UNIVERSITY OF SCIENCE, ARTS AND TECHNOLOGY

BACHELOR'S DEGREE STUDY PROGRAM

ESSAY - 3

COMPREHENSIVE ESSAY READING - **Part 2**

MODULE – 39

[Instructions: Read the essay and when you encounter each set of questions, indicate your answer on the separate answer sheet.]

ESSAY REPORT BY: OLGA TZOTZIS

TOPIC # 1: PSYCHOLOGY

THEME: How to Use Praise Effectively

Introduction

Most parents and child educators will agree that praise is good for children. Praise can reinforce positive behavior, encourage learning and help children develop healthy self-esteem. Praise also has the power to harm. If used inappropriately, it can actually lower self-esteem, undermine motivation and performance, and leave children powerless to handle failure. The key to effective use of praise is knowing when and how to praise. For praise to be effective it must be genuine, specific and it must focus on effort, not intelligence.

The Power of Praise Is Its Sincerity

For praise to be effective, it must be sincere. Children recognize and resent flattery. They are very much aware of praise given with an ulterior motive; they know when they are being patronized. The results of meaningless praise are negative: "The teacher or parent who continually lavishes undeserved praise will find that the child will eventually NOT TRUST the adult…the positive impact of praise will diminish to being rejected by the

student."**1** When, for example, all the students in the class are told that their paintings are phenomenal, they recognize that this is simply not so. They can see that some are better than others are. The praise given loses its significance and the one giving the praise loses credibility. Blanket, automatic, empty praise is useless. Children really do see through it. They lose trust in the adult who gives it and begin to feel insecure in their learning environment. Insincere praise is rejected by children because it is misleading, embarrassing or both. It will either foster a spirit of superiority or be misconstrued as sarcasm. In any case, it does not contribute to a positive learning environment.

On the other hand, sincere praise can do much good. Children thrive on words of encouragement and commendation. They easily discern sincere words when they hear them. Sincere praise is praise that is delivered with a smile of approval, a warm, appreciative tone, a kind pat on the shoulder and words that come from the heart. Sincere praise is grounded in something that is real. Therefore, as parents and teachers, we must assure that our words of praise genuinely reflect our own true feelings of pride and joy in a child's accomplishments. As humans, we are inclined to criticize and so must make a conscious effort to look for areas that justify sincere praise.

Sincere praise will surely create an environment in which a child feels secure, free to learn and to take risks. This is the kind of learning environment that helps to build self-esteem, a quality that is crucial to building resilience and dealing with stressful situations in life. "Self-esteem is most likely to be fostered when children are esteemed and treated respectfully and receive the right kind of positive, meaningful feedback in the form of appreciation, rather than empty praise and flattery."**2**

Praise Must Be Specific

Don't exaggerate praise. It will lose its effectiveness. For example, a child may not believe the statement, "You are the best artist in the whole world," but will respond to, "I sure like the way you drew this part of the picture down here. I can see that you really worked hard on it." This kind of specific praise motivates a child to continue in positive, productive activity. It will prepare a child to be receptive to making improvements. For example, to a child who has finally finished an assignment that is way overdue, you may try saying, "I'm really happy to see that you've finished the assignment. It takes time to write a report that looks as good as this." Here, specific praise is given where it is due. This type of praise allows for growth and improvement. To correct the problem of late work, you could say, "How do you think you might be able to get your next assignment in on time?" By encouraging with specific, positive feedback first, you make it more likely that the child will respond enthusiastically to the next assignment as well as motivating him to get the work done on time.

"Effective praise specifies the particulars of the accomplishment."[3]
This means telling children exactly what they have done right in order to encourage and motivate them. Here are some examples:

"Your spelling score today is better than your score last time."

"I can see a lot of effort went into this report."

"I like what you said-it was well thought out."

"You remembered all the rules. I'm proud of you."

"You really did a fine job playing with your classmate."

"You're doing a good job waiting in line."

"Thank you for following my instructions. You are a good listener."

"I like the way you work. You are so cooperative!"

"You got two correct, that's very good!"

Try to connect praise to a student's improving competence or to the value of his accomplishment. Comment on the content of a student's work or on a noticeable improvement. For example, you might say, "I can see a lot of effort went into this drawing. You are drawing people better." Or you can say, "I like the way you shared your work space. That was a grown-up thing to do." Specific expressions are a means of reinforcing and encouraging positive behavior. They also create a secure learning environment, an environment that focuses on student improvement and where children are not afraid to learn from their mistakes. An atmosphere in which children feel secure is critical to fostering self esteem. "I don't believe you can give anyone self-esteem, but you can create an environment where it can grow,"[4] is the view of J. D. Hawkins, president of the *National Association for Self-Esteem*. The use of specific praise is the key to creating this environment.

Praise Effort, Not Intelligence

Along with being sincere and specific when giving praise, it is important to focus on effort and not intelligence. Praising children for their intelligence may actually undermine their motivation and future performance. Many parents are not aware of this fact. In one poll, "85% of mothers said they believed they must praise a child's intelligence or he won't feel smart."[5] According to Professor Carol Dweck of Columbia University, "it is much better to praise children for their hard work, which bolsters their ability to deal with life's challenges."[6] In a study of the behavior of 412 fifth-graders, researchers at Columbia University recorded the children's reactions to solving mathematical problems. They found that children who were praised for their intelligence worried more about failure. They were more concerned about how smart they look and often sacrificed a chance to learn something important in order to shine. However, children praised for the effort they put into solving the problems, held a more stable view of themselves. They concentrated on ways to learn different approaches to solving the problems. They also showed more resiliency when faced with setbacks, and maintained persistence with a high level of interest. These children did not take failure personally. When they did not succeed in solving the problems, they attributed their failure to lack of sufficient effort, not lack of intelligence. They demonstrated a clear determination to learn strategies that would enhance subsequent performances.

The conclusion reached in this study is that "praising children's intelligence, far from boosting their self-esteem, encourages them to embrace self-defeating behaviors, such as worrying about failure and avoiding risks."[7] This helps us to appreciate the need to use praise effectively by praising effort, not intelligence. By doing so, we foster a positive learning environment; help to build healthy self-esteem in children, and avoid leaving them ill-equipped to cope with failure.

Conclusion

It has been said that children are like sponges. They absorb every word that adults say to them and then take it to heart. Parents and teachers need to be sources of encouragement and hope for them. By using praise effectively, we can motivate and encourage children. Sincerity is critical. Children must trust our words in order to build their internal sense of worth and value. Being specific in our praise allows a child to sense the sincerity of the praise and helps him to appreciate the direction he needs to take for improvement. Specific praise encourages a learning environment where students are not afraid to learn from their mistakes. By focusing on praising effort and not intelligence, we help children build healthy self-esteem, focus on learning and we empower them to deal with failure. Yes, there is power in praise, when it is used effectively.

- **Which statement is the most accurate?**

526. For praise to be effective, it must be sincere. Children recognize and resent flattery. They are very much aware of praise given with an ulterior motive; they know when they are being patronized. By using praise effectively, we can motivate and encourage children. Sincerity is critical. The results of meaningless praise are negative: "The teacher or parent who continually lavishes undeserved praise will find that the child will eventually NOT TRUST the adult…the positive impact of praise will diminish to being rejected by the parent."
527. On the other hand, sincere praise can do much good. Children thrive on words of encouragement and commendation. They easily discern sincere words when they hear them. Sincere praise is praise that is delivered with a smile of approval, a warm, appreciative tone, a kind pat on the shoulder and words that come from the heart. Sincere praise is grounded in something that is real. Children who were praised for their intelligence worried more about failure. As humans, we are inclined to criticize and so must make a conscious effort to look for areas that justify what we say.

528. According to Professor Carol Dweck of Columbia University, "it is much better to praise children for their hard work, which bolsters their ability to deal with life's challenges."**6.** In a study of the behavior of 415 fifth-graders, researchers at Columbus University recorded the children's reactions to solving mathematical problems. Therefore, as parents and teachers, we must assure that our words of praise genuinely reflect our own true feelings of pride and joy in a child's accomplishments. They found that children who were praised for their intelligence worried more about failure.

529. Specific expressions are a means of reinforcing and encouraging good behavior. They also create a secure learning environment that focuses on student improvement and where children are not afraid to learn from their errors. An atmosphere in which children feel secure is critical to fostering self esteem. "I don't believe you can give anyone self-esteem, but you can create an environment where it can grow,"**4** is the view of J. D. Hawkins, president of the National Association for Self-Esteem. The use of specific praise is the key to creating this environment.

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TOPIC # 2: HEALTH & HYGIENE

MODULE – 40

THEME: Hand-Washing Education in Schools: An Important Element in Protecting the Health of Our Children

Introduction

Imagine a better world for tomorrow's children: "Virtually every man, woman and child on the planet knows the importance of hygiene…Everywhere, people live in clean and healthy environments. Communities benefit from the resulting improved health and related economic development."[1] This is the vision of the United Nations Children's Fund, a vision of what life could be like on our earth in the year 2025.

For this vision to become a reality, educators must focus on protecting the health of today's children. The good health of today's children at school is an investment for the future. The single most important element in protecting the health of the world's children is the promotion of hand-washing education in schools.

"How trivial!" some may say, yet, according to the U.S. Association for Professionals in Infection Control and Epidemiology, at "least 80 percent of (infections) are transmitted by our hands, not through the air."[2] These infections compromise children's attendance and performance at school and in developing countries often lead to their deaths. Worldwide, more than "2.3 billion people are unable to practice such basic hygiene as washing their hands with soap and water."[3] Children are most vulnerable to this reality. In 1998, "2.2 million people died because of diarrheal diseases, of which the vast majority was children."[4] It is obvious that hand-washing education in schools deserves our highest priority. It is, in fact, the single most important intervention in protecting the health of our children.

Why Focus on Schools and on Children

Schools are places of learning and education. They are places that can stimulate changes in behaviors. They can act as models that can influence whole communities. Schools are where the children are – the children that will make up the adult population of tomorrow. Behavior patterns are established in the early years of life. By focusing on children in schools we can give the future generation of adults the knowledge and the tools to change behaviors today, so that the future will be healthier and happier.

A Hand-Washing Crisis

A worrisome trend is on the increase – not washing one's hands before eating or after using the toilet. This is not only a problem in developing countries. In a survey of people's hand-washing habits conducted in public restrooms across the United States by the American Society of Microbiology (ASM) and Bayer Corporation, researchers found that "almost one third of people do not wash their hands after using the bathroom."[5] In another study, "bowls of peanuts in English pubs were found to contain traces of urine from 12 different sources."[6] This simple lack of personal hygiene seems to be a widespread problem, highlighting the need to teach children the basic rules of hand washing in schools.

How It Can Be Done

Hand-washing education at school begins with the simple task of scheduling times during the day for hand washing. This technique was evaluated in a case study conducted at Tromley Elementary School in Grosse Pointe, Michigan. At this school, approximately half of school children washed their hands a minimum of four scheduled

times a day. They washed their hands upon arrival at school; before lunch; after using the restroom; and before leaving school for home. The remainder continued with their usual practices of hand washing. The study was conducted for a period of 37 days. The results were predictable: Absenteeism in the school decreased sharply during the study period.

In addition, it is essential to provide teachers with needed training in order for them to carry out their role as effective hand-washing promoters with children. A package of reference material and guidelines needs to be developed. These materials must be properly distributed and used by both teachers and children. Hand-washing education must be incorporated in the school curriculum, perhaps with lessons being provided on a weekly basis. The lessons must show students how hand washing can reduce illness and prevent the spread of bacteria and viruses. They must also provide an incentive for adopting this behavior.

For example, Trish Perl, an associate professor of medicine at John Hopkins University, visits middle schools to promote the importance of hand washing education. She uses a product called "Glow Germ." It is made of cornstarch and a luminescent substance that shines under UV light. To teach the kids how germs are spread, she sprinkles a pen with "Glow Germ," and then passes it around the classroom. Under the UV light, when the kids see how easily germs spread, the lesson leaves quite an impression on them. She also helps students design experiments to determine whether water, soap and water or sanitizer is the best cleanser. The children divide into groups and use different cleaning methods and then score the results. "In all the experiments, commercial sanitizer

was the worst and…the children who use the sanitizer were really surprised.[7]" The result is that the children are now not only informed but motivated to wash their hands.

Furthermore, it is important to demonstrate proper hand washing procedure:

- Use soap and warm, running water
- Wash all surfaces thoroughly, including wrists, palms, backs of hands, fingers and under the fingernails
- Rub hands together for at least 10-15 seconds
- Dry thoroughly using a disposable paper towel or clean unused cloth towel

The teacher should assist each child in performing the basic steps of hand washing, so as to put into immediate application the lesson just learned.

Video presentations, posters, drawing or word exercises related to hand-washing education are also good tools that should be used to reinforce this positive behavior on a regular basis. Sometimes a special campaign may be required in order to increase awareness of the importance of hand washing. An example of such a campaign is Operation Clean Hands. This campaign worked its way into the schools of various cities in the United States, being incorporated into the school curriculum. An Operation Clean Hands Day was coordinated, with posters, stickers, bookmarks and buttons being distributed to students.

In Developing Lands

In many impoverished countries, schools have no facilities for hand washing. Or, if the facilities are there, the hand washing education is lacking. Governments must work with schools and community groups to provide the proper hand washing facilities. However, this alone in not the answer. It is the behavior of the children in the schools that makes the difference. Without proper hand washing education, schools easily become unsafe places where disease spreads. Effective hand-washing education is the key to changing incorrect behaviors to correct behaviors that will have a positive impact on the health of the children in these communities.

For hand-washing education to be effective in these communities, a number of basic criteria need to be taken into account:

- "it has to be practical, and make the link between knowledge, attitude and behavior
- it has to be action-oriented
- its messages need to be relevant in the local context
- its messages need to be simple and understandable in the local context
- its messages need to be locally acceptable
- it should stimulate reflection by students about their behavior
- it should repeat and reinforce messages over time and in a variety of ways
- it should make use of local communications methods"[8]

Here too, hand-washing education must be incorporated into the school curriculum. In Nepal, hand-washing education is incorporated into health class. In addition to this scheduled course, "Teachers in Nepal are encouraged to reinforce discussions by practical demonstrations, repetitions of messages during prayer sessions and sport events, on-the-spot correction of unsanitary practices and stimulating use of sanitary facilities."[9]

If hand-washing education is implemented effectively, changes in the behaviors of children are possible. Children in underdeveloped countries who receive hand-washing education spread the messages they have learned. They spread the messages to their younger siblings who copy their behavior and listen to their advice. They spread the messages to their parents, who are usually less educated and desperately need to hear the messages. Thus, they become the promoters of hand-washing education in their communities and agents for change for the better.

Conclusion

Yes, it is possible to protect the health of today's children. Hand-washing education in schools is a key element in doing so. It is, in fact, the single, most important way to prevent the spread of disease. By focusing our efforts on hand-washing education in schools, we can have a positive impact on the health of our children, both now and in the future.

- **Which statement is the most accurate?**

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such a campaign is Operation Clean Hands. An Operation Clean Hands Day was coordinated, with posters, stickers, bookmarks and buttons being distributed to students. Teachers in Nepal are encouraged to reinforce discussions by practical demonstrations, repetitions of messages during prayer sessions and sport events and on-the-spot correction of unsanitary practices.

531. According to the U.S. Association for Professionals in Infection Control and Epidemiology, at "least 80 percent of (infections) are transmitted by our hands, not through the air."**2** These infections compromise children's attendance and performance at school, and, in developing countries, often lead to their deaths. Governments must work with schools and community groups to provide the proper hand washing facilities. Worldwide, more than "2.3 million people are unable to practice such basic hygiene as washing their hands with soap and water." **3**

532. Schools are places of learning and education. They are places that can stimulate changes in behaviors. They can act as models that can influence whole communities. Schools are where the children are – the children that will make up the adult population of tomorrow. Children need to be taught to rub their hands together for at least 10-15 minutes. By focusing on children in schools we can give the future generation of adults the knowledge and the tools to change behaviors today, so that the future will be healthier and happier. Behavior patterns are established in the early years of life.

533. Hand-washing education at school begins with the simple task of scheduling times during the day for hand washing. This technique was evaluated in a case study conducted at Tromley Elementary School in Grosse Pointe, Michigan. At this school, approximately half of school children washed their hands a minimum of four minutes a day. They washed their hands upon arrival at school; before lunch; after using the restroom; and before leaving school for home. The remainder continued with their usual practices of hand washing. The study was conducted for a period of 37 weeks. The results were predictable: Absenteeism in the school decreased sharply during the study period because children were less sick.

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TOPIC # 3: ADOLESCENT DEVELOPMENT

MODULE – 41

THEME: Adolescent Sleep Needs and School Performance

Introduction

A popular view among teenagers is that sleep is a waste of time and youthful energy. They prefer to do anything but go to bed, surrendering only when extremely tired. One poll in the United States found that "one out of two (53%) younger adults say they will sleep less in order to get more done, and an almost equal percentage (55%) admit to postponing bedtime to watch TV or use the Internet."[1] These teenagers will reason that they can always catch up on the weekend, or simply believe that their youthful vigor will get them by. But youthful vigor and energy are deceptive. They mask symptoms of an underlying problem rampant today – sleep deprivation. Sleep deprivation among adolescents is a serious concern because it puts teens at risk for poor performance at school.

Teenagers Have Special Sleep Needs

Contrary to popular thinking, teenagers do not need less sleep than children or even adults. In fact, evidence indicates that adolescents, especially during puberty, have greater sleep needs than children. They need "about nine hours nightly, as compared to eight hours needed by adults."[2] Yet, surveys find that adolescents get less sleep. Studies show that "26% of high school students routinely sleep less than 6.5 hours on school nights."[3]

Not only do teens need the proper amounts of sleep, they also need to get it at the right time. Research has shown that there are actually differences in the normal sleep-wake cycles of adolescents compared to adults. In teenagers, "the biological clock seems to shift forward during puberty, making youngsters want to go to sleep later and wake up later."[4]

Furthermore, adolescence is a time of growth and growth requires sleep. Science tells us that the production of growth hormone peaks during sleep. In fact, teenagers produce as much as 50 times more growth hormone during sleep than during waking hours. Indeed, teenagers have unique sleep needs.

How Sleep Deprivation Affects School Performance

Sleep is food for the brain. When the brain does not get enough sleep, it becomes relentless in its drive to satisfy this need, and it will create a state of sleepiness. At

this point, if sleep is denied, the brain is challenged. Daytime functioning becomes difficult. The result is poor and inconsistent performance in school.

Insufficient sleep is associated with sleepiness in class, poor concentration, poor memory and a poor understanding of the lectures or material presented by the teacher. When teenagers are sleep deprived they experience an overwhelming desire to sleep during morning classes. What good does early morning education do to these teenagers?

Recent research reveals a link between sleep deprivation and poor grades. For example, in a 1998 survey conducted of more than 3000 high school students, psychologists confirmed this link. They found that "students who reported that they were getting C's, D's and F's in school obtained about 25 minutes less sleep and went to bed about 40 minutes later than students who reported they were getting A's and B's."[5] This fact highlights the need to stress the importance of sleep. Educators must get the message across to parents and teenagers. Sleep is something that must not be neglected or underestimated. Doing so would only put one at risk for poor school performance.

Sleep deprivation in teenagers can also result in negative feelings, anxiety and depression. It can make teenagers moody, aggressive, and impulsive. This is because sleep loss is "associated with a decreased ability to control, inhibit or change emotional responses."[6] These teens are more inclined to take up smoking or to rely on stimulant drugs for a boost. Sleep deprivation creates problems that can have a detrimental effect on a teenager's ability to learn in school. Often, poor performance is the outcome.

The Hectic Life of a Teenager

To get teenagers to give sleep a higher priority in their lives is a daunting challenge. There are many pressures on teenagers today. Consider the schedule of an average teenager. He rises at six in the morning to get ready for school. He may first stop in at the school gym for some weight training until about 7:00 am. Then, it's off to his classes at 7:15 am. After school, he heads for football practice and then to a part-time job for two hours. At home, he has to now focus on homework. What time will he get to bed? Probably before midnight. Will he sleep well? Probably not. Studies have found that children in families with high stress levels are more likely to sleep poorly. The schedule described above is not uncommon. The reality is that we live in a society that puts pressure on teenagers to succeed both socially and academically. It is clear that lifestyle changes are required in order to attempt to meet the challenge of getting enough sleep. As parents and teachers, we must be reasonable in our expectations of teenagers. We must take into account that they need time to take care of their need to sleep in order to perform well at school.

Weekends add to the challenge of getting enough sleep. Teenagers sleep longer hours on the weekend as a consequence of weekday sleep deprivation. Their bodies are trying to pay off a sleep debt. However, these discrepancies between weekdays and weekends contribute to an erratic shift in their normal sleep cycles and thus contribute to the common problem of sleeping during morning classes.

Daytime Sleepiness

Even when an adolescent's schedule provides for sufficient sleep, daytime sleepiness increases in the adolescent years. Changes in the adolescent's circadian timing system, (the body's wake-sleep cycle), produce a pattern of early morning sleepiness. This has a negative effect on daytime functioning at school during early morning classes. It means that even though students are in school physically, their brains are simply not there. In a laboratory study of high school students, "almost half of the students who began school at 7:20 am were pathologically sleepy at 8:30 am, falling into REM (intense) sleep in an average of only 3.4 minutes—a pattern similar to what is seen in patients with narcolepsy."**7** Yes, teenagers are falling asleep during morning classes spontaneously. They cannot help it. Their bodies are programmed to do so. How much benefit are they deriving from early morning classes? How much effort do teachers need to put into these classes to get the attention of these teenagers whose brains are still asleep? Perhaps it would be better for schools to adjust their clocks so that they are compatible with the internal body clocks of teenagers. In this way, teenagers will benefit fully from the educational program provided at school.

Sleep-Friendly Schools

Some schools have adjusted school start times to accommodate adolescents' sleep needs. They have changed their start times from 7:15 am to 8:40 am. Does this make a positive difference on adolescent sleep patterns and academic behavior? The Center for Applied Research and Educational Improvement at the University of Minnesota has studied these issues. The findings are as follows:

- "Students gained an extra hour of sleep

- Students were more alert and fewer fell asleep
- Attendance increased and tardiness decreased
- Students reported eating breakfast
- In suburban schools a noticeable improvement in student behavior
- No change or conflict in students' participation in non-academic Activities"[8]

The positive findings reported in the above study, are essentially the foundations for optimal academic performance. Schools can make a difference in helping their adolescents perform at optimal levels by simply adjusting start times.

Another way that schools can make a difference is by promoting sleep hygiene education. Firstly, teachers and school staff need to be educated about the unique sleep needs of adolescents. Secondly, students need to be educated. Sleep education must be integrated into the school curriculum. It can be incorporated into health, science or psychology classes. Students need to understand why sleep is so important and they must be made aware of the serious consequences of sleep deprivation.

It is important to teach teens about their circadian rhythms (their internal body clocks). Teenagers must know that they have the power to work with and even adjust their circadian rhythms for the school year. This can be done by going to sleep and awakening about 15 minutes earlier each day until the goal of desired sleep and wake times is reached. It is then important to encourage teens to maintain this schedule during weekends and school

vacations. Teens should be provided with information that will help them to manage during the school year. Here are key messages that must be relayed to teens:

- The brain needs sleep like the body needs food. Lack of sleep will make one sick and hurt performance at school
- Avoid stimulating activities before bedtime: exercise, exciting films, engrossing reading material, computer games, television
- Avoid coffee, colas, nicotine and alcohol
- Get into bright light as soon as possible in the morning. This is a signal to the brain that it should wake up. Avoid bright light at night. The brain must know that it is now time to sleep
- Do not eat, study, work, watch TV, play video games in bed; the brain needs to associate bed with sleep
- Create a pleasant environment for sleep: comfortable temperature, a dark and noise-free room, a comfortable mattress and pillows
- Steer clear of raves and say no to all-nighters

By helping teenagers to establish appropriate sleep habits, schools are helping students to become less sleepy during the day. These students are now in a better position to concentrate. Alert teenagers are happier, more emotionally stable and in a better position to benefit from the education they receive in school.

Conclusion

It is important that educators, parents and teachers acknowledge the unique sleep needs of adolescents. This group has been identified as a population at high risk for problem sleepiness. Teenagers need more sleep than adults or children. They need to get it at the right time because their circadian systems demand this. The consequences of insufficient sleep have a detrimental effect on adolescent development. They put teenagers at risk for poor school performance. By promoting sleep hygiene education and by adapting school start times to adolescent sleep needs, we will be giving adolescents the opportunity to get the most out of school.

- **Which statement is the most accurate?**

534. One poll in the United States found that "one out of two younger adults say they will sleep less in order to get more done, and an almost equal percentage admit to postponing bedtime to watch TV or use the Internet." These teenagers will reason that they can always catch up on the weekend, or simply believe that their youthful vigor will get them by. But youthful vigor and energy are deceptive. They mask symptoms of an underlying problem rampant today – sleep deprivation. In a laboratory study of high school students, "almost half of the students who began school at 7:20 am were very sleepy at 8:30 am." Sleep deprivation among adolescents is a serious concern because it puts teens at risk for poor performance at school and at home.
535. The Center for Applied Research and Educational Improvement at the University of Minneapolis has studied sleep issues. Some schools have adjusted school start times to accommodate adolescents' sleep needs. They have changed their start times from 7:15 am to 8:40 pm. Does this make a positive difference on adolescent sleep patterns and academic behavior? The findings are as follows: students gained an extra half hour of sleep, students were more alert and fewer fell asleep, attendance increased and tardiness decreased, students reported eating breakfast and in suburban schools there was a noticeable improvement in student behavior.
536. Teens should be provided with information that will help them to manage during the school schedule. It is important to teach teens about their circadian rhythms (their internal body clocks). Teenagers must know that they have the power to work with and even adjust their circadian rhythms for the school year. This can be done by going to sleep and awakening about 15 minutes earlier each morning until the goal of desired sleep and wake times is attained. Their bodies are trying to pay off a sleep debt. It is then important to encourage teens to maintain this schedule during the week, but not necessarily during school vacations.
537. Contrary to popular thinking, teenagers do not need less sleep than children or even adults. In fact, evidence indicates that adolescents, especially during puberty, have lesser sleep needs than children. They need about nine hours nightly. Yet, surveys

find that adolescents get less sleep. Studies show that "26% of high school students routinely sleep less than 6.5 hours on school nights."[3]

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TOPIC # 4: THE BRAIN, LEARNING AND EDUCATION

MODULE – 42

THEME: How Babies Learn Language

Introduction

"Ba! Ba! Ba! Da! Da! Ma! Mama!" To a mother, these first words bring sheer delight. Her baby is talking! What an amazing accomplishment this is. Unquestionably, a marvel! Without conscious instruction or effort, let alone difficulty, her infant is learning language—a

sophisticated system of communication unique to humans. What she may not know is that this complex process of language learning began long before her baby uttered his first words. For some time, her baby's mind has been furiously sorting out the sounds and patterns of words, phrases and sentences. Then suddenly, he begins to talk! This amazing development we call speech is actually the culmination of a vast amount of learning which begins in the womb.

Learning Begins in the Womb

Research shows that language acquisition begins before birth. As early as 16 weeks gestational age, hearing develops. At this point, a mother's voice reaches the uterus as the sound waves pass through her body. Apparently, newborns learn the rhythm and sounds of their mother's language by hearing her voice while in the womb. "By 27 weeks of gestation, the cry of a baby already contains some of the speech features, rhythms and voice characteristics of its mother."[1] This is, in fact, where the foundation for language acquisition begins. Scientists know this from studying the reactions of newborns to filtered sounds that resemble the language that penetrates the womb. In one study, newborn babies listened to filtered recordings of their mother's voice and also to the voice of another woman while sucking on a pacifier that was attached to an instrument that measures pressure. The newborns sucked harder on the pacifier when listening to their mother's voice in comparison to the other women's voice. They also preferred filtered recordings of their own native tongue over a foreign language. Yes, babies recognize, remember and prefer the sound of their mother's native tongue. According to Peter Jusczyk, professor of psychology at John Hopkins University, the conclusion is clear: "Babies like what they know. Newborns apparently learn the rhythm of their native tongue and of their mother's voice while in the womb."[2]

Language Learning Is Natural and Instinctive

The development of communication through language is a natural process. Research shows that the brain is hard-wired for language acquisition. According to Neurobiologist Dr. Lise Eliot, our brain possesses "a complex neural circuit for rapidly perceiving, analyzing, composing and producing language."[3] This mechanism is in place before birth. Yes, the brain is structured for language. Babies are able to grasp language so instinctively and naturally by using various skills that are hard-wired into their brains before birth. These skills include the "ability to detect patterns of sounds and tones, the ability to detect and remember isolated words, and the ability to remember the frequency in which words occur together in spoken sentences."[4]

Babies Are Good Listeners

Infants are born good listeners. They are such good listeners that they are able to distinguish not only the sounds of the native tongue of their parents, but of every language, including languages they have never heard. "Newborns babies…go well beyond the actual physical sounds they hear, dividing them into more abstract categories. And they can make all the distinctions that are used in all the world's languages. Babies are born citizens of the world."[5]

Starting at six months, however, babies begin to specialize in their listening skills. They begin to listen more closely to the sounds of their mother tongue. They keep track of how

often certain sounds occur in the speech they hear and distinguish the complex patterns of stress, intonation and rhythms of their native language. Babies now know to "focus on sounds that are significant and turn a deaf ear to others and in the process prune or nurture different neural connections."[6] Their brains are being altered by the specific language they listen to. They organize the sounds of the language into a structure that is unique to their mother tongue. They become language-specific listeners. What takes place in the brain is what scientists call linguistic mapping. This refers to the way the brain is altered by the specific language the baby listens to. It is what makes language fluency possible.

The Lessons Continue

Recognizing and distinguishing sounds is one thing, but how do babies isolate where one word ends and another begins? The spaces between the words are only obvious when one understands the language. How do babies solve this problem? They use the rhythm, melody accentuation, and intonation patterns of sounds within words to determine when the words end. When the pattern breaks, the baby understands that a new word is about to start. For example in the English language, 75% of the time, words follow a first-syllable stress pattern: CHICken, TEAcher, BROther, SISter, etc. Babies are able to sort this pattern out. They also sort out what combinations of sounds are possible in their language. American babies recognize, for example, that the sound *tz* is not possible in English but Greek babies have heard this sound many times, (as in the word tzatziki) and know that it is a possible combination in Greek. Babies clearly show a preference for listening to sounds that are appropriate combinations in their native tongue. This too makes it possible for them to put spaces between words heard in speech.

The Babbling Begins

At about six months of age, babies also begin to babble. Babbling serves as practice for later speech. At this stage, infants first produce vowels and then combine a consonant such as *b, d, m* or *g* with a short *a* vowel:

ba, ma, da

You will often hear a string of syllables such as:

mamama or dadada

At this point in time, babies must also practice the differences in the intonation, pitch, and stress of the adult language. When they babble nonsense syllables, they are in fact, applying to them the intonation patterns of the adult language. For example, babies of English speaking parents often babble in ways that resemble the rise-fall intonation pattern of English declaratives:

Pete

was who

It broke

the

jar.

This intonation is evident in the following example of babble:

gu

ee ba

oo ba

ma

ma.

Indeed, when babies babble, they are practicing the powerful language lessons they have been learning since the womb. They are now ready to advance to the next lesson: their first words.

First Words

Learning sounds patterns is one thing but the leap to learning words is quite another. How do children learn words? —There is a fundamental difference between words and sounds and there is a mechanism inside our brain that allows us to make the distinction."[7] Yes, this ability seems to also be built into babies brains. This mechanism is what is responsible for the excellent memorization skills that babies demonstrate. Studies show that "babies can remember words by listening for patterns of syllables that occur together with statistical regularity."[8] Yes, they use statistical formulas to extract the individual words they hear in speech.

At 18 months of age, a vocabulary burst occurs. At this age, babies can speak as many as nine new words per day. Imagine an adult who is learning a foreign language trying to do this. It is truly difficult.

Next we must put words together. How do children figure out the rules? This is a mystery that continues to baffle scientists.

Grammar Lessons

Studies show that 18-month olds recognize grammar and learn to apply it. How they do this is still unknown.

In one experiment at John Hopkins University, an 18 month old baby listens to a recorded voice coming from one speaker to the left side of a booth and then to a voice coming from the right side. "At the bakery, workers will be baking bread," says the voice. The baby turns to the left speaker and listens intently. Next a voice comes from the right speaker: "On Tuesday morning the people have going to work." The baby turns her head away even before the statement is finished. Yes, the baby recognizes that a sentence like "the people have going to work" is not grammatically correct. The rule has been learned. Any verb ending in *–ing*, must be preceded by the verb *to be.* Studies like this one tell neuroscientists what is happening during language learning, but the *how* question remains. Somehow, the brains of infants can spot clues in sentences they hear that help them to learn grammar rules. One thing is for sure: language abilities are inborn. Someone seems to have given babies the template for language acquisition.

Babies Need Input

While babies' brains have been built to learn language, they need something from the humans around them. They need talk. Talk is the input, the fuel that facilitates language learning. Adults help infants to attach meanings to the words they hear. They also help infants to figure out the grammar of their language.

How will a child know the meaning of the word *boat* or the word *give* if he has never heard these words in conversation? The context in which adults use words helps children learn the meanings and the grammar of these words.

Additionally, children need to hear as many words as possible. Studies show that the size of a toddler's vocabulary depends on how much his parents talk to him. Yes, the quantity of words heard is very important.

Conclusion

Language development in infancy is a remarkable accomplishment. It is truly amazing to learn that most infants are involved in complex language lessons from as early as the womb. Before ever uttering a word, infants learn and use the rules of language. Their brains seem to somehow be wired for language acquisition. The more we learn about how infants learn language the more surprised we are with how much babies know. Yes, how babies learn language is a fascinating miracle that will never cease to intrigue us.

- **Which statement is the most accurate?**

538. Research shows that language acquisition begins at birth. "By 27 weeks of gestation, the cry of a baby already contains some of the speech features, rhythms and voice characteristics of its mother."[1] As early as 16 weeks gestational age, hearing develops. At this point, a mother's voice reaches the uterus as the sound waves pass through her body. Apparently, newborns learn the rhythm and sounds of their mother's language by hearing her voice while in the womb.

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TOPIC # 5: CULTURE, COUNTRIES AND LANGUAGE

MODULE – 43

THEME: Culture Shock at School—the Challenge Facing the New ESL Student

Introduction

My grade two school class picture is a picture of me looking very sad, lonely and lost. It still pains me to this day, to look at that picture, even though 30 years have gone by. That picture brings back vivid memories of a difficult year in school. I was a newcomer to Canada and was suffering from a severe case of culture shock. If you can imagine, I did not even realize that the class was being photographed until my parents received a copy of the photograph in the mail. I do not remember much else about events that took place that school

year, yet I do remember my feelings. I remember feeling withdrawn, irritable, helpless and terribly dependent on others. It was as if someone had stripped me of my outgoing personality and as a result, I withdrew into myself for the rest of the school year.

What is Culture Shock?

Culture shock is a condition that affects students that have been suddenly transplanted abroad. It is the shock or stress that results from the new and the unfamiliar. The shock or stress is caused by emotions such as depression, frustration, excitement, irritation, anger and aggression. "The term expresses the lack of direction, the feeling of not knowing what to do or how to do things in a new environment, and not knowing what is appropriate or inappropriate."[1]

For ESL students, the effects of culture shock are two-fold. They must not only adjust to the culture of their new country but also to the culture of their new school. Culture shock symptoms often build up gradually but may sometimes appear suddenly. The common symptoms of culture shock are:

- Social withdrawal, loneliness
- Extreme homesickness
- Stomach upsets, headaches, crying, sleep disturbances
- Boredom and fatigue
- Sense of helplessness, and feelings of depression
- Difficulties with concentration and school assignments

- Irritability and sadness
- Rebellion against rules, lack of interest and participation in school activities

Students are often unaware of the fact that they are experiencing culture shock. This is why they need to be educated to recognize and expect the symptoms. If ESL students are aware of the symptoms that identify culture shock they will be in a better position to cope with it in school. It is also important that ESL teachers be alert to the symptoms with a view to helping these students adjust favorably to their new school environment.

Stages of Cultural Adjustment

The first stage of acculturation is the incubation period of culture shock. This is often referred to as the "honeymoon stage." It is a period of euphoria and excitement over the new things encountered at school. At this stage the student is very positive about everything which is part of the new school culture. He is overwhelmed with new impressions and fascinated by them.

The second stage is the stage of transition. It is when the symptoms of culture shock become clearly evident. The student finds that his inability to communicate in English is causing him frustration, anger and hostility. He may start to become impatient, sad and feeling very incompetent. The transition period is a difficult time characterized by daily conflicts. The behaviors of other students in the school seem unusual and unpredictable. Negative thinking about the culture and about other students begins to develop. The student is

easily irritated, often reacting with anger, lashing out at other students whom he sees as the cause of his frustrations. Consequently, he withdraws into himself.

The third stage is the recovery stage. The student begins to gain some understanding of the new culture and begins to uncover positive aspects. There are some good things he too can find pleasure in and even laugh with. He now wants to adjust, to be accepted by the other students. He may still feel isolated but he is more comfortable at school.

The fourth stage is integration. The student now accepts the new culture and begins to slowly integrate. He develops friendships, joins in after school activities, and generally functions better at school. He feels he belongs here and starts to establish goals for himself. He defines himself as a local rather than a foreigner.

Educational & Social Differences Encountered at School

Educational systems differ from country to country. Often, the differences contribute to culture shock in school. In some countries, teachers are stern and aloof, often never meeting a student eye-to eye. Suddenly, the ESL student finds himself in a new and very different environment. His teacher is open and friendly and this will take some getting used to. Additionally, the noisy classroom stands in stark contrast to the orderly, structured and silent room he has become accustomed to in his home country. As well, he now has to work as part of a group. This may be a difficult adjustment if he comes from a school that fosters competition as the way to academic success. In some schools, students and teachers jointly decide on learning goals and this too may pose a problem for the ESL student who believes

this is the teacher's job. Also, some ESL students are not used to being taught by a teacher of the opposite sex in a mixed classroom of boys and girls. This too contributes to culture shock.

In many countries students learn by rote. They are not encouraged to think creatively or to express personal opinions. Beliefs and opinions are private matters. When exposed to learning by means of enjoyable activities, they may react with suspicion, believing that one cannot have fun and learn at the same time. "They may feel threatened by the degree of participation expected of them in class, preferring to remain silent for fear of 'showing off' or, more likely, of losing face by giving the wrong answer."[2]

Furthermore, many ESL students are confused by what seems to them as a lack of discipline in school. This perception will often cause a child and even older students to react with undisciplined behavior.

The new language of the school is a major source of culture shock for ESL students. Everything is in English, a language they cannot understand. Every day proves to be a tiring, anxious and frustrating experience. Imagine having to endure 6 or more hours of this kind of experience every day! It is hard to concentrate and even harder to participate. Often, the outgoing student withdraws and feels isolated. He doesn't feel very smart, and so, he isolates himself. He may even become depressed.

How to Help Students Overcome School Culture Shock

The ESL classroom is more than just another class in school. It is the place where ESL students acquire the tools needed to cope with culture shock. The ESL teacher instructs students in how to communicate effectively, a basic skill required in integrating into a new culture. The ESL classroom "should develop language, literacy and life skills, pass on important cultural information, enable a learner to gain confidence and contribute to his overall well being."**3** In addition, the ESL classroom serves as a place of safety from the physical and emotional trauma of culture shock.

It is important that ESL teachers acknowledge the challenges faced by ESL students. They are in the process of resettlement and coping with many stresses. Teachers must provide an environment that is relaxed, low-anxiety, fun, encouraging and respectful of the backgrounds and traditions of the students. The classes should provide structure and routine. This will make students feel safe and contribute to some stability in their lives. Routine participation in a structured activity contributes to good health and well being. The lives of new ESL students are in desperate need of stability.

The teacher can help the ESL student cope with culture shock by structuring the curriculum around everyday activities such as the student's home or family life, the neighborhood, the school and its various cultural and social events. He should encourage after-school activities. This will give ESL students a chance to make new friends, which is basic to feeling happy and settled. Students should feel free to approach the ESL teacher with concerns or to receive direction. A good ESL teacher is more than a language teacher. He must also be a good listener, a mediator, and a provider of information and facilitator.

Students Can Cope with Culture Shock

Students need to accept that culture shock is a normal reaction to a huge change that has taken place in their lives. They must understand that culture shock is temporary. With time, things will be right again. Here are some factors that will help students overcome culture shock at school:

- Keeping an open mind
- Maintaining a sense of humor
- Learning to cope with failure
- Participating in ESL discussions
- Joining after-school activities
- Volunteering in community activities
- Communicating feelings
- Being flexible and adaptable
- When feeling stressed at school, talking to an ESL counselor
- Getting regular physical exercise

It is important to maintain open-communication with family and friends. ESL students should share their feeling with those who care about them. This will give students a sense of belonging and reduce feelings of loneliness.

Furthermore, it is necessary to maintain a positive attitude. If you are an ESL student, be open-minded about new experiences at school. The natural tendency is to huddle together

with students of your own culture. Resist this tendency. Students who follow this course will often "turn inward and cut themselves off from opportunities that could really help them."[4] Yes, in order to overcome culture shock and more quickly adapt culturally, you need the help of the native students at your school. Therefore, broaden-out in your associations and take advantage of the help that you can receive from others.

Above all, work hard at acquiring the English language. This is the fastest and easiest route to cultural adaptation. Read a bit of the newspaper every day. Listen to the radio. Remember, "The language of the nation is the gateway to its culture."[5] Acquiring a solid grasp of the English language is the key to overcoming culture shock.

Conclusion

Transferring to a new school in a foreign country is a stressful experience. It entails the loss of friends and the need to make major life changes. The ESL student must not only adjust to a new school, but to a new country and to a new language. Being in a strange place and losing the power to communicate can be quite painful. Often ESL students experience culture shock in school. The symptoms may range from excitement and nervousness to frustration, irritation, anger or depression. It is important for both students and teachers to recognize the symptoms of culture shock with a view to coping successfully. An understanding of culture shock experienced at school will help students deal with negative feeling and also help teachers do their part in helping ESL students adjust favorably to the new school environment.

- **Which statement is the most accurate?**

542. Culture shock is a condition that affects people that have been suddenly transported abroad. The term expresses the lack of direction, the feeling of not knowing what to do or how to do things in a new environment, and not knowing what is appropriate or inappropriate. It is the shock or stress that results from the new and the familiar. The shock or stress is caused by emotions such as depression, frustration, excitement, irritation, anger and aggression. The fastest and easiest route to cultural adaptation is to read a bit of the newspaper in your native language every day. Listen to the radio.

543. The new language of the school is a major source of culture shock for ESL students. Everything is in a language they cannot understand. Every day proves to be a tiring, anxious and frustrating experience. Imagine having to endure 6 or 7 hours or more of this kind of experience every day! It is hard to concentrate and even harder to participate. Often, the outgoing student withdraws and feels isolated. He doesn't look very smart, and so, he isolates himself. He may even become depressed. Getting regular physical exercise and joining after-school activities is the solution.

544. The common symptoms of culture shock are:

Social withdrawal, loneliness
Boredom and fatigue
Extreme sickness
Difficulties with concentration and school assignments
Stomach upsets, headaches, crying, sleep disturbances
Rebellion against rules, lack of interest and participation in school activities
Sense of helplessness, and feelings of depression
Irritability and sadness

545. Furthermore, it is necessary to maintain a positive attitude. If you are an ESL student, be open-minded about new experiences at school. The natural tendency is to huddle together with students of your own culture. Resist this tendency. Students who follow this course will often "turn inward and cut themselves off from opportunities that could really help them."[4] Yes, in order to overcome culture shock and more quickly adapt culturally, you need the help of the native students at your school. They must understand that culture shock is temporary. Therefore, broaden out in your associations and take advantage of the help that you can receive from others.

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TOPIC # 6: ENVIRONMENTAL STUDIES

MODULE – 44

THEME: Creating the Optimal Environment for Learning

Introduction

Imagine an environment that allows us to be passionate about learning. In this environment we feel safe to explore and to face new challenges. All our senses are stimulated and there is a constant flow of rich, new experiences. Our attention is captured, our thinking is stimulated and our brains are challenged. In this enriched learning environment, we thrive and prosper. What characterizes this optimal learning environment and how can we create it?

Insights from the Brain

Research on the brain reveals that an enriched environment enhances learning. This environment stimulates all our senses. Here the brain actually grows, regardless of our age. According to the book, ***Inside the Brain,*** "an enriched environment can contribute up to a

25% increase in the number of brain connections both early and later in life."[1] Therefore, an enriched learning environment will help us to grow a better brain.

To grow, the brain needs information and it needs experiences. Information and experiences enter the brain through our senses. The brain prefers to input information in a way that engages all our senses. It is a parallel processor, meaning it can perform several activities at the same time, such as listening, smelling and tasting. When only one or two senses are stimulated, the process of learning becomes more difficult for the brain. Therefore, in our efforts to create the optimal learning environment, we must provide for rich and varied sensory learning experiences.

Providing the Basics

The learning environment must first provide for the brain's basic need for energy. Although the brain is a small organ, it consumes 20% of the body's oxygen supply. Without an adequate supply of oxygen we can't expect the brain to function at its best. Oxygen helps us to concentrate and to function better mentally. This highlights the need for proper ventilation at learning facilities. It also points to the need for fresh air, windows that open to the outdoors, and fresh, green plants in the classroom. Stale air starves the brain but oxygen fuels it.

More importantly, the brain's need for energy points to the importance of physical activity during periods of learning. Physical movement is essential to the learning experience. It plays a vital role in activating the brain's neural circuitry, "making the entire body a catalyst

in the learning process."[2] The reality, however, is that learning with whole body movements is acceptable only for those of kindergarten age. This thinking must change if we are to create the most favorable environment for learning. We must work toward changing attitudes, so that it is acceptable for adult learners to move their bodies when beginning a new learning process.

Water intake is essential for optimal learning. Without enough water, we become lethargic and our learning abilities are impaired. It is therefore important to drink between 6 to 8 glasses of water a day and make sure that the water supply is found within the classroom where students can have access to it. This too, will contribute to an environment that is conducive to the learning experience.

Color and Light

Research tells us that color and lighting influence learning. We must consider this when creating the optimal environment for learning. With color and lighting we can stimulate our senses. "Distracting color combinations can lead to task confusion and slow reaction time. Quality lighting and appropriate colors improve visual processing and reduce stress."[3] The chart below provides a connection between color and learning:

Yellow	Increases reading comprehension
Green	Increases retention and recall
Blue	Increases willingness to read
Red	Promotes new ideas and concepts

Pink	Decreases anger and aggression

The brain remembers color first and content second. It learns best in an environment that is colorful.

Natural lighting is also very essential. In one study, it was shown that in classrooms with skylights, students made progress more quickly on math and reading tests than did students in classrooms with less natural daylight. Clearly, "the visual environment is one of the most important factors in learning, affecting mental attitude, class attendance and performance."[4] For this reason we must take color and lighting into consideration when designing an environment which promotes successful learning.

Challenge, Safety and Other Essentials

While the physical environment must not be overlooked, there is much more to the optimal environment for learning. Critical to enriching our brains is challenge. We need an environment that continually stimulates our curiosity and satisfies our thirst for new information and experiences. In an enriched learning environment, "it is the challenge to the nerve cells which is important."[5] Challenge to the brain comes from novelty and change. Yet, this challenge must not create too much anxiety. The environment must feel safe, secure and non-threatening. If the brain perceives a threat, it will shut down.

A challenging and safe learning environment sparks emotional interest. When we get emotional about something we are truly involved in the learning process. If we are not

attached with emotion to a new learning experience, the information is discarded within seconds. Research tells us that emotions help us to remember an experience. "Chemicals (and) neurotransmitters are released into the endocrine system, which is connected to synapses, altering, coloring and intensifying our conscious experience of a situation."[6]

To retain new information, the brain needs time to process. Processing time allows the new synapses just formed to be strengthened. Young children need to take frequent time out periods after short spurts of learning. Adults too, should be encouraged to stop and reflect at regular intervals during the learning process. This will help students to gain meaning from the learning experience. It will ensure that the efforts put into teaching and studying will not be wasted. Understanding does not take place immediately for the brain. It often comes later, after much processing which takes place consciously and unconsciously. Processing time is vital to the learning environment.

Meaning and Patterns

In the optimal environment for learning, teachers focus on the construction of meaning instead of focusing on fragmented knowledge. This environment provides periods for analyzing, evaluating and problem solving. It helps students to reflect on the bigger picture: major concepts and principles and how the student is involved in real life. It allows for meaning to be derived from the facts. The challenge to the student must be a personally meaningful challenge. An example is found in immersing a student in a foreign culture to teach him a second language. People learn best when solving real problems in which they can see the solution as part of the bigger picture. The best way to learn is not in the lecture hall

environment, but by participation in real environments that immerse the learner into the experience.

Patterns and rituals are also part of an enriched learning environment. The brain thrives on taking random, unstructured information and putting it into a neat, orderly and meaningful pattern. An environment that allows for problem solving and critical thinking assists the brain in its search for meaningful patterns during the learning process. "For teaching to be effective, a learner must be able to create meaningful and personally relevant patterns. Thematic teaching, integration of the curriculum, and life-relevant approaches to learning are those that most recognize this tenant."[7]

Emotions are critical to the brain's success in seeking out meaningful patterns. "Positive emotions such as love, excitement, enthusiasm and joy enhance the ability of the cerebral cortex to process information and create permanent mental programs."[8] The optimal environment for learning is one where students feel they are cared for and supported. It is one that fosters excitement, joy and enthusiasm. Here, learners thrive.

Music and Art

The optimal learning environment is also aesthetically pleasing. The brain responds to the entire sensory context in which learning occurs, including physical surroundings. Art displays in the classroom should reflect learning content and should stimulate interest. They should be changed frequently to reflect changes in learning content. Designers of schools, classrooms and educational tools should be artistic individuals.

Music too, enhances the learning environment. It facilitates the acquisition of knowledge and aids in the retention of information. It can change an emotional state in a matter of seconds. In the optimal learning environment, teachers use music with their lessons, not just with young children but also with adults. They use it to create emotional states that are conducive to the learning experience. As well, students are also encouraged to participate in music and arts programs. Studies show that participation in the arts results in better visual thinking, problem solving and language learning. "By learning and practicing in the visual and performing arts, the human brain actually rewires itself to make more and stronger connections."[9]

Conclusion

Creating the optimal environment for learning is a daunting task but well worth the efforts involved. We know from current research that the learning environment has much more influence on brain development and learning that previously thought. Hence, there is a need to work on creating the optimal learning environment. First, we must look to neuroscience to help us identify how the brain learns best. We must consider the brain's basic needs for energy, light and color. We must also provide for personally meaningful challenges and emotional connections. We must create a safe place for learning. Lastly, we must be artistic. By doing so, we can ensure a lifetime of passionate learning.

- **Which statement is the most accurate?**

546. In our efforts to create the optimal learning environment, we must provide for rich and varied sensory teaching experiences. To grow, the brain needs information and

it needs experiences. Information and experiences enter the brain through our senses. The brain prefers to input information in a way that engages all our senses. It is a parallel processor, meaning it can perform several activities at the same time, such as listening, speaking and hearing. In the optimal learning environment, teachers use music with their lessons, not just with young children but also with adults. When only one or two senses are stimulated, the process of learning becomes easier for the brain.

547. Understanding does not take place immediately for the brain. It often comes later, after much processing which takes place consciously and unconsciously. Processing time is vital to the learning environment. To retain new information, the brain needs time to process. Processing time allows the new synapses just formed to be strengthened. Young children need to take frequent time out periods after short spurts of learning. Adults too, should be encouraged to stop and reflect at regular intervals during the learning process. This will help students to gain meaning from the learning experience. It will ensure that the efforts put into teaching and studying will not be wasted.

548. Natural lighting is also very essential. In one study, it was shown that in classrooms with skylights, students made progress more quickly on math and language tests than did students in classrooms with less natural daylight. It can change an emotional state in a matter of seconds. Clearly, "the visual environment is one of the most important factors in learning, affecting mental attitude, class attendance and performance."[4] For this reason we must take color and lighting into consideration when designing an environment which promotes successful learning.

549. Stale air starves the brain but oxygen fuels it. The learning environment must first provide for the brain's basic need for energy. Although the brain is a small organ, it consumes twenty percent of the body's oxygen supply. Without an adequate supply of oxygen we can expect the brain to function at its best. Oxygen helps us to concentrate and to function better mentally. This highlights the need for proper ventilation at learning facilities. It also points to the need for fresh air, windows that open to the outdoors, and fresh, green plants in the classroom. Physical movement is essential to the learning experience. It plays a vital role in activating the brain's neural circuitry, "making the entire body a catalyst in the learning process."[2]

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