

Agrupamento de Escolas da Lixa

2020-1-PT01-KA101-078066

“Meaningful Learning Through Interdisciplinary Education”

Interdisciplinary Learning

The interdisciplinary approach has become an important and challenging technique in the modern curriculum. The interdisciplinary ***synthesises more than one discipline*** and creates teams of teachers and students that enrich the overall educational experience. Many researchers find many advantages, as well as disadvantages of interdisciplinary studies. The interdisciplinary approach provides many benefits that develop into much needed lifelong learning skills that are essential to a student's future learning.

Today's children need to actively participate in the learning process instead of old-school learning methods. It is also important to make learning permanent in learning environments by doing and experiencing, and to ensure that teachers learn from other colleagues in the developing world norms. Therefore, skills such as 21st century skills, cooperation, analytical thinking, and problem solving of both students and teachers will be developed by the application of interdisciplinary teaching approaches. In this rapidly changing and developing age, the most important problem faced by the education system is that the information learned at school cannot be associated with daily life by the students, the information cannot be renewed, learning and research methods cannot keep up with the development of technology.

Students will encounter many different problems throughout their lives, and these will often be multifaceted. In order for them to easily understand, interpret and solve these problems, it will not be enough to look at them from a single discipline framework.

For this reason, the integration of the courses with the interdisciplinary approach is very important so that our students can gain scientific literacy and integrate the metacognitive thinking system into their whole lives.

This is why, many literature studies have been conducted on the effects of the interdisciplinary approach.

The purpose of this qualitative study, which was carried out using the literature review method, is to reveal the definition and importance of the interdisciplinary approach and how and why the interdisciplinary teaching method should be applied in education.

Interdisciplinary Approach:

Advantages and Disadvantages of Interdisciplinary Approach

Interdisciplinary approach is one of the newly developed approaches that are now commonly used in a wide spectrum of disciplines. Jacobs, H. (1989 pp. 3-4) defines interdisciplinary learning as "***a knowledge view and curriculum approach that consciously applied methodology and language from more than one discipline to examine a central theme, issue, problem, topic, or experience***". The term interdisciplinary is defined in Collins English Dictionary as "***involving two or more academic disciplines***". In interdisciplinary, in order to maintain permanent learning, the teachers juxtapose and blend two or more disciplines to connect the topics, contents and the activities. Thus, the teachers work together for planning the teaching and evaluation process. The curricular concept of integrating or connecting school subject areas has gained significant attention in recent years as a plausible solution to developing a more coherent and effective approach to teaching and learning (Adelman, 1989; Department of Labor, 1991; Cheek, 1992). The integrative and multi-disciplinary curricular approach related to technology education seeks to help students learn and appreciate the relevancy of how school subjects are tied together and how each subject builds on the other (Wicklein & Schell: 1995).

The Interdisciplinary approach has been used in many ways and at all levels of Education. From early childhood to graduate school, interdisciplinary studies are becoming more and more popular. Boehm explains fundamental disciplines such as Geography and History by stating, "teachers rarely teach the two subjects in an integrated fashion, and American children's understanding of both subjects suffers" (Boehm, 2003). Boehm's "The Best of both worlds" is designed to be used by students from kindergarten to High School. For some disciplines the interdisciplinary approach is said to, not only be preferred, but needed. Youngblood states that interdisciplinary is beneficial because "They may within the one discipline cover physical and social sciences as well as humanities as they focus on considering interrelations between realms of knowledge" (2007,p.2). Staples explained that Environmental Sciences need an interdisciplinary approach due to the poor "state of environmental education and the need for improvement in ecological literacy" (2005, p.6).



Dawn Youngblood, the author of "Interdisciplinary Studies and the Bridging Disciplines", and Laura L. Duerr, author of "Interdisciplinary Instruction", both agree that methodology is the key to interdisciplinary success, not the domain of subject material or textbooks alone. Interdisciplinary techniques are not only important for a student to learn any one single discipline or solve problems in a synthesised manner, but it also enriches a student's lifelong learning habits, academic skills, and personal growth.

Students who are taught with an interdisciplinary technique in which the students master higher order thinking skills and integrated pedagogy become very attractive to top colleges and wealthy businesses. Youngblood explains that the foundation of interdisciplinary techniques will lead to a future of discovery and innovation. Youngblood highlights Newell's demonstration of a Geographer who is involved with a team that tries to solve the problem of acid rain. Newell says "In order to be successful, she may find it just as necessary as will the practitioner of interdisciplinary studies to develop an understanding of issues ranging from chemistry to culture" (Youngblood, 2008, p.3). Boyer and Bishop quote Stanley Hall who said "the future of humankind was, in large measure, determined by the quality of education received" (2004, p.2).

Kleinberg says “interdisciplinary studies became complicit, if not responsible, for the fragmentation of the university into a series of localised specialisations isolated from, and in competition with, one another to attract niche customers/students” (2008, p.1). If the methodology is reduced to specialisation, then future students of interdisciplinary techniques will no longer be sought after, nor will they have the synthesis of a broad range of disciplines. To overcome this problem, Kleinberg suggests two models of interdisciplinary courses, one that covers a very broad range of disciplines and another that is a project based group that focuses more than one discipline on a specific issue.

Duerr, of “Interdisciplinary Instruction”, explains the importance that broadness has to student’s futures in the way that **“Their cognitive development allows them to see relationships among content areas and understand principles that cross curricular lines. Their psychosocial development gives them the ability to understand people and to look at situations from various viewpoints”** (Duerr, 2008, p.177). Though interdisciplinary techniques have many sought after benefits that will last a lifetime, there are many concerns about the quality of interdisciplinary studies as they are now.

The methodology of the 5E model (engage, explore, explain, elaborate, evaluate) addressed in the training met the new trends in education, since its main requirement is interdisciplinarity.

The teaching-learning in Portugal must change and, in this sense, this training came to fill a gap and / or strengthen the knowledge / skills in interdisciplinary work by teachers, as mentioned by teachers in the pre-test applied before mobility. The aim is to create the necessary conditions for students to develop essential skills such as critical and reflective thinking, collaborative work, communication skills, autonomy, and perseverance in problem solving, i.e. to acquire a broader knowledge capable of facing the demands of today's world.

Initially, the approach to subjects based on this model was difficult, as it requires a lot of time and motivation from peers, even after the dissemination of the 5E model and ICT, to arrange the best strategies for an interdisciplinary approach and, at the same time, that are motivating and facilitating for students. However, some teachers managed to implement interdisciplinary projects with the students, which resulted in very motivating, practical and interesting activities for both the students and the teachers involved.

Conclusion

As the interdisciplinary approach continues to synthesise the characteristics and methods of multiple disciplines while developing lifelong learning skills, they will have met the goals that Newell has laid out. Interdisciplinary curricula is time consuming and takes collaborative team work to create, which can seem like a hard and exhausting disadvantage, but in the end, the interdisciplinary approach exhibits many favoured skills that are sought by future colleges and employers. Students and their teachers will advance in critical thinking, communication, creativity, pedagogy, and essential academia with the use of interdisciplinary techniques.

In today's world where technological development continues rapidly, education and training requires the individual to know how and where to access information. At the same time, it should enable the individual to know how and where to use this information.

The ability to use the knowledge and skills acquired during school life in social life will increase the success of individuals in their personal, social, academic and business lives. It will contribute positively to a meaningful learning experience based on co-operative learning throughout his/her education life.

The widespread implementation of this interdisciplinary practice will take some time, but it may be the beginning of a new trend in our school.

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PS: This article has been prepared by project participants with project reference number of 2020-1-PT01-KA101-078066 and title: "Meaningful Learning Through Interdisciplinary Education". Funded by the European Union.

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.