Prof. A.P. Sharma
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Inquiry Based Learning: Issues and Challenges

* Dr. Jugal Kishor Mishra

"Every time we teach a child something, we keep him from re-inventing it for himself"

– Jean Piaget, 1972

Introduction

There is historical evidence that, humans have always been curious, sensitive, and eager to learn about the nature of existence; this process begins at birth and continues till the last breath. Curiosity and discovery are inherent in human beings which lead us to question everything, aid in decision-making and develop high-level thinking skills. So it is essential that individuals develop their creativity, along with their high-level thinking skills, such as critical and analytical thinking, decision-making, evaluation, accurate analysis, and synthesis. To achieve these, they must actively participate in learning environments by putting their dreams into practice, analysing, discovering, researching, and asking questions. Individuals who actively participate in learning likely to sustain knowledge and support learning processes. The act of learning relies on the sense of curiosity, asking questions, and finding correct answers that are understandable and reliable. It is important to guide students in asking sensible questions, to establish environments that facilitate the question-creation process, and to facilitate a healthy inquiry process.

Classroom Culture

Let us visualise role of the students & teachers in classroom and reflect on its implications. To do so, if we visit a classroom of the school we are currently teaching at, what do we observe? What do we notice? How are students reaching understanding? Are teachers predominantly lecturing to cover content? Are students consistently active as learners? Are they engaged in investigations that promote higher order thinking skills and conceptual understanding? Are students involved in a collaborative learning and offered a chance to explore their interests, opinions, feelings, beliefs, and curiosities? Is learning taking place in small group? Is cooperative learning encouraged? Is there any continuous evaluation and feedback going on? Such questions reveal a lot about the classroom culture.

Learners want to think, analyse, evaluate, apply, and create. They want to tell a story, be autonomous, interact, and collaborate. They want to explore and be engaged while using meaningful technological

tools. Our social needs have tremendously changed over the years. We need to think of our students and the challenges that are ahead of them. To make sure our students are well equipped with the necessary tools to face the demands and expectations of the future, there has been a clear need for instructional practices that promote critical thinking, reflection, questioning, collaboration, communication and research. Inquiry-based learning (IBL) is a student-cantered instructional approach that makes use of meaningful tasks such as cases, projects and research to situate learning (Avsec & Kocijancic, 2016). With IBL, students are engaged in the learning process and are making sense of the world around them. Alfieri et al. (2011) refer to the benefits of IBL in the classroom by explaining that, "*allowing students to interact with materials, models, manipulate variables, explore phenomena, and attempt to apply principles affords them with opportunities to notice patterns, discover their underlying causalities and learn in ways that are seemingly more robust" (p. 3*). Therefore, adopting IBL engages students in the learning process and maximizes learning.

Thus , traditional role of teacher as director to other more effective roles such as the collaborator or facilitator are sought after which are more relevant to this new millennium era that strives for better curriculum reform.

Constructivist Learning Theory & Inquiry Based Learning

"IBL is rooted in constructivism, which is a learning theory, and states that humans construct their own knowledge and meaning from their *personal experiences"(Tamim & Grant, 2013)*. Therefore, in such a case, knowledge is being built rather than delivered by the teacher.

John Dewey, a constructivist and an advocate of IBL, states that students should actively be in engaged in the learning process. He explains: *"if you have doubts about how learning happens, engage in sustained inquiry: study, ponder, consider alternative possibilities, and arrive at your belief grounded in evidence" (Dewey, 1998, as cited in Mapes, 2009, p.11). John Dewey strongly believed that students need to be reflective problem solvers (Santrock, 2017).* Jerome Bruner contributes to constructivism and is primarily concerned with making *"education more relevant to student needs at each stage, and he believes that teachers could accomplish this by allowing students to actively participate in the learning process" (Roblyer & Doering, 2013).* His theory, discovery learning, is a form of IBL and states that *"students are more likely to understand and remember concepts that they discover during their interaction with the environment" (Roblyer & Doering, 2013).* Lev Vygotsky known for his social constructivism theory explains that *"social interaction and critical thinking are two main ingredients of a learning process" (Liu & Chen, 2010).* He describes *IBL as an "integral part of creating .... a social constructivist classroom" (Powell & Kalina, 2009, p. 244).* IBL can be implemented at different levels (Duran & Dökme, 2016).

Type of IBL

Mackenzie (2016) explores the differences between four types of student inquiry – *structured, controlled, guided, and free. He further explains that teachers usually begin the year in a structured inquiry model, move to controlled inquiry, then guided inquiry, and if all goes well, conclude the year with free inquiry.*

Mackenzie's four types of student inquiry:

1. **Structured Inquiry.** Students follow the lead of the teacher, who introduces an essential question and then guides students through specific activities, resources, and assessments.

2. **Controlled Inquiry:** Students explore one question from several different questions generated by the teacher using a selection of resources curated by the teacher.

3. **Guided Inquiry:** The teacher introduces topics and students begin to formulate their own questions as well as select their own resources to research their answers.

4. **Free Inquiry:** Students, with the support of their teacher, design their own questions, select their own resources, and customize their own summative assessments to demonstrate what they learned.

Marshall (2013) has previously explored the continuum of inquiry and has asked his readers to imagine on one end the teacher as the teller of information, and on the opposite end, open inquiry.

He has referred to the following terms to describe the four types of inquiry: *teacher as a teller, prescriptive inquiry, guided inquiry,* and *open inquiry.* He contends that students engaged in prescriptive inquiry are usually doing little to no critical thinking and that is the reason why it should be the exception rather than the general procedure. Whereas, *"when instruction includes effective guided inquiry, learning is rich, and challenging to students of all ability levels" (Marshall, 2013, p.17)*

Benefits of Inquiry-Based Learning

Improved student engagement: Inquiry-based learning is about students taking charge of asking the questions they want to explore. That requires meaningful participation from students along with teacher support, all of which promotes student engagement.

Greater student mastery: When students explore and discover rather than only listen to lectures, they develop greater mastery skill and concept.. For example, a teacher can show students set of rules to be followed for solving an algebra equation, but real mastery occurs when students are asked to develop their own. Although this might take more time, it deepens understanding of a concept.

Improved knowledge retention: Mastering and learning new things in the classroom is essential, but students must be able to recall that information later

Deeper understanding of students: Allowing students to take center stage in a lesson gives teachers the valuable opportunity to observe. For example, a math teacher might demonstrate how to solve a

problem in a traditional lesson, but during an inquiry-based lesson the teacher can see how each student views a problem and the steps they take to get a solution in their own unique way. Teachers are then able to gain a deeper understanding of how their students think and learn.

Teacher's Role in IBL

Students own a great deal of responsibility for learning during inquiry-based lessons, but teachers are still crucial guides for making sure that learning takes place. The role teachers play in inquiry-based learning depends on several factors:

1. Teachers begin the inquiry process by introducing topics and encouraging questioning and modelling what it looks like to be curious.

2. They promote and guide focused dialogue and discussion among students attempting to answer their questions.

3. The teacher leads students between small-group and whole-classroom discussions. They determine the transition.

4. Teachers pay attention to discussions and clarify misconceptions. They add information to further develop students' understanding of the material.

5. They bring student experiences into the discussion to make learning more relevant.

The amount of guidance and leading a teacher provides may vary. Teachers are able to make changes on the fly to adapt to particular lessons and concepts. Additionally, by knowing how their students respond teachers can create truly engaging learning experiences.

*   Resist the urge to answer all student questions. Remember that this is student-focused learning and exploration

*   Limit the time spent introducing a concept or lesson. A lecture can quickly become boring and unengaging. Provide only what students need to get started in their own exploration.

*   Be prepared to be flexible. Classes and students are different and require more or less guidance. Some strategies for a lesson may seem perfect when you start but fail part way through. Be willing to adapt and adjust to keep the inquiry going and engagement strong.

*   Let your own curiosity unfold, too. Model lifelong learning and engagement by asking your own questions and exploring them with students. They'll appreciate it.

*   Make time for reflection at the end of every inquiry lesson. This may be a discussion as a class or a period of quiet journaling. Reflection should include the concepts learned, but also the learning process. Ask leading questions like "How did exploration deepen your understanding?" or "Was it frustrating to not get immediate answers?"

Arranging Curriculum, Pedagogy and Assessment

One major problem raised by efforts to incorporate IBL is time pressure. Research has shown that the success of implementing IBL mechanism largely on how IBL is integrated into the educational environment. Superficial attempts at incorporating IBL tend to lead to frustration and confusion due to happen at a little time. To address this situation, curriculum, pedagogy and assessments should be arranged properly. One key step worth considering, in this regard, is to draw on a system of holistic assessment based on performance tasks and formative assessments that evaluate students' critical thinking skills.

This applies to the curriculum as well. In the traditional model of instruction, the curriculum is taught to students who will have to remember it to reproduce it in the exams. In this model, since the focus is on knowledge retention, we might infer that the knowledge in the curriculum is perceived as universal, stable, unchanging and independent of time and context.

School and the real World

Incorporating IBL in the humanities can develop students into the sort of citizens who can address global problems. To accomplish this, school leaders and teachers might want to consider how schools serve as learning environments, whether school culture and classroom environments are conducive to developing and cultivating cultures of inquiry for both teachers and students. That is, cultures that embrace and promote inquisitiveness, curiosity, questioning, dialogue and debate, all of which are essential for successful in IBL (Kwek, 2018

The Role of Teachers

One clear insight offered by the research is the integral role teachers play in an IBL framework. They will need to develop skills to design authentic and thought-provoking activities, provide sufficient and timely scaffolding, design appropriate formative assessments and give constructive feedback. Schools might want to engage experts to work with teachers and students to enrich the learning experience, especially in concert with pedagogies involving outdoor, technology enhanced and hands-on activities that can make the process more interesting and meaningful for learners. It is thus important for school leaders and middle managers to empower teachers, granting them autonomy and creative discretion to incorporate inquiry into their teaching (Chu et al., 2011).

Fostering a Culture of Collaboration

Scholars also recommend fostering a culture of collaboration among teachers, school librarians and school leaders. Librarians can help explain and organise informational resources and activities and train students to seek, find and analyse information (Todd, 2012). Librarians thus have an increasingly prominent role to play, especially in transforming school libraries into dynamic learning spaces and working with teachers to facilitate learning with resources and varied modes of communication (Kuhlthau, Maniotes, & Caspari, 2015). One way to do this is to create a flexible three-member core team with two subject teachers and a librarian for the purpose of IBL activities (Kuhlthau, Maniotes, & Caspari, 2015). Here, too, school leaders have an opportunity to create a school culture that

embraces, promotes and provides administrative support for collaborative teaching (Chen, 2008; Chu, Tse, & Chow, 2011)

Conclusion

It is important for us to remember that our students are 21st century learners, hence we cannot teach them in the same manner as we taught yesterday's students. The inquiry method of learning is a valid and compelling alternative to the more traditional classroom methodology utilized in the past. In order to fully grasp the concept, learners must experience inquiry directly to gain a deep understanding of its characteristics. Successful students' inquirers can therefore be productive lifelong mind seekers. Our students need to be involved in the learning process. They need to formulate their own questions, direct their learning, be responsible for it, and show ownership. For this to happen, teachers have to be a growth mind-set and strongly believe that all students today can be trusted to take responsibility for their learning. So, if IBL is effectively implemented by a skilled teacher who is willing to teach, reteach, and model patterns of thinking, then students will be involved in a classroom culture that reinforces collaboration, problem solving, reflection, differentiation, motivation, and above all, transfer of knowledge and skills to new situations in and beyond the classroom for global citizen..

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Corresponding Author
* Dr. Jugal Kishor Mishra
Retired Principal, DIET, Odisha
Email - jugalkishoremishra78@gmail.com, *Mobile - 9437119134*