shared valuable insight gained from a variety of sources, thus improving our efficacy in class

### **Reinvestment**

Since our school board is moving towards a Deep Learning approach, these lessons and activities will help our colleagues become more comfortable with UDL (vs traditional teaching). This will also help prepare our students to become lifelong learners and take initiative in their learning, which will benefit our educational community as a whole.

We plan to share our learning with our colleagues in August of next year and will support anyone interested in embracing a UDL approach to teaching. We will also work with our Grade 1 math teaching colleagues next year to support one another in our teaching and to create continuity within the cycle.

We have also put together a Google Drive folder containing all of our digital resources for implementing/printing our games/activities/lessons. Please note that many of these

are copyrighted to ERPI (Numérik 2e année) and therefore can only be used by teachers using the Numérik program.

- Evaluations/Teaching Tools (Situational Problems, includes some copyrighted materials):  
<https://drive.google.com/open?id=1CwaJ4yQnSgh75mhBhHCeo89uvPYxqBD7>
- Math Games (copyright ERPI):  
[https://drive.google.com/open?id=1AE6cWmV9BpoX-kgEY0v3QYxWbbpMA\\_-c](https://drive.google.com/open?id=1AE6cWmV9BpoX-kgEY0v3QYxWbbpMA_-c)
- Lessons and Activities (Themes 3-8):  
<https://drive.google.com/open?id=13DZ6sNa24U-UzH4rNR916ZDSwF1VGldPhNVXhjPZpwY>
- Mes outils - Mathématiques (Classroom Website):  
<https://westpark2.weebly.com/mes-outils---matheacutematiques.html>
- Feuilles de mathématiques (Classroom Website):  
<https://westpark2.weebly.com/feuilles-de-matheacutematiques1.html>

If our colleagues are interested in applying for a PDIG to develop similar lessons and activities for their grade levels, we would recommend that they attend workshops on UDL, Deep Learning, 6 C's, Summer Math Institute, Daily 5 and Café, that they start small (choose one subject area, ie Math) and build their way up and that they seek out other staff members who have implemented or started implementing this approach to have a starting point to build off of. This last point would also help alleviate the pressure of starting from scratch.