AN ASSESSMENT OF SOCIAL STUDIES MAJORS' WHOLE-BRAIN LEARNING SYSTEMS

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Abstract

Robert Frost said, *"The brain is a wonderful organ. It starts working the moment you get up in the morning and does not stop until you get into the office".* It is like a jungle of rainforest wired with so many interconnections once it functions (Edelman, 1992). This study is an assessment of the Bachelor of Secondary Education (BSED) Social Studies majors' whole-brain learning systems from October 2013 to April 2014. Through a purposive sampling, the case study employs mixed methods of both quantitative and qualitative approaches. The assessment results between Gardner's Multiple Intelligences and Herman's Brain Quadrants are consistent, that is, a safe-keeping-self matches a connection of a double-dominant left brain. Though social masking is prevalent on personal narratives, self-preservation is used to camouflage harsh social realities. What is hidden inside, the group projects to be friendly in search of social approval, a concealed angst within their personality that purges inner voices to be heard in response to the development of the whole-brain learning system. Their attitudes and values toward social studies remark a high level of strong agreement, with average content knowledge, but these still need attention to balance instruction and fill in the limited right brain exposure that would improve the group's content knowledge acquisition in social studies where it is found less efficient.

Keywords: Whole-brain learning system, social masking of realities, content knowledge, self-reservation, inner voices

Introduction

Robert Frost said, *"The brain is a wonderful organ. It starts working the moment you get up in the morning and does not stop until you get into the office".* It is amazing how the human brain can perform numerous

functions relative to life's survival. "It is like a jungle of rainforest (somewhat chaotic, a layered world of interwoven, interdependent neurological connections) wired with so many interconnections once it functions" (Edelman, 1992). Many years back, the study of the human brain was not only limited to its anatomical and physiological structure. It took a long time for behavior to be studied until the emergence of neuroscience, which was not then respected because of lack empirical bases. Years passed, many metaphors were used for the human brain. It was compared like a switchboard in the '70s and a computer towards the late '80s. However, these comparisons have changed with the latest development on the triune brain, brain quadrants, and brain plasticity.

As the Information Age continues to unfold, educators at all levels are faced with several competing factors in promoting teacher efficacy and student achievement: brain research, instructional technology, and the move towards state and national standards, are readily embraced by the constructivist movement, standards, and accountability of the school (McKenzie, 2012). Vis-à-vis, the goal of education is to encourage the development of well-rounded individuals (Gardner, 1983) in order to grapple their maximum potentials for success. In the Philippines, the developmental curriculum of the K to 12 programs of the Department of Education has been designed to match these constructivist and humanistic expectations. In support, Bethere, Pavitola and Ozolina (2014) describe that "the current situation in the field of education has been influenced by the tendencies of today's global world characterized by post-modernism, constructivism as well as democratic and humanistic approach to pedagogy". Dr. Jocelyn DR Andaya (2013) [Director III, Bureau of Secondary Education] describes the K to 12 (Enhanced Basic Education Program) competences as "seamless that ensures the spiral progression of content and skill development in various subjects from primary, secondary, to post-secondary levels". With this new development, batches of teachers every year have been trained to handle students in the constructivist way of teaching since 2012 where all the curricula from various grade levels will be fully in place by 2017.

According to MacLean (1952) human beings have three little brains in one amazing brain. These perform the holistic life's functions, which are coordinated by the reptilian brain, the mammalian brain, and the neo-cortex (Clemons, 2005). Clemons expounded MacLean's assertion that, first: the brain stem, being the lowest area of the brain, assimilates information and regulates survival functions like breathing, walking, sleeping, and other forms of physical manipulation; second: the limbic area, which controls the emotions and the decision-making process; third: the cerebrum, which mentally invents, creates, writes, and calculates as our individual attributes

for higher-order-thinking skills unique from other forms of organisms in the animal kingdom.

Ned Hermann (1996) theorizes that every individual has four brain quadrants in order to be called successful in life. The four quadrants were classified into A (Blue Quadrant), B (Green Quadrant, C (Red Quadrant), and D (Yellow Quadrant). According to him, QA is characterized as the "Rational Self" or the "logician", who knows how things work, knows about money, likes numbers, quantifies, analyzes, and is realistic, critical and logical. The QB is dubbed as the "Self-keeping Self" or the "organizer", who plans time schedules, organizes and gets things done, establishes procedures, takes preventive action, and is neat and reliable. The QC is the "Feeling Self" or the "communicator", who is expressive and talks a lot, is emotional and supportive, feels sensitive to others, touches a lot, and likes to teach. The QD is the "Experimental Self" or the "visionary", who infers and imagines, speculates, takes risks, is curious and impetuous, breaks rules, plays a lot and likes surprises.

The UNESCO's International Commission on Education for the 21st century [chaired by Jacques Delors in 1996] reported four pillars of lifelong learning such as: Learning to Know, Learning to Do, Learning to Live Together and Learning to Be (Canadian Council for Learning, 2010). This framework serves as the blueprint of the Enhanced Basic Education Program in the Philippines, with KPUP (Knowledge, Process, Understanding, and Products or Performances) as a buzzword for instructional implementation, which dovetail to the development of the learners' whole-brain learning system. The Learning to Know pillar [**Knowledge**] requires the acquisition of knowledge in different sources using critical thinking, which can be accessed by the brain's blue quadrant. The Learning to Do pillar [**Process**] necessitates the adeptness to survival skills, which can be responded by the brain's green quadrant. The Learning to Live Together pillar [**Understanding**] demands the development of social and interpersonal skills, which can be enhanced by the brain's red quadrant. The Learning to Be pillar [**Products or Performances**] generates the dexterity for personal development of the body, mind, and spirit, which can be shaped by the brain's yellow quadrant.

McKenzie (2012) synthesizes the three learning domains of Gardner's multiple intelligences into analytic, interactive, and introspective. The analytic domain includes logical, mathematical, and naturalistic intelligences. Kinesthetic, intrapersonal, and verbal comprise the interpersonal domain, while intrapersonal, visual; existential intelligences constitute the introspective domain. Addressing these nine multiple intelligences support whole brain learning development, which includes the individual's cognitive, affective, and psychomotor potentials.

With all these developments, the classroom teachers must remain steadfast through their observation of the students' performance. Comments of teachers regarding their students can neither be good nor bad. They are good when they yield possible support and bad when they are ignored. One of the comments we usually confront is the tendency to compare one batch of students with the rest of other batches in a regular semester. Based on the researchers' observation, the respondents of this study are observed to be different from the rest of the batches of BSED Social Studies majors. It is very hard to expect a perfect attendance; some arrives in class late; others are passive and maintain their own world of fascination; and they have low results in their written exams. These initial observations are cornerstones on why the researchers chose to do a case analysis of the whole-brain learning systems of this specific group in the Cebu Normal University for the second semester of Academic Year 2013-2014.

Objectives of the Study

This study aimed to determine the whole brain learning systems of the selected BSED social studies majors. To answer the main problem, the following objectives were raised: (1) analyze the dominant brain-based learning quadrants and multiple intelligences of the respondents in relation to their personality traits; (2) describe their universal thinking styles in terms of social studies contexts; (3) identify the attitudes and values toward social studies content knowledge in anthropology, economics, geography, sociology, history, psychology, and political science; and (4) categorize the teaching methods commonly used by the professors and the corresponding generated values.

Short Literature of the Study

Rushton and Larkin (2001) in Rushton, Eitelgeorge and Zickafoose (2003) state that brain research "provides educators with strategies that can stimulate specific areas of the brain in order to gain the learner's attention, foster meaningful connections with prior understanding, and maximize both short and long-term memory". Teachers' scaffolding of lessons like: chunking, chaining, singing, moving, and other graphic organizers in learning fit the changing landscapes of brain plasticity. Wolfe and Brandt (1998) established the concept of neural plasticity, the brain's ability to constantly change its structure and function in response to external experiences. This happens when fluctuations occur by excitement or threat. Through relaxed alertness as one of the three instructional techniques of brain-based learning advocated by Caine and Caine (1991), emotions are critical to learning. They said that "happy emotions enhance learning (*by endorphin production*) and sad emotions inhibit learning (*by cortisol*

production)". This finding would challenge teachers to create a happy learning environment that stabilizes students' emotions. Powell (2005) urged teachers to be aware that "too much challenge may lead students to give up, while too little challenge will lead to boredom". This suggests a perfect balance on how to provide an appropriate learning enhancement that matches the students' learning abilities.

Atkinson and Shiffrin's Stage Theory expounds that "external stimuli trigger our senses, which either forget the stimuli or pass on the signal to our short-term memory". To make our information remembered, it must be interesting or surprisingly known in order to be retained in the short-term memory in 20 seconds, as they believe. When it is repeated at least three times, retention is assured. Retention improves when information is connected to past meaningful experiences. The process of absorbing new information into long-term memory occurs during our deep sleep at night (Grohol, 2009) that our haypothalamus secrets dopamine hormones that stimulates for falling asleep and serotonin hormones for bringing a deep sleep. These hormones are responsible for the development of the pleasure hormones called endorphins, essential for learning retention. This information requires parents to monitor the sleeping time of their children in preparation for academic learning in the classroom. Teachers are recommended to utilize orchestrated immersion and active processing for active retention of students' learning.

During the 21st century, there is new hope that educators and neuroscientists can improve the process of teaching and learning through brain-based research (Sousa, 2006) in Morris (2013). The interfacing of these two creates the concept of brain-based education. According to Jensen (2010) "brain-based education is best understood through engagement, strategies, and principles toward effective teaching". This requires more participation of students to utilize movement activities, which yield maximum learning potential, like exercise and play. Exercise improves attention and working memory and, it facilitates the growth of new brain cells (Ratey, 2014). To him, "exercise has been shown to increase endorphins that make us feel better; the neurotransmitters dopamine and serotonin increase attention, working memory, and mood". Sorenson (2013), in Brain-Based Learning Strategies with ADD and ADHD, "encourages active brain-breaks to reenergize the students in maximizing learning, by recommending a minute of standing up and moving, so that 15% more blood and critical oxygen reach our brain".

Rapport (2009) in Low (2009) suggests chewing gum as an activity that can increase blood flow, thus enhancing attention in the brain. According to Dr. Craig Johnston, lead researcher at Baylor College of Medicine, *"108 students, ages 13 to 16 … were assigned to either chew*

sugar-free gum during math class, while doing math homework and during math tests or to refrain from gum-chewing. After 14 weeks, the students took a math test and their grades were assessed. Those who chewed gum had a 3% increase in standardized math test scores and had final math grades that were significantly better than those of the other students. Teachers observed that those who chewed gum seemed to require fewer breaks, sustained attention longer and remained quieter". Rapport (2009) further expounds that chewing raises the heart beat, which causes more oxygen and nutrients to be pumped into the brain and triggers the production of insulin, which stimulates a part of the brain involved in memory". Like exercise, chewing generates movement that reduces boredom. Exercise, fruit and water have been shown to improve academic performance on tests.

Water helps move neuron signals through the brain and keeps the lungs moist so oxygen can get into the bloodstream more easily. According to Norman (2010) "dehydration can lead to fatigue, dizziness, poor concentration, and reduction of cognitive abilities and even mild levels of dehydration can impact school performance". Therefore, there is a need to utilize teaching strategies that increase the levels of glucose, oxygen and water in the brain as part of our daily consumption. Glucose taken from carbohydrates can boost working memory, attention and motor function (Armstrong, 2014). It is noted that raisins are excellent fruit sources of glucose as a potential source of energy to stimulate the brain. Starting the class with a good joke or humor creates laughter, which in turn increases the level of oxygen in the blood. Laughter also produces endorphins, which stimulate the brain's frontal lobes and give students a sense of well-being. Positive emotions enhance learning retention (Caine & Caine, 1991). When people laugh together, they bond and establish a community spirit and create a positive classroom free of fear and anxiety (Stambor, 2006). This happens when the right brain hemisphere is nurtured with the use of aesthetics that stimulate emotions. Techniques and activities using right brain functions such as: guided imagery, music, drawing, films, storytelling, sensory experiences and games enhance to enrich students' learning (de la Cruz, 2002).

Methods and Materials

This was a case analysis of a typical group of social studies majors of the Bachelor of Secondary Education (BSED) program of Cebu Normal University. The study employed a mixed method of both the quantitative and qualitative approaches with simple frequencies, ranks, and means to treat the data generated by the survey questionnaire adapted from Walter McKenzie (2002). A researcher-made questionnaire on Brain Quadrants with Likert Scales served as one of the tools in a selected and contextualized contents

and concepts in social studies, animal metaphors, and narratives of the respondents. These were used to generate the needed data for the learning systems, personality traits, and attitudes toward their specialization. A Focused-Group-Discussion (FGD) was conducted to provide a triangulation of findings.

Results and Discussion

On Whole Brain Learning Systems

Table 1 Respondents' Brain-based Learning Systems Profile

Quadrants	Total Respondents	Frequency	Average Mean	Rank
A	16	198	12.38	3rd
B	16	275	**17.19**	**1st**
C	16	104	6.50	4th
D	16	201	12.56	2nd

Table 1 depicted the social studies majors' learning profile in terms of the four brain quadrants. Quadrant B (the Safe-Keeping Self) obtained the highest average mean of 17.19. This revealed that they possessed the following traits such as: timely planning, organization of works neatly, reliability, getting things done, establishing procedures and taking preventive action. They kept a premium on safekeeping organized important learning activities like: script-writing, staging play performance and strategizing for individual creativity. This finding matched their introspective learning domains in Gardner's Multiple Intelligences theory as depicted in Table 2.

On MI Profile According to Learning Domains

Table 2 Respondents' Multiple Intelligences

9 Multiple Intelligences	Group Average Mean	Learning Domains	Decision	Average Mean by Domains
1. Naturalist	69.41	Analytic	Moderately High	65.30 (Moderately High)
2. Musical	63.53	Analytic	Moderately High	
3. Logical	62.95	Analytic	Moderately High	
4. Existential	85.88	Introspective	Extremely High	82.94 (Extremely High)
5. Intrapersonal	92.94	Introspective	Extremely High	
6. Visual	70.00	Introspective	Moderately High	
7. Interpersonal	54.71	Interactive	Average	65.10 (Moderately High)
8. Kinesthetic	75.89	Interactive	Moderately High	
9. Verbal	64.71	Interactive	Moderately High	
Average Mean	71.11	Introspective	Moderately High	

The concept of the "safe-keeping self" is found to be extremely high in the following factors, as revealed on the FGDs.They are introspective learners.They are deeply intrapersonal and existentialist individuals

possessing five cultural factors, in which Eisner (1997) emphasized the role of culture in processing representation and forming minds. They were raised in sheltered homes with a one-daughter syndrome wherein they were closely raised and monitored in the family. They were raised with a strong parental orientation, strong family ties and stern family regulations. They possessed awareness of self-reservation that led them to think before they needed to act.They were trained to be more mature at an early stage in life. Nine of them were the eldest in the family where Filipino culture shaped them to be responsible and protective to their siblings. They acquired a certain form of "social masking", a camouflage of one's prejudices from others for self-reservation. Social masking refers to Jung's archetype of the person's collective unconscious or "persona" that we wear among different groups and situations to shield the ego from negative images (Kendra, 2014). Their narratives support social masking of reality in each of the following vignettes across learning domains, as a subjective manifestation of the importance of their personal values. On the first vignette:

> *"I'm okay with writing, depending on my moods. I don't easily get bored reading especially books that talk about man and society. I'm good at writing scripts and creating stories. I also write poems and make commercial dialogues. I also love reading most specially stories that are written by famous writers. I love writing stories and reading books".*

This was a classic ***wise old man archetype*** of seeking knowledge and wisdom. They claimed these narratives to project a verbal-linguistic being; however, the FGDs revealed that these narratives are products of being extremely introspective, which are attributed to factors such as introversion, constant exposure to reading and writing, and engagement in campus journalism. On the second vignette:

> *"I love acting. I'm good in dancing. I easily learn new dance steps. I love travelling and exploring new things. I love playing volleyball. I love dancing."*

This was the ***child archetype*** of longing for innocence, rebirth, and salvation. This social masking showed gestures and bodily movements through self-introspection. Based on actual observation of their play and dance presentations, they danced with feelings and projection. They internalized their roles first before they could act very well in the actual play. These scenarios are attributed to exposure to relatives who worked in a regular television show, influence and imitation of the dancing movements

of the parents and the rest of the siblings, exposure to family members' love for travelling, and total learning exposure through competition in intramural celebrations during their basic education years. On the third vignette:

> *"I learned to socialize because it is needed to have friends. Life is so boring without someone to talk to".*

This was the ***maiden archetype*** of innocence, desire, and purity. These are the actual life's turning points - evident with a low average mean in interpersonal intelligence, through which consequently they realized the need for socialization with others, as the highest form of transcendence. On the fourth vignette:

> *"I'm good at planting crops and planting trees. I'm good at sketching landscapes like the views of nature such as the sunset, beaches, and forest".*

This is the ***mother archetype*** of being nurturing and comforting with nature. When it comes to the analytic domain of being naturalistic, logical, and rhythmic, they maintained this mask to be a lover of nature. By being introspective, they used nature as a nurturing ground for reflection and discernment for possible action. One of the respondents said that he loves plants because he lives on a farm, wherein he was surrounded by neighbors who were farmers during the elementary years. His teachers urged the entire class to participate in backyard gardening. A realization was made that the need for food depends on nature and the love for plants. Learning nature sketching was dependent on the place where one of the respondents lives. A place near the beach facing the morning sunlight inspired him to become a visual artist with the rest of his siblings. This set of masks, once triggered, would lead to catharsis (one's turning points or "aha" moments) that changes our predetermined view about life, to which brain plasticity advocates strongly conformed as a cornerstone for change in response to external experiences. On the fifth vignette:

> *"I'm good at playing the guitar. I love composing songs and I also like singing. I have been joining singing contests since elementary grades".*

Music is also used for social masking as another example of a child archetype. One of the respondents revealed that her family kept on transferring from one residence to another since she was young, and one way to experience a breather from puzzling scenario was to keep on reflecting, by

composing songs and singing when she woke up early in the dawn. Her musical identity was also influenced by her mother who beautifully played a guitar from whom she learned a lot of this craft. Another inherited her singing ability from her family and was nurtured more in school since the second year high school. Another one also learned singing from her music teachers and was greatly influenced by the social environment of the university chorale.

On Personality Traits

Using the list of animals to be used in life's metaphor, 62.5 % of the respondents opted to choose the "dog", which represented their personal trait of being friendly and loyal to commitment, and protective of somebody. *"I'm approachable, open-minded, and listen to someone's feelings and very much willing to comfort someone who is downtrodden. I will be friendly to my students, guide them the proper way, and comfort them, when they have problems. I need to implement a friendly environment in the class and protect my students from harm".*

When asked with whom they would like to work in a metaphoric way, the "dogs" would like to socialize with the group of farm animals such as the "water buffalos" and the "goats". While the rest wanted to socialize with the "butterflies", the "dolphins", the "lions", and the "tigers". Those people who represented the "goats" were calm, the "water buffalos" were hard-working, the "butterflies" are light-hearted, the "dolphins" are meek and obedient, the "lions" and the "tigers" were wild or strong. This context implied that these respondents were friendly, but hesitant; they needed assurance to be calm, diligent, light-hearted, meek, obedient, and strong with their exposure to the social environment.

On the other hand, there were 31.25% who chose the "fresh-water buffalo", which represented their personal trait of being industrious, hardworking, and strong. They would like to work with the "dolphins" because they are obedient and optimistic in life. Amidst this, there were also respondents who compared themselves to a "tiger" (a symbol of powerful energy), the "lion" (a symbol of royalty and bravery), the "fox" (a symbol of intelligence and diplomacy), the "butterfly" (renewal and happiness), the "ant" (patience, teamwork, perseverance), and the "dolphin" (love, balance, and optimism) with a lower percentage. The "tigers" would like to work with the "foxes" because they can blend to be socially aware in the group. The "lions" like to work with the "dolphins" in order to avoid life's boredom.

Table 3 Universal Thinking Styles of the Respondents

Quadrants	Average Mean	Total Average Mean	Rank	Interpretation
A	12.38			Double Dominant Left Brain
B	17.19	**14.78**	**1st**	Realistic/common sense
C	6.50			Double Dominant Right Brain
D	12.56	9.53	4th	Idealistic/intuitive
A	12.38			Double Dominant Cerebral
D	12.56	**12.47**	**2nd**	Cognitive/pragmatic
B	17.19			Double Dominant Limbic
C	6.50	11.85	3rd	Visceral/instinctual

Table 3 presented the average mean of 14.78 that depicted the respondents' left brain dominance. As exposed to facts related to human life, the result revealed that they were realistic and used their common sense in responding to challenges. This cognitive profile was supported by the average mean of 12.47 that indicated double-dominant cerebral with practical ways in responding to realities. They were found weak in intuition and the use of instinct and muscles in responding to challenges.

On Values and Attitudes toward Social Studies Content Knowledge

Table 4Level of Attitudes toward Anthropological Content Knowledge

Quadrants	Q1	Q6	Q23	Q48	Q49	Average Mean	Interpretation	Disciplinal Finding
A	25.00	6.25	6.25	0	6.25	8.75	Needs Improvement	Good Attitude
B	6.25	31.25	31.25	56.25	81.25	**41.25**	Good	
C	68.75	50.00	31.25	18.75	0	33.75	Satisfactory	
D	0.00	12.50	31.25	25.00	12.50	16.25	Needs Improvement	

The average mean of 41.25% revealed that the respondents had a good attitude toward anthropological content knowledge evident in being organized. This was supported when asked about these situations: first, "*A heap of black ants found a territorial space in your closet. People say that this brings more money in the family*". It was revealed that 56.25% organized ways on how to find money; second, "*You are different from your brothers and sisters in terms of physical appearance. You suspect that you are not a legitimate sibling*". They responded by interviewing existing relatives about it in order to get things done.

However, they were found strong emotionally in quadrant C by painful realities like, *"A member of your family died in an accident*". There were 68.75% who responded that they cried for the loss and 25.00% opted to

proceed to the funeral home. When confronted by this situation "*You are sitting on the bench found at the left side of the park. You see two colorful butterflies flying in the garden"*, 50.00 % of them said that they smiled while looking in which direction the butterflies flew. When 31.25 % said that they had to take photos or videos of these butterflies, then obviously, the tendency to go back to quadrant B becomes their compulsive dominance. This was enhanced, when another situation was given "*You see flowers blooming in the garden after waking up in the morning*". Momentarily, there was an emotional response of feeling relieved from worries and imagining how these flowers bloomed. But these were transitory; the action of taking photos for the album was a quick response very evident of a typical quadrant B. The initial response of Quadrant C that shifted to Quadrant B showed the evidence of neural plasticity in the brain.

Table 5 Level of Attitudes toward Geographical Content Knowledge

Quadrants	Q5	Q11	Q12	Q32	Average Mean	Interpretation	Disciplinal Finding
A	50.00	50.00	93.75	25.00	54.69	Good	Good Attitude
B	25.00	18.75	0	6.25	12.50	Satisfactory	
C	18.75	31.25	0	0	12.50	Satisfactory	
D	6.25	0.00	6.25	68.75	20.31	Satisfactory	

The average mean of 54.69 % showed that the respondents had a good attitude toward geographic content knowledge evident in being realistic and critical as revealed in the given situations. The first situation, "*The school sends you to a place for a seminar that you have never been to*". Half of the respondents asked for certain itineraries or location guides, while 25.00% of them would search the net for the specific location of the place. These jibed with quadrants A and B with typical left-brain dominance. Second situation, "*We are experiencing the unprecedented effects of climate change now like heavy rains that cause floods and soil erosion".* Half of the class responded that they would be critical about this issue, while 31.25% were emotional and wanted to write poems expressing their sentiments. A stronger response was to be more critical in the third situation. "*You notice a smoke-belching vehicle running so fast on the road"*. 93.75% responded to report it to the concerned authorities, a critical response to curb possible health risks. When confronted with this situation *"Others said that the Republic of the Philippines seldom achieves unity because of its archipelagic setting"*.68.75% responded to generate the people's response about it, evident of a quadrant D compulsion, while 25.00% were critical in seeking the needed evidence in quadrant A. In this context, the respondents were cognitive and at the same time pragmatic, indicative of a double dominant cerebral learning system.

Table 6 Level of Attitudes toward Historical Content Knowledge

Quadrants	Q17	Q18	Q19	Q20	Average Mean	Interpretation	Disciplinal Finding
A	12.50	0	50.00	37.50	25.00	Satisfactory	Good Attitude
B	87.50	87.50	18.75	12.50	51.56	Good	
C	0	12.50	0	0	3.13	Needs Improvement	
D	0	0	31.25	50.00	20.13	Needs Improvement	

When confronted with historical contexts, the respondents were strong in quadrant B when it comes to selected topics in Philippine History. In the first context, *"Magellan was killed by Lapu-lapu. Granting that you were a witness to that event, what would you do?"* To provide a detailed documentation of the event represented 87.50 % of the responses, while 12.50% said that they had to analyze what provoked Lapu-lapu's anger. This is an obvious double dominant left brain. When exposed to the second context, *"Jose Rizal founded the Propaganda Movement with the ultimate aim of Spanish reformation in the Philippines".* This represented the same percentage response (87.50%) to the first context; they said: to write a memento for its documentation, while 12.50 % lamented, rejoicing that at least someone initiated the reform, a classic representation of a double dominant limbic learning system. When given this situation *"Science subjects were not introduced in the curriculum during the Spanish occupation in the Philippines"*, half of the respondents said that they would make an investigation on why the administration decided not to, while 31.25% would visualize the life style scenario when science subjects were not offered. These resulted in a double dominant-cerebral learning system. When exposed to East Asian History, it showed a consistent finding in this situation, *"Emperor Shih Huang Ti constructed the Great Wall of China for the full security of the country from the attacks of the barbarians"*. Half of the respondents were speculative of the aftermath of its construction, and 37.50% remained analytical in terms of its scope.

Table 7Level of Attitude toward Economics Content Knowledge

Quadrants	Q9	Q10	Q22	Q30	Q37	Q43	Q46	Average Mean	Interpretation	Disciplinal Finding
A	25.00	87.50	6.25	18.75	31.25	6.25	31.25	29.46	Satisfactory	Satisfactory Attitude
B	75.00	0	6.25	68.75	68.75	25.00	25.00	28.57	Satisfactory	
C	0	6.25	0	0	0	43.75	43.75	19.64	NI	
D	0	6.25	87.50	12.50	0	0	0	22.31	Satisfactory	

Table 7 presented the respondents' satisfactory attitude toward economics content knowledge. There were three contexts that comprised

Quadrant B. First, when confronted with this situation, *"When you visited the grocery lately, you found that the prices of basic commodities had increased. What would you do?"* They responded to initiate possible means to tighten their budget that constituted 75.00% of the total responses. Second, *"A friend borrowed money from you. For a long time, she did not bother to return it on the day promised"*. 68.75% responded to plan for a perfect time to tell her about it. This was consistent with the third context, when asked *"Your children are in need of new pairs of shoes. But, you ran out of money to buy these for them"*. 68.75% responded to let the children understand the situation. On these three contexts, they ranked second in Quadrant A, as they wanted to verify the cause of the price increase in the first situation, to analyze how she could be reminded about it in the second situation, and to find money to buy these shoes ranked 18.75 to 31.25% respectively. These ranks fluctuate to Quadrant A. Once confronted with this context, "*In progressive taxation, the higher your income, the higher is the tax"*. The majority responded (87.50%) that they would obey with it for the country's progress and development.

On the other hand, when respondents were given two sensitive contexts, Quadrants A and B shifted to Quadrant C. First, "*Your loved one is in need of money in the hospital to save his life. But you have insufficient savings to pay the hospital bills"*. Second, *"You are impoverished now. You want to outgrow this situation in the future"*. These contexts obtained 43.75% responses; they controlled their emotions regarding the first situation and wanted to be more optimistic in life most of the time in the second situation, though quite emotional, but they responded 25.00% as second in rank on both contexts, such as; listing down the needed expenses and the needed amount to lend in the first context and organizing personal activities that would achieve this aim in the second context. This shifted to a Quadrant B attitude, consistent with the first set of contexts mentioned above. However, when their right brain mode was focused, the respondents were consistent when confronted with this last situation, "*Due to our changing climate condition, the agriculture and livestock industries are seriously affected which consequently made the prices of agricultural products increase. If given a chance to curb this situation, what would you do?"* They responded to create a mechanism that protects the crops from its present condition, a shift from quadrant C to quadrant D. These shifting patterns showed a consistent, pragmatic, and commonly sensitized brain-dominance of the respondents.

Table 8Level of Attitudes toward Sociological Content Knowledge

Quadrants	Q7	Q8	Q21	Q25	Q26	Q31	Q36	Q38	Q40	Q42	Q46	Ave. Mean	Interpretation	Disciplinal Finding
A	6.25	43.75	0	0	18.75	37.50	25.00	12.50	6.25	0	31.25	16.48	NI	Satisfactory Attitude
B	50.00	25.00	81.25	6.25	12.50	43.75	0	0	0	87.50	25.00	30.11	S	
C	37.50	6.25	0	0	56.25	6.25	0	0	6.25	12.50	43.75	15.91	NI	
D	6.25	25.00	18.75	93.75	12.50	12.50	68.75	87.50	87.50	0	0	37.52	S	

Table 8 depicted four contexts provided to the respondents that showed a high response to Quadrant B. First, 87.50% responded to find momentarily a safer place to stay in when confronted with this situation, *"Your house was burned together with other houses in the village"*. Second, 81.25% responded, to provide valuable projects for farmers to improve production in response to the situation *"Most people from the rural areas flocked to the cities to find work leaving the farmers idle that contributed to the inadequacy of the country's agricultural needs*". Third, 50.00% responded to planning how to approach her to cross the street with this situation "*You see an old woman having difficulty crossing the street"*. Lastly, 43.75% responded to find time to reflect on what to do about this situation, "*Nardo's girlfriend (Liza) had another man, and she kept Nardo blinded about the relationship. If you were Nardo once you knew the truth, what would you do?"* However, 37.50% shifted to Quadrant A to confront and ask Liza why she did it. Quadrant A was sustained in another situation, *"An amputated beggar is asking for help in front of the church"* with 43.75% to give him money for food, while 25.00% in both quadrants B and D responded to call the welfare agency for possible help and bring him to a safer place and provide his needs.

They remained steadfast in quadrant D, when confronted with four additional contexts. *"While attending a mass inside the church, you notice the noise of 5 persons who were not paying attention to the priest's homily".* In this context, 93.75% responded to tell them to pay attention and give a smile. In another context*, "You had a quarrel with your neighbor regarding the use of a parking space"*, 87.50% of the respondents would negotiate a scheme wherein two of them could use the parking space. The responses to these three situations were consistent with their responses to two additional situations. In, "*You had a little misunderstanding with your teacher over a certain issue"*, still 87.50% of the respondents wanted to talk to the teacher and reconcile with his or her on the issue. When, *"You saw your father had*

another woman. When you tell your mother regarding this, she would surely have a heart-attack", 68.75% responded that they wanted to confront the father regarding his secret, while only 25.00% would remain critical about the best time to tell their mother regarding it. There were only two situations in which the respondents turned emotional. First, "*Your life is impoverished now. You want to outgrow this situation in the future*", 43.75% responded that they wanted to pursue and be more optimistic in life most of the time, while, 25.00% to 31.25% had varied perspectives that dwelt in A and B quadrants such as: thinking of ways on how to do it and in organizing personal activities that would achieve this aim. Second, *"A wallet was left inside the taxi. You noticed it a few minutes after you got inside"*, 56.25% responded to call up the phone number found inside it because they worried about the owner's situation, while 12.50% to 18.75% dwelt on A and B quadrants such as: thinking on how to return the wallet to the owner and bring this to the radio station for announcement, as a manifestation of honesty.

Table 9 Level of Attitudes toward Psychological Content Knowledge

Qnts	Q2	Q3	Q4	Q24	Q27	Q28	Q29	Q34	Q35	Q39	Q41	Q50	Ave. Mean	Interpre-tation	DF
A	100	6.25	0	0	25.00	0	18.75	81.25	0	6.25	18.75	37.50	24.48	S	
B	0	81.25	31.25	62.50	43.75	68.75	12.50	12.50	25.00	25.00	43.75	56.25	38.54	S	SA
C	0	6.25	25.00	25.00	12.50	18.75	50.00	0	12.50	12.25	6.25	6.25	14.58	NI	
D	0	6.25	43.75	12.50	18.75	12.50	18.75	6.25	52.50	56.25	31.25	0	22.40	S	

The satisfactory attitude of the respondents toward psychological knowledge was attributed to Quadrant B compulsiveness in six contexts. First, *"The examination is fast approaching"*, 81.25% responded to prepare for a study schedule. Second, "*You are the only monkey in the group of lions in the wild. You are scared that you will be devoured by them"*, 68.75% responded to climb up to the highest branch of the tree. Third, *"You are exhausted after a long test"*, 62.50% responded to take a break and relax. Fourth, *"The rest of your friends were invited by Ana to a party except you",* 56.25% responded to stay in the house and sleep. Fifth, *"You did not know that you were sitting beside a bad guy inside a passenger jeep until such time when he announced hold-up, dictating to you and the rest of the passengers to surrender your valuables"*, 68.75% responded to surrender their valuables. Sixth, *"Your wallet was stolen by someone who badly needed money for a surgical operation of his son"*, 43.75% responded to negotiate that the money would be returned sooner or later after the operation. Being consistent with the double dominant left brain, the respondents showed better indication of an A Quadrant in two contexts. First, "*The next day, you heard from the news that you won in a lottery*", 100.00 % responded to verify from

the agency first. Second, *"You are one of the passengers of a sinking ship. You want to save your life because you are the only breadwinner in the family"*, 81.25% find the best way to secure one's life, as a consistent manifestation of self-protection.

There were also four contexts in which the respondents were classified according to their double dominant left brain. First, *"There was a race participated in by the horse, the dog, the chicken, the snake, and the turtle. As a turtle, you wanted to win the race over the rest of the other contenders"*. There were 50.00% who responded to be friendly with the rest of the animals, while 18.75% wanted to convince them to have a long nap and imagine that they would fly like an eagle. This pragmatic move turned them to a shifting dominance to Quadrant D in three more contexts. First, "*In a natural accident, the members of the family were missing. You were left alone as the only survivor"*, 52.53% responded to initiate ways to find them and 25.00% respondents to teach themselves that life must go on. Second, *"You met your best enemy alone inside the elevator"*, 56.25% responded, "Imagine that the two of you are okay" and 25.00 % responded to be polite and say hello. Third, "*Your crush is approaching*", 43.75% said to savor the moment of his or her presence and 25.00 % to 31.25 % said to feel comfortable about his or her presence and establish a good rapport or relationship with him or her.

Table 10Level of Attitudes towardCivics and Political Science Content Knowledge

Quadrants	Q13	Q14	Q15	Q16	Q33	Q44	Q47	Average Mean	Interpretation	Disciplinal Finding
A	50.00	50.00	18.75	43.75	43.75	12.50	12.50	33.04	Satisfactory	Satisfactory Attitude
B	12.50	0	25.00	50.00	0	50.00	18.75	22.32	Satisfactory	
C	6.25	12.50	12.50	6.25	0	0	56.25	13.39	Needs Improvement	
D	31.25	37.50	43.75	0	56.25	37.50	12.50	31.25	Satisfactory	

The satisfactory attitude of the respondents toward civic and political science content knowledge was attributed to Quadrant A compulsiveness in two contexts. First, *"On the Right Road (Sa Daang Matuwid) is the battle-cry of PNoy's political administration that contributed the socio-economic standing of the Philippines in Asia"*, 50.00 % responded to find possible indicators of this scenario. Second, *"the Bangsa-Moro Islamic Freedom Fighters (BIFF) and the government panel have created tension among the masses in Mindanao"*, 50.00% responded to question the BIFF's existence. With these two situations, 31.25 % to 37.50% responded to speculate for possible growth before he steps down the presidency in the first context and imagine if the government gives them full autonomy in the second context.

This is a good shift to a Quadrant D perspective. In another situation is, *"When you die, God will give you a special mission to go back to the Philippines to end the government officials' corrupt practices. Once the mission is accomplished you are assured of eternal life in heaven"*, 56.25% responded to use different strategies to spot the corrupt officials. "When you noticed that someone detests corrupt practices in your school", 43.75% responded to integrate this issue in the classroom discussion. This view was enhanced in the subsequent context *"There are so many drug dependents in your barangay. As a barangay chairman"*, 37.50% responded to coordinate with the police authorities and the members of the drug enforcement agency to eliminate the problem, while 50.00% responded to organize projects for the youth to avoid drugs, evident of Quadrant B attitude. Another situation that yielded a Quadrant B attitude was when *"Someone is accused of a crime which she has never committed"*, 50.00% responded to provide a detailed investigation of her case. Only in one situation did the respondents respond to be emotionally flexible with a 56.25% response in this given situation "*You live in a foreign land. But, you still cling to being a Filipino".*

On Value Judgment

Table 11 The Totality of Judgment in Social Studies Content Knowledge

LOJ	Anthro.	Geog.	History	Econ	Socio	Psych	Pol. Sci.	Total	%	Rank	Disciplinal Finding
SA	45.84	45.13	**54.58**	**53.54**	**59.32**	**54.49**	41.67	354.57	**50.65**	**1st**	There is an average level of Strong Agreement.
A	**51.58**	**50.54**	43.66	42.83	37.55	38.32	**53.33**	317.81	45.40	2nd	
U	2.58	4.33	1.86	3.63	3.13	6.47	5.00	27.00	3.86	3rd	
D			.35			.72		1.07	.15	4th	
SD											
Total	100	100	100	100	100	100	100		100		

The average level of strong agreement in Social Studies content knowledge, which was marked 50.65%, was an indicator that the respondents' judgment toward their chosen area of specialization was appropriate. This was prevalent in 59.32% knowledge in sociology, 54.58% knowledge in history, 54.49% knowledge in psychology, and 53.54% knowledge in Economics. These four areas in the Social Science disciplines represented the most familiar content in the professional courses in Education which are anchored on sociological and psychological theories and principles like: Child and Adolescent Development, Facilitating Human Learning, Social Dimensions of Education, and Principles of Teaching.

History and Economics courses were found to be dominant courses in their field of specialization, with more than 6 units offered under the BSED-Social Studies curriculum. Second in rank, the respondents had showed an average level of agreement with 45.40% content knowledge in the areas of anthropology (51.58%), geography (50.54%), and civic and political science (53.33%). This depicted a low indicator of less exposure or integration of these courses in the Professional Education and Specialization courses more especially in classroom instruction and assessment with professors who are competent to teach these courses as revealed in the focused-group-discussion. At the outset, the result would show that the respondents still need more exposure to the different contents, principles, competences, attitudes, and values of the Social Sciences before they could reach a 100% mastery of their chosen specialization.

Lived Experiences with Professors' Teaching Methods

As revealed, the following teaching methods enhanced the double-dominant left brain mode of the respondents that immersed them to be intrapersonal and existentialist. Zimmerman (1998) described learning in terms of self-regulated learning cycle phases consisting of three repeating stages: forethought, performance, and self-reflection (Weibell, 2011). These phases are repeatedly revealed among the four teaching methods identified that enhanced the introspective domains.

On the Lecture Method

This method of teaching utilized formal speaking engagements with students in a well-organized presentation. The lecture provides intrapersonal values such as independence, self-reliance, transcendence, and self-management. These values represent **life's transcendent purpose**. *"Lecture makes me independent and enables me to study and discuss things on my own. I discover things on my own and associate it with my previous experiences. Also, it enables me to work individually without needing to bother other people. I have to listen carefully and afterwards reflect and ask questions".* The lecture method also provides existential values such as freedom, choice, responsibility, and obedience. These values comprise **life's relentless tolerance**. *"If I don't like the lesson, I don't listen to the teacher. I become more independent to listen and jot down what I should have to write and not depend on my classmates. I can have my own choice whether or not to get all the information I need in pursuit of my idea with responsibility. I realized that every single person has the freedom to choose what he or she wants to learn".*

On Advanced Reading Strategy

This is a strategy for independent learning that provides intrapersonal values of self-direction and personal responsibility, which comprise **life's vigilant optimism**. *"I understand the lesson more if I read unknown topics and become more interested. I have enhanced my skills in reading and I can easily concentrate and understand what I am reading. It makes me become responsible on how to learn things on my own. It also gives me the idea on how to be efficient as a person in a way that whenever circumstances which are seemingly unfavorable occur, I would manage to get through then".* Through advanced reading the students can generate the values of readiness, discovery, and information as potential source for **life's banal knowledge**. "*I can read anywhere I want and can understand easily. It gives me the idea of being ready in whatever things are needed to be discovered. It equips me with information necessary in every single thing I do. It also gives me an idea of what things would look like if you are prepared and ready for a battle".*

On the Reporting Method

Reporting is one of the interactive methods which a teacher can use in the realization of lesson objectives. This provides intrapersonal values of awareness, trust, and cautiousness as potential source for **life's erudite prudence**. *"It challenges me to show that I can do things to make me realize that I am capable about my strength. It helps me gain confidence and trust. It makes me think deeper as a person. I become more aware of my actions and try to behave in a socially acceptable manner. It also makes me more careful and keen as a person".* Through reporting, the students are given full responsibility on the assigned topic that provides the existential values of confidence, interest, and encouragement as a potential source for **life's determination and willpower**. "*I'm confident when reporting because I'm more interested about the topic assigned to me. I decide on what words to use and provide more appropriate explanations during the actual report. It really boosts my confidence and self-esteem that encourages me to prove to others that I am capable".*

On the Exposition Method

Exposition is an elaboration and expansion of information which provide the values of carefulness, concentration, and authenticity. These values are the potential source of **life's realistic and critical judgment**. *"I always reflect on my words whether I can offend people or not. I can easily prepare my words to speak and get more concentration to listen. It makes me realize that I have the right to defend and voice out what I feel. It also gives me confidence to believe in myself. It made me realize that there is a need for*

us to be verbally critical as a person. Exposition can also provide existential values of generosity, assertiveness, and composure as potential sources for **life's strong belief system for personal maturity**. "*It helps me learn how to stand and defend my own. I become more mature in dealing with situations as much as possible. I maintain my composure and confidence".*

Conclusion

The social studies majors' assessment results between Gardner's Multiple Intelligences and Herman's Brain Quadrants were consistent as attributed to a Quadrant B (safe-keeping-self) traced a connection to a double-dominant left brain, that matched positively with MIs' introspective domain of being visual, intrapersonal, and existential and dowelled a cornerstone for building more pragmatic, commonly sensitized, transcendent, reflective, decisive, and dependable social studies majors. Though social masking was prevalent in their personal narratives and was found repulsive to existing realities of life, but they used it for self-preservation as a camouflage from harsh realities outside. What was hidden inside, they projected it to be friendly in search of social approval, an angst concealed within each of their personalities, which was attributed to other social factors, purged their inner voices to be heard in response to a quest for whole brain-system development. Their attitudes and values toward social studies areas remarked a high level of strong agreement, with average content knowledge, that still needed more attention for better instruction common to most areas among the social studies disciplines more especially in anthropology, geography, and political science where it is found less efficient.

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