

Video Production as an Instructional Strategy: Content Learning and Teacher Practice

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Abstract

This study examined teacher-learners' reflections about the use of video production in their K-12 classrooms for evidence of content learning, the factors facilitating teacher use of video production, and the challenges teachers reported. Findings demonstrated positive content learning outcomes as measured by objective tests, rubrics, and anecdotal evidence. Integrating video production facilitated connections to content, student motivation and engagement, the use of alternative assessment, and shifts in teacher identity. Challenges faced by teachers included issues related to equipment, logistics, and time. The study concludes that video production, when understood as an instructional strategy and not as an object of study, has an important role to play in K-12 content learning.

Today's students are not abandoning TV for new media – they watch more TV than ever. They love the Internet but spend far less time browsing than adults. They watch less online video than most adults but find the ads engaging. They read newspapers, listen to the radio, and even like advertising more than most. They play video games, but only two of their five favorites are rated Mature by the Entertainment Software Rating Board. Their favorite TV shows, websites, and genre preferences across media are mostly the same as their parents: *American Idol* was the top TV show, Google the top website, and dramas their preferred TV genre (The Nielsen Company, 2009). In fact, today's students are not uniquely wired but are an “artifact of larger, demographically broader shifts in media behavior. Teens are wildly different –not from other consumers today, but from teens of generations past” (p. 16).

One important characteristic of today's students' interaction with media is their increased concurrent media use and their rate of media multitasking (Roberts & Foehr, 2008). Increasingly, "the millennial generation, immersed in popular and online cultures, thinks of messages and meanings *multimodally*—not just in terms of printed words, but also in terms of images and music" (Miller, 2007, p. 62). Roberts and Foehr (2008) argued that the headline covering the findings from research on media exposure over the past ten years is that concurrent use of multiple media has become the order of the day among young people. Young people listen while they watch, while they click, and sometimes at least, write.

Media Literacy

In light of the unique media savvy, multimodal, and multitasking attributes of today's student, researchers are responding with a renewed interest in media literacy. Although no single definition predominates in the literature, media literacy has generally been defined as the ability to access, analyze, evaluate, and communicate messages in a wide variety of forms (Aufderheide, 1993). It is used to refer to the process of critically analyzing and learning to create one's own messages in print, audio, video, and multimedia. Media literacy often incorporates the goal of "discriminating responsiveness" or the fostering of critical analysis in its participants (Brown, 1998) and involves "asking questions about what you watch, see and read" (Hobbs, 2001, p. 5). By encouraging ongoing critical inquiry, those interested in media literacy seek the development of critical viewers—those who have or are learning to analyze and question what is on the screen, how it is constructed, and what may have been left out (Thoman, 1999).

Education and Media Production

Students cannot become truly media literate—deeply critical consumers of mass media—until they can experience making photographs, planning and organizing ideas through storyboards, writing scripts and performing in front of a camera, designing a web page, and reporting a news story. Goodman (1996) stated, "The power of technology is unleashed when students can use it in their own hands as authors of their own work and use it for critical inquiry, self-reflection, and creative expression" (as quoted in Hobbs, 1998, p. 20). Media literacy necessarily entails "writing" as well as "reading" the media (Buckingham, 2005).

By comparison with the wealth of research on children's understanding of media, the research related to media production is limited (Buckingham, 2005). Nevertheless, some research has been reported related to the effect of specific approaches to media production. Burn and Reed (1999) reported the value of modeling editing processes informally on whiteboards. Sweetlove (2001) found peer tutoring valuable in teaching the use of iMovie to 11-year-olds. Burn and Parker (2003) found that collaboration between teachers of art, English, media, and music was productive when helping 10-year-old students create an animation.

Although many educators embrace the importance of media production, others wonder what students actually learn when they make videos (Grahame, 1991). The most important concern about this "practical work" centers on fears that media production can easily be taught as a decontextualized set of tasks that emphasize a type of vocational education. As Stafford (1992) explained, "The great risk with practical work . . . is that

students will simply learn to ape the professionals, and that a critical, analytical perspective will be lost” (p. 171).

Video Production as an Instructional Strategy

One way to combat concerns about video production as decontextualized or without a focused content is to link it with the ongoing curricular requirements of particular learning contexts. Video production then becomes an instructional strategy for teaching content, not a set of tools and processes to be mastered as isolated skills.

Instructional strategies are what instructors do to facilitate student learning (Dabbagh & Bannan-Ritland, 2005). As Jonassen, Grabinger, and Harris (1991) stated, instructional strategies are “the plans and techniques that the instructor/instructional designer uses to engage the learner and facilitate learning” (p. 34) and represent “a plan, method or series of activities, aimed at obtaining a specific goal” (p. 31). Thus, for example, video production as an instructional strategy might link video essays with Civil War concepts or documentaries with the study of historical and current immigration issues or marketing videos with promoting a book, an invention, or an environmental cleanup. In this application of video production, the media are not studied formally, but the analysis of media text and the creation of media messages are emphasized as components of course work in the traditional disciplines.

This approach, in the hands of a well-qualified educator, carries with it the potential for students to gain exposure to media analysis and production activities while simultaneously mastering the complexities of disciplinary knowledge (Hobbs, 1998). As Hofer and Swan (2005) wrote, “The engaging and flexible nature of digital moviemaking projects offers great potential to ground the use of technology in discipline-specific content and processes” (p. 108).

Challenges to Practice

A number of challenges to the integration of video production exist with ongoing educational practice. These challenges include restrictive models of literacy in school curricula (Beavis, 2001; Burn & Parker, 2002); insufficient attention to popular culture in school curricula (Buckingham, Grahame, & Sefton-Green, 1995; Buckingham & Sefton-Green, 1994); and the lack of specific attention to media education in general, specifically in English curricula (Hart & Hicks, 2002). In addition, challenges with the tools, lack of teacher education, and time are considered obstacles to practice.

As Hobbs (1998) wrote, “The practical limitations of many production activities preclude their being offered to most elementary- and secondary-school students. For example, video and multimedia production often requires more equipment, classroom time, personnel, and teacher training than is available in many schools (p. 20).” Increasingly, however, tools are less and less of a problem. With inexpensive digital video cameras (e.g., Flip™ digital camcorders), free and freely available editing software (e.g. Apple’s iMovie and MicroSoft’s MovieMaker), and nearly unlimited images and video resources available on the Internet, technology resources no longer constitute legitimate obstacles.

The second obstacle frequently cited is lack of teacher education. Kirwan, Learmonth, Sayer, and Williams (2003) and Grahame and Simons (2004) reported little or no training in the area. Hart and Hicks (2002) identified an overemphasis in media teaching on activities of analysis and interpretation. Reid, Parker, and Burn (2002) emphasized

the direct relation between the quality of video production by pupils and the ability of teachers to teach aspects of moving image “language” explicitly.

Before teachers can be expected to use varied media and media production effectively as student learning tools in their classrooms, teacher educators need to provide teachers with opportunities to learn and think deeply about media and media production for their own purposes and find ways to support teachers’ ongoing instructional needs (Miller, 2007). The future of media literacy, in fact, depends on the development of long-term, rigorous, and intellectually demanding educational work with classroom teachers (Hobbs, 1998).

The third obstacle frequently cited is time. Teachers report that the process of planning, recording, and editing digital videos is too time consuming to be used in any sustained way in their practice. Reporting on research conducted with participants of two graduate summer courses on video production, Girod, Bell, and Punya (2007) wrote, “Related to the pragmatics of teaching and the pace at which most teachers work, participants appreciated the opportunity to explore digital video design in this summer experience but several only laughed when asked if they would continue to design videos during the regular school year” (p. 27).

Research Questions

A number of challenges constrain the integration of media literacy and media production in K-12 practice. Yet, despite high-stakes testing, pressure to meet annual yearly progress goals, and standards-driven classroom curriculums, video production can be an integral part of K-12 practice if it is understood as an instructional strategy to support content learning, not as an object of study. This study examined teacher-learners’ use of video production in their K-12 classrooms and connections between students’ content learning and teacher-learners’ practice. The following questions guided the research:

- What evidence of content learning was reported by teacher-learners who integrated video production in their classroom?
- What do teacher-learners’ reflections report about what worked when they integrated video production in their classroom?
- What was challenging to teacher-learners when they integrated video production in their classroom, according to their reflections?

Methodology

The Context

In the College of Education and Human Development at George Mason University, the Integration of Technology in Schools (ITS) graduate degree program is a five-consecutive-semester cohort program. ITS graduate teacher-learners are practicing K-12 classroom teachers who come together to study technology applications and their affordances, as well as curriculum and instruction. Teaching experience for ITS students ranges from 3 to 25 years. The 36-graduate-credit-hour program includes five required tools courses, four required curriculum and instruction courses, one required leadership course, and two required practicum courses.

The ITS program curriculum centers on the design of learning opportunities for in-service teachers focused on mastery of tools (both conceptual and physical) through authentic activity, not isolated instruction on the mechanics or processes of the tool(s).

Technology is considered as an instructional strategy to support teaching and learning, not as an object to master. Teachers are encouraged and supported as they extend this approach to the design of learning opportunities for their own students.

Video in the K-12 classroom is intensely studied in the second semester of the ITS program (EDIT 713 – Tools 2: Graphics, Simulations, and TV/Video) and reviewed and extended during the fifth semester (EDIT 719 – Tools 5: Web 2.0 and Digital Video Editing). Flip digital camcorders, laptop and desktop computers, and digital video editing software (Windows MovieMaker) are available to teacher-learners during class time. Teacher-learners are encouraged to identify and use resources at their schools for out-of-class activities and for use in their practice.

Teacher-learners complete readings and participate in activities and discussions about television and video, identifying the need for both them and their students to be skilled at viewing and producing video. In addition, the design process for constructing video, as well as the concept of in-camera editing and an array of camera techniques are explained and discussed.

When both the importance of video as an instructional strategy and knowledge of the process for designing and producing video have been introduced, teacher-learners experiment with their application through several fun and safe activities. These activities are not assessed but are part of the work of the group designed to allow for exploration, experimentation, and understanding ([examples may be found at http://vhs.gmu.edu/videos/index.html#jokes](http://vhs.gmu.edu/videos/index.html#jokes)). These activities are followed by production of a video essay supporting educational games—part of the course curriculum. Final video essays are shared and discussed in class ([examples may be found at http://vhs.gmu.edu/videos/index.html#essay](http://vhs.gmu.edu/videos/index.html#essay)).

Participants

Over the course of three academic years (2007, 2008, and 2009), 138 teacher-learners from eight different cohorts graduated from the ITS program. The primary form of evaluation for the program is a Web-based, cumulative portfolio that includes both reflections about and artifacts from their learning. Upon completion of the ITS program, teacher-learners submit a CD copy of their portfolios. Two unit plans and accompanying action research reports are included on their submitted portfolio CDs. Thus, the researchers had access to 276 unit plans with action research reflections.

The units are designed during the fourth (fall) semester using a structure for designing learning opportunities that support integration of content, activity, and tool (Norton & Wiburg, 2003). These units reflect teacher-learner decisions that link learning and content goals with appropriate selection(s) from the array of technologies studied during their program—telecommunications (e.g., email and synchronous communication tools), Internet resources and activities, Web publishing, databases, graphics, games and simulations, TV/video, desktop publishing, educational software, multimedia/hypermedia, blogs, podcasts, wikis, and digital video editing.

Teacher-learners design these units with the understanding that they are required to implement the units in their own classrooms. As they teach each unit in their final semester, they collect data gathered as a result of their assessment plan. They use the data to write a thorough action research reflection addressing a description of their teaching context, learning goals for their students and themselves, a summary of collected

evidence, samples of student work, reflections on what worked, reflections on what was challenging, and a summative reflection on lessons for their practice.

Data Collection

To identify those unit plans and action research reflections that integrated video production, the researchers emailed graduates from the 2007, 2008, and 2009 cohorts, asking if either of their action research units included the use of video. Thirty-one teacher-learners replied that one of their units used video. The CD copies of the 31 teacher-learners identifying a video-using action research reflection were extracted from the stored portfolio CDs and printed. Each printed reflection was examined to identify those that integrated video production as an instructional strategy, as opposed to the use of or analysis of existing video only. Seventeen completed action research reflections were identified and thus became the data for the study.

These 17 action research reflections are summarized in the [appendix](#). All 17 reflections included a clear statement of learning content derived from Virginia's Standards of Learning (Virginia Department of Education, nd). Six units focused on elementary science, two on elementary social studies, two on middle school physical education, two on middle school language arts, one on middle school science, and one each on high school Spanish, sign language, and marketing. Fourteen of the units used video production as the culminating, synthesizing activity, while three of the units used video production as one of a cluster of culminating productions.

The most frequently used camera was the Flip digital camcorder, which was available in most of the teacher-learners' schools and easily managed by their students. In addition, the Flip digital camcorder easily facilitated in-camera editing, downloading, and rendering. Several of the teacher-learners' students further edited their videos using software available at their schools. In those instances where small groups of students created segments of a larger class project, teacher-learners reported doing the final editing.

Data Analysis

This study focused on teacher-learners' reflections about integrating video production in content units. Data were primarily narrative in form, thus we selected a qualitative approach to data analysis. Qualitative analysis procedures emphasize the views of the participants and interpret the subject of study from their perspective. This process is inductive in that themes emerge during the process of categorizing, coding, and organizing data.

As a first step in analysis, we used a categorizing process identified by Maxwell (2005) as coding. In the coding process, we examined teacher-learner reflections and coded the reflections using three preestablished organizational topics: impact on content learning, what worked, and what was challenging. As a second step, data were fractured (separated from their context) and rearranged into the preestablished organizational topics guided by the research questions. As a third step, reflections were further coded to identify themes within the preestablished organizational topics. Representative quotations were selected to reflect teacher-learners' voices. Categories and subthemes are summarized in Table 1.

Table 1
Summary of Coding Categories and Emerging Themes

Prestablished Coding Categories	Emerging Themes
Impact on Student Learning (Research Question 1)	Results from objective tests Results from rubric assessment Anecdotal results – samples of student work, teacher observation journals, student surveys, parent comments
What Worked (Research Question 2)	Connections to content Student motivation and engagement Alternative assessment Teacher identity
What Was Challenging (Research Question 3)	Limitation and availability of equipment Issues with locality The influence of time

Findings

Content Learning

The first research question asked, “What evidence of content learning was reported by teacher-learners who integrated video production in their classroom?” Data from the action research reflections indicated that teacher-learners chose varied and multiple forms to evaluate and report student learning. Eleven of the 17 reflections reported the results of objective tests of content. Fifteen of the reflections included summaries of results from a single or multiple rubrics. All 17 included samples of student work with reflections about what teacher-learners had learned from these samples. Sixteen of the 17 teacher-learners provided anecdotal evidence from student surveys, teacher observation journals, and parent comments.

Objective tests. Eleven teacher-learners used an objective content test to assess student learning. All 11 reported positive learning outcomes, as the following comment by a seventh-grade language arts teacher demonstrated: “Students took a quiz on the content vocabulary following their activity. According to their scores, students were successful in learning the important content knowledge and vocabulary required for this standard. Over two thirds of the students scored 100%.” Another teacher wrote,

The policy in our school is that a student is not allowed to fail a test; if they fail, it must be taken again. Every single unit so far this year has required at least one retest—until this unit. This was the first unit test that I had not one child need to retake the test. I was so happy and proud of the students, and it was not an easy test. There were many more application and higher level questions than they are used to, but all passed. Out of 49 students, I only had seven C’s; the rest were A’s and B’s.

A first grade teacher wrote, “By completing the pre/post assessment, I was able to gather concrete data on what each individual student brought to the unit from kindergarten and what I was able to teach them during our two week time.” Perhaps the most powerful statement concerning the impact of the objective data was written by a technology resource specialist who had borrowed a seventh-grade language arts classroom in order to complete the assignment. She wrote that one impact of the data on her instruction was

“a newfound respect for the power of data. Students were very successful in this unit, and I have the numbers to back it up. In my position, it will be very beneficial for me to have the data to back up the types of instruction I am recommending.”

Several of the teacher-learners were able to compare their results with previous years. A fourth-grade teacher wrote, “The weather test was a great success this year. My students performed better on the test this year than in years past. I was very excited to see the results of the test and so were the students.” A high school Spanish teacher who used a series of quizzes instead of a culminating test wrote:

The grades were higher than last year when I did a regular classroom lecture series and a formal objective test. I think it goes to show that the kids learned by doing, not just studying. I think, however, it was important to have the formal quizzes and listening comprehension exercises. They served as benchmarks throughout the unit and kept me abreast of what was being learned and what needed remediation.

Rubrics. Fifteen of the 17 teacher-learners used either a single rubric or a series of rubrics to assess components of the video design process (students’ written plans, storyboards, and scripts) and to assess the final videos. Although evidence gathered using the rubric(s) was generally presented in summary tables, teacher-learners’ written reflections best captured the rubric results, as the following quotes illustrate: “All groups received an A on their videos,” and “Every student in 6 classes earned either an A or a B.” A sixth-grade physical education teacher wrote, “The students were graded on their creativity, storyboarding, content of video, and group work. The table shows that most of the students did very well creating their videos and working well with others.”

Teachers reported that rubrics were a better means for assessing higher level thinking than the objective content tests and allowed them to capture evidence for students who struggle with traditional assessments of learning. A seventh-grade language arts teacher wrote, “Students demonstrated a higher level of understanding. They scored around 15% higher than last year on their storyboards for their cumulative video projects. Students from all academic achievement areas scored well [on the rubric].” A fourth-grade teacher wrote of her social studies unit,

At the recall level, students clearly learned basic information about their topics [on content tests]....I was most impressed with students' understanding and skill in choosing the most important and relevant information for their scripts. Out of the 12 student groups, [the rubric indicated that] only one group missed an important piece of information for their topic.

Anecdotal evidence. In addition to more quantitative assessments, teacher-learners gathered evidence of content learning from samples of student work, student surveys, teacher observation journals, and parents. Illustrative of their comments concerning samples of student work were the following:

- “The best evidence that I have of student learning is their final video project which was uploaded onto our school website.”
- “Having them create these videos really enabled me to get a feel for who understood the information and who was having a little trouble.”
- “The samples I have of student work clearly demonstrate their understanding of this unit.”

Because teachers placed such a high value on the video products as evidence of student learning, we placed several samples of student work on our university website (<http://vhs.gmu.edu/videos/index.html#k12>).

Some teachers asked students to complete a survey at the conclusion of their unit. One teacher-learner wrote about students' survey responses:

By using alternative assessments like a student survey, teachers really gain an understanding and hear what students have learned through their writing. Using a student survey can be much more valuable in assessing what students have learned rather than just using an objective test that relies on the recalling of facts.

Teacher-learners observed and recorded examples of student comments that represented student interactions with and reflections on content topics, indicating that student discussions were rich with conversation about content. The following excerpt from a teacher-learner's journal exemplifies the kinds of conversations teacher-learners identified as evidence of content learning during the video planning process:

While walking around to listen to the students as they recorded their narrations, I was surprised at how much they had to say and how little help they needed from me. When one student asked me what something in his video was called, I hesitated, saying, "This is your exhibit—you should know what that is. Refer back to your notes if you're not sure," only to realize that he didn't know what to call the plastic basket he had filmed, not the fact that it was demonstrating the concept of *translucency*. I had to laugh at how much credit I was not giving them—they *did* know this and had *really* learned all about Light!

Finally, teacher-learners reported comments from parents. They valued these comments as evidence of the impact of their teaching and its reach beyond their own classroom. They believed that parent comments provided evidence that student content learning bridged classroom and home. Among the many parent comments provided as evidence, a first grade teacher-learner who taught a unit on matter echoed the sentiment of many when she wrote,

The reaction that I have received from the parents has been tremendous. I received many e-mails thanking me for posting our class movie. I also got feedback on how excited the students were about the assignment. One parent wrote to tell me: "Tony has been so excited about matter this week! He comes home each day bursting to tell me what he has learned during science class!"

In summary, teacher-learners reported a wealth of evidence that students had learned during the teaching of their units. They provided ample objective evidence that their students had mastered the content for which they were responsible. Through presentation and discussion of evidence gathered about the final video product (rubrics, samples, surveys, and anecdotal comments from their teacher journals), teacher-learners demonstrated a strong connection between content learning and the final video. It was clear from teacher-learners' reflections that engaging students in the process of video production reinforced and expanded students' understanding of content, resulting in positive learning outcomes.

What Worked

The second research question asked, “What do teacher-learners’ reflections report about what worked when they integrated video production in their classroom?” Four themes emerged in the “what worked” category: connections to content, student motivation and engagement, alternative assessment, and teacher identity.

Connections to content. In the connections to content category, two subthemes emerged. The first subtheme focused on the ways in which teacher-learners incorporated in-depth content knowledge as an integral part of their instructional plan. The second subtheme reflected teacher-learners’ understanding of the role of an authentic problem to direct their students’ attention to content and to create a target audience and purpose for content learning.

All teachers explicitly taught content in order to scaffold students’ ability to design and produce a video. Teacher-learners reported using a range of instructional strategies to teach concepts and knowledge, including United Streaming videos (a video subscription service, now called Discovery Education *streaming*), interactive science notebooks, textbooks, teacher demonstrations, worksheets, and research.

Teacher-learners wrote,

During this unit, students learned about matter in a variety of ways. They completed science experiments, used interactive flipcharts, investigated websites, and researched their subject matter in the science book. The culminating activity was making our matter movie.

From the start, [students] knew they would have the ultimate task of creating a light exhibit for the Smithsonian though they were not given all the details of this until after the light concepts were taught. In order to prepare them for their culminating project, they carried out lab activities and completed interactive lab notes.

Teacher-learners reported that the use of an authentic problem clearly focused students’ content learning and served to anchor learning. Because the use of an authentic problem created both a purpose and a target audience, teacher-learners reported that their students were engaged and motivated to learn content in order to meet the challenge of responding to a request for a video, whether from the school principal, an organization like the Smithsonian or the Fredericksburg Convention Center, or a television program like *Discovery Kids* or *Animal Planet’s The Most Extreme*. For example, students were challenged to create “Virginia Minutes” to help others understand the contributions of famous historical Virginians. Their teacher wrote, “Most [students] understood that they needed to entertain their audience, including little pieces of popular culture to tie the past with the present.”

Having a sense of purpose and an audience served to make content learning meaningful. “Students were more focused on completing the background building [content] activities because they were looking forward to the final activity,” wrote one high school teacher. A sixth-grade teacher-learner wrote, “Students were definitely more motivated to complete the background knowledge building [content activities] in order to get to the final project....Students were always looking for clues about the content that would help them with their [final product].” A third teacher-learner wrote, “I believe the authentic problem

really got my students excited about this unit. They were participating a lot more in class and did very well on all the assessments.”

Student motivation and engagement. In the category of “what worked,” 9 of the 17 teacher-learners indicated that the use of video production as a final unit project impacted students’ motivation throughout the entire unit. Teacher-learners understood that motivation was an integral component of the learning process. As one teacher wrote, there was a “higher level of motivation to be proficient in the skills ... [because] the teacher would be watching every video.”

Teacher-learners’ reflections identified the power of integrating video production to motivate as an unexpected positive outcome. One teacher reported, “I was completely blown away with the creativity and motivation my students showed,” while another stated, “I feared [students] would have trouble coming up with original ways to show the concept they learned; that they’d simply be copycat activities of those we did in class. Boy was I wrong!”

Seven of the 17 teacher-learners described students as engaged in and enthusiastic about the learning process while producing videos and recognized this engagement as a necessary part of content learning. Engagement was noted as students’ being “attentive during [the] entire process” and having a “high level of interest and enthusiasm.” Engagement was also described in terms of students’ ability to be on task. One teacher-learner’s description of the activity in her classroom during the project summarized the evidence of engagement particularly well:

My room was a mass chaos at some points, every student getting pictures, paper, practicing line, and making props, but if you were to walk around and listen to conversation, mostly all students were on task. The assistant in my one science class made the same comments. She said [that] even though it was loud in the room, everyone was doing what they needed to be doing. That is a great sign that things are going well and that students learned.

Finally, a third teacher-learner stated,

My students were actively engaged for the entire unit and showed much enthusiasm and energy. I had 100% participation in the project and they worked incredibly well together. I am pleased that I met my goal of getting everyone involved – even the students who are not as motivated as others in other tasks.

Alternative assessment. Four teacher-learners expressed that another aspect of what worked was the ability to use student-produced videos as an alternative assessment. Video productions provided teacher-learners with the opportunity to enjoy final presentations as part of the real audience rather than a classroom teacher and evaluator. Since the final projects were filmed, teacher-learners “did not have to worry about assessing students as they were presenting.” What worked for one teacher-learner was the ability to use the multiphase nature of the video process (written plan, storyboard, script, final production) to assess student learning at different evaluation points through the use of rubrics. One teacher-learner expressed that the use of video production as a culminating project allowed “students to see and learn from their mistakes” and “to get instant feedback by watching what they had created.” Two teacher-learners reported that opportunities for alternative assessment provided “another learning avenue for students” and “a brand new learning experience” for them.

Teacher identity. Teacher-learners described opportunities to expand their identity as teachers beyond previous teaching conceptions. From the experience of implementing units that focused on video production, teacher-learners identified emerging roles such as curriculum and instruction collaborator and supporter, innovative designer, and facilitator of student learning.

A technology resource teacher experienced “a successful collaboration with grade level teachers, as well as the school librarian. It reinforced the power of collaborative planning and the role of the technology resource teacher as a curricular and instructional resource.” This teacher-learner also noted a shift in the perceptions of school staff about her role “from a technology support role to a curriculum and instruction support role.” A second technology resource teacher described a similar experience and expressed that her role as collaborator strengthened the “positive and professional relationship that exist[ed] between [her] and the classroom teachers.”

One teacher-learner reflected that her video production unit permitted students “to accomplish something that no other student [in the school] ever did,” indicating that video production was a relatively new concept in classroom practice. Designing units that used new technologies and employed new instructional strategies such as video production offered teachers-learners the opportunity to be innovative designers. With the use of video production, teacher-learners reported they were able to design unconventional activities in disciplinary areas, for example,

Traditional PE classes only focus on skill acquisition—can a student perform a skill? Implementing technology into the PE class will now allow the teachers to focus on student learning in new ways. For some students who are not “athletes,” using technology tools will allow them to show that they are learning.

In addition, integrating video production with classroom practice called for the use of different instructional approaches and in many cases, new strategies that were unfamiliar in typical classroom settings or that required “working out of [teachers’] comfort zone[s].” One teacher-learner expressed,

For the last 4 years I have been in the same mode. Each year I use the same strategies that I learned in college. These strategies worked great. There has been no need to change. Now, though, implementing [video production] activities has forced me to use new strategies.

Teacher-learners also portrayed themselves as facilitators:

- “As a facilitator, I coached each student in their roles and then [I] moved aside so that they could share their knowledge with their group.”
- “I just floated around the room to ensure they were on-task and didn’t need any help. I offered suggestions and posed questions to get them thinking deeper.”

Yet another mentioned that she “walked around observing students” and “was impressed with how each member of the work group contributed to the overall movie.” She elaborated by describing the ways in which students rather than teachers became the classroom leaders. “Some students stood out as leaders of the group. One girl in particular continued to ask her group if each member agreed in what they were doing and how could [they] change it.” Finally, one teacher-learner, who feared her lack of experience with video would cause the project to fail, realized, “It is OK for [teachers] not to know everything. We are all learning together.”

What Was Challenging

The third question of the study asked, “What was challenging to teacher-learners when they integrated video production, according to their reflections?” Three themes emerged in this category: limitation and availability of equipment, issues with locality, and the influence of time.

Limitation and availability of equipment. Teacher-learners indicated that equipment issues posed obstacles for which adjustments had to be made during unit implementations. These obstacles included incompatibilities associated with video devices and computers, incompatibilities associated with computers and video editing software, use of equipment that proved to be too complicated for student use, or an insufficient number of video devices. To overcome these challenges, classroom teachers sought help from technology resource teachers to solve problems or, as in most cases, found their own solution by locating one computer that was compatible with the video devices or substituting a more complex software program with one less complicated. In addition, challenges related to equipment shortages were overcome by limiting the number of groups working on the project at any one time. One teacher-learner reflected that better planning would have eliminated the issue related to equipment shortages:

In preparation, it should have been obvious that one camera would not be enough for 6 groups. This became a problem when several groups were ready to tape but did not have access to the equipment. One thing that could have been done would be to use a variety of video equipment. This would have been a great experience to compare all of the videos using different types of video recording equipment.

Issues with locality. Challenges associated with locality also emerged from teacher-learner reflections. Teacher-learners indicated that finding an appropriate space for filming was difficult. Locating spaces with adequate lighting and quiet areas for single group use proved to be problematic and often “hindered the quality of recording and the product of the tape itself.” One teacher-learner expressed that video production required the need to “define film sound stage areas.” Yet, teacher-learners found that areas of this type were often unavailable in a school setting. One high school teacher resolved the problem by having student groups complete filming at home. Another teacher-learner reported solving the problem by using additional classrooms and calling on colleagues to help:

I had 5 flip video cameras, 5 groups, and 1 gym. That is not an ideal situation for videotaping. I had to put the 3 groups into 3 sections of the gym and have them get their scenes and equipment ready to go. In doing so, they had to be quiet as another group would be taping. There was a lot of “Quiet on the scene” going on as well as trying to get the groups ready for their scene in the mean time. I had the other 2 groups in the SACC rooms filming with another PE teacher. I took these groups on my planning time and lunch periods to get the filming done. I would like to find a realistic way to get this filming done without using several teachers and different locations to do so.

The influence of time. Similar to teacher-learners in Girod et al.’s (2007) study, two teacher-learners found the demands of their unit and the incorporation of video production to be “unrealistic in the real world” and that “the amount of preparation that is involved simply cannot be done during an elementary school teacher’s planning time.” Yet, for most, the concerns with enough time to plan and implement their lessons was less a problem than a consideration to be accommodated. Eleven of the 17 teacher-

learners reported that their unit was “time consuming” and that more time needed to be allotted in order to carry out the planned activities.

They did not, however, view these time constraints as reasons for rejecting the use of video production as an instructional strategy. In many instances, the mention of time as a challenge was made almost in passing and without elaboration. They wrote,

- “I did not allow enough time.”
- “My plan was extensive and time consuming.”
- “I would allocate more time for this unit in the future.”

The absence of complaints about time constraints in teacher-learners’ reflections was particularly noteworthy. Teacher-learners acknowledged time was a challenge for which they needed to develop adaptations. Rather than rejecting video production as a time consuming activity, teacher-learners suggested that additional support in the form of parent volunteers could be enlisted to better meet individual needs of students during the videoing process. Teacher-learners conveyed the need to plan a more realistic timeline for completing video productions. One teacher-learner summed it up, “I would use videos again, and I just think the more that the students and I use them, the easier it will be to work with them in the future.”

In summary, teacher-learners offered insights into both the positive and challenging aspects of integrating video production. What worked for teacher-learners was the positive influence on content learning. They attributed this, in part, to increased student motivation and student engagement and, in part, to the use of an authentic problem to help students establish purpose and audience. In addition, integrating video production had positive impacts on them as practitioners. Video products were assessed using alternative assessment strategies, and teacher-learners reported an emerging appreciation of the power of alternative assessment to better understand learning outcomes. The integration of video production also altered their sense of themselves as teachers. Many identified an emerging understanding of their role as that of collaborator, supporter, facilitator, and innovative designer – an identity beyond that of presenter and manager. Challenges related to equipment, logistics, and time were structural at the school level but were not inherent in instruction. The challenges were perceived more as problems to solve than barriers preventing use of video production.

Discussion and Recommendations

Teacher-learners in this study began with many of the same concerns expressed in the literature. They did not have enough time in their crowded day (Girod et al., 2007). They were not competent or knowledgeable enough (Grahame & Simons, 2004; Hart & Hicks, 2002; Hobbs, 1998; Kirwan et al., 2003; Miller, 2007; Reid et al., 2002). Their students would not be able to create original video (Stafford, 1992). Students would not learn the required content.

The reflections of the teacher-learners in this study, however, made it clear that the content learning outcome of their efforts to design learning opportunities using video production was positive and, in some cases, more effective than previous attempts to teach the same content. Reports of objective measures of content learning demonstrated mastery of content learning goals. Results of rubric assessments provided evidence that students were able to create videos that were well conceived, creatively produced, and reflective of in-depth content understanding. Anecdotal evidence from samples of student work, teacher observation journals, student surveys, and parent comments all pointed to

the power of learning organized around an authentic problem and the production of video. In the hands of these teacher-learners, video production fostered mastering the complexities of disciplinary knowledge (Hobbs, 1998) and supported grounding the use of technology in discipline-specific content and processes (Hofer & Swan, 2005).

Not only were teacher-learners' reports of student learning robust, they also reported learning personal lessons from their own attempts at practice. They mentioned an emerging appreciation for alternative assessment, both as a means to capture and discuss student learning and as a strategy for assessing higher order thinking, diverse learners, and learning not normally valued by traditional assessment strategies. They mentioned insights about the nature of their own role as a teacher, moving beyond presenter and evaluator to designer, collaborator, and facilitator. They rejoiced in their ability to share student learning with parents because they had a creative, content rich product to share. They wrote of the challenges they faced—challenges of locality, equipment, and time—and the ways in which they overcame those problems.

As teacher-learners worked to integrate video production, they wrote vigorously about the ways in which they connected content with video production, noting the range of content knowledge built through multiple teaching strategies and the ways in which that knowledge became part of students' video planning and production. Teacher-learners wrote in depth about the power of an authentic problem to provide a purpose and an audience to guide their students' content learning. They recognized how the authentic problem motivated, engaged, and focused content learning.

Recommendations

Given evidence from the teacher-learners in this study in support of the power of video production to promote content learning, there is a role for video production in K-12 classrooms. Clearly, one recommendation resulting from this study is to incorporate video production in K-12 classrooms by considering it an instructional strategy or activity to support content learning.

Since teachers are responsible for selecting instructional strategies, realizing the possibilities of video production depends on providing teachers opportunities to learn and think deeply about video production (Miller, 2007). Findings of this study suggest several recommendations for the design of opportunities for teachers to learn to maximize the power of video production.

- Teachers need the opportunity to learn that video production has a place in their practice when understood as an instructional strategy to promote content learning.
- Teachers need the opportunity to learn to use authentic problems with video production in order to link purpose, audience, motivation, and engagement with content learning.
- Teachers need the opportunity to learn to create and use effective rubrics as a way to both structure the video design process (written plan, storyboard, script, and final product) and to provide clear evidence of learning in a domain that does not always lend itself to more traditional assessment.
- Teachers need the opportunity to learn, discuss, anticipate, and resolve infrastructure considerations that impact the integration of video production.
- Teachers need to consider the use, availability, and compatibility of equipment, the logistics associated with space, noise, lighting, and adult assistance, and time

considerations related to planning and producing video before using video rather than encountering these problems in practice.

Conclusion

In today's schools, the pressure is on. Schools and school districts are required to meet annual yearly progress goals. Teachers are required to prepare students for high stakes tests and to cover a wide array of curricular mandates. In an increasingly crowded day, teachers are asked to teach more and more to a generation of students with little tolerance for teacher-directed, textbook-based learning. As The Nielsen Company (2009) wrote, "Teens are wildly different—not from other consumers today, but from teens of generations past" (p. 16). It is often challenging for practicing educators to honor the media habits of today's students. Clearly, there is little or no time to add television and the possibilities of digital video as an independent object of study in an already complex set of educational requirements. Yet, as the reflections of the 17 teacher-learners examined in this study suggested, video production used as an instructional strategy and integrated in classrooms in robust and rigorous ways promotes content learning.

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Appendix
Summary of Unit Plans Including Video Production as an Instructional Strategy

Grade/ Subject	Content	Authentic Problem	Evaluation
K Science	weather, temperature, barometric pressure, winds - direction, speed, precipitation, storms, warnings and watches, Internet research	The school principal comes to class to request morning weather reports for broadcast on the school system. Will the Kindergarteners help next week?	rubric, teacher journal, student survey, samples of student work
1 st Science	states of matter, liquid, solid, gas, forces that change matter, examples of each kind of matter, characteristics of each kind of matter, Internet research	Create an episode of <i>Bill Nye the Science Guy</i> to teach other 1st graders about matter.	pre-post test, teacher journal, samples of student work
3 rd Social Studies	US geography - states, role of history in each state, Internet research, media literacy, teach other teachers about using video in classroom	Request from National Commission of Tourism—need short segment on each state with interesting history fact— <i>The Virginia Minute</i> .	Rubric to assess teamwork, sequence, design, sound, production techniques, samples of student work
3 rd /5 th Special Project	integrate and draw on student knowledge of math, multi-cultural awareness, writing, oral communication, presentation skills, geography	School principal is looking for some cooking segments representing the cultures of students in the school to be shown on the school's morning TV message. Will students interview parents for favorite family recipes around the world and create a video showing how to make the recipe?	student survey, rubric, samples of student work, teacher journal
4 th Social Studies	important historical events in Virginia history, review topics selected from SOLs, organizing information, Internet research	Virginia Historical Society seeks 60-second infomercials that accurately and creatively teach important aspects of Virginia history for their new series, <i>The Virginia Minute</i> .	student survey, rubric for video for main concepts, teacher journal, samples of student work
4 th	motion - force, speed, work, inertia,	Discovery Channel for Kids is seeking to	content test, rubric to assess

Science	friction, kinetic energy, potential energy, Internet research	expand its video collection about science concepts. Will you produce a video on motion for them?	video (did it demonstrate concepts learned), teacher journal, samples of student work
4 th Science	animal adaptations, types of adaptation, role of adaptations in helping survival, food chains and webs, human adaptations, how humans impact animal environments, Internet research	Will the class create an episode of Animal Planet's Most Extreme on adaptations with small groups choosing an animal and doing one segment?	rubric for treatment, rubric for storyboard, rubric for video, end of unit test, teacher journal, samples of student work
4 th Science	the ocean: depth, currents, salinity, continental shelf, trenches, plateaus, ecosystems, pollution/conservation, ocean resources (food, energy), role in water cycle, Internet research	Local television channel is looking for information videos to show free of charge on Sunday mornings. Would the children make videos on the ocean's living life forms?	test from textbook teacher manual, rubric for videos, teacher journal, samples of student work
5 th Science	light - color, heat, refraction, reflection, convex, concave, transparent, opaque, scientific process - questioning, predicting, note taking, collaborating, Internet research	Smithsonian Museum is considering putting together a traveling exhibit. They want to include a number of topics including light. Each exhibit will have a brochure and a short video. Would students help by creating the light exhibits?	teacher journal, content test, rubric for video, rubric for brochure, samples of student work
6 th Science	the role and work of a meteorologist, water, wind, air pressure, and temperature, reading a weather map, identifying weather instruments, learning how to read weather instruments, and forecasting the weather, Internet research	The local weather station wants to change the way their station is forecasting the weather. They want to target a younger audience. They have asked our class to make sample videos of students forecasting the weather.	content test, student science journals, teacher journal, rubric for video, samples of student work

6 th Physical Education	basic tumbling skills, identify and perform the basic movements and positions to for each tumbling skill - log roll, egg roll, forward roll, backward roll, tip up, tri pod, head stand, hand stand, cartwheel, and round off, understand and observe proper safety techniques	The authentic problem is to become performer and a creator of a video that will be used to help a up and coming tumbling instructor with his new tumbling facility. The video will be used by the instructor to help his new members.	rubric to assess video, teacher journal, student journal entries in physical education portfolio, samples of student work
6 th Physical Education	bowling: role of an event coordinator, advertising strategies, logos, slogans, organizing events, rules for bowling, scoring	Will students become event coordinators and plan and put on the bowling tournament for 2 nd graders, creating advertisements, signs, a logo, a slogan, layout for the gym, and "How to Bowl" videos to teach 2nd graders about bowling rules and scoring?	rubric - each product including video, student survey, teacher journal, content test, samples of student work
6 th Language Arts	comprehension of a variety of fiction - the mystery genre, writing for promotional purposes, writing for clarity, write for specific audiences, learn about the publishing and book promotion	Students are invited by Puffin Publishing to create a promotional plan for the re-launch of The Westing Game in celebration of the book's 30th anniversary. The plan should include an invitation to the release party, a new book cover, a press release, and a video interview with the author or a commercial.	content test, multiple rubrics including a rubric for their video project, teacher journal, samples of student work,
7 th Language Arts	explore primary means of communication, examine verbal and nonverbal messages and use both appropriately, explore their roles as information gatekeepers and the responsibility to inform the public of issues, to work cooperatively as a group, to report the facts of the issue without bias, Internet research	The principal is an aficionado of television documentaries. He has asked us to prepare short videos on historical subjects to run over the closed circuit television system in our school. He is proposing a series called The Progressive News –a series of news segments that report news events from the progressive era in U. S. History	rubric for video, student survey, teacher journal, samples of student work, students' reflective paragraphs

10/11 Spanish	Spanish cuisine, the varied kinds of food and its connection to regions, understand and be able to give positive and negative informal commands, using the passive voice, fluently communicate a recipe and directions in the kitchen for cooking the foods, Internet research	The tourism board of Leesburg is asking members of the community to propose a Spanish restaurant—one that serves authentic Spanish food not Mexican. They seek proposals includes a recommended menu and meals from appetizers to desserts, example advertisements, a name of the restaurant, a proposed decor, and videos demonstrating the preparation of selected recipes.	content quizzes, student survey, teacher journal, samples of student work
HS Sign Language	learn to sign work-related vocabulary, discuss the Americans with Disabilities Act in relation to the workplace, present descriptions of the four titles related to the Americans with Disabilities Act, discuss challenges in the workplace for Deaf and Hard of Hearing individuals, Internet research	Pulley Career Center works with special needs students providing them career and independent life skills. As part of their training program, they would like to educate their staff more about the Americans with Disability Act. Instead of handing out printed materials, administration is looking for public service announcements and training videos.	content quizzes and tests, teacher journal, rubric for video, samples of student work
HS Marketing	prepare marketing materials by preparing a variety of promotional media for presentation, learn to prepare promotional print advertisements, radio commercial copy, and broadcast commercials, compare and contrast the benefits of various types of promotional media, Internet research	A convention center is opening. The first event will be a trade show presenting potential business opportunities to local entrepreneurs. The Center has asked the marketing class to prepare newspaper advertisements, develop radio announcements, and create a television commercial all promoting the trade show.	content test, series of rubrics for promotional materials in various media formats, student journal entries, samples of student work, teacher journal