



**Teaching Mathematics in Elementary Schools (Pre-K to Grade 8) ¹
EMTH 310 – 040 (CRN 13532)/EMTH 310-202102 20066**

Winter 2022

Instructor: Dr. Latika Raisinghani
Email: lraisinghani@yukonu.ca
Office hours: By appointment (through email)

Course Credits: 3.00
Course Delivery: Virtual Remote Learning (YukonU MyCourses and Zoom)
Meeting Days & Time: Tuesdays 5:30 pm – 8:25 pm PDT

Territorial acknowledgement²

As members of this learning community, we acknowledge our presence in the traditional territory of the Kwanlin Dün First Nation and the Ta'an Kwäch'än Council in Yukon and of the Treaty 4 and Treaty 6 peoples in Saskatchewan. We are thankful for the opportunities to live and learn on the ancestral lands on which the Yukon University and the University of Regina are located and operates. We respect and honour the treaties that were made on all territories and acknowledge the harms and mistakes of the past. Indigenization and sustainability are our shared responsibilities, and we are committed to move forward in partnership with the Indigenous Nations in the spirit of reconciliation and collaboration.

Course Description

This course is designed to address the philosophies, goals, curriculum documents, and methods of instruction and assessment of elementary and middle school (PreK to 8) mathematics. A critical, resource-based approach to this course will provide opportunities for students to reflect on and construct understandings of key issues in mathematics education. ***Prerequisite: For elementary pre-internship students only (Early Elementary and Middle Years).***

Course Delivery

This course employs remote teaching methods involving both synchronous and asynchronous online modes of learning. All key course resources, and information about the course activities and virtual Zoom meetings are available through Yukon University MyCourses, which will serve as the main platform for communication, instruction, assessments, and evaluation of the course. During the first day of class, we will meet virtually through Zoom to discuss the details of the course including assignments and recommended resources and the nature and scope of synchronous, virtual class meetings as well as engagement in the asynchronous activities during the term.

¹ These Course Outlines are informed by previous EMTH 310 and EMTH 317 course outlines and sample syllabi shared by Dr. Alayne Armstrong and Carolyn Simmons.

² Source: <https://www.uregina.ca/indigenization/resources/territorial-acknowledgement.html> and <https://saskschoolboards.ca/wp-content/uploads/Treaty-4-Territory.pdf>

Course Overview

“Mathematics is well integrated into the technological, industrial, military, economic and political systems...human use of mathematics is capable of both horrors and wonders....Mathematics — *the most universal mode of thought* has to do with the *most universal* problem — survival with dignity”
(Ubiratan D’ Ambrosio as quoted in Mukhopadhyay et al., 2009, reconstructed from pp. 66-67, original emphasis)³

Welcome to EMTH 310 Teaching Mathematics in Elementary Schools! Embracing Indigenization and sustainability as our shared responsibilities, this course explores the theories, practices, and key issues in mathematics education. The course design focuses on K-8 mathematics curriculum in Yukon and Saskatchewan, diverse cultural perspectives including Indigenous ways of knowing mathematics and Yukon First Nations Core Competencies, and social and ecological justice in mathematics education. Informed by the National Council of Teachers of Mathematics (NCTM) principles and standards, the core tenets of the course emphasize understanding students’ mathematical thinking and designing responsive curricula, instructional activities and assessment practices that strive towards empowering diverse students. Capitalizing on student-centered constructivist pedagogies, the course utilizes collaborative inquiry, problem solving and technology-enhanced approaches to develop capacity for co-creating and co-implementing mathematics education curricula in elementary schools, and in formal and informal home and community settings. The ultimate aim is to develop critical knowledge, skills, attitudes, and values as mathematics educational leaders who strive for imparting inclusive, ecologically and socially just, responsive mathematics education for the benefit of self, students, society, and the planet.

Central Course Themes

1. Nature, philosophies, and goals of Mathematics Education
2. Mathematical Literacy and Curriculum
3. Learning theories and Students’ Mathematical Thinking
4. Critical Issues in Mathematics Education
5. Culturally Responsive Mathematics Education and Indigenous ways of knowing
6. Learning in/for/with art and aesthetics infused and environmentally informed, Social and Ecological Justice-oriented, Cross-curricular, Multi-model Mathematics Education that is informed by STEAM/STEEM frameworks

Course Objectives

By participating in this course, the students will be able to:

1. Gain knowledge about the philosophy, goals, and critical issues of mathematics education
2. Become familiarized with the K-8 mathematics curricula, digital and hands-on manipulatives, and other resources
3. Cultivate understandings of Indigenous ways of knowing and culturally responsive, ecologically and socially just, inclusive mathematics education practices and work towards building mathematical understandings that promote mathematics as a human endeavour

³ Mukhopadhyay, S., Powell, A., & Frankenstein, M. (2009). An ethnomathematical perspective on culturally responsive mathematics education. In B. Greer, S. Mukhopadhyay, A. Powell, & S. Nelson-Barber (Eds.), *Culturally responsive mathematics education* (pp. 65-84). Routledge.

4. Develop capacities to design and implement cross-curricular, multi-model, responsive instruction, and assessment activities in four key strands of mathematics learning namely, 1) Number 2) Patterns and Relations 3) Shape and Space 4) Statistics and Probability
5. Develop critical stance to evaluate research, teaching, and learning practices, and engage in personal and professional growth as a mathematics learner and educator
6. Reflect on personal mathematical identities, values and beliefs and develop philosophies to empower Self and Others as mathematics learners

Course Expectations

This course recognizes the cultural capital and wealth of knowledge each one of us may hold. As an instructor of this course, I anticipate establishing a learning community where everyone feels welcomed and supported, and I am delighted to invite you all to participate in this collaborative learning discourse as a knowledge co-creator. The success of this course and effectiveness of learning experiences depends on everyone's contributions, and it is crucial that we all take responsibility for our own learning as well as for supporting peers' learning. To be successful in this course, it is important to:

1. Participate in all course activities and virtual meetings by listening, speaking, writing in a professional, respectful manner.
2. Engage reflectively with the course readings and other resources by connecting them with the academic, personal, professional, and communal interests.
3. Complete all individual and group assessments in a thoughtful, creative, and organized way, and submit these timely as per the assigned deadlines.

The key is full professional engagement in all aspects of the class. It is crucial that we participate with interest and care for deepening our own and other's learning and aim towards creating rewarding learning experiences for all. In the event of extenuating circumstances, the responsibility rests with you to communicate with your peers (especially if you are working on group projects), and the instructor about the possible extensions of assignments (before the due date), and make-up for any missed work and absences. Please also refer to Yukon Teachers Certification [guidelines](#) and [Academic Regulations of Yukon University](#) as well as Saskatchewan Teachers' Federation's (STF) guidelines for [Teacher Professionalism Codes and Standards](#).

Accessibility, Inclusivity and Equity

This course strives to provide safe and inclusive learning environment and responsive, equitable learning opportunities to all. If any one of you have any concerns, please feel free to contact me. The students who may have diverse learning needs and/or exceptionalities, please register with the [Yukon University Accessibility Services](#) and discuss suitable accommodations with me. Please connect with the [Academic Support Centre | Yukon University](#) for Academic guidelines and other helpful resources.

Course Resources

The recommended key texts for the course includes following:

- Small, Marian (various editions). *Making Math Meaningful to Canadian Students K-8*. Toronto, ON: Nelson Publications.
- Boaler, Jo (2016). *Mathematical mindsets: unleashing students' potential through creative math, inspiring messages, and innovative teaching*. San Francisco, CA: Jossey-Bass. (An electronic version of this text is available from the University of Regina Library)

Other helpful texts:

- Van De Walle, John A. & Folk, S. (various editions). *Elementary and Middle School Mathematics: Teaching Developmentally*. Toronto, ON: Pearson Education Canada Inc (or other publishers).

Additional readings and resources for this course will be available through the Reading List on the course site. These will include selected book chapters, Journal articles and web-based resources.

Key Web resources:

- [Learn about Yukon’s school curriculum](https://yukon.ca/en/school-curriculum) <https://yukon.ca/en/school-curriculum>
- [Saskatchewan Curriculum](https://www.edonline.sk.ca/webapps/moe-curriculum-BBLEARN/index.jsp?lang=en) <https://www.edonline.sk.ca/webapps/moe-curriculum-BBLEARN/index.jsp?lang=en>
- [SaskMath Resource](https://www.gssd.ca/Programs/cai/mathematics/Documents/Sask%20Math%20Resource.pdf) (2021). The Saskatchewan Education Sector Strategic Plan (2020 - 2021). A Saskatchewan Mathematics Resource. <https://www.gssd.ca/Programs/cai/mathematics/Documents/Sask%20Math%20Resource.pdf>
- Saskatchewan Teachers of Mathematics: <http://smts.ca/>
- The National Council of Teachers of Mathematics (NCTM): <https://www.nctm.org/>
- NCTM Illuminations: <https://illuminations.nctm.org/>
- Math Central: <http://MathCentral.uregina.ca>
- Make math moments: <https://makemathmoments.com/>
- Graham Fletcher website: <https://gfletchy.com/>
- NRich: <https://nrich.maths.org/>

Virtual Manipulatives:

- Coolmath4kids: <https://www.coolmath4kids.com/manipulatives>
- Desmos: <https://teacher.desmos.com/>
- Mathigon: <https://mathigon.org/activities>
- Math before bed: <https://mathbeforebed.com/>
- VM Inventory: <https://virtualmanipulatives.nikulak.ca/>
- Tap into teen minds: <https://tapintoteenminds.com/>

We will build on these resources further through our collaborative inquiry into mathematical processes.

Tentative Schedule

Weeks	Topic*	Activities
Week 1	Introduction of the course and participants	Introductions and Course Overview
	Mathematics: Nature and Philosophies	Exploring personal connections and experiences with Mathematics + Chapter 1 and 2 Small, M. + Chapter 1 and 2 Boaler, J.

Week 2 Topic Selection and Peer Discussion for Pedagogical Leadership	Curriculum and Mathematical Literacy + Assessments and Planning Instructions	Provincial Curriculum + Chapter 3 and 4 Small, M., Chapter 8 Boaler, J. In-class meeting with the peers and instructor on Pedagogical Leadership
Week 3 Groups and Presentation Day Selection for Cross-Curricular Resource and Microteaching	Teaching Mathematics to Diverse Students	Yukon First Nations Core Competencies + SaskMath Resource + Gear article
	Reading in Mathematics	Barton article Pedagogical Leadership draft in progress: Peer feedback and Self-assessment
Week 4	Early Number	Chapter 7 Small, M. + Jung article Pedagogical Leadership
	Number Operations: Early operations	Chapter 8 Small M. Early operations + Bay-Williams & Kling article Pedagogical Leadership
Week 5	Number Operations: Estimations and Calculations + Place Value	Chapter 11 Small, M. Estimation and Calculation strategies with larger whole numbers + Murata & Stewart article Pedagogical Leadership
	Fractions	Small, M. Chapter 12 Fractions + Clarke et al article Pedagogical Leadership
Week 6 Math Around Us Resource and Reflection Submission	Decimals	Small, M. Chapter 13 Decimals Pedagogical Leadership
	Ratio & Proportions	Small, M. Chapter 14 Ratio & Proportions + Beckmann et al. + Simic-Muller articles Pedagogical Leadership
READING WEEK	READING WEEK BREAK	No Class
Week 7	Patterns and Algebra	Chapter 16 Small, M. Pedagogical Leadership
	Mathematical Mindsets + Rich Mathematical Tasks	Chapters 4 and 5 Boaler, J. Math Around US Virtual Gallery
Week 8	3-D and 2-D Shapes	Small, M. Chapter 17 3-D & 2-D Shapes+ Newcombe article Pedagogical Leadership
	Shape and Space	Chapter 18 Location & Movement Small, M. Pedagogical Leadership
Week 9	Measurements	Small, M. Chapter 19 Nature of Measurement + Kamii article or Copley et al article or Preston & Thompson article Pedagogical Leadership
Week 10	Statistics: Data	Small, M. Chapter 21 Data Pedagogical Leadership
	Statistics: Probability	Small, M. Chapter 22 Probability Pedagogical Leadership
Week 11	Social Justice and Equity in Mathematics	Chapter 6 Boaler, J. + Raisinghani article

	Diverse Cultural and Indigenous Ways of Knowings in Mathematics	Wisdom Sharing by Indigenous Elder/Knowledge Keeper**
Week 12	Inquiry into Mathematics Learning and Teaching	Cross-curricular Resource Sharing and Microteaching
Week 13	Inquiry into Mathematics Learning and Teaching	Cross-curricular Resource Sharing and Microteaching
	Final Reflections + Course Feedback	Final Reflections + Course Feedback

* Specific guidelines for each week will be provided on course site as the term progresses.

** May change depending on the Elder’s availability during the term.

Course Assessments and Grade Distributions

The assessments in this course focus on evaluating your thoughtful and professional engagement in all course activities, and your vital contributions in knowledge co-construction processes to educate self and others. The course includes four key assignments that are mentioned below along with the percentage of total grade that each assignment accounts for.

1. Math Around Us Virtual Resource and Reflection (30%)
2. Pedagogical Leadership Presentation and Reflection (30%)
3. Cross-Curricular Resource Development and Microteaching (40%)

Note: Extensions for assignments may be granted by consultation with the instructor BEFORE the due date. Late assignments without adequate reason (and for which documentation such as a doctor’s note may be requested) will be deducted 5% per day to a maximum of 3 days. After the third day, the assignment will not be accepted and will be recorded as a zero. Suggested guidelines and rubric for each of these assignments are given below.

Assignment Instructions and Rubrics

This section includes description and rubrics for all four course assignments. The detailed nature and criteria for success in each of these assignments will be discussed during the term through virtual class meetings. The ultimate nature and scope of these assessments may change depending upon the needs of the students as the learning discourse unfolds during the course.

Assignment 1 Math Around Us Virtual Resource and Reflection (30%): This assignment includes two parts: a) Identifying a particular mathematical phenomenon (concept, idea, topic, issue, etc.) around us and analyzing its possible curriculum and pedagogical connections through a pre-recorded 6-8 minute video i.e., virtual resource, and b) Writing a reflection on this learning experience. **Please submit your reflection along with the Link for your video before Week 6 Class Session.**

1a) Virtual Resource: Your video should clearly illustrate and communicate the key points about the mathematical phenomenon of your choice and your analysis of it. This recorded video should include followings:

- a) The background information/history/principles or other interesting details of the phenomena
- a) The inquiry question/reasons for your interest in the phenomena
- b) The connections with the provincial curriculum
- c) The suggestions for integrating this phenomenon into teaching mathematics at a specific grade level
- d) Brief description of three relevant resources that you used for researching (at least two of these resources should be for teachers)

1b) Reflection: You will write this 450-500 word reflection to reflect on the learnings that happened through creating this virtual resource. This reflection should include:

- a) How your engagement in creating and presenting this virtual resource on Math Around Us has reinforced/changed your understandings of particular mathematical phenomenon and mathematics?
- b) What new issues have emerged?
- c) How may these influence your teaching and learning of mathematics?
- d) Any suggestions that you may give to your peers about integrating this phenomenon into mathematics teaching and extending their learning.
- e) Also include a list of key references used in APA 7 reference style.

Rubric for Math Around Us Virtual Resource and Reflection (30%)

Criteria	Beginning (≤ 70%)	Progressing (71-80%)	Accomplishing (81-90%)	Exceptional (91-100%)
Creativity and Critical Thinking	Demonstrates jumbled ideas and incoherent analysis of mathematical phenomena	Demonstrates generalized ideas and simplified analysis of mathematical phenomena	Demonstrates originality of ideas and thoughtful analysis of mathematical phenomena	Demonstrates originality of ideas, imaginative and critical analysis of mathematical phenomena
Curricular Connections	Vague connections are made with the curriculum and relevant resources; No specific age and grade level are identified	Generalized connections are made with curriculum; clearly identified age and grade level	Meaningful connections are made with curriculum, clearly identified age, grade level and learning outcomes	Critical connections are made with curriculum, clearly identified age, grade level, learning outcomes and indicators
Pedagogical Approaches	Pedagogical approaches are teacher-centered; No specific considerations are taken regarding inclusion	Pedagogical approaches utilized are student-centered; Basic considerations are taken regarding inclusion	Pedagogical approaches are student-centered and emphasize inquiry; Thoughtful considerations are taken regarding inclusion and cultural responsiveness	Pedagogical approaches utilized are student-centered, and emphasize inquiry, critical thinking, and social justice; Thoughtful considerations are taken regarding inclusion and cultural responsiveness

Clarity, Organization and Presentation	Language, images, and other forms of representation used are challenging to understand	Language, images, and other forms of representation used are clear with a few awkward wording and occasional representation errors	Language, images, and other forms of representation used are clear concise and free of errors	Language, images, and other forms of representation used, are clear, concise, free of errors with ardent expression of personal voice and professional interests
Reflection	Information and ideas are presented are somewhat incoherent; Shares a few aspects of learnings that happened	An overall clear progression of information and ideas, clearly articulates learnings that happened, and how these may inform teaching	Logical and thoughtful presentation of information and ideas; meaningfully articulates learnings that happened, the new issues that emerged and how these may inform teaching, includes responses to peers' questions	Logical and thoughtful and engaging presentation of information and ideas; critically articulates learnings that happened, the new issues that emerged and how these may inform teaching, includes responses to peers' questions with suggestions to extend learning further
Inclusion of Learning Resources	General resources are included with no reference style followed	Resources included are relevant, references follow APA 7 reference style with minor errors	Resources included are relevant and multimodal, references follow APA 7 reference style with minor errors	Resources included are relevant and multimodal, and extend the learning further, references correctly follow APA 7 reference style

Assignment 2 Pedagogical Leadership (30%): This assignment invites you to lead and facilitate a 20-25 minute discussion on a selected mathematics topic during one of the synchronous learning sessions and reflect on your learnings. Your goal is to prompt active engagement and meaningful discussion on the topic and ensure respectful participation of all participants. **The opportunity to select a topic/day for leading a discussion and connecting with peers for preparation of your Pedagogical Leadership presentation will be provided early in the term.**

2a) Pedagogical Leadership Preparation: Prior to leading the class session on your selected topic, you will be meeting with your peers to discuss the draft outline for your pedagogical presentation. Your draft outline should focus on identifying the followings:

- What are important key principles/concepts/issues/ideas raised in selected mathematics topic that you would like to address?
- What questions/prompts/learning activities might you use to introduce and actively engage your peers in learning mathematics concepts?
- What considerations may help in deepening elementary students' learning of the mathematical concept?

Please also review the following Self-assessment rubric as you begin preparing for your pedagogical leadership presentation.

Self-assessment Rubric for Pedagogical Leadership Preparation and Peer Feedback (5%)*

Criteria	Beginning (≤ 70%)	Progressing (71-80%)	Accomplishing (81-90%)	Exceptional (91-100%)
Planning and Preparation	Has a clear idea about the topic; begins to design the learning activities and discussion questions when prompted during in-class meeting with the peers	Rough draft of activity is in progress (includes a clear topic, and learning activity); actively engages in in-class preparation activities; effectively collaborates with peers during planning and discussion session by sharing a virtual copy of the plan	Rough draft of activity is in progress (includes a clear topic, learning activities, discussion questions and prompts); actively engages in in-class preparation activities; effectively collaborates with peers during planning and discussion session by sharing a virtual copy of the plan	Rough draft of activity is almost fully prepared (includes a clear topic, learning activities, discussion questions and prompts, and ideas for assessments); actively engages in in-class preparation activities; effectively collaborates with peers during planning and discussion session by sharing a virtual copy of the plan, reaches out to individual members to ensure collective collaboration
Critical thinking and Creativity	Demonstrates generalized understandings of the topic; summarizes the topic without clearly identifying key concepts, no learning activity is identified	Demonstrates a good understanding of the topic; clearly identifies key concepts and learning activity	Demonstrates an in-depth understanding of the topic; actively contributes to designing the learning activity, discussion questions and prompts with considerations taken to ensure respectful participation of diverse students	Demonstrates a critical and insightful understanding of topic, actively contributes to designing the learning activity, discussion questions and prompts with considerations taken to ensure respectful participation of diverse students
Justification	Please assign a percent grade and highlight the relevant criteria in the rubric along with a rationale which clearly describes the reasons for identifying specific criteria for self-assessment. <u>Submit this self-assessment at the end of Week 3.</u>			

* Your overall grade for this part of assignment will be determined by the instructor on the basis of quality peer engagement during in-class session and thoroughness of your self-assessment.

2b) Pedagogical Leadership Presentation and Reflection: You will lead and facilitate a 20-25 minute discussion by sharing your PowerPoint presentation during one of the virtual class sessions and write a reflection on your learnings. **Please submit your PowerPoint and Reflection as a Microsoft Word or PDF file by 11:59 pm on the day following your pedagogical leadership presentation.**

Your presentation should include followings:

- a) introduction of the important key concepts/issues/ideas raised in selected mathematics topic that you would like to address.
- b) one interactive activity using virtual/hands-on manipulatives to engage your peers in learning of the mathematics concepts.

- c) questions/prompts for leading peer discussion on the activity to discuss how this activity may help in deepening elementary students' understandings of the mathematics topic.

After leading the class session on your selected topic, you will submit your PowerPoint presentation along with an individual written reflection of about 450-500 words on learnings that happened through this pedagogical leadership experience.

Your reflection should include:

- a) a description of your initial understandings of the selected mathematics content topic/issue.
- b) how your learnings may have evolved through your engagement in reading the chapter and by designing and leading the learning activity and discussion.
- c) the key questions, insights and issues raised by peers during your discussion and how these may inform your teaching and further learning of the specific topic/issue.

Please also review the following rubric as you prepare for your pedagogical leadership presentation.

Rubric for Pedagogical Leadership Presentation and Reflection (25%)

Criteria	Beginning (≤ 70%)	Progressing (71-80%)	Accomplishing (81-90%)	Exceptional (91-100%)
Leadership	Introduction of the mathematics topic and activity is somewhat vague, attempts to lead a discussion about the learning activity without clear prompts/questions to discuss how it may help in deepening elementary students' understandings of the topic	Introduces the mathematical topic with clear identification of key concepts/issues/ideas, leads a discussion about the learning activity with clear prompts and questions to discuss how it may help in deepening elementary students' understandings of the topic	Introduces the mathematical topic with clear identification of key concepts/issues/ideas in an engaging manner, uses thoughtful questions and prompts for a meaningful discussion about the activity to discuss how it may help in deepening elementary students' understanding of the topic	Introduces the mathematical topic with clear identification of key concepts/issues/ideas in a passionate manner, uses critical questions and prompts for a meaningful discussion about the activity to discuss how it may help in deepening elementary students' understanding of the topic, includes personal/professional experiences to advance peer learning

Contribution to Knowledge Co-construction	Discussion questions and learning activities are teacher-centered with suggested use of manipulatives	Learning activity and discussion questions are student-centered with use of manipulatives	Discussion questions and learning activities are student-centered and multi-model with meaningful use of multi-model manipulatives with suggested considerations for student diversity	Discussion questions and learning activities are student-centered and multi-model with effective use of multi-model manipulatives with actions taken for individual and collaborative student learning in an inclusive and relational manner
Critical thinking and Creativity	Demonstrates generalized understandings of the topic/issue, summarizes the topic	Demonstrates a good understanding of the issue/topic, clearly identifies key concepts, engages with peers in a collaborative and respectful manner at all the times	Demonstrates an in-depth understanding of the issue/topic, key concepts are clearly identified and woven meaningfully with the learning activities, engages with peers in a collaborative and respectful manner at all the times	Demonstrates a critical and insightful understanding of issue/topic, key concepts are clearly identified and woven meaningfully with the discussion questions and learning and assessment activities, engages with peers in a collaborative and
Reflection	Information and ideas presented are somewhat incoherent; shares a few aspects of learnings that happened	An overall clear progression of information and ideas, clearly articulates learnings that happened, and how these may inform teaching	Logical and thoughtful presentation of information and ideas; meaningfully articulates learnings that happened, the new issues that emerged and how these may inform teaching, includes responses to peers' questions	Logical, thoughtful, and engaging presentation of information and ideas; critically articulates learnings that happened, the new issues that emerged and how these may inform teaching, includes responses to peers' questions with suggestions to extend learning further

Note: The final grade for this assignment will be assigned by the instructor on the basis of quality and thoroughness of your PowerPoint Presentation, in-class discussion, written reflection, and your self-assessment of the preparation.

Assignment 3: Cross-Curricular Resource Development and Microteaching (40%): This is a group project which involves engaging in a collaborative inquiry and developing and sharing a cross-curricular resource that could be utilized to teach a mathematics topic in a cross-curricular manner to select grade level(s) in Yukon/Saskatchewan schools. This resource should include followings:

- a) A rationale for teaching selected mathematics topic as informed by the mathematical research and personal/professional interests along with a description of cross-curricular connections
- b) Clear identification of learning outcome(s) and indicator(s) of mathematics and other relevant subject(s) curricula of specific grade level(s)

- c) Mathematics lessons (corresponding to the number of group members) designed as per the Backward Design model with an inquiry-based instruction with examples of multi-model, cross-curricular learning activities and assessment plan with examples of formative and summative assessments (each lesson should have connections with at least two other subjects)
- d) Adaptations for various dimensions of student diversity including considerations for integrating diverse cultural and Indigenous ways of knowings and Yukon First Nations Core Competencies
- e) A list of related learning resources in APA 7 reference style

Note: You will present key features of your developed cross-curricular resource through a PowerPoint and explicitly illustrate how this may inform meaningful cross-curricular mathematics learning of elementary students by engaging your peers in an interactive learning activity from one of your lessons. The opportunity to form your groups and select presentation date will be provided early during the term. **Please submit the PowerPoint and developed cross-curricular resource as a single Microsoft Word or PDF file by Week 12 Monday@ 11.59 pm and share it during any ONE of the virtual meeting sessions on Week 12 or 13.**

Rubric for Cross-Curricular Resource Sharing and Presentation (35%)

Criteria	Beginning (≤ 70%)	Progressing (71-80%)	Accomplishing (81-90%)	Exceptional (91-100%)
Rationale and Learning Outcomes	Rationale to justify teaching of selected topic/issue is vague; Vague connections are made with the curriculum; No clear learning outcomes are identified	Rationale to justify teaching of selected topic/issue is general; Generalized connections are made with the curriculum; Generalized learning outcomes are identified	Rationale to justify teaching of selected topic/issue is logical; Meaningful connections are made with the curriculum with clearly identified learning contexts; Clear learning outcomes are identified with specific mention of grade level(s)	Rationale to justify teaching of selected topic/issue is logical and reflects critical thinking; Critical connections are made with the curriculum with clearly identified learning contexts; Clear learning outcomes are identified with specific mention of grade level(s) and opportunities for extension
Pedagogical Approaches	Grade appropriateness cannot be determined; Pedagogical approaches are teacher-centered; No considerations are taken regarding student diversity	Pedagogical approaches are grade appropriate and student-centered; Learning activities emphasize physical and cognitive growth; Basic considerations are taken regarding inclusion of students with exceptional needs	Pedagogical approaches utilized are grade- appropriate and student-centered; Learning activities emphasize physical, cognitive, and emotional growth of students; Specific considerations are taken to recognize and accommodate various dimensions of student diversity within classroom settings	Pedagogical approaches utilized are grade appropriate and student-centered; Learning activities emphasize the wholistic (physical, cognitive, emotional, and spiritual) growth of students; Specific considerations are taken to recognize and accommodate various dimensions of student diversity

				within classroom and community settings
Assessment Plans	Only summative assessments are included; No considerations are taken regarding student diversity	Summative and formative assessments are included; Basic considerations are taken regarding inclusion of students with exceptional needs	Formative and summative assessments emphasize physical, cognitive, and emotional growth of students; Specific considerations are taken to recognize and accommodate various dimensions of student diversity within classroom settings	Formative and summative assessments emphasize the wholistic (physical, cognitive, emotional, and spiritual) growth of students; Specific considerations are taken to recognize and accommodate various dimensions of student diversity within classroom and community settings
Organization and Presentation	Information and ideas presented are vague and incoherent; Language images, and other forms of representation used are challenging to understand	An overall clear progression of information and ideas; Language images, and other forms of representation used are clear with a few awkward wording and occasional representation errors	Logical and thoughtful presentation of information and ideas; Language, images, and other forms of representation used, are clear concise, and free of errors	Logical, thoughtful, and engaging presentation of information and ideas; demonstrates in-depth understanding and critical thinking; Language, images, and other forms of representation used, are clear, concise, free of errors with ardent expression of personal voice and professional interests
Inclusion of Learning Resources	General resources are included with no reference style followed	Resources included are relevant, in-text citations, and references follow APA 7 reference style with minor errors	Resources included are relevant and multimodal, in-text citations and references follow APA 7 reference style with minor errors	Resources included are relevant and multimodal, and extend the learning further, in-text citations and references correctly follow APA 7 reference style
Overall Quality and Responsiveness of Developed Resource	Reflects a beginning level of knowledge about the curriculum, and pedagogical skills with a potential for learning to effectively implement the curricula and respond to various dimensions of student diversity in	Reflects a satisfactory level of knowledge about the curriculum, and pedagogical skills, with a potential for learning to effectively implement the curricula and respond to various dimensions of student diversity in	Reflects a professional level of knowledge about the curriculum, pedagogical skills, and capacity to effectively implement the curricula, integrate diverse cultural knowledges, and respond to various dimensions of student diversity in classroom contexts	Reflects a professional level of knowledge about the curriculum, pedagogical skills, and capacity to critically implement the curricula, integrate diverse cultural knowledges, and respond to various dimensions of student

	classroom and community contexts	classroom and community contexts	with a potential of growth for supporting diverse students' learning in community contexts	diversity within classroom and community contexts
--	----------------------------------	----------------------------------	--	---

Rubric for self and peer assessments (5%)*

Criteria	Beginning (≤ 70%)	Progressing (71-80%)	Accomplishing (81-90%)	Exceptional (91-100%)
Quality of Contributions	Contributions are general,	Contributions are relevant and logical,	Contributions are relevant and meaningful,	Contributions are relevant and Critical
Engagement	Contributes most of the times when prompted	Contributes most of the times	Contributes most of the times in a timely manner	Contributes all the times in a timely manner
Teamwork skills	Demonstrates willingness to engage with peers professionally in mutually supportive ways that are consistent with the principles of equity, fairness, and respect for others	Actively works towards engaging with peers professionally in mutually supportive ways that are consistent with the principles of equity, fairness, and respect for others	Engages professionally with peers in mutually supportive ways that are consistent with the principles of equity, fairness, and respect for others; reaches out to individual members to ensure collective collaboration; demonstrates leadership	Engages professionally with peers in mutually supportive ways that are consistent with the principles of equity, fairness, and respect for others; reaches out to individual members to ensure collective collaboration; demonstrates leadership with capacity to nurture responsive learning environments
Justification	Please assign a percent grade and highlight the relevant criteria in the rubric along with a rationale for your assessment which clearly describes the reasons for identifying specific criteria for self and/or peer assessments.			

*** Your overall grade for this part of assignment will be determined by the instructor on the basis of quality and thoroughness of assessments that you complete for your peers and self.**

Note: **Please submit your completed self and peer assessment rubric as a Microsoft word or PDF by 11.59 pm on the day of your class presentation.** You may copy and paste the Rubric corresponding to the number of members in your group and complete it for each member of your group including yourself.