



# K-12 Science Curriculum

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## Inquiry in School Science

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*When you inspire students to imagine beyond their expectations, to seek more questions than they will ever answer, and to persist when others concede, you are becoming an inquiry-based teacher.*

-Douglas Llewellyn

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## GREAT FALLS PUBLIC SCHOOLS

### VISION:

All kids are engaged in learning today ... for life tomorrow.

### MISSION:

We successfully educate students to navigate the future.

### WE BELIEVE:

- All students deserve teachers and staff who thrive on student success.
- Each student will have fair and equitable opportunity for quality instruction and academic success.
- All students learn when their individual needs are met.
- All students and staff learn and work best in a safe, secure, and nurturing environment.
- Highly skilled and committed personnel are our greatest asset.
- Quality education is a partnership of student, staff, family, and community engagement.
- Dedication to acknowledging, affirming, and including diversity enriches the educational experience for all.
- District resources, programs and staff are flexible and adaptable to meet the changing needs of all students.
- A well-educated community is the foundation of our democracy.

## GREAT FALLS - GREAT SCHOOLS - GREATER TOMORROWS

### Introduction

Great Falls Public Schools presents the 2008 K-12 science curriculum which is designed to be implemented using the essential features of classroom inquiry. Scientific classrooms in Great Falls Public Schools strive to engage learners in scientifically oriented questions which require investigation, gathering of data and development of explanations for scientific phenomena.

As endorsed by the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council, the Essential Features of Classroom Inquiry include the following:

- Learners are engaged by scientifically oriented questions.
- Learners give priority to evidence which address those questions.
- Learners formulate explanations from evidence.
- Learners evaluate their explanations in light of alternative explanations.
- Learners communicate and justify their proposed explanations.

The K-12 science instruction program is framed around three enduring understandings which align to state and national standards:

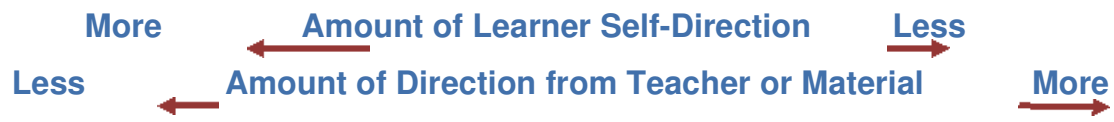
- **Scientific inquiry affords all learners opportunities to make observations, pose questions, develop hypotheses, design and conduct investigations, and analyze data to draw conclusions.**
- **Exploring systems, order, and organizations in our natural and designed world are integral to understanding the scientific disciplines and their interdependence.**
- **Both contemporary and historical scientific understandings inform technological, ethical, cultural and life decisions.**

As students develop their abilities and understanding of scientific concepts and procedures, they become more adept at designing and conducting scientific investigations for the purpose of understanding their world in a scientifically literate way.

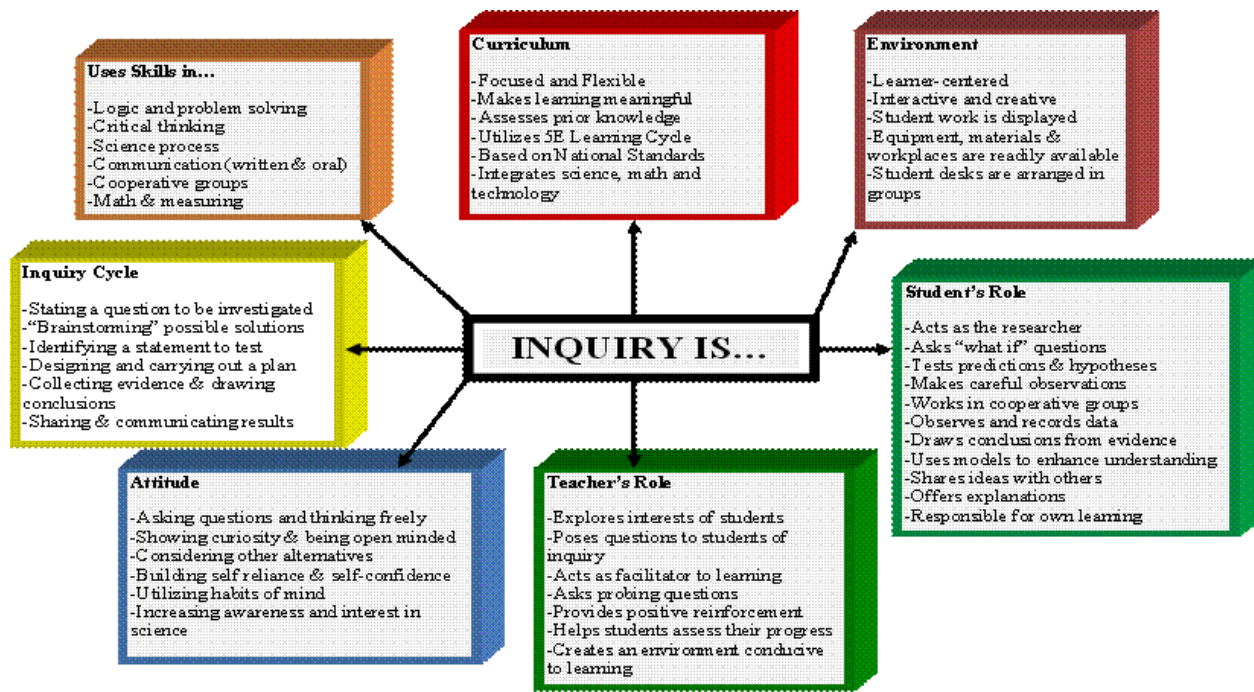
### Essential Features of Classroom Inquiry

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Level 4	Level 3	Level 2	Level 1	
<b>Learner engages in questions</b>	Learner poses questions	Learner selects among questions, poses new questions	Learner sharpens or clarifies question provided by teacher, materials or other sources	Learner engages in questions provided by teacher, materials, or other sources
<b>Learner gives evidence</b>	Learner determines what constitutes evidence and collects it	Learner directed to collect certain data	Learner given data and asked to analyze	Learner given data and told how to analyze
<b>Learner formulates explanations</b>	Learner formulates explanation after summarizing evidence	Learner guided in process of formulating explanations from evidence	Learner given possible ways to use evidence to formulate explanation	Learner provided with evidence and how to use evidence to formulate explanation
<b>Learner connects to scientific knowledge</b>	Learner independently examines other resources and forms the links to explanations	Learner directed toward areas and sources of scientific knowledge	Learner given possible connections	
<b>Learner communicates and explains</b>	Learner forms reasonable and logical arguments to communicate explanations	Learner coached in development of communication	Learner provided broad guidelines to sharpen communication	Learner is given steps and procedures for communication



Adapted from National Science Education Standards



Adapted from Cowwin Press, 2002. Reprinted from *Inquire Within*, D. Lawrence Ryan.

Committee Membership-elementary

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<b>Lori Vinson</b>	Valley View	Third Grade
<b>Heather Beck</b>	Loy	Fifth Grade
<b>Tara Rosipal</b>	Sac/North	6, 7, 8 Grade
<b>Megan May</b>	Roosevelt	Sixth Grade
<b>Beth Thomas</b>	District	Environmental
<b>Kathy McLean</b>	Sunnyside	Principal
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<b>Luke Diekhans</b>	District	Environmental
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Additional Writing Participants-elementary

<b>Lynn Ryerson</b>	SS	Kindergarten
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Committee Membership-secondary

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Advisory Team

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