

Integrated Arts-based Teaching (IAT) Model for Brain-based Learning

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Abstract

This study analyzes teaching strategies among the eight books in Principles and Methods of Teaching recommended for use in the College of Teacher Education in the Philippines. It seeks to answer the following objectives: (1) identify the most commonly used teaching strategies congruent with the integrated arts-based teaching (IAT) and (2) design an IAT Modelling for brain-based learning. This study employed a content analysis among the eight selected books in the study. Coding of the identified teaching strategies from 1 to 7 was matched into any of the four designated learning quadrants as illustrated in the flow chart (see chart instrument in the appendix). With grounded theory as framework, a critical analysis of the coded arts-based teaching strategies is interpolated to Hermann's Brain Quadrants. C1VAL is the first code for Visual Art for Learning; C2LAL is the second code for Art for Learning; C3TAL is the third code for Theater Art for Learning; C4MAL is the fourth code for Musical Art for Learning; C5LAL is the fifth code for Locomotor Art for Learning; C6CAL is the sixth code for Communication Art for Learning; and C7NAL is the seventh code for Naturalistic Art for Learning. To guarantee inter-coder consistency, internal and external validators are requested to ensure objectivity of results. After the analysis of these books, a documentation of an integrated arts-based teaching for brain-based learning was juxtaposed for modelling. The analyzed books in Principles and Methods of Teaching used in College of Teacher Education in the Philippines exhibited a lopsided distribution of communicative, theater, and musical arts-based teaching strategies, which conformed to the Filipinos' vivacious, chatty, and flamboyant traits of being Quadrants B and C, who are self-conscious, systems-focused, people-oriented, sentimental, and entertaining. Though the use of visual and literary arts was frequently reflected; but naturalistic and locomotor arts for dancing was infrequently codified, indicative that the outcomes for artistic creations and scientific inventions in Quadrants A and D were less likely met, evident to have shown a limited number of Filipino analysts, writers, composers, inventors, designers, and creative teachers the country has produced. With this, it is recommended that authors on Principles and Methods of Teaching may explore - revising their books, to ensure an equitable balance of arts-based teaching, addressing Brain-based Ambiguity Theory of Learning (BAT-L) in the 21st century.

Keywords: *Integrated Arts-based Teaching; Brain-based Ambiguity Theory of Learning (BAT-L)*

1. Introduction

Serving for more than two decades in full-time teaching has been a personal commitment to life's efficacy. The nobility of teaching is not only measured with how much accomplishment is achieved; but how many lives are touched by it, in order to become successful. The science of teaching follows the universal standards that measure the quantifiable outcomes in the aspects of its empirical processes. Its results are customized to extrapolate objective truth. In achieving this, learners find learning tedious, process rigorous, and lesson contents rigid. They are choked, infuriated: gasping out their learning frustration, which may affect the increasing number of school drop outs or truancy, and other forms of apathetic behavior, indicative of a teacher and learner's cognitive mismatch. If not intervened, this condition leads to suicide as shown in the '3 Idiots, where Dr. Viru Sahastrabuddhe (Mr. Virus) screwed students to pass a certain course requirement in engineering, which those who could not make it, feeling trapped, and aggravated by their parents' pressure, never hesitated to surrender life'. This movie is no difference to what happens in the Philippines lately, when two adolescent learners, who are cousins, in Daan Bantayan, Cebu,

commit suicide, when a parent complains for money contribution for projects required in school, feeling bad, his ward ended his life. Knowing such fate, the other cousin, whose clearance was not also signed by the teacher, because of no requirements in a certain subject, has also ended his life, a day after (Sunstar Daily News, 2015).

This misunderstanding between parents and their children, or any teacher in school, can lead to violence, just like the case of “Neil”, a poignant character in the “Dead Poet Society”. Neil committed suicide after feeling dismayed when his father prevented him from following his literary passion. These mentioned scenarios, obviously show that our teachers and parents need to rekindle the finer aspects of their teaching or guidance to preserve the balance of life, through the art of teaching as shown in the character of “Mr. Keating” (Robin Williams). Teaching as an art, demands teachers to be fully human, loving and compassionate to the learners, rather than the subjects they teach. They are expected to mold them and be successful in achieving their dreams, as exemplified by “Miss Gruelle” (Hillary Swank), a teacher who exudes a humanistic character, in “Freedom Writers”. We know that teaching is not a lost art, teachers need a constant reminder that: ‘success of our professions depends on the amount of love, grit, patience, and humility we model inside the classroom’. Promoting a harmonious learning environment can only be singled out; once the teachers maintain a happy classroom, where there is: joy and fun learning, freedom and maximum tolerance for everyone, and self-responsibility. Reminding this noble duty, US President Barack Obama, for Arts and Humanities month celebration this October, wishes that “we rely on the arts and humanities to broaden our views and remind us of the truths that connect us”. All these become possible through an incessant use of an integrated arts-based teaching, thus, this study is conducted.

Several theories in brain-based learning support the use of the arts as a vehicle to stabilize human emotions that eventually circuit neural connections responsible to retrieve prior knowledge and connect to present experiences, in order to construct meanings. Ned Hermann’s theory on Four Quadrants of the brain supports this context and offer opportunities for curriculum designers to fit quadrant modelling in the teaching and learning process (Hermann, 1999). Quadrant Model of Teaching is more meaningful, if it is done through the use of aesthetics, to increase the production of endorphins, in a most relaxed state of alertness, so that learning reaches its maximum potential. To Rinne, Gregory, Yarmolinskyaya, and Hardiman (2011), “placing information in some sort of context requiring learners to process information at a deeper level aids memory because it establishes a more elaborate memory trace”. This is a loop from the amygdala (seat of emotions) to the hippocampus (memory storage), when several dendrites are expanding, learning takes place in a satisfying experience. To Rooney (2004), arts-based teaching and learning practices raise students’ interest and motivation levels and, according to some reports, have improved cognitive skills for gains in academic achievement.

Based on the previous study, participants of the K to 12 training for Grade 10 social studies teachers have insufficient skills in the integration of creativity under the Quadrant D, which needs utmost attention (Inocian, 2015). This means that while most teachers are really found good in teaching memory and analyses of knowledge, giving exercises to enhance learners’ skills, indicate that they are proficient in Quadrants A and B. These are all indicators that teachers only give preference to the left brain perspectives. Thus, the side for Quadrants C and D for developing the right side of the brain is left unchallenged. In response to this finding, a follow up study venturing on arts integration in teaching has been prioritized. Integrated Arts-based Teaching (IAT) is the synchronized blending of the different arts in actual teaching, to promote brain-based learning. This primarily comprises the use of the visual arts, literary arts, theater arts, musical arts, locomotor arts, communicative, and naturalistic or the manual arts in the instructional process, as an implemented phase of the school curriculum, which are categorized into logical arts for Quadrant A, rhetorical arts for Quadrant B, dialectical arts for Quadrant C, and creative arts for Quadrant D.

MacLean’s Brain-based theory is one of the most prominent brain-based theories in the learning process, which every educator deserves to lean on. Kane (2013) concludes that one of the educator’s benefits is getting into constant research to update new methods, learning activities and strategies that create an environment for effective brain-based learning. She further expounds that, “*if we stop researching and enhancing the field of education, we fail to contribute to the success and future progression of the human race*”. This compels educators to plan instruction addressing the construction of meanings in a relaxed and non-stressful learning environment. To Jensen (2000), brain-based learning is a way of thinking about the learning process, and addressing a set of principles, knowledge and skills, which propels to make a better decision in the learning process.

Brain-based learning theory presupposes the interlinking connection between the use of traditional and modern philosophical theories in education that provide a meaningful experience in the learning process. Brain-based learning is espoused to have connection with other learning theories of Skinner’s Operant Conditioning, Dewey’s Progressivism, Vygotsky’s Social Development, Bruner’s Discovery Learning, Flavell’s Metacognition, Kohler’s

Insightful Learning, and other learning theories that provide a formidable legacy in a never-ending quest for quality learning.

2. Objectives of the Study

This study analyzes teaching strategies among the eight books in Principles and Methods of Teaching recommended for use in the College of Teacher Education in the Philippines. It seeks to answer the following objectives: (1) identify the most commonly used teaching strategies congruent with the integrated arts-based teaching (IAT) and (2) design an IAT Modelling for brain-based learning.

3. Methods and Materials

3.1 Research Design

This study employed a content analysis among the eight selected books in the study. Coding of the identified teaching strategies from 1 to 7 was matched into any of the four designated learning quadrants as illustrated in the flow chart (see chart instrument in the appendix). With grounded theory as framework, a critical analysis of the coded arts-based teaching strategies is interpolated to Hermann's Brain Quadrants. Quadrant A accesses the development of critical thinking skills; Quadrant B facilitates the development of communication and survival skills; Quadrant C nurtures the enhancement collaboration skills; and Quadrant D enables the promotion of creative thinking skills. C1VAL is the first code for Visual Art for Learning; C2LAL is the second code for Art for Learning; C3TAL is the third code for Theater Art for Learning; C4MAL is the fourth code for Musical Art for Learning; C5LAL is the fifth code for Locomotor Art for Learning; C6CAL is the sixth code for Communication Art for Learning; and C7NAL is the seventh code for Naturalistic Art for Learning. To guarantee inter-coder consistency, internal and external validators are requested to ensure objectivity of results, by providing them the eight copies of the analyzed sample books with pages flipped that serve as their review guide. After the analysis of these books, a documentation of an integrated arts-based teaching for brain-based learning was juxtaposed for modelling.

4. Results and Discussion

4.1 Code 1 Visual Art for Learning

Of the 13 listed visual arts strategies, 53.85% of these arts; charts, pictures, posters, graphs, cartoons, timelines, and models are recognized by Aquino (1988) and Heinich, Molenda and Russell (1985), enhancing learning. Six or 46.15% are not recognized among the other 6 authors: collage, graffiti, comic strips, painting, graphic organizer and scrapbook-making (See Table 1). The use of charts, pictures, and graphs provide analyses of information ideal for Quadrant A, which can be enhanced with the use of cartoons and timelines evident for Quadrant B. Though posters and models allow students to enhance their creativity under Quadrant D, these are inadequate. To Rosier (2010), visual art stirs the learners' emotion, once used in teaching; it enhances speed and efficiency of the cerebral cortex – a region involved in higher level functions most especially in the long-term memory. McClean (2012) also supports Rosier, when the limbic system of the brain converts human emotions from the amygdala to meaningful information in the short-term and long-term memory through the hippocampus. Once the learners are exposed to color and texture, these can create rich and stimulating environments for learning (Lackney, 1998).

Table 1. Visual Art

Utilized Arts	Reference Found	Pages	Brief Descriptions	Quadrants
1. Charts	Aquino, G. (1998). Principles and Methods of Effective Teaching	p. 484	These are visual materials that attract students' interest to provide information in a visually structured form.	A
2. Pictures	-do-	p. 486	These are illustrations of photographs, paintings, and drawings.	A
3. Cartoons	-do-	P. 487	These are drawings with exaggerated features or symbols which provide humor or satire.	B

4. Posters	-do-	P. 487	These are decorative, attention-getting placards which often contain drawings.	D
5. Graphs	Heinich, R., Molenda, M. & Russell, J. (1985). Instructional Media and the New Technologies of Instruction, 2 nd Ed.	p.94	These provide visual representation of visual data.	A
6. Timelines	-do-	p.93	These illustrate chronological relationships between events.	A
7. Graffiti	Not found	Not found	This is form of abstract art expressing students' pent up emotions in a specific selection.	B
8. Comic Strips	-do-	-do-	It is a visual presentation using humorous dialogues.	B
9. Painting	-do-	-do-	The use of paint and brush on canvass to represent realistic or abstract concepts.	D
10. Collage	-do-	-do-	The process of putting all discarded materials to form a masterpiece representing an issue.	D
11. Graphic Organizers	-do-	-do-	It is a form of visual scaffolding of lessons through webs or charts.	A
12. Scrapbook-making	-do-	-do-	It is an art project where students' learning applied in most creative way.	D
13. Model or miniature	Aquino, G. (1998). Principles and Methods of Effective Teaching Heinich, R., Molenda, M. & Russell, J. (1985). Instructional Media and the New Technologies of Instruction, 2 nd Ed.	p. 489 p.99	It is a copy or a reproduction of a real thing like cut-a-ways and mock-ups. It is a three-dimensional representation of a real thing.	D

4.2 Code 2 Literary Art for Learning

The use of literary arts strategies (See Table 2) exhibits 63.64% potentiality for developing the Quadrant D attributes for products and performances. Shah, et al (2013) rejoins when creative writing is combined with cognitive writing processes: the use of the literary arts can enhance memory, by integrating information from various sources, writing compositions eventually become spontaneous. Through literary arts, learners think deeply. Rinne et al. (2011) suggest teachers call upon students to write a story, a poem, and a song or create a piece of art incorporating the information they want students to learn. But of the 11 identified arts, only 30% journal writing, storytelling, and oral reading; are identified by Calderon (1998) and Corpus & Salandanan (2003). 70% of poetry-writing, editorial writing, essay writing, interpretative reading, oration, declamation, and news casting are not found among the other five other books.

Table 2. Literary Arts

Utilized Arts	Reference Found	Pages	Brief Descriptions	Quadrants
1. Story-telling	Calderon, J. (1998). Principles and Practices of Teaching	p. 162	It is the creative telling of a story by the teacher or student.	C
2. Poetry writing	Not found	Not found	It is a creative using rhyme with connotative meanings.	D
3. Editorial writing	-do-	-do-	It is an article that represents the newspaper's opinion on an issue.	D
4. Essay writing	-do-	-do-	It is a form of writing that analyzes an issue or opinion.	D
5. Interpretive Reading	-do-	-do-	It is a dramatic reading that a reader shares the interpretation with the author in an audience	C
6. Interpretative Reading	-do-	-do-	It is an oral reading that the reader's interpretation of the material vita to convey the vicarious experiences of the audience.	C
7. Oration	-do-	-do-	It is a formal public speech address to a specific occasion.	D
8. Declamation	-do-	-do-	It is a famous speech where the speaker re-interprets the original piece with power.	D
9. News casting	-do-	-do-	It is a typical radio or television broadcasting replicated in the classroom.	D
10. Journal writing	Corpus, B. & Salandanan, G. (2003) Principles and Strategies of Teaching	pp. 48-49	It is the writing of a simple daily record or a diary.	D
11. Oral Reading	-do-	p. 54	It is a teaching that requires the student to find information from the printed educational materials.	B

4.3 Code 3 Theater Art for Learning

The seven identified theater arts strategies in Table 3 enhance Quadrant C attributes. The analyzed books exhibit 71.43% of these arts for games, pantomimes, simulations, role plays, and dramatizations. The remaining 28.57% for comical and chamber theater are not mentioned among the 8 writers. According to Philipps (2013) theater arts benefit to build learners' confidence and take command on stage in front of large audiences, where they make mistakes and learn from them during practices or rehearsals. This supports the finding of American Alliance for Theatre and Education (2014) that drama improves academic performance, attendance, reading comprehension, and builds self-esteem, compared to non-drama performing learners.

Table 3. Theater Arts

Utilized Arts	Reference Found	Pages	Brief Descriptions	Quadrants
1. Game	Heinich, R., Molenda, M. & Russell, J. (1985). <i>Instructional Media and the New Technologies of Instruction</i> , 2 nd Ed.	p. 306	It is an activity in which participants follow prescribed rules that differ from those of reality as they strive to attain a certain goal.	C
2. Pantomime	Inocian, R. (2010). <i>Fundamentals of Teaching</i> , 1 st Ed.	p. 289	It refers to an activity where there is no script, no dialogues, no costumes and props are required.	C
3. Simulation	Corpus, B. & Salandanan, G. (2003) <i>Principles and Strategies of Teaching</i> Acero, V., Javier, E. & Castro, H. (2000). <i>Principles and Strategies of Teaching</i>	p.38 p. 117	It is a contrived presentation of reality. It is intended to represent a work, a problem situation, or a real-life situation.	C
4. Role Play	Calderon, J. (1998). <i>Principles and Practices of Teaching</i> Acero, V., Javier, E. & Castro, H. (2000). <i>Principles and Strategies of Teaching</i>	p. 246 p. 116	It is acting out an emotional reaction to a problematic situation. It is dramatic enactment between two or more people intended to represent a situation	C
5. Dramatization	Calderon, J. (1998). <i>Principles and Practices of Teaching</i>	p. 245	It is telling a story through a play or drama.	C
6. Comical Skit	Not found	Not found	It is a satirical of humorous story that tells a lesson.	C
7. Chamber Theater	-do-	-do-	It is a method of adapting a literary original works on stage with minimal and suggestive settings.	C

* *Not found among the studied books*

4.4 Code 4 Musical Art for Learning

Table 4 illustrates a 100% potentiality for developing Quadrants A, B, and D attributes, with 70% recognition in the books of Calderon, (1998), Corpus & Salandanan (2003), Acero, Javier, and Castro (2000) and Inocian (2010). This includes the actual singing, humming, jingle, rap, chanting, suggestopedia, and musical instrument manipulation, which allow them to think creatively and develop perseverance and focus (Philipps, 2013). Lyrical analysis, beat-box, lyrical compositions are not mentioned by the eight authors.

Table 4. Musical Art

Utilized Arts	Reference Found	Pages	Brief Descriptions	Quadrants
1. Singing	Calderon, Jose F. (1998). <i>Principles and Practices of Teaching</i>	p. 248	It is a means of expressing emotions.	B
2. Jingle	Corpus, B. & Salandanan, G. (2003) <i>Principles and Strategies of Teaching</i>	p. 44	It is a rhyming of tunes and sounds.	D
3. Beat-box	Not found	Not found	It is vocal percussion using mimicking.	D
4. Lyrical Analysis	-do-	-do-	It is an analysis of a certain lyrics of the song, which have	A

5. Lyrical composition	-do-	-do-	connections to the concepts found in a lesson selected. It is a lyric poem with rhymes.	D
6. Humming	Inocian, R. (2010). Fundamentals of Teaching, 1 st Ed.	p. 290	It is a musical activity with the use of droning, whining, and buzzing primarily blending the desired human sounds.	D
7. Rap	-do-	-do-	It is a musical activity where students sing and dance depicting a certain concept or issue.	D
8. Chanting	-do-	-do-	It is musical mantra of students' composition associated in the lesson selected.	B
9. Suggestopedia	-do-	p. 291	It is a writing activity with the use of background music, in order to generate interest to express out their emotions.	B
10. Musical instrument manipulation	-do-	p. 291	This is playing the musical instrument in order to produce a harmony of sounds.	B

4.5 Code 5 Locomotor Art for Learning

Table 5 shows a no indication among the 8 books studied, as regards in the list of the 4 locomotor or performance arts teaching. The lack of knowledge about these arts is the reason why these are not recognized among 8 authors. Once known, these enhance the kinesthetic intelligence for Quadrant C learners. Interpretative dance, dance drama, creative and silhouette dancing need to be given an epitome in the teaching and learning process. In the performing arts, the reward for dedication is the warm feeling of an audience's applause, making students' efforts worthwhile (Philipps, 2013). Through movements in a certain space either indoor or outdoor, students can provide oxygenation in the cerebral cortex to make active learning possible (Lackney, 1998) in Hasliza and Emilin (2012).

Table 5. Locomotor /Performing Arts

Utilized Arts	Reference Found	Pages	Brief Descriptions	Quadrants
1. Interpretative Dance	Not found	Not found	It is a theatrical dance where the dancers' movements depict an emotion or tell a story.	C
2. Dance Drama	-do-	-do-	It is drama presented through dancing with a frequent interpretative dialogue.	C
3. Creative Dancing	-do-	-do-	It is a type of dance that reveals the spirit or motivation of the dancer to the audience.	C
4. Silhouette Dancing	-do-	-do-	It is a creative dancing using the dancers' shadows like the El Gamma Phinumbra.	C

4.6 Code 6 Communicative Art for Learning

Table 6 shows 86.67% on the use of communicative arts teaching such as: brainstorming, buzz session, talk show, debate, interview, think-pair-show, discussion, panel discussion, symposium, forum, caucus, dialogue, and colloquium are art strategies that enhance the Quadrant C potentials, as revealed by Calderon (1998), Acero, et al (2000), Inocian (2010), and Garcia (1989). There are 13.33% of the communicative art strategies such as: literature circles and learning together, which the 8 authors have missed out, as potential teaching strategies for cooperative learning. Learners' real life experiences can also enhance effective communication (Ozden and Gultekin, 2008).

Table 6. Communicative Art

Utilized Arts	Reference Found	Pages	Brief Descriptions	Quadrants
1. Brainstorming	Calderon, J. (1998). Principles and Practices of Teaching	pp. 207-208	It is a group meeting to stimulate creative thinking, develop new ideas, and the like.	C
2. Buzz session	Acero, V., Javier, E. & Castro, H. (2000). Principles and Strategies of Teaching	p. 118	It is the process of getting as many ideas without prejudice or criticism.	C
3. Think-pair-share	Acero, V., Javier, E. & Castro, H. (2000). Principles and Strategies of Teaching	p. 18	It is a small group (5 or 6) assembled to work on common problems or issues and work out a solution and report to a larger group.	C
4. Interview	-do-	p. 117	It is a discussion of two students who face to each other sharing about any topic, given with permission to share it with others in the class.	C
5. Literature circles	Acero, V., Javier, E. & Castro, H. (2000). Principles and Strategies of Teaching	p. 133	It is an in-depth treatment of a subject or an issue.	C
6. Learning Together	Garcia, M. (1989). Focus on Teaching, Approaches, Methods, and Techniques	p. 97	It calls for an active interaction between the interviewer and the interviewee with a certain topic.	C
7. Discussion	Not found	Not found	It is a discussion strategy where each member is assigned to perform a different role of the lesson assigned.	C
8. Debate	-do-	-do-	It is a group activity where each member of the group has a specific assignment on divided topics in a certain lesson for discussion.	C
9. Colloquium	Calderon, J. (1998). Principles and Practices of Teaching	p. 205	It is a form of lecture, short or long, which is an expression or explanation, a description or a narration.	C
10. Symposium	-do-	p. 208	It is a formal presentation of arguments of both sides of a question before an audience in accordance with standardized procedure.	C
11. Panel Discussion	-do-	p. 208	It is an informal conference of discussion.	C
	-do-	p.206	It is a discussion of several persons who are invited to speak on a controversial issue during which the discussants present their viewpoints regarding the subject.	C
	Calderon, J. (1998). Principles and Practices of Teaching	p. 206	It is a form of discussion with two to four, but not more than four members assigned to discuss the different aspects or	C

	Garcia, M. (1989). Focus on Teaching, Approaches, Methods, and Techniques	p.90	parts of a subject or topic. It is a direct discussion where panelists exchange ideas among themselves and react directly with each other, with the help of a moderator.	
12. Forum	Inocian, R. (2010). Fundamentals of Teaching, 1 st Ed.	p. 289	It is a facilitated discussion address to a bigger crowd or a class where majority of the students are expected to express their views.	C
13. Caucus	-do-	p. 289	It refers to a conference of five members discussing on important issues or problems that needed immediate solutions.	C
14. Talk show	-do-	p. 288	It is a discussion where the host facilitates guests to engage in the interplay of different views.	C
15. Dialogue	Aquino, G. (1998). Principles and Methods of Effective Teaching	p. 187	It is uses an expert and expert interviewer to explore a subject prior to its later discussion by the entire class.	C

4.7 Code 7 Naturalistic Art for Learning

Table 7 shows the identified lists for naturalistic art that enhance to develop Quadrant D potentials. The products and performances in Quadrant D need attention because out of the eight books, only 12.50% recognizes the value of naturalistic art; while 87.50% of the listed art are not mentioned among the 7 authors. The book on Philippine Arts and Crafts are found obsolete by Galvante, Udan, and Salvador (1958), no one mentions among the other 7 authors about the need for naturalistic art in learning.

Table 7. Naturalistic Art

Utilized Arts	Reference Found	Pages	Brief Descriptions	Quadrants
1. Freehand Drawing	Galvante, J, Udan, P. & Salvador, G. (1958). Philippine Arts and Crafts	p.33	It involves muscle movements not ordinarily used in handwriting.	D
2. Landscaping	Not found	Not found	It is gardening strategy where students are made to beautify using natural resources.	D
3. Gardening	-do-	-do-	It is strategy of raising plants or crops in order to provide a certain yield like a dish gardening.	D
4. Mosaic	-do-	-do-	It is an art or creating images using assemblages like in different materials.	D
5. Wood Carving	-do-	-do-	It is an on working of wood with the use of knife, chisel, and hammer.	D
6. Clay modelling	-do-	-do-	It is a flexible activity of forming objects using clays.	D
7. Basketry	-do-	-do-	It is a weaving of flexible strips of materials to form an artistic pouch.	D
8. Weaving	-do-	-do-	It is the process of interlacing strips of leaves to form a desired art.	D

Table 8 shows that Communicative Arts for Learning emerges the highest in rank (86.67%). This proves that teaching and learning is a social and interactive process. Theater Arts for Learning follows the second in rank (71.43%), reveals that teaching and learning is a demonstrable, oral, and kinesthetic process of doing and acting. Both these verbal and non-verbal interactions validate those Quadrants B and C potentials, which are anticipated as a primary intention among the 8 book writers. These anticipations enhance the interpersonal and intrapersonal traits of the Filipinos to socialize and survive. This is supported with the findings of Inocian, de los Reyes, Lasala, Pacaña and Dawa (2015) that professionals who shifted their degrees for teaching show a greater propensity to teach for Quadrants B and C. The Musical Arts for Learning is the third in rank (70.00%), constitutes the learners' Quadrant B and D potentials. The Visual Art for Learning ranks 4th (53.85%), which means that Aquino, (1998), Heinich, Molenda and Russell (1985) recognize the importance of the visual arts in learning compared than the other 6 writers. Least integration of arts in teaching is shown in locomotor aspect that receives the lowest rank, naturalistic in 6th rank, literary in 5th rank. These arts are less likely emphasized among the analyzed books. This means that the Quadrant D potentials are not given so much emphasis in Philippine educational system. Corollary with this when prospective social studies teachers have shown with lowest rank in terms of value judgement toward their exposure to achieve certain outcomes in Quadrant D in different contexts of the Social Sciences (Inocian and Lasala, 2014).

Table 8. Summary of the 7 Arts for Integrated Teaching

Coded Arts for Integrated Teaching	Percentage by Category	Rank
Code 1 Visual Art for Learning	53.85%	4 th
Code 2 Literary Art for Learning	30.00%	5 th
Code 3 Theater Art for Learning	71.43%	2 nd
Code 4 Musical Art for Learning	70.00%	3 rd
Code 5 Locomotor/Performing Art for Learning	0%	7 th
Code 6 Communicative Art for Learning	86.67%	1 st
Code 7 Naturalistic/Manual Art for Learning	12.50%	6 th

Table 9 shows the IAT modelling for brain-based learning. This is a juxtaposition of the art strategies, which enhances humanistic learning that addresses the development of the 21st century skills, desirable attitudes and values that Eisner (2002) has advocated. Once these IAT strategies are used in almost all subjects in the curriculum, learners avoid committing any form of violence that imperils the quality of life, which supports the Brain-based Ambiguity Theory of Learning (BAT-L). BAT-L states that when lessons are presented through a ridiculous association in an IAT strategy, then learning is enjoyable and enhances better retention.

Table 9. Inocian (2015) IAT Model for BAT-L

Bain Quadrants	21 st century Arts Quadrivium	Integrated Arts-based Teaching Strategies	21 st century skills to be addressed	Desirable Attitudes and Values (Eisner, 2002)	Focused Disciplines
A	Logical Arts comprise the use of logic in correct grammar and sound reasoning.	Graphs, charts, timelines, graphic organizers (<i>visual art</i>) Lyrical composition, lyrical analysis (<i>musical art</i>)	Critical thinking using convergent thinking and higher cognitive skills	1. Solving problems in complex forms 2. Making vivid representation of our thinking	All disciplines with major discussions in Philosophy and Logic, Mathematics, Chemistry, Physics, Biology, Accountancy, and other Natural Sciences.
B	Rhetorical Arts comprise the use	Graffiti, cartoons, comic strips (<i>visual art</i>)	Communication using convergent	1. Trafficking subtleties	All disciplines with major

	of speaking, writing, painting, drawing, and singing using correct set of procedures.	Silent Reading, oral reading (<i>literary art</i>) Singing, chanting, manipulation of musical instrument (<i>musical art</i>)	thinking and life skills	2. Facilitating better communication	discussions in Literature, Communication and the Languages.
C	Dialectical Arts comprise the use of literary, theater, performing, and communicative strategies using the power of emotions in divergent ways.	Storytelling (<i>literary art</i>) Game, pantomime, simulation, role play, dramatization, comical skit, chamber theater (<i>theater art</i>) Interpretative dancing, dance drama, creative dancing, silhouette dancing (<i>performing arts</i>) Brainstorming, buzz session, talk show, debate, interview, literature circles, think-pair, learning together, discussion, panel discussion, symposium, forum, caucus, dialogue, colloquium (<i>communicative art</i>)	Collaboration using divergent thinking and social skills	1. Celebrating multiple perspectives 2. Discovering wide range of feelings	All disciplines with major discussions in Political Science, Governance, Geography, History, Anthropology, Sociology, Economics, Tourism, and Psychology.
D	Creative Arts comprise visual, literary, musical, and naturalistic strategies using the power of emotions in divergent ways.	Collage, posters, painting, miniature, scrapbook (<i>visual art</i>) Poetry-writing, editorial writing, essay writing, interpretative reading, oration, declamation, news casting, journal writing (<i>literary art</i>) Humming, jingle, rap, bit box, lyrical composition, suggestopedia (<i>musical art</i>) Free-hand drawing, landscaping, gardening, mosaic, wood carving, modelling clay, basketry, weaving, folding (<i>naturalistic or manual art</i>)	Creativity using divergent thinking and metacognitive skills	1. Disclosing inner feelings 2. Opening opportunities for change 3. Making good judgment about qualitative relationship.	All disciplines with major discussions in Home Economics, Practical Arts, Music, Physical Education, Humanities, Engineering, Technology and Advanced Sciences.

5. Conclusion and Recommendation

The analyzed books in Principles and Methods of Teaching used in College of Teacher Education in the Philippines, exhibited a lopsided distribution of communicative, theater, and musical arts-based teaching strategies, which

conformed to the Filipinos' vivacious, chatty, and flamboyant traits of being Quadrants B and C, who are self-conscious, systems-focused, people-oriented, sentimental, and entertaining. Though the use of visual and literary arts was less emphasized; but naturalistic and locomotor arts for dancing was rarely cited, indicative that the outcomes for artistic creations and scientific inventions in Quadrants A and D were less likely met, evident to have shown a limited number of Filipino analysts, writers, composers, inventors, designers, and creative teachers, the country has produced. With this, it is recommended that authors on Principles and Methods of Teaching may explore - revising their books, to ensure an equitable balance of arts-based teaching, addressing Brain-based Ambiguity Theory of Learning (BAT-L) in the 21st century.

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Appendix

Validation Sheet								
Books Analyzed	Number Coding	Mapping for Brain-based Instructional Quadrants				Internal Validator	External Validator	External Validator
		QA	QB	QC	QD			
Principles and Methods of Teaching, by Aquino, G.(1998)	C1VAL C2LAL C3TAL C4MAL C5LAL C6CAL C7NAL	//	/		//	Validated	Validated	Validated
Principles and Practices of Teaching, by Calderon, J. (1998)	C1VAL C2LAT C3TAL C4MAL C5LAL C6CAL C7NAL		/	///	/	Validated	Validated	Validated
Principles and Strategies of Teaching, by Corpus, B. & Salandanan, G. (2003)	C1VAL C2LAL C3TAL C4MAL C5LAL C6CAL C7NAL			/	/	Validated	Validated	Validated
Principles and Strategies of Teaching, by Acero, V.,	C1VAL					Validated	Validated	Validated

Javier, E. & Castro, H. (2000)	C2LAL C3TAL C4MAL C5LAL C6CAL C7NAL			/				
Instructional Media and the New Technologies of Instruction, 2 nd Ed., by Heinich, R., Molenda, M. & Russell, J. (1985).	C1VAL C2LAL C3TAL C4MAL C5LAL C6CAL C7NAL	/		/		Validated	Validated	Validated
Fundamentals of Teaching, 1 st Ed., by Inocian, R. (2010)	C1VAL C2LAL C3TAL C4MAL C5LAL C6CAL C7NAL			/	/	Validated	Validated	Validated
Focus on Teaching, Approaches, Methods, and Techniques, by Garcia, M. (1989)	C1VAL C2LAL C3TAL C4MAL C5LAL C6CAL C7NAL					Validated	Validated	Validated
Philippine Arts and Crafts, by Galvante, J, Udan, P. & Salvador, G. (1958)	C1VAL C2LAL C3TAL C4MAL C5LAL C6CAL C7NAL				/	Validated	Validated	Validated