INQUIRY-BASED APPROACH IN PROMOTING RESEARCH SKILLS AND SCIENCE LITERACY

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In the modern world, science literacy is essential because it allows people to comprehend and interact with scientific topics that impact both their personal lives and society as a whole. It requires not just an understanding of scientific facts but also the capacity for critical thought, information evaluation, and the application of scientific reasoning to practical issues. Inquiry-based learning is a powerful tool for promoting science literacy and cultivating critical research abilities. This method places a strong emphasis on active learning, in which students ask questions, conduct practical investigations, and use analysis and experimentation to find solutions. Inquiry-based techniques improve students' comprehension of science and research skills by putting them at the center of the learning process.

A question or issue that piques interest is the starting point for inquiry-based learning. Inquiry-based learning encourages students to investigate and uncover scientific concepts on their own, in contrast to traditional teaching techniques that frequently focus on rote memorizing of facts. By conducting experiments, gathering data, and making conclusions, students actively participate in the learning process rather than being passive users of knowledge, which fosters deeper engagement. In this sense, inquiry-based learning helps students acquire the abilities necessary to conduct investigations and find solutions to problems by closely simulating the steps involved in scientific research.

The development of critical thinking is one of the main advantages of inquiry-based learning. Students must develop hypotheses, plan experiments, and assess the

findings as they study scientific phenomena. Students gain the analytical abilities required for scientific investigation through these exercises, which replicate the work of working scientists. Students who learn to approach problems methodically and critically are better able to evaluate scientific claims and make wise decisions regarding science-related matters in their daily life. Inquiry-based learning is essential for developing scientific thinking in students, which they will use in both their academic and professional life, claims Llewellyn (2020).\

Inquiry-based learning also encourages drive and curiosity, two qualities that are critical for research. Students are more engaged in the learning process when they are encouraged to pose their own queries and look for answers. This internal drive pushes individuals to delve further into scientific ideas, which frequently results in a deeper comprehension of the topic. Because students can study subjects that interest them within the parameters of the curriculum, this method also enables personalized learning, which results in a more significant and pertinent educational experience.

The development of research abilities is a crucial component of inquiry-based learning. Students gain experience in data collection and analysis, result interpretation, and communication through practical experiments and investigations. Students who practice these fundamental abilities in the classroom will have a better knowledge of how science functions in the real world. Students not only learn how to carry out experiments but also learn how to think like scientists by posing queries, putting theories to the test, and citing data to back up their findings.

Students' ability to work together is further enhanced when inquiry-based learning is incorporated into the scientific curriculum. Group work is a common component of inquiry-based activities, where students work together to plan experiments, communicate results, and resolve issues. This cooperative learning style is similar to how scientists actually work in the field, where they frequently collaborate in groups to carry out experiments and evaluate results. Students gain valuable skills for scientific research

and daily life by cooperating with one another, including effective communication, idea sharing, and respect for diverse viewpoints.

Even while inquiry-based learning has numerous advantages, putting it into practice can be difficult. It calls on educators to adopt a more student-centered approach in place of the conventional lecture-based one. Instructors must foster an atmosphere that invites inquiry and discovery while offering the assistance required to lead students through the inquiry process. This can take a lot of time, and teachers may need further training to acquire the abilities necessary to successfully support inquiry-based learning. Nonetheless, it is a wise investment given the long-term gains in students' scientific literacy and research skills.

References:

Llewellyn, D. (2020). Inquire within: Implementing inquiry-based science standards in the classroom. Corwin.