Inquiry Learning: Personalizing Learning

Southeast Service Cooperative
October 20, 2014

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Inquiry Defined

According to Wikipedia, inquiry learning is a dynamic approach to learning that involves active learning, exploring the world, asking questions, where progress is assessed by how well students develop experimental and analytical skills rather than how much knowledge they possess where teachers are viewed as facilitators of learning rather than vessels of knowledge.

Guiding Principle Underlying Inquiry

LEV VYGOTSKY

Why Do Inquiry?

Inquiry-based activities cause us to revise our prior understandings and deepen our understanding of the world. Through inquiry we develop important skills such as careful observation, reasoning, critical thinking, and the ability to justify or refute our existing knowledge. Lastly, because inquiry begins with a meaningful problem or issue, the process engages students as they come to value the driving questions that motivate their inquiry process.

Inquiry Defined

Inquiry Learning can be defined as the pursuit of an unanswered question that is grounded in primary resources around a topic that was the choice of the inquirer. It tends to be trans-disciplinary in nature generating more unanswered questions that become fuel for the next inquiry. It culminates in some sort of performance that is measured against a rubric or checklist.

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Learning Theory?

Behaviorism

Learning Theory?

Cognitivism

Computer model: inputs, managed in short term memory, encoded for long term retrieval, output

Learning Theory?

Constructionism

Learners create knowledge in process of understanding experiences.

Learning Theory?

Connectivism

Connectivism, "a learning theory for the digital age," has been developed to explain the effect technology has had on how we live, how we communicate, and how we learn.

Origins of Inquiry

Neuroscience and psychology research has extended the behavioral and cognitive models of learning. Learning is partly a social activity, taking place within the context of culture, community and past experiences. Constructivist theory has emerged with a focus on the learner.

The need for education to adapt to the changing world has led to an increase in popularity in recent years. Many teachers know that the industrial culture has shaped our schools and we are preparing to meet the needs of our current culture. Children need not only knowledge, but useful skills to meet the demands of high-performance workplaces. Employees must be able to plan, collaborate, communicate and learn civic responsibilities.

Motivation

• Autonomy: The opposite of autonomy is control: Choice leads to autonomy
• Mastery: With autonomy, Mastery Emerges
• Purpose: With Mastery comes Purpose

Drive, Daniel Pink
Why Use Inquiry Learning

- Promotes curiosity – which needs to be outcome of learning, promotes life-long learning and skills for the work place in this century and the next.
- Caters for the diversity of the class by allowing students to build from their own prior knowledge and understandings. Build a cognitive map of knowledge.
- Social learning situations allow students learn from each other – socio-cultural learning theory.


Research-Based

A study involving over 1400 students found that inquiry-based approaches in middle and high school language arts classrooms allow both low- and high-achieving students to make academic gains. In a large-scale study that included sites in California, Florida, New York, Texas, and Wisconsin, researchers observed 64 classrooms to determine whether the teacher primarily focused on fostering student inquiry into literary themes or whether they emphasized simple recall of details of plot and character. A variety of achievement data were also collected. The analysis revealed that discussion-based inquiry approaches were significantly related to improved student performance. Further analysis controlled for initial literacy levels, gender, socioeconomic status, and race/ethnicity, and the researchers concluded that these approaches were effective across a range of situations, for students of varying levels of academic ability, whatever classrooms they were in.


Myths About Inquiry Learning

- Inquiry-based instruction subordinates the curriculum to the interests of the child.
- All subject matter should be taught through inquiry.
- Student engagement in hands-on activities guarantees that inquiry teaching and learning are taking place.
- All inquiry-based lessons are open-ended.
THREE MINUTE DEBRIEF

Turn to your neighbor: What is going on with your thinking regarding inquiry at this moment?
What are your unanswered questions?

What Does Inquiry Look Like in the Classroom?

Inquiry begins with Questions
an issue
a problem
an idea
a puzzlement
a wondering

Planning an Inquiry Learning Project

1. Initially the teacher/facilitator may have to provide the question
2. The teacher/facilitator conferences with the student to determine what has their interest. Typically, the teacher/facilitator tries to help the student refine their interest (it is usually too broad or not clearly defined)
3. Have the student begin digging. This is a divergent step of the process
4. As the student digs, follow up meetings focuses on crafting a driving question. This essential question should be provocative and open-ended. It should be to the point and serve as to guide students to the heart of the topic. The question should be challenging and relate to real-world issues. It should be linked to standards. Creating a solid question may take some drafting.

With 6-8 Year Olds

If they have a question we help them refine it
If they have no question we have started with:
WHAT HAPPENED ON THE DAY YOU WERE BORN?

6-8 Year Olds

What's the biggest part of your body?
How do you get old?
Why do cars speed up passing a stop sign?
Why do things far away seem blue?
Why do my eyes water when I stare?
How does your body make tears?
Is salt in our tears the same as the salt we put on food
What's that pipe from the silo to the barn?
How and why do fingernails grow?
How do chickens make eggs?
When is enough enough?
Who is friendlier? The Moon or the Sun?
Why do earthworms come out of the ground after it rains?

6-8 Year Olds

Primary Resources
Note-Taking
Interview Process
6-8 Year Olds

- LENSES
- Political
- Social
- Economic
- Environmental
- Spiritual

With 6-8 Year Olds
Process is more important than the Product

With 9-18 Year Olds

Teacher as Facilitator

What is the Topic, Idea, Concept, Belief or Question that has your attention?

Record the question you will pursue

What do you already know about that idea? Record what you know.

What are some of the unanswered questions you have surrounding your idea?

Annotated Bibliography: Record the search journey you undertake as you pursue your question. List the citation (APA 6) and record a brief description that you could employ in a slide or prezi and one that provides you with enough information to allow you to discriminate between multiple, similar citations. Add more frames as needed.

Work Plan: Use the calendar provided. Lay out a work plan to guide you to complete the project. Send the completed calendar to the facilitator. Remember to have the presentation ready for the last class scheduled. Be prepared to present it to your peers. Identify specific dates and time to check in with your facilitator to update progress. Meetings may be face-to-face, email or online. Be prepared to update your plan as you progress.
With 9-18 Year Olds
Teacher as Facilitator

**Expert Input:** List the potential experts you encountered on your journey.

- What questions do you have for your expert?
- What steps have you taken to secure the answers to your questions?
- What new information have you discovered in your pursuit of experts?

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**Assessing Inquiry**

Assessment includes a multiple focus:
- determining the criteria for learning and quality of student work,
- monitoring student progress, and
- adjusting and improving instruction.

(Llewellyn, 2005, p. 112)

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**Assessing Inquiry Learning**

Four Possible Methods of Gaining an Understanding of the Learning of Students:

- Observing students engaged in inquiry
- Asking questions designed to probe reasons and understanding
- Looking closely at the evidence from class work
- Setting special tasks, assignment, performance

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**Assessment:** Feedback is critical to student success. Checklists or rubrics will inform and motivate the investigator. List below criteria you would want included in a checklist to measure the content of your inquiry.

List below the criteria you would want included in a checklist to measure the performance that delivers the content of your inquiry.

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**Depth and Complexity**

**Lenses:** One step to enhance the quality of the inquiry effort is to consider your idea or topic through a number of lenses. Political, social, economic and environmental lenses quite often open other perspectives in the inquiry process. Taking the perspective of content experts also broadens and deepens the focus of the inquiry.

- Consider multiple lenses and record your journey.

**Connections:** Another and additional pathway investigators take is to consider relationships between topics previously pursued and pathways considered and abandoned to focus energy on what is important.

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**Inquiry Rubric**

<table>
<thead>
<tr>
<th>Rubric</th>
<th>Appraise</th>
<th>Evaluate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Collection of Information and Resources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Analysis and Interpretation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge and Assessment</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Form 4**

**Expert Input:** List the potential experts you encountered on your journey.

- What questions do you have for your expert?
- What steps have you taken to secure the answers to your questions?
- What new information have you discovered in your pursuit of experts?
Debrief: After the presentation it is important to reflect and to discuss the journey of the inquiry. Respond to the questions:

What surprised along your journey?
What unanswered questions have you uncovered?
What was the most difficult aspect of this process? How would you do it differently next time?
What elements of the Habits of Mind did you initiate and practice during this inquiry? How was it demonstrated?
What audience would benefit most from your efforts?
Who provided you the most surprising information?

With 9-18 Year Olds
Teacher as Facilitator

Form 8
Debrief:

After the presentation it is important to reflect and to discuss the journey of the inquiry. Respond to the questions:

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Who provided you the most surprising information?

With 14-18 Year Olds

More Choice
Less Structure
Stress the Non-linear Process of Inquiry

Evidence-Based Research

Middle-school physics students taught through inquiry outperformed high school students taught with conventional methods. White, Barbara, Todd A. Shimoda, and John R. Frederiksen. 1999.


Middle school teachers who used an inquiry approach increased the achievement scores of African American students, narrowed the achievement gap between male and female students, and found that their students were more interested in what they had to teach. Kahle, J. B., J. Meece, and K. Sutcliffebury, 2000.
Evidence-Based Research

A California school district, an inquiry-based approach to science with English Language Learners (ELLs) led to greater proficiency in not just science, but also English language, reading, and math. Amaral, Olga, Leslie Garrison, Michael Klentschy. 2002.

When used in place of a textbook approach, an inquiry-based approach yielded significantly higher achievement for high school students with special needs. Scruggs, T. E. and M.A. Mastropierl, 1993.

Inquiry Learning

When we no longer know what to do, when we have come to our real work and when we no longer know which way to go we have begun our real journey. The mind that is not baffled is not employed. The impeded stream is the one that sings.

Wendell Berry

Resources


