Final Paper

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EDFR 6302 03V

Foundations of Learning, Cognition and Human Development

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**Introduction**

Throughout the course EDFR 6302, we have studied various theories and studies that allow us to deeper understand the different aspects of learning, cognition, and human development. Understanding the different concepts of learning, cognition, and human development play a huge role as an educator. As an educator, we want to ensure we meet students where they are at in order to give them the tools necessary to succeed. Not only do we, educators, teach content, but we serve as role models for students as they develop into adults.

This paper will summarize learning, cognition, and human development as learned throughout the various modules. In addition, I will give 5 recommendations for the classroom based on what I have learned throughout this course. The application of recommendations will have examples that are based on teaching elementary science. However, these recommendations can be applied throughout various grade levels and contents.

**Learning**

Learning is a process of receiving new knowledge or skills through experience, studying, or being taught. Learning at a neural level encompasses the work of different neurons working together. Neurons action potentials transmit different signals with information. This information is stored as memories in our brain to use as knowledge. Memory plays a huge role in the process of learning by facilitating critical thinking, enhancing understanding, retention of knowledge, and problem solving and decision making.

**Cognitive Development**

Cognition pertains to thinking and memory processes while cognitive development pertains to the long-term storage of these processes. Throughout this course we examined the constructivist perspective of psychologist like Piaget and Vygotsky which developed theories of on how children develop their learning and how they learn best. Vygotsky’s social development theory shows that students work better through collaboration and social interaction. This allows us to see how teaching moves from traditional to constructivism.

**Human Development**

Human development refers to the many aspects of developing such as physically, behaviorally, cognitively, emotionally, and morally. In this course, we learned about the various stages of human development that play an important role in the students’ life. Understanding these stages allows teachers to build strong relationships with students and help them navigate difficulties.

***Recommendation 1***

The first recommendation that I would like to give is for educators to create an enriched environment for students in which students can engage in hands-on learning and have space to let their energy out. Since we are moving from a traditional way of teaching into a constructivist way of teaching, it is important for teachers to create space for student enrichment. This enrichment could be done throughout lessons or at different times throughout the school day. It is important to acknowledge that all students learn differently, and we need to provide them with the tools needed to be successful in their learning. I will be discussing the relationship between neuroplasticity and enrichment as well as discussing two studies that prove that enrichment is powerful when learning.

On module 2 we discussed how the different parts of the brain work by sending messages to enable different functions in the human body. The central nervous system which is made up by the brain and the spinal cord, sends signals to the body via cells called neurons. These neurons are protected by myelin sheets in order to send signals to different parts of the brain and the body. Additionally, Neuroplasticity refers to the brain's ability to adapt by forming new connections as a result of experience, learning, or following an injury.(an van go 2023) Both environmental experiences, such as stimulation, and events within a person’s body, such as hormones and genes, affect the brain’s plasticity. Thus having an effect on learning.

A study done in 2009 studied the relationship between enrichment, specifically music training, and the size of the corpus callosum, which is the part of the brain that is responsible for cognitive functions such as learning and memory. The study was done for a period of 29 months and included 31 children 5-7 years of age. Students were divided into 3 groups which consisted of a control, low practice, and high practice. Children underwent MR brain scans before and after the music practices and the table below shows how the high practice (enrichment) students had a higher growth in corpus callosum. This allows us to see how enrichment, in this case done by music training allowed for better brain plasticity and higher potential for learning.

A graph of different colored bars

Description automatically generated with medium confidence

Additionally, research done by Rosenzweig & Bennet also allows us to see enrichment effects on neuroplasticity. In this study, rats were randomly placed in one of two different environments. In the enriched environment, rats were placed in a cage with other rats, toys, games, and maze to explore. I the deprived environment, rats were placed alone in a cage with no other rats or toys. Rats were later killed to examine changes in the brain structure. The results showed that rats in the enriched environment had a heavier frontal lobe and thicker cortex compared to the rats in the deprived environment. This study is important because rats have very similar brain structures to humans and show a huge benefit for being in enriched environments.

There are various ways in which educators can promote enrichment in their classroom and schools. A significant factor could be differentiated instruction. This may look like having students learn in various ways throughout the classroom. This may include the use of different techniques for students such as standing desks, wiggle chairs, elastic bands, and fidgets. This might also include the incorporation of various brain breaks that include body movement. For 5th grade students, I always tried to incorporate various ways to keep them physically active in order to also keep them mentally active.

***Recommendation 2***

The second recommendation that I have for educators is promoting positive classroom management strategies that reward/reinforce students and avoid punishments. The use of positive management strategies allows for the teacher and the students to be in a more comfortable space for learning and have a productive growth mindset.

Edward Thornlike mentions that throughout various experimentation, he has concluded that punishments have no benefits. He mentions “Punishing Xi , or Xx , or X3, or X 4 does not make it less likely to happen. The person improves only because of the rewards for R. If the learner does R and is rewarded, he is more likely to do R the next time. But if he does X i and is punished, he is not less likely to do Xi the next time. The wrong tendencies are not reduced in strength one jot or tittle by the punishment.” This is something that I have seen in the classroom as a 5th grade teacher. I’ve used various techniques that promote rewards and a positive environment. For example, instead of punishing students by taking their recess away for not completing their independent work, I moved towards using a whole class system that rewards them with extra recess if they all focus and complete their independent work.

Another research done by Flora studied the effects of extrinsic reinforcement for reading during childhood on reported reading habits of college students. College students were surveyed to learn more about their reading habits during childhood versus their reading habits. The study showed that when a child is rewarded for reading with money the child will increase the amount of reading and enjoyment of reading may also increase. This shows that providing students with rewards whether they may be intrinsic or extrinsic will higher the chances of a desired behavior.

Another example that can relate to this is one that I love to use in my classroom. This reward system includes a breakdown of time in my class. I create some space on my whiteboard, and I divide it by the days of the week. Every day, students can earn stars based on what they accomplish during the class. If the students are on track during class, I make it very public that they are earning starts. If the students are not doing good, I push them towards earning stars without negatively mentioning they are falling behind. Students love the praise and feel encouraged to earn more stars. At the end of the week, students earn a prize for earning a certain number of stars (20 in my case in order to earn 5 per day.) Having classroom systems like these allow for students to be rewarded for working hard and not punished for things they were not able to attain.

***Recommendation 3***

My third recommendation for teachers is to create a student-centered classroom that allows for students to learn through collaboration. As mentioned before, we are moving from a traditional way of teaching into a constructivist way of teaching which has a huge emphasis on learning through collaboration. Vygotsky’s social development theory focuses on the idea that a child’s learning ability can be guided by social interactions. Vygotsky focuses on the zone of proximal development which refers to the tasks that a student can perform with the help of others.

A recent study tests Vygotsky’s theory on social interaction and its influence on development of pre-school children. In this case, teachers were studied by researchers to examine their level of understanding of the theory and how they apply it to their teaching. It was concluded that teachers lacked understanding of the scaffolding needed for the zone of proximal development. Scaffolding plays a huge role when students are learning through collaboration. It gives an opportunity for students to learn through interaction without being presented with concepts beforehand.

  An example I can think of is from teaching 5th grade science. In the unit where I teach the properties of matter, I like for students to explore different ingredients and their properties. I ask students what are some dishes that their family like to cook. When students give me examples of dishes, I ask more questions about ingredients that can be found in the dishes. I see students getting excited about the foods that they share, and they often can relate to other students who eat the same thing. When there are students who don’t share similar dishes with the rest of the class, I ask for students to share about the dishes, and we celebrate different cultures and relating it to the science objectives.

Similarly, in order to create a student-centered classroom that looks through collaboration, it is important to create opportunities for collaboration throughout the lessons. Collaboration might look like having productive discussions and debates, asking students to explain their understanding of concepts, and allowing for students to tutor other students.

***Recommendation 4***

My fourth recommendation for teachers is to create a comfortable environment for students to express themselves and foster relationships among students and adults. It is important for teachers to understand the students’ funds of knowledge in order to create trust and provide students with the tools necessary to be successful. Erikson’s stages of psychological development allow teachers to understand student development and meet them where they are at. Creating a culturally responsive environment will ensure students feel included and safe.

Erikson’s theory is based on social experience and environmental factors across the whole lifespan and allows us to see how social interaction and relationships play a role in the development and growth of human beings. It is important to understand what stage of development students in our classroom are currently going through. I have experienced teaching various grade levels and have noticed the huge differences of stages of development in which my students fall into. For example, teaching a group of 3rd graders or 5th graders demonstrates the fourth stage in which the conflict relies in industry and inferiority. This allows us to see how students interest in new skills rises through confidence and willingness to try their best. In addition, students might experience failures and discouragement if not provided with encouragement and support. Teaching this specific group of students means providing them with the encouragement to overcome obstacles and keep trying.

Additionally, teaching a group of 5th grade students alters because some of them might be entering the fifth stage of development in which students are struggling with identity and confusion. At this age, it is important for teachers to analyze their students to best understand them and support them. Young adolescents will struggle with self-esteem, identity, and majorly be affected by their social interactions. Teachers should find ways to build strong relationships with students in order to create an inclusive and safe environment for them to thrive on. A way to do this is by creating culturally responsive lessons which students can relate to and incorporate SEL lessons into their everyday lives. SEL lessons are speaking, social, and emotional learning lessons that allow students to have a voice and tell their story. These lessons allow the teacher to tap into the students’ backgrounds and socialization.

Bronfenbrenner’s bioecological theory allow teachers to see what factors influence social development by digging deep into family, peer, and teacher relationships. Baumrind’s four parenting styles allows us to see the different parenting styles in which our students’ everyday lives might look like. These four stages which include authoritarian, authoritative, permissive, and uninvolved allow teachers to see what level of adult and child interaction the student is used to. Creating a relationship with the students’ caregivers will have a positive and huge impact establishing relationships with students. Overall, building a strong teacher and student relationship can allow for understanding students’ socialization and serving as a mentor when needed.

***Recommendation 5***

My fifth recommendation is to promote a classroom that uses conflict resolution and promotes inclusivity. It is important for teachers to model dialogues that promote conflict resolution and inclusivity. Promoting conflict resolution taps into understanding moral development and the student’s theory of mind. The three theories of moral development from Piaget allow us to understand students’ moral development stages and how to best support them.

The theory of mind is related to an individual identifying other people’s beliefs, intentions, emotions, and thoughts. Research in theory of mind (ToM), defined as the ability to make inferences about people’s mental states and to use these inferences to explain others’ behavior. Children often start understanding the theory of mind within 3-5 years of age and matures starting at the age of 13. In the case of 5th graders, it is evident that students at this age are beginning to have more empathy towards other thoughts and feelings. Teachers should model a respectful dialogue that students could use for conflict resolution. This might include the use of probing questions such as the ones below:

* How do you think this might make the other person feel? Were those your intentions?
* How does this make you feel?
* What do you want this person to know about how you felt when this (conflict) occurred?
* Is this how you or someone you care for would like to be treated?
* What can I do to help you solve this conflict?
* What can you do to avoid this conflict from happening in the future?
* What do you want to see to this person?
* What do you need from me or another person to make sure that this doesn’t happen again?
* Do you need space/ do you want to take a small break before talking?

A study done in 2020 by Jigsaw University in China aimed to study the theory of mind and inclusivity of students with disabilities and students in general education. The study showed that the theory of mind is much more visible when students interact among classrooms that have a shared population of general education and special education students. This proves that an inclusive classroom can be very beneficial in the student’s theory of mind and moral development.

Similarly, Piaget’s theory of moral development allows teachers to understand the stage at which a student will be at. The various stages that include pre-conventional, conventional, and post-conventional stages. The different stages and levels vary by age and teachers can facilitate conflict resolution based on the student’s morality stage. Younger students might require more explanation and facilitation of discourse since they are barely developing a strong set of moral values. Older students might require less explanation when involved in conflict resolution.

As educators, it is our duty to promote this inclusivity and make students feel included, valued, and respected.

**Final Thoughts**

In conclusion, the various studies and theories learned throughout this course allow teachers to understand learning, cognition, and human development in a better way in order to ensure student success. These recommendations are intended to be used throughout all grade levels while accommodating by age accordingly. The application of the recommendations given allow for students to feel supported, included, safe, and respected.

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