The association between learning processes and formal music electives among sixth grade music students

Anthony C. Varga
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THE ASSOCIATION BETWEEN LEARNING PROCESSES AND FORMAL MUSIC ELECTIVES AMONG SIXTH GRADE MUSIC STUDENTS

By

Anthony C. Varga

A Thesis

Submitted in partial fulfillment of the requirements of the Masters of Arts Degree in Music Education of The Graduate School at Rowan University May 9, 2002

Approved by

Professor

Professor

Date Approved 5/9/02

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ABSTRACT

Anthony C. Varga
THE ASSOCIATION BETWEEN LEARNING PROCESSES AND FORMAL MUSIC ELECTIVES AMONG SIXTH GRADE MUSIC STUDENTS
2002/03
Thesis Advisor: Dr. Lili M. Levinowitz
Masters of Arts in Music Education
Graduate Division of Rowan University

The purpose of this study was to examine the association of learning process frequencies among sixth grade music students who elect to participate in musical ensembles. Is there an association between the student’s choice of elective music ensemble and their learning process?

Forty five sixth grade music students participated in the study with their parent’s permission. Subjects were administered the Learning Combination Inventory during their scheduled music class. They were asked to first respond to 28 Likert-type statements rating their answers as best fitting their own individual learning. The second part of the instrument required the subjects to respond to three open ended questions.

Data were analyzed four ways employing chi square analyses. The observed chi square value for the total population was 20.24. Subsequent chi square values were, 4.38 within instrumental ensembles, 5.10 between instrumental and vocalists, and 10.85
among instrumentalists, vocalists and doublers, respectively all chi square values were not found to be statistically significant. Results of the study indicate that a diverse portrait of learning processes exists among sixth grade elective music ensembles with 45% being sequential, 19% technical, 19% confluent, 10% bridge or multiple learners and 6% precise.
MINI-ABSTRACT

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This study examined the association of learning processes as identified by the Learning Combination Inventory and the choices of elective ensembles among music students in sixth grade. Observed chi square values were not found to be statistically significant. There is no association between learning process and ensemble choice among sixth grade music students.
ACKNOWLEDGEMENTS

Many individuals to whom I am grateful have lent their support and knowledge along the way to completion of this study. My appreciation is extended to all who have touched or influenced this work in some manner. To my colleagues at Haddonfield Middle School, I am grateful for their assistance and appreciative of their generosity in affording me the opportunity to invade their classrooms for a day.

Additionally, I am grateful for the invaluable advice and resources afforded to me by Dr. Christine Johnston. I would like to extend special gratitude to Dr. Lili Levinowitz whose constant guidance and encouragement has made what seemed an insurmountable task six years ago, become a reality. You have truly been a wonderful mentor and it has been my pleasure to have been under your tutelage.

Finally, I want to thank my family for always being there with kind words of encouragement. To my wife Michelle, my deepest heartfelt thanks for sharing this experience and standing untiringly along side of me through the entire process. We made it!
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Chapter One

Introduction

Experience is the best teacher. For years, this cliché has stood as an uncontested philosophical pillar. Formerly, when learning was thought to be a universally homogenous process, this may have been safe to presume however recently, the assumption has faced challenge by the re-examination of intelligence and education. Howard Gardner characterizes intelligence as a process that “begins with information delivered to the eye or ear and only concludes when an answer has been issued by mouth or hand.” (Gardner, 1983, p. 22) Furthermore, he believes that,

There is a universal human temptation to give credence to a word which we have become attached, perhaps because it has helped us to understand a situation better. *Intelligence* is such a word; we use it so often that we have come to believe in its existence, as a genuine tangible, measurable entity, rather than a convenient way of labeling some phenomena that may or (but may well not) exist. (Gardner, 1983, p. 69)

By proposing the notion of intelligence as being multi-faceted, Gardner was a pioneer in recognizing individuality among learners citing that different capacities for learning exist based on a person’s innate cognitive strengths. According to Gardner, “the claim that we use the same problem-solving apparatus across the board becomes vacuous.” (Gardner, 1983, p. 23) Ergo, having the experience is no
longer sufficient. Educators need to strive toward tailoring the experience to suit the cognitive needs of the learner if we intend to design the best learning opportunity.

Webster's New Collegiate Dictionary (1986), defines education as: 1.) the action or process of educating or of being educated, and 2.) the field of study that deals mainly with methods of teaching and learning in schools. Etymologically, education is derived from the word, *educe* meaning to draw out or lead from. Until cognitive psychology had begun to gain favor, traditional education did little to support that in practice. Education has commonly been a one way, top-down process that assumed little, if any, for what lies within and can be drawn from the student. Historically teachers delivered information via a scripted approach, under the guise of equal learning opportunity. The charge of the student on the other hand was to be the receptor of the information rather than a partner in his or her own learning. This traditional active/passive paradigm of education is quite different from active/active model which the word *educe* implies.

Education in its most literal sense begins with the student. In Let Me Learn, (1998), Dr. Christine Johnston suggests that effective learning begins with the teacher listening to the voice of the learner. She proposes that through our senses, we absorb stimuli, or the learning task. She identifies two cooperative processes which essentially compose our comprehensive learning process. “What is happening in our mind is a convergence of the past learning with the unknowns of the new learning.” (Johnston, 1998, p. 20) Johnston further states that, “The greater use of the senses and intelligences, the more likely the processing will develop a new understanding.” (Johnston, 1998, p. 20) This “executive office of the brain”
new understanding.” (Johnston, 1998, p. 20) This “executive office of the brain”
“the sifter of information and experience,” (Johnston, 1998, p. 20) is what Dr.
Johnston calls cognition. Parallel to the “rational thought center” is the
“performance control center” or conative process. Dr. Johnston describes conation
as “simultaneous to thinking, the brain is preparing to act.” “Most frequently,” she
says, “the conative center determines the initial response to a learning assignment.”
(Johnston, 1998, p. 21)

Responding to the interest and need to investigate the individual nature of
learning, cognitive psychological research has produced a new arena of information
processing models known as learning styles, learning modalities, and learning
processes. Dunn and Dunn (1993) describe learning styles “in terms of a student’s
ability to master new and difficult academic information.” (Stanfa, 1999, p. 2)
According to Trinity University professor Diane Persellin, “although everyone uses
all three modalities for learning, most people rely on one or two of the modalities in
times of intense concentration or when the task is difficult.” (Persellin, 1992, p.
307) She advocates that “teachers (should) teach to a child’s strongest learning
modality and then reinforce through the weaker learning channels.” (Persellin,
1992, p. 307) Consequently, to design the best teaching experience and provide the
maximum opportunity for success, teachers should be aware of the each student’s
learning style. For this purpose, a generous number of assessment instruments exist
which have been carefully designed to assist with learning style identification.

Many theories of learning style models exist and despite some minor
disparity among them, all seem to recognize at least three major styles or modes of
learning. “Whether you look at learning as a style or process, psychologists all agree that learning is as follows: 1) cognitive, which is the information control center, 2) conative, which is skills of fluidity, dexterity, mobility and coordination, and 3) affective, which is a learner’s feelings and emotions.” (Stanfa, 1999, p. 1)

Among the more popular learning style assessment instruments are, Kolb’s Learning Style Inventory (1976), the Learning Style Inventory of Dunn and Dunn, (1985) and the 4Mat Learning Type Measure (1987). In addition to these, the Myers-Briggs Type Indicator (MBTI) (1985) is often used although mistakenly to identify learning style. However closely related to learning, the MBTI is designed to recognize personality types rather than to identify preferences in learning. Akin to learning styles are learning modalities which are commonly associated with appropriate sensory-receptive labels such as those described by Persellin, “in general, there are three learning modalities in education-visual, auditory and kinesthetic” (Persellin, 1992, p. 307).

Yet another model, Let Me Learn (LML) offers another view of learning where tendencies in learning processes are identified to the degree which a student either favors or avoids certain cognitive and conative processes. The premise of LML is that everyone has a unique combination of “mind patterns” or learning processes that shape how we process information.

The convergence of the three brain activities (cognition, conation, and affectation) form four stable patterns of learning, each with a distinct message. Taken together, they compose the learner’s combination of learning voices. Each
pattern exists in all of us to some degree and contributes to our unique learning combination. (Johnston, 1998, p.24)

Utilizing the Learning Combination Inventory, LML, empowers the learner with valuable information to assume responsibility for their own education rather than rely exclusively on the teacher’s interpretation to create an experience. This shift in the learning paradigm places the student in a powerfully advantageous position of being an active partner in guiding their own development. Armed with this knowledge students can help teachers create experiences that are comfortable and accessible to them through their own unique learning combination, thus maximizing learning potential and success.

The four categories of learners recognized by LML are sequential, precise, technical, and confluent, each offering four separate windows for accessing information. Consider for a moment a music lesson where the objective is to teach note reading to a group of violin students. The traditional method of memorizing the names of the notes on the staff using the popular “every, good, boy does, fine,” mnemonic device would work fine for a sequential learner who favors organization and structure. The precise learner would not merely accept this concept without supporting details or facts. Nothing is left to the imagination of precise learners they challenge and need to know why. For them, truth is in the proof. The technical learner however, would rather engage in a tactile activity such as drawing the notes on the staff. Solving the riddle is an important component of learning for the technical learner who prefers to discover how and why it works. Three of the four learners represent conservative approaches compared to the last. The confluent
learner is the risk taker. They dare to venture with ideas that others may be critical of or find too abstract. The confluent learner is the thinker outside of the box.

According to St. Olaf College associate professor, Gloria Klester,

Quality education must mean total education. That means teaching and learning in every way possible – not just reading and writing and calculating but also feeling and moving, drawing and singing, dancing and creating. Total understanding is basic to life and basic to education. The academic and the aesthetic are essential halves. (Klester, 1992)

Music as much as any academic subject embodies a wealth of complexities for the learner. It is the synthesis of cognitive development embracing linguistic decoding skills, mathematical logic blending these with psychomotor control.

“Music belongs in school because it is basic to learning. Music is a unique way of knowing.”(Klester, 1992) Addressing the Rochester City School District, music executive Wendell Harrison explained,

The theory of bi-lateralism of the brain has been thought by many to be the reason for increased intelligence in the artistic child. This states that the brain is divided into two halves- the analytical brain and the subjective/artistic brain. When both halves of the brain are not fed equally, the brain does not develop as a whole, thereby not developing as well in total intelligence. (Harrison, 1990)

Tapping into and maximizing the parallel processing capabilities of the brain remains the challenge for today’s educators both in the academic and music classrooms. Never before has the importance of addressing information processing been so urgent or critical. The pursuit of the potentially holistic brain depends on
the prudent choice of the most optimum path of learning, the one that creates and nurtures the best learning experience.

Unfortunately, music seldom receives the commitment deserving of most educational experiences. While the joy of music making should never lose its appeal, often its complexity frequently is underrated thus becoming a limitation for many students who are unable to negotiate its inherent multi-tasking demands. In addition to the rigors of tone production whether vocal, or instrumental, requires music students to engage in decoding a symbolic language. For many young children, the physical demands placed on immature dexterity are challenging enough however, the note reading component is particularly problematic for many requiring them to not only comprehend an abstract language but also demonstrate a keen level of hand-eye coordination to articulate it. Consequently, the identification of a student’s learning style or process can be paramount to the facilitating of the acquisition of these skills.

Despite the implications for arts advocacy, little research has been done in music education examining learning processes. To date, only two studies exist which are pertinent to this research. The Persellin study examined the effect of learning modality on children’s response to rhythm patterns. The second study by Stanfa, examined the relationship between learning processes and junior high school students who play a band instrument. Although the Stanfa study identified learning processes among a musical population, it offered limited generalization beyond students outside of the band program. To adequately address the needs of learners in acquiring musical skills and competencies, it is helpful for music
educators to be knowledgeable of the learning processes of all music students so that informed instructional decisions may be made to assist in each child’s successful musical experience.

Research Questions

What are the frequencies of learning processes among sixth grade music students who participate in performing ensembles as identified by the Learning Combination Inventory? Is there an association between student’s choice of elective music activity and their learning process as identified by the Learning Combination Inventory?

Hypothesis

An association will be observed between student’s choice of elective music activity and their learning process as identified by the Learning Combination Inventory.
Chapter Two

Related Research

Research examining the impetus of information processing models on music education has been relatively limited. The following two studies have been abstracted as relevant in support of such research. Diane Persellin investigated the effect of learning modality on information retention, particularly the recall of rhythmic patterns. The implication being that instruction through a child’s primary learning modality will increase his or her performance. The second study by Tina Stanfa examined learning processes of junior high school band students. Utilizing the Learning Combination Inventory, Stanfa identified unique learning process combinations of students who are in her band. By recognizing diversity among learners, both studies validate the need to develop multiplicity of instruction which can tap into the maximum learning potential of a child.


The purpose of this study was to examine the relationship between learning modalities and the short term recall of rhythm patterns. The researcher investigated which modality “allows children to recall rhythm patterns the best? Does the most effective modality or combination of modalities remain constant from the first grade
through fifth grade? Do children have a better short term recall when presented with a rhythm pattern through a single modality or through multiple modalities? Do multimodality presentations confuse younger children more than they confuse older children?” (p. 307) According to the researcher, “the recall of music rhythms could be more effective if the appropriate teaching modality were applied,” thus lending support for music educators to be knowledgeable of their students cognitive needs.

Two hundred and ten children chosen from among three grades in two urban elementary schools participated in this study: 70 first grade, 70 third grade, and 70 fifth grade. Multiple grades were selected to examine the effect of maturation and reading skill on the effectiveness of presentation. The researcher chose to conduct this study in May to allow for the development of logical left to right reading patterns among the first grade subjects. Subjects were not pre-tested to determine their preferred learning modality.

The subjects were randomly sent into one of two rooms and asked to draw a piece of paper from a box. On the piece of paper was written one of seven possible combinations of learning modalities encompassing, visual, auditory, kinesthetic, visual/auditory, visual/kinesthetic, auditory/kinesthetic and finally, visual/auditory/kinesthetic. Following a uniformed script to ensure validity, each child was individually tested by one of the investigators and only in one of the modalities. All patterns were administered in the same order and following the presentations, the children were asked to recall patterns from memory. Subjects were scored using a rating scale of zero through ten based on the number of trials.
required to achieve an accurate performance. A score of ten reflected an accurate initial performance and scores were subsequently reduced by one point per retrial.

Data were analyzed as an incomplete factorial experiment accounting for the absence of a no treatment cell or control group restricted by the design nature of this study. Initial analysis determined that three way interactions were significantly different from zero, \( p < .05 \) revealing an observable difference between the first grade visual only test and the remaining 20 cells. Reanalysis employing a Tukey multiple comparison test again revealed that the first grade visual only test was significantly different from the others, \( p < .05 \) resulting in its omission from further analysis. The remaining twenty cells were reanalyzed again employing an incomplete factorial design and it was determined that high order (three way) interactions were no longer significant at the .05 level. Instead, grade level was found to be significant \( (p < .001) \) suggesting that "as grade levels increased, performance increased." (Persillín, 1992, p. 312) The researcher concluded from the results, that visual presentations were more successful in the third and fifth grade and less so in the first as one might expect developmentally. Scores supported a grade hierarchy validating the role of maturity. Additionally, the researcher concluded that multimodal presentations did not confuse the children. Persellin (1992, p. 313) suggests that "perhaps using visual icons in combination with other modalities gives the icons aural meaning for young students." "If teachers incorporate multiple learning modalities into their teaching style, it is possible that music education could be more effective." (Persillín, 1992, p. 314)
The purpose of this study was to examine the learning processes of junior high school band students. The researcher examined if there is “a common learning process among students who play a band instrument?” (p. 5) Subjects consisted of 60 seventh and eight grade band students selected from Edgewood Junior High School in Camden County, New Jersey and was representative of the diverse socioeconomic and ethnic qualities of the community.

The researcher employed the Learning Combination Inventory (LCI), a twenty-eight statement instrument that identifies learning processes rather than inventorying learning styles. The instrument asks subjects to make self evaluations employing a scale which reflects an affective response as being: 1) never ever, 2) almost never, 3) sometimes, 4) almost always, and 5) always. Additionally, subjects are asked to respond to three short answer questions that asked, 1) what frustrates them about learning, 2) how do they like to show what they know, and 3) how would they teach if given an opportunity? It was imperative to the internal validity of the instrument that these open ended questions be completed. Written responses are compared to numerical scores of the LCI to determine reliability of the data.

The subjects were administered the Learning Combination Inventory (LCI), during a regularly scheduled class period and were instructed on the scoring procedure. The researcher reviewed the scores to determine accuracy and correctness.
Data were reported by learning process category, sequential, (S) technical, (T) precise, (P) confluent, (C) and bridge (B), instrument family and comparatively within the entire band, reflecting both raw data and corresponding percentages. Learning processes among thirty nine woodwind students reflected, 38%(S), 33%(T), 5%(P), 15%(C) and 3%(B). Data among brass students indicated, 15%(S), 69%(T), 15%(P), and 0%(C) or (B). Among percussion students, the data reflected 0%(S), 88%(T), 0%(P), 12%(C), and 0%(B).

The researcher concluded that “hands on learners fit best with the technical process and it seems that this type of learning is most prevalent in instrumental music students.” (p. 19) She suggests that the relationship between cognitive skills, (audiation) and tactile skills translate into technique and therefore, “it seems reasonable…. that students who prefer to learn in this technical way would excel at an instrument.” (pp. 19, 20)
Chapter Three

Design and Analysis

Sample

Seventy-three sixth grade music students who participate in varying performing ensembles at Haddonfield Middle School in Haddonfield, New Jersey were requested to participate in the study. Haddonfield is a small borough in Camden County, located in southern New Jersey characteristic of an affluent and professional community with minimal minority representation. The subject population was representative of the community demographic base.

Instrument

The Learning Combination Inventory (LCI) (1998) was found to be an age appropriate instrument making it a suitable choice for assessing the learning processes of the subjects. The LCI is a two part survey developed by Dr. Christine Johnston as the basis of the Let Me Learn Process. Part One consists of twenty-eight Likert-type items and Part Two asks three brief open ended questions designed to validate the numerical scores attained in Part One. The LCI identifies to what degree a student employs or avoids each of four learning processes, sequential, precision, technical, and confluent, and the instrument is self reporting.

Procedures

Letters of intent to conduct this study were submitted to the school administration and parents of the subject population requesting permission to proceed. Parents of forty-
five students responded favorably representing fifty-five percent of the total available population. Upon securing permission, subject members of the band, orchestra, and choir were administered the LCI to identify their learning combination. The LCI was administered in the third marking period during a regular scheduled forty-two minute music class and data were collected from all three ensembles over a period of three consecutive days. Subjects were asked to respond to 28 Likert-type items in Part One, rating their responses as: 1) never ever, 2) almost never, 3) sometimes, 4) almost always, or 5) always. Following this, subjects were asked for brief responses to the three open ended questions in Part Two concerning what makes learning frustrating, how each student would choose to demonstrate learning, and how the student would design the learning experience if he or she were the teacher. Due to time restrictions, the instruments were scored by the researcher. Internal validity was then determined with the assistance of Dr. Christine Johnston. Dr. Johnston reviewed the responses to the Part Two open ended questions citing relationships between the subjects Part One raw scores and the nature of the brief narratives. Typical responses for a sequential learner would be “I need to see a sample of the work before I begin,” or “I like it when the teacher gives step by step directions.” Precision learners “want to know exactly what is expected,” and “don’t make me guess.” The technical learner would, “rather be working alone or at home,” and would “enjoy doing more projects.” Students who demonstrate a high preference for confluence frequency would tend to be more open minded citing, “I am willing to try anything once,” but are not beyond offering their own “better idea.”

Upon determining that the data were valid, it was categorized according to the learning processes as they surfaced in each ensemble. Data were analyzed and subjected
to a chi square analyses with statistical significance of \( p > 0.05 \). Four chi square analyses were performed to identify associations and frequencies within the following ensemble combinations:

1) all ensembles, 2) band versus orchestra, and 3) vocal versus instrumental, and 4) ensembles versus doublers or those enrolled in multiple ensembles. To isolate frequencies among exclusive performing groups, students enrolled in multiple ensembles were included in the first and last analysis as their own unique categories.
Chapter Four

Results and Interpretation

Chi Square Analyses

Learning Processes among Sixth Grade Elective Music Ensemble Students

Frequencies for chi square data among the total subject population are presented in Table I.

Contingency Table and Chi Square Data for Learning Processes among Sixth Grade Elective Music Ensemble Students: Table I

<table>
<thead>
<tr>
<th></th>
<th>Band</th>
<th>Orchestra</th>
<th>Choir</th>
<th>Band/Choir</th>
<th>Band/Orch</th>
<th>Orch/Choir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Precise</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Technical</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Confluent</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bridge</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

\[ X^2 = 20.24 \]

The vertical columns depict categories of ensembles to which the subjects belong, band, orchestra, and choir, band/orchestra, orchestra/choir, or band/choir. Horizontal rows reflect the following four learning processes: sequential, precise, technical, and confluent.
A fifth category called bridge, describes those subjects who demonstrated equal strength with more than one process. The obtained value for the chi square statistic for the total sample was $X^2(20, N = 45) = 20.24, p = .05$ and found to not be statistically significant. Thirty-six percent of the total sample was sequential processors. Technical processors represented the second highest proportion of learners at twenty-seven percent and eighteen percent of the subjects were observed to be confluent. Thirteen percent of the subjects demonstrated bridge or multiple tendencies. Precise processors accounted for only six percent representing the minority process of the sample. Of all of the ensembles, only two (band/choir and orchestra) represented each of the possible five processing categories as noted in Table I.

Learning Processes within Instrumental Ensembles

Thirty-one of forty five subjects are enrolled exclusively in band, orchestra, or choir. Frequencies for chi square data representing learning processes within only instrumental ensembles are presented in Table II.
Contingency Table for Learning Processes within Instrumental Ensembles: Table II

<table>
<thead>
<tr>
<th></th>
<th>Band</th>
<th>Orchestra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Precise</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Technical</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Confluent</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bridge</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

$X^2 = 4.38$

Vertical columns represent the two instrumental ensemble categories, band and orchestra. Horizontal rows reflect the four learning processes: sequential, precise, technical, and confluent. A fifth category called bridge, describes those subjects who demonstrated equal strength with more than one process. The obtained value for the chi square statistic was $X^2(4, N = 20) = 4.37, p = .05$ and was not found to be statistically significant. Despite that the orchestra sample was smaller proportionately it reflected a wider variety of processes within the ensemble than did the band sample. Fifty percent of the band subjects were sequential while the remaining fifty percent were divided equally between technical and confluent processes. Table II observations of the orchestra yielded not only a more diverse mix of processes than the band, but the spread among the population was more equitable as well.
Learning Processes between Instrumental and Vocal Ensembles

Frequencies for chi square data representing learning processes between instrumental and vocal ensembles are presented in Table III.

Contingency table for Learning Processes between Instrumental and Vocal Ensembles:

Table III

<table>
<thead>
<tr>
<th></th>
<th>Instrumental</th>
<th>Vocal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Precise</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Technical</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Confluent</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Bridge</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

\[ X^2 = 5.10 \]

Vertical columns represent two categories, instrumental and vocal. Horizontal rows represent the four learning processes: sequential, precise, technical, and confluent. A fifth category called bridge describes those subjects who demonstrated equal strength with more than one process. The obtained value for the chi square statistic was \( X^2(4, N = 31) = 5.10, p = .05 \) and found to not be statistically significant. Instrumental ensembles reflected both the highest number of sequential learners and the lowest incidence of bridge processors. Proportionately, the number of sequential learners in choir is more substantial than the larger raw value observed in the instrumental ensembles. Fifty five percent of the total vocal population favored sequential processing as opposed to forty percent of instrumentalists.
Comparison of Learning Processes between Ensembles and Doublers

Data for fourteen subjects in the total population called "doublers" because they participate in multiple ensembles were isolated from the first three analyses to identify pure frequency associations among the three ensembles.

Contingency Table for Comparison of Learning Processes among Instrumentalists, Vocalists and Doublers: Table IV

<table>
<thead>
<tr>
<th></th>
<th>Instrumental</th>
<th>Vocal</th>
<th>Doublers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Precise</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Technical</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Confluent</td>
<td>6</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Bridge</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

\[ X^2 = 10.85 \]

Comparisons including these data are illustrated in Table IV, where the vertical columns represent subjects belonging to each of the following categories, instrumental, and vocal, or doublers. Horizontal rows reflect the four learning processes: sequential, precise, technical, and confluent. A fifth category called bridge, describes those subjects who demonstrated equal strength with more than one process. The obtained value for the chi square statistic was \[ X^2(8, N = 45) = 10.85, p = .05 \] and found to not be statistically significant. Forty-three percent of doublers were technical and the highest incidence of bridge processors was also observed among this group representing fifty percent among...
the total sample. (Bridge processors represented the following combinations: sequential/technical 1, sequential/confluent 1, and technical/confluent 1.)

**Interpretation**

Sequential processing is described by Dr. Christine Johnston as “the making connections part of our learning.” (Johnston, 1998, p. 24) Learners favoring this process “look for the match, the pattern, the previous experience comparing it to the new.” (Johnston, 1998, p. 24) Among thirty-six percent of the subjects, sequential processing was observed as dominant. Development of musical technique inherently is methodical in nature demanding that the student balance the delicate choreography of cognitive and kinesthetic skills. Consequently, this processing style is likely for music students where performance represents the synthesis of these skills. Technical processors accounted for the second highest proportion of learners with twenty seven percent. “The technical pattern is our actions speak louder than words, pattern,” (Johnston, 1998, p. 27) The tactile aspect of this process lends itself very well to instrumentalists, addressing the dexterous expectation of their education. The observation that this style was not predominant among the majority of instrumentalist is inconsistent with the findings of Stanfa in 1992. Even with the absence of tactile instruction like their instrumental counterparts, only a one percent difference was observed between vocalists and instrumentalist regarding technical processors. Strength with technical processing was also observed among thirty seven percent of doublers as well. Doublers accounted also for the highest percentage of bridge processors, or those who demonstrated equal strength with more than one process. This may be attributed to
either the diversity of their ensemble experiences or the possibility that conative style has aided their decision in choice of multiple music ensembles.

Precise processors surfaced in three groups, the orchestra, the choir, and band/choir representing a minority seven percent of the total population. Dr. Johnston describes precise processors as relying, "heavily on memory..." (Johnston, 1998, p. 26) By the nature of pedagogy such as the Suzuki method and text memorization, subjects belonging to the "precise" ensembles tend to engage more in memorization than do band students.

Chi square analyses of data among all groups were not found to be statistically significant supporting the supposition that learning processes among sixth grade music students remain independent of which ensemble that they participate in. In retrospect, this is good news for music education because ensembles will continue to enjoy the fruits and benefits of a talent pool shaped by a heterogeneous learning population.
Chapter Five
Summary and Recommendations

Purpose and Problem of the Study

The purpose of this study was to examine the frequencies of learning processes among sixth grade band, orchestra and choir students. The research problem was to investigate an association between choice of elective ensemble of sixth grade music students and learning process.

Design and Analysis

Upon securing administrative permission, correspondence was sent home with seventy-three sixth grade music students who participate in an elective music performing ensemble requesting permission to participate in this study. Affirmative responses were received from forty-five students who were administered the Learning Combination Inventory over the course of three consecutive days during their regularly scheduled music class.

Students were given specific instructions verbatim from the user’s manual to complete the instrument. Subjects were asked first to respond to twenty-eight Likert-type items rating their answers as how appropriately they apply to their individual learning. Following the completion of Part I, subjects were asked for brief responses to three open ended questions using full sentences. Due to time restrictions, scoring was done by the
researcher and validity was determined by Dr. Christine Johnston of the Center for Advanced Learning.

Data were categorized according to ensemble, band, choir, orchestra incorporating three varieties of doubler groups, (band/orchestra, band/choir, choir/orchestra.) Four chi square analyses were performed examining learning process frequency associations observed among all subjects who are enrolled in an elective music ensemble.

Results

All chi square analyses were not found to be statistically significant, inferring that there is no association between learning process and sixth grade music student’s choice of elective music ensemble. The dominant learning process among the subject population was sequential (36%) with the exception of the doubler group who was primarily technical. Technical processing also accounted for the second highest proportion of learners among the total population at 27%. Confluent processors represented 18% of the population with bridge processors, or those subjects exhibiting equal strengths with multiple processes, approaching at 13%. The highest incidence of bridge processors was found among doublers. The learning process least indicative of the subject population was precise at 6%.
Conclusions and Recommendations

Based on interpretation of the data collected via the Learning Combination Inventory, it is safe to conclude that learning processes have no association with the choice of elective music ensemble among sixth grade music students. Further research is recommended with the following modifications:

1. The instrument should be administered during period one rather than period nine to adjust for subject attentiveness.

2. The study should be conducted during a routine instructional week free of special events such as spirit week.

3. A survey of the entire sixth grade class should be performed to investigate learning process differences between non-music and music students.
APPENDIX A
Mr. Fegley,

In partial fulfillment of the requirements of completing the Master's program at Rowan University, I have designed a study which will be the basis of my thesis. The study will examine the association between learning processes as identified by the Learning Combination Inventory and the choices of music elective ensembles among sixth grade music students. The target population will be sixth grade students who participate in band, orchestra and choir and they will be administered the LCI during their regular class period 9. Students will be asked to respond to the questions and will receive instruction for self-scoring the instrument. Data will be reported solely for the purpose of completing the thesis.

I have prepared a consent form notifying parents of this study which I plan to distribute either through homeroom or through their general music classes. Student anonymity will be preserved by employing a numeric system by which scores may be accessed with the parental permission only. In addition, I have already taken the liberty of securing permission from Mr. Uibel and Mrs. Barton for visitations to their classes for the purpose of conducting the study. I plan to conduct the research according to the following schedule with your approval:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band</td>
<td>Tuesday, March 19th</td>
</tr>
<tr>
<td>Choir</td>
<td>Wednesday, March 20th</td>
</tr>
<tr>
<td>Orchestra</td>
<td>Thursday, March 21st</td>
</tr>
</tbody>
</table>

Included you will find, a copies of the parental consent form as well as the Learning Combination Inventory. Please accept this letter as an official request to proceed forward with my research. I look forward to your recommendations and approval and I appreciate your time and consideration in this matter.

Sincerely,

Anthony C. Varga
APPENDIX B
Dear Music Parents,

In conjunction with the final stages of fulfilling the requirements of the Master's program at Rowan University I have designed a study upon which my thesis will be based. The purpose of this study is to examine the association between learning processes and the choices of elective music ensembles among sixth grade students. Consequently, I am asking for your permission to allow your child to participate in the study.

As a member of the subject population, your child will be administered a learning process profile instrument called the Learning Combination Inventory (LCI). The LCI is a brief survey that will ask your child to respond to questions and make informed judgments about the way they learn. Based on these responses, a profile will emerge reflecting his or her favorite and least favored learning processes. This information can provide you and your child with valuable insight and be beneficial to your child's future success. Should you express interest in discovering your child's learning profile, I will make this information available to you at your request by simply indicating it on the permission slip upon its return to me, otherwise all will be kept strictly confidential and anonymous and will have absolutely no bearing or effect on your child's grades or placement within classes. Data will be employed and reported solely for the purpose of completing the thesis.

The study will be conducted the week of March 18th, during your child's music ensemble class period 9. If you wish for your child to be included in this study, please complete the consent form attached and return it to me no later than Wednesday, March 13th, so that the appropriate preparations may be made. Should you have any questions regarding the study or its circumstances, please do not hesitate to contact me at 429 - 5851, ext. 304. Thank you in advance for your cooperation and consideration in this matter.

Sincerely,

Anthony C. Varga
Learning Process Study Consent Form

*Please return this consent form by Wednesday March 13th.*
*The study will be conducted the week of March 18th.*

By my signature below, I hereby grant permission for my child:

to participate in the learning process profile study. I understand that his/her identity will be anonymous and that information will reported expressly for the purpose of satisfying the thesis research study and will otherwise be kept strictly confidential.

I am interested in discovering more about my child’s learning process profile.

Please contact me at: ________________________________

Parent signature: ________________________________
APPENDIX C
# Understanding Learning

## Let Me Learn

<table>
<thead>
<tr>
<th></th>
<th>Cognitive</th>
<th>Conative</th>
<th>Affective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sequential</strong></td>
<td>We are running mental computer matches; analyzing and organizing the information in our heads.</td>
<td>We list; we organize; we plan.</td>
<td>Consistency and dependability make me feel good.</td>
</tr>
<tr>
<td><strong>Precise</strong></td>
<td>We challenge, we seek proof, we want to know more.</td>
<td>We document; we test; we prove we are right.</td>
<td>We enjoy knowing. We like to be correct.</td>
</tr>
<tr>
<td><strong>Technical</strong></td>
<td>We seek concrete relevance; we need only enough information to solve the problem.</td>
<td>We tinker; we tackle tough jobs; we get it done!</td>
<td>We are absorbed in finding out what makes things tick. We are self-sufficient.</td>
</tr>
<tr>
<td><strong>Confluent</strong></td>
<td>We read things between the lines; we see connections others don’t see; we think outside the box.</td>
<td>We risk; we dare; we venture into many things, finishing none.</td>
<td>We are carefree. We take failures in stride as part of learning. Please don't criticize our ideas.</td>
</tr>
</tbody>
</table>
Bibliography

Form II, Corwin Press, Inc. Thousand Oaks, CA


