

Enriched Environments Enhance Learning

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Introduction

Under what conditions do you learn best? What causes your brain to grow? Research indicates that the brain can and does grow regardless of age, provided it is involved in a variety of rich new experiences on a constant basis. When the learning environment captures our interest, offers challenging experiences, infuses sights, sounds, movement, and connects to the real world our brain grows [dendrites](#). In other words, [neurons](#) are communicating, reinforcing existing connections, as well as forging new relationships. Knowing that information only enters the brain through our senses, conscious effort must be given to designing lessons/units that stimulate brain growth and development with rich and varied sensory learning experiences.

What do experts say an enriched learning environment looks like? "An environment which is stimulating and challenging and in which the students' minds are actively involved" (23) is the answer Dr. Pat Wolfe gives in her book, *Mind, Memory and Learning: Translating Brain Research into Classroom Practice*. To add to this definition and our understanding, the following experts in brain research remind us that an enriched environment increases brain growth in the following ways.

Challenge

Eric Jensen in his book, *Teaching with the Brain in Mind*, sites "two things that are particularly important to growing a better brain. The critical elements in any purposeful program to enrich the learner's brain are that learning is challenging with new information or experiences. Often novelty will do it, but it must be challenging. Second, there must be some way to learn from the experience through interactive feedback" (32).

"But no matter what form enrichment takes, it is the challenge to the nerve cells which is important...one must interact with the environment. One way to be certain of continued enrichment is to maintain curiosity throughout a lifetime. Always asking questions of yourself or others and in turn seeking out the answers provides continual challenge to nerve cells" (Diamond).

Time to Process

"...teachers must encourage 'personal processing time' after new learning for material to solidify" (Jensen 47).

Eric Jensen says, "Down time (or processing time) allows the new synapses that were formed to strengthen" (qtd. in D'Arcangelo, 20-25).

Learning Through the Senses

Marion Diamond says, "As the nerve cell gets stimulated by new experiences

and by exposure to incoming information from the senses, it grows branches called dendrites" (qtd. in D'Arcangelo, 20-25).

Wide Range of Experiences

Pat Wolfe says, "Our challenge in education is to determine what makes an enriched classroom environment. We're probably going to find that it's the interaction of the student's mind with the materials, the simulations--all the things that good teachers have always done to make learning meaningful so that students sprout new dendrites, which form new connections and become strong through review. The second time two neurons fire together, they become more efficient and fire more readily. That develops what we call long-term memory" (qtd. in D'Arcangelo, 20-25).

"Learners with a wide range of experiences often have better problem-solving skills because they have more ways of recalling and connecting information to use in their search for solutions" (Parry and Gregory 31).

Each Brain is Unique

"Each brain is unique. The brain's structure is actually changed by learning" ([Caine](#)).

Pat Wolfe says, "No two human brains are alike. An enriched environment for one is not necessarily enriched for another. No two children learn in the identical way. In the classroom, we should teach children how to think for themselves. One way is to group children so they're talking to one another, they're asking questions of each other, and they're learning to be teachers. One of the most important concepts for a 5-year-old to know is that he or she can teach because you have to understand something to teach it" (qtd. in D'Arcangelo, 20-25).

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Questions to consider when designing an enriched environment

If an enriched environment is essential for brain growth, what does an enriched classroom look like? To ensure you are creating and maintaining an enriched learning environment use the following questions to guide your lesson/unit design.

Have I:

- created challenging learning opportunities for all students?
- provided students with feedback so they are better able to generalize and transfer their thinking to new situations?
- created opportunities for students to work in collaborative groups so they share and explore ideas together?
- designed performance tasks that engage students in real-life roles and settings, in order to solve a complex problem and produce a product for a real audience?
- designed new and novel approaches to intrigue and spark student curiosity?
- created rich experiences for students to connect prior knowledge to new learning?

- used questioning techniques that encourage students to apply higher order thinking skills?
- provided processing time for students to reflect, review, and rehearse what they have learned in order to further develop their knowledge base?
- used teaching strategies to attract individual interests and let students express their auditory, visual, tactile, or emotional preferences.

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Suggestions/examples related to technology use

How do students learn best? How will the use of technology increase student's learning? The following suggestions are examples of how teachers use technology, along with best practice to enrich the learning environment and enhance student learning.

Spreadsheets

Teachers create challenging problems for students to solve when they ask questions such as: "What relationships exist between a countries' gross national product,

	A	B	C	D	E
1	Countires	GDP	Birth Rate	Infant Mortality Rate	
2	Argentina	10,300.00	19.91	18.41	
3	Australia	21,200.00	13.21	5.11	
4	China	3,600.00	15.1	43.31	
5	Germany	\$22,100.00	8.68	5.14	
6	Kenya	1,550.00	30.8	47.02	
7	United Sates	31,500.00	14.3	6.33	

birth rate and infant morality rate?" To answer this question, students have to develop theories and test them. Using the [World Fact Book](#), an Internet resource, in concert with a spreadsheet, students make use of technology tools to explore a question. By combining instructional strategies that encourage students to ask questions and using technology tools that enable students to explore possibilities, teachers are better able to enhance student learning.

Performance Tasks

The design, purpose, and function of a [performance task](#) is to engage students in real-life learning that is important to them and to their learning community. The Internet is an excellent tool to facilitate the research many performance tasks require. Students can take virtual field trips, research a wide variety of online newspapers and magazines, access multimedia, and talk with professionals without leaving their classrooms. This type of experience engages students by having them assume a role, collaborate with others, and work to solve real problems in much the same way as a working professional would. At the end of a performance task, students communicate and/or publish their results to real audiences via a web page, video conference, print, visuals, oral presentation, and/or e-mail.

A [WebQuest](#), in essence, is a web-based performance task. The majority of the work involved in a WebQuest is completed through online research. The WebQuest provides background, connects prior knowledge to the new learning and asks students to work in cooperative groups in order to solve a complex problem. A WebQuest also requires students to analyze, synthesize, and evaluate information. Through this process students complete a project and communicate their findings to audiences that can make use of their data.

Simulations

[Science Court](#), a software program from [Tom Snyder Productions](#), offers a novel way to teach difficult science concepts. Through an engaging courtroom simulation, students analyze and discuss scientific concepts, perform hands-on experiments, and work cooperatively in groups to solve a problem. The software also uses humor and encourages conversations among the cooperative groups in order to engage students in exploring their theories to reach a deeper understanding of scientific concepts. By using effective instructional strategies along with Science Court software, teachers can enhance students' understanding of hard to teach science concepts.



Tom Snyder Software:
Science Court

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Last Modified: Thursday, October 10, 2002

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