Incorporating Technology and Vermont Standards In A Unified Arts Program

by
Anne Hamilton, music teacher
and Michelle Smyth, art teacher

1997

At North Country Union Junior High School (NCUJHS), in Vermont's Northeast Kingdom, 360 seventh- and eighth-grade students come together from seven different towns. Because of the variety in curriculum from those sending institutions, student arrive with a varied background of skills and experiences. Although the school is moving toward the "middle school concept," there are many traditional junior high elements still in place that influence scheduling and flexibility issues. Class periods are tightly scheduled in forty-minute blocks, although there are long-range plans to convert to a block scheduling model. All seventh- and eighth-graders are required to take four "quarter classes"—art, technology education, living arts, and music—each meeting daily for nine weeks.

The purpose of this paper is to share with other teachers in Vermont and across the United States our experiences over the past several years. We have been developing an innovative local arts curriculum aligned with state and national standards while managing the challenges brought about by quickly changing technology, advancements in telecommunications, and the introduction of new standards and assessments of student learning.

We are midway through our journey. Hopefully, there are teachers who can benefit from what we have learned so far.

Please note: Although this paper addresses the joint experiences of both authors, in the following text the first person voice is primarily Anne's; this changes to Michelle's voice in the 1996-97 section that specifically discusses the art program.

1994-95: Developing District Curriculum Aligned with Vermont Standards

In order to provide equity of opportunity in the 10 different towns of the Orleans-Essex North Supervisory Union, there was a major initiative to coordinate the curricula in all subject areas, K-12, throughout the district. A committee of fine arts teachers was asked to write a curriculum for music, art, dance and drama. Because of the enormity of the task and our unwillingness to plunge in without training, the committee enrolled in a specially designed graduate course in curriculum writing at St. Michael's College, and over the course of two years and six graduate credits, wrote a pre-K through 12 fine arts curriculum.

During the time of our curriculum work, several other initiatives came together which we were able to utilize. We familiarized ourselves with the National Fine Arts Standards, which had recently been published. Although the music teachers found these standards quite compatible with our philosophies and drew on them extensively, the visual arts teachers found them unworkable, and had greater difficulty adapting them to their local curriculum.

Also during this time the Vermont Common Core, or the Vermont Framework of Standards and Learning Opportunities, was being developed, and this was incorporated into our curriculum work. In addition, I was able to bring to the task my experience as a member of the Vermont Arts Assessment Project.

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

2

At the time that I was hired at NCUJHS in 1993, the music curriculum was a traditional one, emphasizing listening and music history rather than a middle school, hands-on approach. I was asked to develop a "Performing Arts" class to include elements of dance and drama as well as the traditional music curriculum. My recent Master's in Creative Arts in Learning from Lesley College, as well as nine years of teaching in elementary schools, qualified me to make these changes.

Michelle started teaching at NCUJHS in 1994, at the same time that the fine arts curriculum was being developed. As a result, the art program was geared toward the implementation of that curriculum, based on specific standards and assessments. Because the students come to NCUJHS from six different elementary schools, their visual arts experiences vary greatly, with some having had comprehensive art programs since kindergarten, and others having had no formal art instruction at all.

Our involvement with technology coincided with these curricular developments. We were among the first schools to become involved with the Vermont MIDI Distance Learning Network, receiving a computer, a musical keyboard, and composition software. Because of our familiarity with the National Standards and the integration of these standards into our local curriculum, the Network was an ideal way to address the standards having to do with composition, critique and reflection, and technology. In January 1995 we met with the other participating schools in the Network, picked up the equipment, and together began to try to figure out how to use it.

During the spring of 1995, I began with one small eighth-grade class, having the students create simple melody lines. With one MIDI set-up in the classroom, much of the work was done with pencil and paper, with students lined up to enter their work on the computer. Each student received a printed copy of their piece, giving them a great feeling of satisfaction. Although this was a successful beginning, it certainly did not take advantage of the technology, and the computer was being used as no more than an expensive music typewriter.

At that time in the Network, we had no formal training in the hardware or software, and were all struggling with the "teacher learning curve" at the same time that we were trying to teach students. We began to share work online through individual America Online accounts, sending pieces to other Network schools via e-mail. They were files specific to the music software rather than MIDI files, which was a clear limitation. The students' excitement at creating original music on the computer and then sharing it with other schools was contagious, however, and we became convinced that the Network should be expanded.

At the Making Connections Institute in Montpelier during the summer of 1995, Michelle and I took a course on integrating movement into the curriculum, completing action research projects as part of the course. Michelle's project explored how movement activities could be used to teach art concepts; mine looked at how students can relate their knowledge of music form to form in dance composition. As a result of this work, NCUJHS received an additional computer and a video camera from the WEB Project (a U.S. Department of Education Technology Innovation Challenge Grant, centered in the Montpelier Schools in Vermont and serving the entire state) so that we could further document our work.

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

3

1995-96: Learning to Use Multimedia Technology

During the 1995-96 school year, I was able to use a very old and slow Macintosh computer in our media center for use in music composition, making a total of three available computers, although some students had to go across the hall to the library to access the computer there. Tired of the disruptions, after a few months the librarian allowed the machine to be moved "temporarily" to the music room for the weeks spent on music composition.

In the fall, I was still having students work on compositions individually or in pairs, but this proved to be too cumbersome, so we divided each class of 15 to 18 into groups. This created a bigger problem, however, as having groups of five or six seventh- and eighth-graders gathered around a small computer monitor is not conducive to their involvement or learning. Grouping issues relating to both size and composition are discussed later in this paper.

Also during this time, composer Peter Tavalin spent a few days working with the students. He introduced them to basic notation, gave simple parameters for composing their pieces, and then left them for a few weeks' break, with me following through on his instructions. His method proved very effective, and the students were quite successful in their work. When he came back, his input was extremely valuable and well-received by the young composers. In the future, I would find it most worthwhile to have him work with students at the revision stage rather than the earlier parts of the process. Having seen how the process works, I am comfortable starting the students with the general theory preparation, but for students to fine-tune their work, a "real composer" can bring an artistic perspective that most teachers simply don't have.

At this time the Vermont MIDI Network was expanding to include more schools and establishing a more efficient method of sharing work and information. During the Making Connections Institute in the summer of 1995, a beginning MIDI composition class had been offered, which created more interest and brought more people into the program. Statewide meetings of the participants and further "mini-training" sessions throughout the school year proved helpful, as we developed protocols and shared our successes and frustrations. In the meantime, a commonly shared web site was being developed to address some of the short-comings of our e-mail exchanges, and there was much "debugging" involved with that.

During the early spring of 1996, having realized that a long-term strategy should be developed to make the most efficient use of the technology as possible, we made a presentation to the school board requesting an additional, unbudgeted computer. The financial investment in computers for the arts by a rural school was unusual, to say the least. We had received computers from the WEB Project, and if the school wanted us to expand the program, it would have to start supporting it financially to match outside funds. Michelle had a background in computers and video, and wanted to incorporate technology into the visual arts program. With this as a goal, we asked the board to purchase a computer that would be powerful enough to run graphics and video programs and could be used in the art program as well. Machines could be used in the music room for several weeks each quarter, and then "cycled" into the art room for use there. Through their seventh- and eighth-grade years, every student in the school would use these computers during their music quarter to com-

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

4

pose a piece, and during their art quarter to create animation or multimedia work, so the computers would be in use almost all the time.

The student work, the developing web site, and our curricular plan spoke for themselves, and with the support of our principal and superintendent the request was granted. We now had four computers, but because of recurring problems with the library computer I replaced it by loaning my own computer to the school. We currently have five computers and music keyboards in the classroom, so there are usually three students, with a maximum of four, working together at each machine.

During the summer of 1996, I took the MIDI II course offered at the Making Connections Institute (forcing me to compose music for the first time since college), and Michelle enrolled in Computer Animation.

1996-97: Reinforcing Common Vocabulary for Music and Art

Art program begins to integrate technology
In the fall of 1996, we had two computers powerful enough to run the professional graphics software. In order to understand how to integrate the technology into my regular classes, I wanted to begin with a group of highly motivated students in an informal setting, so students were invited to join an after school computer art club.

At the beginning I allowed them to try out the different tools and functions. It quickly became apparent that in order to move to more complex work we would need to focus on a specific task, so I had them create storyboards to plan out their animations. They worked in groups and took turns at the computers. Progress was slow at first, due to minor technical problems along with our learning of the software.

At the end of the second quarter we received software and more computers from the WEB Project, and a networking grant from the State of Vermont. I decided to teach computer animation in my regular classes during the last few weeks of the quarter. In order to grasp basic animation concepts, students created flipbooks and overviewed some of Muybridge's photos which isolated movement. We spent a few days learning the basics of the software and then the students were able to create their animations in about seven days. Because of this tight schedule, I encouraged them to create short pieces, stressing quality instead of length. Guidelines for a successful animation were also established. In the last two quarters, the students filled out rubrics which set clear standards for assessment of the animations.

It is important to note that although initial animations were simplistic and rough, the students learned a lot as they went through the process of problem solving. Each quarter the quality and complexity of their work increased, and I was able to judge their understanding of the concepts through our final assessments of the pieces.

In May 1997, the WEB Project and a school-to-work grant funded artist-in-residence Scott Chesnut to work with the art students in the creation of interactive multimedia pieces. During the residency we kept students in the same groups of three and four that had created animations, with each group designing an interactive multimedia piece connecting the four animations created in their class. The benefits of this approach were that each student went

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

5

through the whole process of multimedia design, and Scott and I could facilitate more effectively because there was one underlying structure common to all groups. Students had the opportunity to create unique projects using similar material, and they were able to see a variety of ways to communicate similar information.

<div align="center">

Music — technical problems
</div>

With more equipment, the technical problems in the music program multiplied, particularly because no two machines were the same. The newer, more powerful computers proved to be incompatible with the simple music software that we were using. This created tremendous problems, exacerbated by the fact that the machines were so new that no one else seemed to be experiencing the same difficulties. Technical support was not forthcoming, either from the computer vendor or the software manufacturer. During a very frustrating spring quarter several computers were continually "bombing" and student work was being lost. Several times I had to print out student work and reenter it after school on another machine, using the mouse. Work transferred from an incompatible machine to an older computer would somehow change the preferences in the computer so it would not function properly; some functions, such as copy and paste, would cause the computers to freeze. Needless to say, the students began to lose interest when their screen was frozen and I was trying to deal with another technical problem on the other side of the room.

Despite these difficulties, the level of sophistication of student work increased exponentially in both art and music. As we became more familiar with the hardware and software and better able to instruct the students, we streamlined much of the teaching process. Having had composition experience as seventh-graders, eighth-graders were better able to tailor new pieces to their individual interests. For example, two students wrote a composition for flute and clarinet and performed it at a school ensemble concert. Several students wrote piano pieces that were beyond their skill level as performers, which of course brings up completely different criteria as students consider the limitations of both the instruments and the human players. Certainly live performance of pieces should be the ultimate goal.

1997-98: Integrating Music Composition with Digital Art

We are designing guidelines for students to follow in order for them to utilize the technology in creative ways. Fine art standards serve as a structure, vital for maintaining the integrity of each discipline. Given the same guidelines, the products vary greatly from student to student. Rather than restricting their creativity, these parameters provide the students with a safe structure and the freedom to advance. For instance, in the visual arts when students design menu pages for their interactive multimedia pieces, the preteaching of design principles and composition options enables them to make informed decisions and enhance the overall quality of their work.

We are also building on the commonalities between visual art and music. Concepts such as composition, communication, clarity, and purpose are reinforced in both classrooms. When students use identical vocabulary in the two different disciplines, it enhances their understanding of the broader concepts. As students progress, they reflect on their work and critique the work of others. Reflection and articulation facilitate creative growth and provide feedback that enables students to refocus on the key concepts.

Assessment is a vital component of both the music and visual arts program. Clear expectations, as well as structure needed to guide students to higher levels of achievement, are presented in the form of a rubric. It has been especially helpful to develop rubric standards at the beginning of the assessment process, with students participating. Through leading questions from the teacher, students are able to articulate expectations. The process may take a whole class period, but it is a very valuable exercise.

The three aspects we address are the quality of the piece (in specific terms), approach to work, and respect for others and equipment. All three parts are integral to the success of the work. The quality of a piece, whether a musical composition or computer animation, needs to be defined in specific language in order for students to know the expectations from the beginning. Approach to work encompasses individual effort and responsibility in the group. Addressing expectations regarding respect for others and equipment is also vital at the beginning of the process.

The integration of technology into our classes has increased the amount of time that students work in groups. Issues such as group make up, individual accountability, sharing of equipment, and constructive use of time all need to be addressed within this structure.

A significant amount of time is spent in setting up groups, taking into consideration ability level, personality, and gender. A heterogeneous group is generally aimed for, although sometimes it can be helpful to place outgoing personalities together if their similar styles of interaction positively affect the process of the group. Gender is also an important factor, however; we have noticed that when quiet girls are grouped with more outgoing boys, the girls may not contribute equally. One very productive group consisted of four relatively nonassertive girls, who were able to flourish when grouped together.

When students work on a major creative project in groups over a long period of time, they must be held responsible for their day-to-day contribution to the group's work. We are developing rubrics, checklists, self-assessments, and other methods of evaluation to ensure individual accountability. As we coordinate assessment techniques between the music and art programs, the students are able to better understand them, and expectations are similar in both classes.

The use of technology in any classroom creates new time management challenges. In addition to creating and revising lesson plans, the time spent maintaining computer files, printing out student work, and dealing with technical problems is substantial, given the time constraints inherent in a teacher's typical day. Delegating certain tasks to students, sharing management tips with other teachers on the Network, and documenting our successes and failures ease the burden somewhat, but developing these systems also takes a tremendous amount of time.

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

7

After each quarter we reevaluate our goals and methods in order to improve instruction. Because of the other pieces of the curriculum that must be addressed, we have to be more and more careful not to let technology dominate the students' experience in our classes. We could easily spend the entire quarter, or in fact an entire year, composing music or creating multimedia pieces. But this is the last music or art experience that some of these students will have in school, and it must reflect a more well-rounded approach.

Developing lesson plans and activities using the computers has proven immensely valuable, as the plans can easily be changed and adapted as a result of experience. Once a solid lesson is in place, the hands-on nature of the technology involves the students on a physical and intellectual level, and is also fun. Although the creation of these activities takes time, so does any good teaching plan.

With the enormous proliferation of arcade-style computer games, it is important to choose software and activities that most involve students in the creation of art. There are many programs that allow the user to "compose" music by simply making choices among predetermined patterns, and a selling point seems to be that "you don't have to know anything about music" in order to create your own composition. Although these programs would entertain students, they are not teaching tools. The creation of art forms with the use of technology involves students in the actual process of communication, rather than passive watching. As they express ideas they didn't know they had, they are involved in a form of self-discovery.

Probably the most difficult, as well as the most exciting, aspect of teaching the arts through technology is the geographical and philosophical isolation in which we work. It is difficult because to make our own way without the benefit of others' experience, and exciting to feel that we are breaking new ground. Certainly the MIDI Distance Learning Network has created dialogue among the music teachers. Hopefully this will continue to expand, and a network for visual arts teacher interested in multi-media will become a reality.

As we work with computers, we are discovering that the ease with which revisions are made to creative work can be a deterrent to gaining a sense of closure. Unlike a finished watercolor or sculpture, a computer animation or musical composition can be endlessly revised and "improved," even after the official assignment is completed; within a classroom setting, time limits must be placed on the assignments and exercises, encouraging an orientation around a foundation of skills and concepts rather than product.

In the summer of 1997, I assisted in teaching MIDI composition classes at the Making Connections Institute. Michelle took a class at the Institute in video production, and also traveled to Los Angeles to attend the Siggraph conference in order to gain experience from experts in the field of multimedia and animation. In addition, we both taught one-week workshops in multimedia and MIDI composition to local teachers and community members. Because of our designation as a cooperating school in the WEB Project, we will also be offering training sessions at NCUJHS in multimedia throughout the 1997-78 school year.

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

8

Looking Toward the Future

Our goals for the next few years are:

1. To work toward true integration of the art and music programs with real collaboration in the creation of multimedia projects. Currently we are working parallel, with student MIDI compositions layered onto separately conceived "multimedia" presentations. We would like to have a project where the students truly collaborate on a specific theme or mood in both the art presentation and the music composition. This will require creative scheduling, which is an obstacle at present.

2. To continually revise our processes of teaching in both programs, and work together to stress the commonalities between the disciplines.

3. To involve other faculty members in workshops and training sessions so that they not only understand what we are doing, but feel comfortable using the equipment and integrating multimedia presentations into their teaching. We would like to emphasize the importance of artistic concepts in making informed choices in interdisciplinary projects and presentations. Our computer lab teacher will purchase a copy of Photoshop, allowing students to work with their own images in the computer lab, which has traditionally been used for word processing. We hope that we will also be able to purchase a site license for music software so that students can use the lab for that purpose as well.

4. To see more use of artists-in-residence. There are many reasons why we feel that the time and expense are justified. Students need to see real-life connections between what they are doing in the classroom and what professional artists do. Teachers as well as students are energized when a fresh face offers new ideas, input, and perspective. A teacher's suggestions should spring from the piece themselves rather than from a lesson plan, and this is difficult to sustain every day, all day, with a hundred students. Residencies are particularly helpful for teachers who are developing strategies and specific teaching activities for employing new technology and realizing Vermont's higher learning standards. The artist can take over the role of providing creative feedback, and the teacher can be more concerned with breaking down the concepts as they apply to her specific student population.

Our participation in the WEB Project has taken our school in an exciting direction, and has given every student an incredible opportunity to solve problems and communicate in an artistic way. They are gaining the knowledge and skills to use technology creatively rather than passively, and have come to understand the global connections and possibilities available to them as communication and technology develop in the future.

Through our experiences over the past few years, we have come to a point of clarity and are ready to integrate our curriculum using some common standards and assessments melded together through technology. The last pages of this interim report show an outline form of our current situation. It lists the standards we share, the questions we raise, and the assessments we employ. Over the next year, we will rely on a network of teachers who also use music composition and animation in their classrooms to calibrate our own sense of what exemplifies "Quality of Art Work."

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

9

Initial Questions

1. How do we provide a structure which enables students to learn key concepts while allowing for creative expression and individual variations?

2. How do we ensure that students use the computers as a means of learning arts concepts?

3. What are the standards and concepts we will be assessing and how will we measure progress?

4. How can we build on commonalities between the visual arts and music?

5. How can we utilize artists in residence to enhance the learning?

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
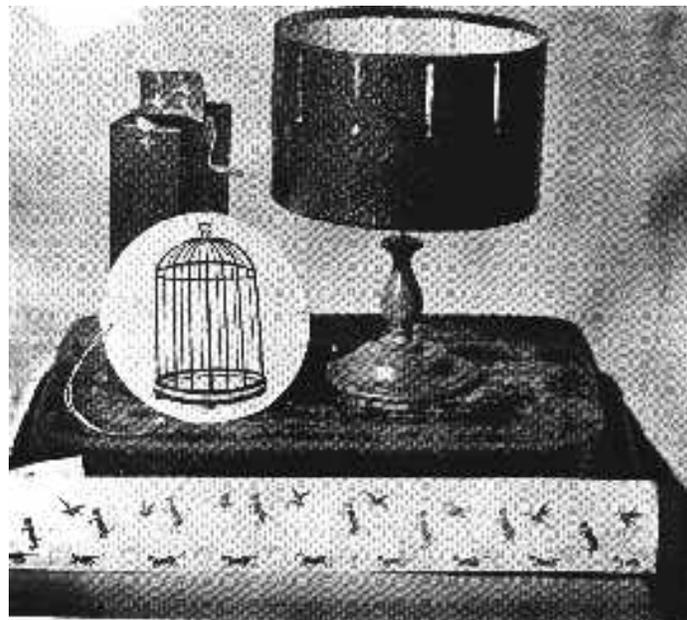(Hamilton, Smyth)

10

1. How do we provide a structure which enables students to learn key concepts while allowing for creative expression and individual variations?

A. Provide CommonBackground (Example from Animation)

Overview of the History of Film and Animation

Muybridge and early motion machines
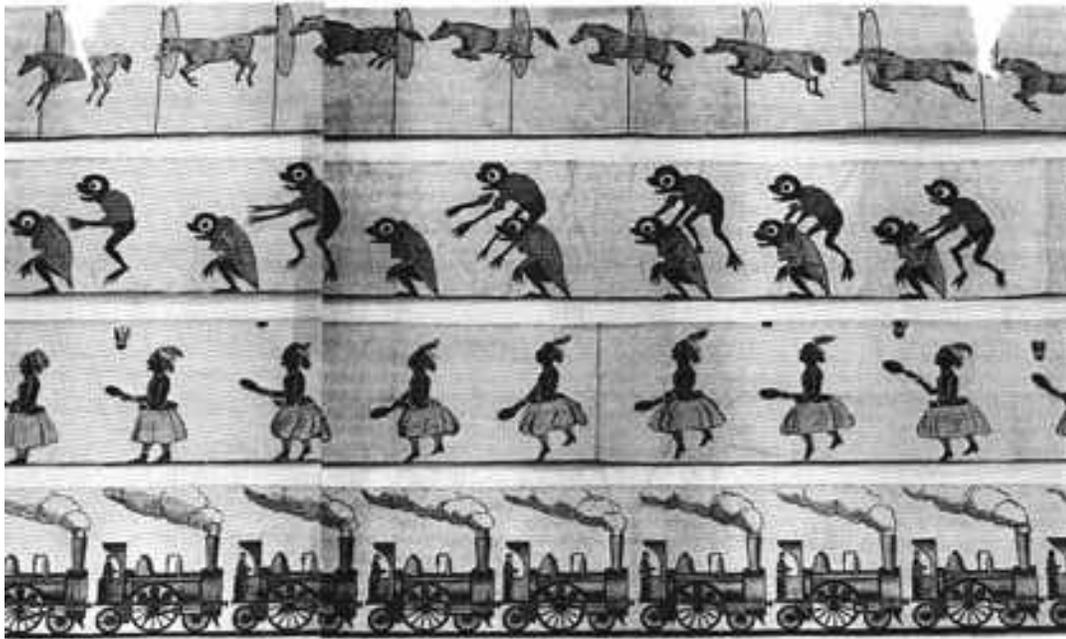
B. Allow for an initial concrete application of the concepts.

Creation of flipbooks and storyboards

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

12

C. Allow for individual expression in final projects

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

14

2. How do we ensure that students use the computers as a means of learning arts concepts?

A. Choice of software

Basic concepts of our disciplines are embedded into the software we select and is used by professionals in the field

B. Continuity of instruction

Reinforcement of concepts that transfer from music to art

C. Structure of assignments

Assignments begin will basic principles and skills that can be learned as the students learn to use the software (eg. the meaning of an eighth note can be discovered through learning the functions of the software)

3. What are the standards and concepts we will be assessing and how will we measure progress?

Vermont's Framework
of Standards and Learning Opportunities

<u>Vital Results</u> – Communication
Expression/Artistic Dimensions

1.16 Students use a variety of forms, such as dance, music, theater, and visual arts, to create projects that are appropriate in terms of the following dimensions:

Skill Development – Projects exhibit elements and techniques of the art form, including expression, that are appropriate to the intent of the product or performance.

Reflection and Critique – Students improve upon products and performances through self-reflection and outside critique, using detailed comments that employ the technical vocabulary of the art form.

Making Connections – Students relate various type of arts knowledge and skills within and across the disciplines.

Approach to Work – Students safely approach their media, solve technical problems as they arise, creatively generate ideas, and cooperate with ensemble members where applicable.

<u>Arts, Language and Literature Standards</u>
Elements, Forms, and Techniques in the Arts

5.28 Artistic Proficiency — Students use art forms to communicate, showing the ability to define and solve artistic problems with insight, reason, and technical proficiency.

From the selected standards, students have identified 3 scoring dimensions for Skill Development and Approach to Work:

1. **The Quality of the Artwork**

2. **The Student's Approach to Work**

3. **Respect of Others and Equipment**

The rubrics are not built until students have had ample experience so that they design the rubrics in an informed manner.

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

17

Approach to Work

Quality work

descriptors

1. on task, focused
2. experiments and takes risks
3. contributes ideas

Respect for others and equipment

Quality work

descriptors

1. respects others' ideas
2. uses equipment properly
3. takes turns with equipment

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

18

QUALITY OF ARTWORK
(student terms)

Quality of animation
_____

descriptors
1. smooth movement, no jumps
2. complete storyline
3. shows different shots or views
4. clear, neat drawings

Quality of musical composition
_____

descriptors
1. Makes sense- uses patterns
2. No wild skips
3. Treble and bass clefs go together
4. Variety of notes and rhythms

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

19

The rubric for Reflection and Critique is employed by a network of teachers and students across Vermont and appears as follows:

Generic Rubric
for Assessing Student Responses

Level 3

Accurately describes the area being discussed. Gives detailed examples, references, connections or responses to general insights. Uses arts vocabulary.

Level 2

Accurately describes the area being discussed. Uses a mix of arts vocabulary and general terms.

Level 1

Gives general comments that could apply to other situations as well as the one under discussion.

4. How can we build on commonalities between the visual arts and music?

A. Vocabulary

B. Key Concepts

C. Assessments

D. Reflection and Critique

5. How can we utilize artists in residence to enhance learning?

A. To help learn basics as an initial step

B. To use expertise at the stage of reflection and critique

WEB Project Interim Report
Incorporating Technology and Vermont Standards in a Unified Arts Program
(Hamilton, Smyth)

21