Reimagining Career and College Readiness: STEM, Rigor, and Equity
Microsoft OneNote - Teacher and Student Efficiency, Organization, and Collaboration

Mike Tholfsen
Principal Program Manager
OneNote team, Microsoft
Re-Imagining Career and College Readiness: STEM, Rigor, and Equity

Problem Based Learning and 1:1 Program with OneNote Class Notebooks

Eric Ferguson, Director of Instructional Technology, Bellevue School District
Bill Palmer, Instructional Technology and Curriculum Coach, Sammamish High School
Mike Tholfsen, Principal Program Manager, OneNote, Microsoft
Questions

1. What instructional shifts happened before going 1:1?
2. How did you find the right tools for students and teachers?
3. Transforming classroom culture: What practices are emerging as a result of using OneNote class notebooks?
Sammamish High School

Sammamish High School: Problem Based Learning and OneNote Class Notebooks
Neighborhood Comprehensive School grades 9-12

- 950 Students
- About 40% would be first in their family to earn a two year degree or higher
- 43% qualify for free or reduced lunch
40% speak more than 1 language,

43 languages,
53 countries
Renewal Process at Sammamish

Identification of local needs and achievement gaps through analysis of building-based data by both teachers and principals, focusing especially on the performance of students from traditionally underrepresented groups.
Renewal Process
Research and Planning

• Surveying current research and literature related to college and career readiness to identify skills that will be in demand and best practices in instruction, and using those skills and practices to develop locally-owned priorities and vision (including the Key Elements of a Sammamish Classroom).

• Creating a five-year timeline, written by both teachers and principals, over which the identified innovations would unfold in phases throughout the school.
Renewal and Leadership Distribution

• Creating leadership positions filled by teachers working half-time in the classroom – to ground the work of leadership in the realities of day-to-day instruction.

• Frequent leadership meetings involving principals and teacher leaders to discuss emerging issues, assess progress, and adjust plans as needed.

• Enlisting a wide variety of staff members in designing and leading sessions of professional development, always anchored to the needs of students and to the vision of a Sammamish classroom as outlined by our vision for PBL.
Partnerships

Seeking out intentional partnerships with university, government, and business organizations to add resources of money, time, and knowledge towards increased student college and career readiness.
• **92%** of students passed at least one math end of course exam by 10\(^{th}\) grade in 2014, compared with **77%** of students in 2011 (including at least 20% score increases for low-income students and English Language Learners).

• The number of students completing an advanced level math course (pre-calculus or equivalent) before graduation increased by **10%** between 2011 and 2013.

• **78%** of 10\(^{th}\) graders passed the Biology End of Course Exam in 2014, compared with **60%** in 2013 (the first year it was required for graduation).

• **91%** of the class of 2013 graduated with credit in at least one Advanced Placement class, compared with **81%** of the class of 2010.

• The number of students with disabilities and English Language Learners enrolled in at least one AP STEM course increased from **20** in 2010 to **61** in 2014.

• The overall AP exam pass rate increased from **36%** in 2010 to **50%** in 2013.

• During the 2012-13 school year alone, **unexcused tardies decreased by 80%**, from 2600 to 550 per month.
i3 Grant: Re-imagining Career and College Readiness: STEM, Rigor, and Equity at a Comprehensive High School

Providing dedicated, paid time during the day for almost half of the teachers working at SHS during this five-year period to re-design course curriculum for problem based learning.
Problem Based Learning (PBL) Because...

• Teaching 21st Century Skills
• Challenging and engaging all students at all levels
• Best Practice – researched, validated
• Equitable Practice – closes achievement gaps
• Leverages Underused Resources – experts in the community and higher education
Key Elements of SHS Classrooms: Problem-Based Learning

- Authentic Problems
- Authentic Assessment
- Collaboration
- Academic Discourse
- Culturally Responsive Instruction
- Student Voice
- Expertise
Sample Key Element: Collaboration

• **What:** Collaboration is the collective action of groups to solve problems. High-quality collaboration is characterized by a set of both *interpersonal* and *project management* behaviors. *Interpersonal* behaviors supporting successful collaboration include active listening to all fellow members; responding to and building on others’ ideas; and an ability to resolve conflict. *Project management* behaviors include displaying responsibility to the group (following through on assignments, going beyond simply completing one’s individual assignment to see how the assignment adds to the quality of the product as a whole); and awareness of group goals and timelines, including frequent check-ins and adjustments as needed. Additionally, in order for students to see the effectiveness of and need for collaboration, the tasks they address should be “group-worthy” — that is, tasks that require multiple members’ skills and inputs to be successfully completed.

• **Why:** Collaboration is a critical skill for college and workplace environments. Problems confronted by professionals are often too complex, complicated, and multi-dimensional for individuals to solve in isolation. For students to be college and career ready, they must develop skills and gain practice with working in teams to solve complex problems.
1:1 Technology Integration...
Development of 1:1 Program

• 2013-2014: Pilot with 9th grade students

• 2014-2015: All students with Lenovo ThinkPad Yoga

What we learned:

✓ Whole School – every teacher, every student
✓ Digital Ink – accommodate needs of every subject area
✓ OneNote – flexible platform for student work, collaboration, and feedback
What is OneNote?
OneNote Class Notebook
A framework for teaching and learning with OneNote and Office 365

1. Teacher:
   - Creates shared notebook, adds students
   - Sees everything in notebook

2. Students:
   - Get link to notebook, opens on their device or browser
   - Sees shared sections and only their personal notebook along with collaboration space and copy-only content library.

- "Anything, anywhere" canvas (type, write, clip web, insert files)
- Ready-made digital portfolio for any class.
- Real-time coaching ("Flip the classroom")
- Natural learning with digital ink to write or annotate
- Fits many learning styles with a variety of inputs and uses
- One Powerful Notebook for an entire class

Go to OneNoteInEducation.com to learn more!
1:1 Pilot - Course OneNote Notebooks

Mind Map 2 due 1/20/21

*Why are site factors important and how have they changed over time?*

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**Why are site factors important and how have they changed over time?**

- Site factors play a crucial role in the location of industries.
- Changes over time have been influenced by technological advancements, economic policies, and market demands.
- Corporations look for areas with more favorable conditions, such as better infrastructure or lower costs.
- Industries move to regions that offer comparative advantages, such as access to raw materials or lower labor costs.
- Trading and globalization have also impacted the location of industries.

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**Corporations moved to areas with more favorable conditions, such as access to labor or raw materials.**

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**Industries move to where the greatest rate of advantage is found.**

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**Comparative advantages include**

- **Access to raw materials**
- **Labor costs**
- **Market size**
- **Government policies**
- **Infrastructure**

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**Movement**

- **Trading**
- **Globalization**
- **Comparative advantages**
1/20/15 Meeting
Tuesday, January 20, 2015  9:00 AM

1. Develop/Brainstorm Ideas for our Instructional Focus for second semester
   a. Key Element Collaboration
   b. Ideas from 6 Jan ILT meeting:
      i. Collaboration time
         1) Structured time with focus on instruction/PBL
         2) Science has common planning periods, but can use more time.
         3) Performing Arts, some English teams currently have no common planning times
      ii. Course level conversations
         1) Migration BBL Components
         2) Specifics
         3) Learning BBL Components
     iii. Student threads
         1) 6 Jan ILT meeting
         2) Focus on Migration

Migration 2013
Thursday, October 17, 2013  9:29 AM

<table>
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<th>Monday</th>
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<td>10/21</td>
<td>10/22</td>
<td>10/23/24</td>
</tr>
<tr>
<td>Migration Introducti...</td>
<td>day 2 of migration...</td>
<td>migration case study...</td>
</tr>
<tr>
<td>Unit 2 Migration...</td>
<td>Migration Flashcards</td>
<td>migration case study...</td>
</tr>
<tr>
<td>Migration Table of...</td>
<td>HW: 3.3 &amp; 3.4</td>
<td>HW: 3.5 &amp; 3.6</td>
</tr>
</tbody>
</table>
Shifting Practices:
PBL and OneNote Class Notebooks

1. Lesson Preparation and Responsiveness
2. Infinite Digital Canvas
3. Real Time Feedback
4. Coaching Collaboration
5. Proactive Lesson Preparation
Lesson Preparation and Responsiveness

• Flexible tool for organizing and sharing curriculum resources.
• Not bound by what was sent to copy center.
• Make changes to lesson and lesson materials during the class period.
• Differentiate before or during lessons.
• Collaborate with colleagues.
The Infinite Digital Canvas

Sammamish High School: Problem Based Learning and OneNote Class Notebooks
Real Time Feedback (making thinking visible)

2. Mutations?

Sunday, March 22, 2015 6:29 PM

I have heard of mutations in Marvel movies and books, but have also real examples. Like extra limbs or appendages, I think if you had a mutation you would just live a normal life, but a little differently. You probably would not live a normal life with mutation society looks down on that.

Where have you heard of mutations before? What do you think would happen to you if you had a mutation?

WPL

Change in genetic code
Changes physical appearance or person
Can be natural or induced

Comics → science experiments gone wrong

- Some people are born with mutations like extra fingers, or less fingers

Mix DNA
Can change how people may act

I have heard of mutations in all sorts of animals causing their bodies to not work properly or causing them to work to well. If you have a mutation it causes your body's cells to not do their necessary jobs that they were made and intended for most of the times they don't work as planned but sometimes the work to well.

So they are good and bad?

I have heard about mutations in movies and stories

LM

Many diseases and disorders in humans are caused by genetic mutations. Some things, like color blindness, aren't particularly harmful. Others can be fatal.
Feedback Cycle

• Days to minutes
• Multiple modes
• Utilize student-student talk
• Shift away from teacher as evaluator

Materials (per group)
DNA sequence
Computer with an internet connection

Procedure
1. Obtain your DNA sequence from your teacher.
2. Convert your DNA sequence into a complementary mRNA sequence.
   EXAMPLE: DNA: T A C G G C T A G
   mRNA: A U G C C G A U C

Your DNA sequence:

mRNA sequence:

3. Determine the codons.
   EXAMPLE: mRNA: A U G C C G A U C
   I see you can transcribe, how do you figure out the amino acid sequence?

Page 1 of 4

Sammamish High School: Problem Based Learning and OneNote Class Notebooks
Coaching Collaboration

### 2a. Research Responsibilities

**Monday, February 2, 2015** 7:43 AM

<table>
<thead>
<tr>
<th>Task</th>
<th>Person Responsible</th>
<th>Relevant Links</th>
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<tbody>
<tr>
<td>Figure out which biofuel</td>
<td>Everyone</td>
<td></td>
</tr>
<tr>
<td>Find Materials</td>
<td>Patrick &amp; Victoria</td>
<td></td>
</tr>
<tr>
<td>Write Procedure (fermented)</td>
<td>Victoria &amp; Patrick</td>
<td><a href="http://www.makebiofuel.co.uk/make-biodiesel-at-home">http://www.makebiofuel.co.uk/make-biodiesel-at-home</a>, this procedure is for 1 liter. 1 liter = 1,000 ml's, for scaled calculations divide by 2, this should be roughly the amount needed.</td>
</tr>
<tr>
<td>Find Cost of Material</td>
<td>Patrick</td>
<td></td>
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<tr>
<td>CO2 Emissions</td>
<td>Andrei &amp; Victoria</td>
<td></td>
</tr>
<tr>
<td>How to Test It</td>
<td>Andrei</td>
<td>Money, CO2 emissions</td>
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<tr>
<td>Cost vs. Gasoline</td>
<td>Emmanuel</td>
<td><a href="http://www.neo.ne.gov/statshmti/66.html">http://www.neo.ne.gov/statshmti/66.html</a></td>
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<td>Environmental Impacts</td>
<td>Victoria &amp; Andrei</td>
<td></td>
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<tr>
<td>Molecular Formula</td>
<td>Everyone</td>
<td><a href="https://www.goshen.edu/academics/chemistry/biodiesel/chemistry-off/">https://www.goshen.edu/academics/chemistry/biodiesel/chemistry-off/</a></td>
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</table>

**Molecular Formulas**

- **Canola Oil: C19H30O2**
  - 
  - 
  - 
  - 

- **Mineral Oil: C13H26O2**
  - 
  - 
  - 
  - 

- **Sodium Hydroxide**

**Ethanol**

**Sodium Hydroxide**

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Sammamish High School: Problem Based Learning and OneNote Class Notebooks
Dehydration Initial Ideas

Thursday, February 26, 2015  7:37 AM

Good
- Water
- Green Tea
- Black Tea
- Gatorade (electrolytes, added salts)
- Propel
- Milk (skim? Almond? Soy?)
- Fruit Juice?
- Decaf Coffee?

Bad
- Saltwater
- Alcohol
- Vitamin Water
- Coffee? (dehydrates you, growth? Decaf?)
- Bleach
- Lemonade
- Coke
- Sprite
- Energy Drinks

Because your kidneys shut down, you get dehydrated, and an increase in salt content.

Driving Questions
What's going on inside our cells that makes us dehydrated?
What can we give someone to help when they have become dehydrated?
1. Challenge description and rubric

**Bellevue Urban Challenge 2.0 Rubric 2015**

<table>
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<th>Bellevue Urban Challenge Rubric</th>
<th>5</th>
<th>8</th>
<th>1</th>
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<tr>
<td><strong>Phase One</strong></td>
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<td></td>
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<tr>
<td>Spatial Unevenness and the variances are thoroughly discussed regarding:</td>
<td>Household Income</td>
<td>Household Income</td>
<td>Household Income</td>
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<tr>
<td>• Household Income</td>
<td>Race &amp; Ethnicity</td>
<td>Race &amp; Ethnicity</td>
<td>Race &amp; Ethnicity</td>
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<tr>
<td>• Density</td>
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<td>Density</td>
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<td><strong>Phase Two</strong></td>
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<td></td>
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<tr>
<td></td>
<td>In-Depth Level Two &amp; Three Analysis</td>
<td>Level Two Analysis</td>
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**Challenge Description**

Your challenge for this unit focuses on the urban landscape of Bellevue, various urban models, land uses, and future projections. You will be analyzing the demography of Bellevue and the City of Bellevue. It is extremely important that you do your research thoroughly. For this challenge, you will be the only group member with this knowledge.

During **phase one** you will develop expertise in the spatial analysis of demographic data. You will be analyzing the city’s racial and ethnic composition, and you will be asked to explain correlation and causation. You will be given the opportunity to conduct a demographic analysis of Bellevue, the City of Bellevue, and other cities in the region.

During **phase two** you will work in heterogeneous groups and analyze how demographic and spatial topics impact the built environment. You will be given the opportunity to conduct a demographic analysis of Bellevue, the City of Bellevue, and other cities in the region.

During **phase three** you will be conducting field research and answering questions about the city’s urban history. You will be given the opportunity to conduct a demographic analysis of Bellevue, the City of Bellevue, and other cities in the region.
Student Perspectives

• Supporting college application process
• Transforming organization and work completion
• Resources when missing school
• Resources when offline
### Fall 2014 Admission Statistics for Public Four Year Washington State Colleges and Universities

<table>
<thead>
<tr>
<th>College and Website</th>
<th>Applicants</th>
<th>% admitted</th>
<th>Avg GPA</th>
<th>Avg SAT</th>
<th>Avg ACT</th>
<th>Under Grad Enrollment</th>
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<tbody>
<tr>
<td>Central Washington University (<a href="http://www.cwu.edu">www.cwu.edu</a>)</td>
<td>4,200</td>
<td>83</td>
<td>2.8-3.5</td>
<td>890-1120</td>
<td>18-24</td>
<td>10,075</td>
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<tr>
<td>Eastern Washington University (<a href="http://www.ewu.edu">www.ewu.edu</a>)</td>
<td>5,100</td>
<td>77</td>
<td>3.27</td>
<td>969</td>
<td>21</td>
<td>11,678</td>
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<tr>
<td>The Evergreen State College (<a href="http://www.evergreen.edu">www.evergreen.edu</a>)</td>
<td>1944</td>
<td>86</td>
<td>2.73-3.48</td>
<td>981-1210</td>
<td>22-28</td>
<td>3,851</td>
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<tr>
<td>University of Washington Seattle (<a href="http://www.uw.edu">www.uw.edu</a>)</td>
<td>31,608</td>
<td>55</td>
<td>3.67-3.94</td>
<td>1760-2040*</td>
<td>26-32</td>
<td>28,745</td>
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<td>University of Washington Bothell (<a href="http://www.uwb.edu">www.uwb.edu</a>)</td>
<td>2,500</td>
<td>75</td>
<td>3.43</td>
<td>1070</td>
<td>22</td>
<td>4,106</td>
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<tr>
<td>Washington State University (<a href="http://www.wsu.edu">www.wsu.edu</a>)</td>
<td>17,148</td>
<td>82.1</td>
<td>3.27</td>
<td>929-1130</td>
<td>19-25</td>
<td>17,338</td>
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<td>Western Washington University (<a href="http://www.wwu.edu">www.wwu.edu</a>)</td>
<td>9,280</td>
<td>84.5</td>
<td>3.28-3.78</td>
<td>1520-1820*</td>
<td>22-28</td>
<td>14,285</td>
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Additional Reflections

• Focus on curriculum and instruction before introducing new technology
• Established culture of staff collaboration and student collaboration prior to 1:1
• Admin support for innovation
• Space for teachers to share practice with each other
### 1e: Designing Coherent Instruction

<table>
<thead>
<tr>
<th>Unsatisfactory - 1</th>
<th>Basic - 2</th>
<th>Proficient - 3</th>
<th>Distinguished - 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher coordinates</td>
<td>Teacher promotes the successful learning of all students, making minor adjustments based on data</td>
<td>Teacher seizes an opportunity to enhance learning, building on a spontaneous event or student interests, or adjusts and instruction to individual student needs.</td>
</tr>
</tbody>
</table>

**Plans represent the coordination of in-depth content knowledge, understanding of different students' needs, and available resources (including technology), resulting in a series of learning activities designed to engage students in high-level cognitive activities.**

**Learning activities are differentiated appropriately for individual learners. Instructional groups are varied appropriately with some opportunity for student choice.**

**The lesson's or unit's structure is clear and allows for different pathways according to diverse student needs.**

### 2c: Managing Classroom Procedures

<table>
<thead>
<tr>
<th>Unsatisfactory - 1</th>
<th>Basic - 2</th>
<th>Proficient - 3</th>
<th>Distinguished - 4</th>
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<tbody>
<tr>
<td>Much instructional time is lost through inefficient classroom routines and procedures. There is little or no evidence that the teacher is managing instructional groups, transitions, and/or the handling of materials and supplies effectively. There is little evidence that students know or follow established routines.</td>
<td>Some instructional time is lost through only partially effective classroom routines and procedures. The teacher's management of instructional groups, transitions, and/or the handling of materials and supplies is inconsistent, the result being some disruption of learning. With regular guidance and prompting, students follow established routines.</td>
<td>There is little loss of instructional time because of effective classroom routines and procedures. The teacher's management of instructional groups and the handling of materials and supplies are consistently successful. With minimal guidance and prompting, students follow established classroom routines.</td>
<td>Instructional time is maximized because of efficient classroom routines and procedures. Students contribute to the management of instructional groups, transitions, and the handling of materials and supplies. Routines are well understood and may be initiated by students.</td>
</tr>
</tbody>
</table>

Sammamish High School: Problem Based Learning and OneNote Class Notebooks
Further Information

Bellevue Schools:  
http://www.bsd405.org/

Sammamish High School:  
http://www.bsd405.org/sammamish/
FREE Bite-sized interactive Training for everyone on OneNote in Education

• Tabs for each audience
• Scenarios based on customer feedback
• Easy to follow guides with clicks, only 5-7 minutes
• Embeddable Links for blogs, websites
• Built-in Viral Sharing
  • Twitter
  • Facebook
  • LinkedIn

OneNoteInEducation.com
Thank You!

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