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THE USE OF VIDEO ANALYSIS TO IMPROVE PERFORMANCE

By
Dillon Sain

A Dissertation Submitted to the
Gardner-Webb University College of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

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Approval Page

This dissertation was submitted by Dillon Sain under the direction of the persons listed below. It was submitted to the Gardner-Webb University College of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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unnoticed.

Abstract

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This case study was an exploration of how sport coaches, teachers, instructional coaches, and administrators use video analysis to improve performance. The study helped to reveal the usage of video analysis and its perceived advantages and barriers. The case study helped to determine frameworks for practical use by school districts or individual educators. Data revealed a lack of use due to the lack of understanding of how to use video analysis to improve performance as well as limited frameworks for use. Professional development remains a high need in education, and the case study revealed self-video analysis as a viable option as a professional development tool. An understanding of the reflective learning theory of John Dewey was noted in this study to properly understand the basics of reflection and how it can lead to an enhancement of performance and be a driver of change. Recommendations from this study include the need for training on how to utilize video analysis and frameworks put into place for teachers, instructional coaches, and administrators.

Keywords: coach, instructional coach, reflective practice, North Carolina educator evaluation system Standard 5, video analysis

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Chapter 1: Introduction

Video analysis is a vital tool used for self-reflection and the improvement of skills in various fields. The field of athletics and education use film to analyze performance (Flowers, 2019; McCullagh, 2012). Although many use video to capture daily events, few educators use video to analyze their practice in order for self-improvement to occur on a consistent basis (Flowers, 2019). In the education field, video reflection has not been used to the extent it is used in the athletic world (Knight, 2014a). If teachers were to capitalize on video reflection, they could enhance the impact they have on students. "It could be argued that teachers' interactions have more long-term impact than any other professional skill, yet video observation and reflection is not yet the norm in schools" (Flowers, 2019, p. 37). Flowers (2019) echoed Thomson (2012) in stating that the lack of video reflection by teachers for the purpose of improving practice is where the problem lies. The athletic world is using video analysis to improve performance (Thomson, 2012). The strategies and frameworks athletics incorporate lead to improved performance and outcomes (Pedicini, 2014). In teaching, the same strategies and frameworks used in athletics may also lead to improved performance in the educational setting (Knight, 2014a; McCullagh, 2012).

According to McCullagh (2012), a person's memory cannot always be relied on to remember details. Minor details and context can go unnoticed or misinterpreted because the human mind can cloud the judgment of our own performance. In education, film can provide a teacher with details of what took place during a lesson instead of what the teacher or observer remembers (Knight, 2014b). Video allows the viewer to relive the action that took place. Teachers are then able to reflect as time permits, and the video can

be viewed and shared as often as needed (McCullagh, 2012). This type of action is similar to the post-game review of film in athletics. Teachers can relive the play by play of the action in their classrooms (Thomson, 2012). Thomson (2012) provided more insight on the use of video reflection in athletics. Lessons on the value of video reflection can be found in the athletic realm. The world of athletics has embraced the use of film analysis to improve performance and is reaping its benefits.

As stated by Jones (2019), athletes and coaches are aware of the impact of film analysis on performance. In many athletic team film sessions following practice and games, the mantra of the "eye in the sky does not lie" is often stated. Athletic teams understand film is the missing piece of practice and preparation that will lead to increased success in gameplay (Jones, 2019). The camera has no opinion and provides the truth we all seek when attempting to improve our performance (Knight, 2014a).

Video Analysis

The use of video as a tool to analyze performance can be helpful to those who use it for the goal of self-improvement. Video analysis is a tool for reflective practice that captures experiences that can be shared. Video reflection and analysis can enrich the dialogue, increase collaboration, and be used as a mediation tool (McCullagh, 2012). Mediation can come from a mentor, coach, or peer. Video can be shared, making it a valuable teaching tool. The ability to share film allows for analysis from others, which enables more feedback to be given. Teachers are professionals and take pride in being viewed as professional educators (Marzano & Toth, 2013). Video recordings can be used in a way that respects teacher professionalism in the classroom (Knight, 2014b). Knight (2014b) stated that video can prompt educators to reflect on their practice and enable

them to learn new ways to teach content. Video can also allow teachers to observe video of their colleagues and have colleagues provide feedback of their video in exchange, also known as peer review, without taking away from instruction. This type of video reflection allows teachers to implement new practices learned from others and learn what is and is not working in their own classroom (Knight, 2014a).

Role of an Athletic Coach/Instructional Coach

Coaches have a level of expertise that allows them to help mold and improve people into a better version of themselves (Flowers, 2019). Coaches have many responsibilities, including building relationships, being an encourager, and demonstrating the right way to do something. It is the coach who can provide motivation to help the pupil do things better than they would otherwise. The coach's primary goal is to improve the effort of people (Flowers, 2019). Coaches push others to places they have not gone and to levels of greater achievement along the way. A coach is a person of inspiration who can help bring out their pupil's full potential. Teachers inspire their students to learn, but the teacher also needs a mentor, who is often referred to as a coach. In education, this can be a person who inspires others to also coach and teach (Flowers, 2019). As stated by Flowers (2019), coaches have a way of pushing individuals and teams to places unseen by the mind of those being coached. The coach knows the end product they want to see the pupil achieve (Flowers, 2019).

Learning and teaching are frequently taken for granted. Napolitano (2014) believed that teaching and learning are inevitable, even sometimes automatic, when a person is shown how to do something. People can then show others what they can and cannot do or even what they know or do not know (Napolitano, 2014). Flowers (2019)

spoke to the benefits of coaching as the opportunity to see yourself through another person's eyes and reflect on the performance. A coach is able to analyze performance through their own personal lens. When paired with a coach's feedback, video analysis makes for valuable growth opportunities (Flowers, 2019).

Video Use by Athletic Coaches

In athletics, coaches attempt to bring the absolute best qualities and skills out of their athletes (Flowers, 2019). In athletics and the workforce, people need a coach in either an official or unofficial status to improve their performance. Coaches use multiple tactics to help the pupil reach their full potential (Crane, 2017). Relationships, encouragement, demonstration, and inspiration are all tactics used to help pupils reach goals set by the individual and the coach. The benefits of a coach on performance provide opportunities the individual cannot find on their own (McCullagh, 2012).

Also in athletics, valuable feedback can come from a discussion between player and coach. The conversation can occur during gameplay and practice (Jones, 2019). Feedback between player and coach can have an impact on future actions. During gameplay situations or practice, players and coaches can refer back to previous conversations that can improve the actions of both in-the-moment or future situations. Jones (2019) went further to discuss in detail that the player and the coach are able to reference mental notes from coach and player discussions many hours later during practice drills and even during gameplay.

The film room is just as important as the practice field. Coaches use film to study their team and the opposing team prior to gameplay. Film is studied to better understand the opponent's tendencies, strengths, and weaknesses (Trevino, 2015). Film study in

athletics can also enable coaches to see their own team's strengths and weaknesses and determine areas that can be used as an advantage. In the past, film study took a considerable amount of time and was not easily navigated (Trevino, 2015). Today, film is easier to analyze and navigate with the use of phones, iPads, and computers. Making film even more accessible is the ability to view it anywhere with wireless internet. In the past, coaches relied on videotapes and more recently digital versatile discs (Constine, 2015). Film study is widely used in American football. The use of film analysis is one of the most important aspects of the game. Film analysis is used from the highest level of football, the National Football League, all the way down to little league (Trevino, 2015).

Film use in general is beneficial, as 65% of people learn visually (Pedicini, 2014). Most athletes prefer to see what they are doing right or wrong in order to learn. Video analysis provides a competitive edge. The competitive edge includes video use in preventing injuries, instant replay, scouting, breaking down film of upcoming opponents, and injury prevention (Pedicini, 2014).

Video Use by Instructional Coaches

Instructional coaches are human resources who are used to help educators make progress professionally. Crane and Patrick (2014) stated, "as coaching becomes a predominant cultural practice, it will create a performance-focused, feedback-rich, organization capable of creating and sustaining a competitive advantage" (p. 12). When an instructional coach is able to use video to coach a teacher on classroom practices, the feedback is concrete (Knight, 2007).

Instructional coaching is a skill that takes intentional conversation and planning in order to help teachers reach their full potential (Knight, 2014a). Transformational

coaching is the form of coaching instructional coaches find most successful. “The art of assisting people enhances their effectiveness, in a way they feel helped” (Crane & Patrick, 2014, p. 31). Instructional coaches are able to help teachers understand objectives and find more effective practices for achieving goals (Crane & Patrick, 2014). Coaching of teachers can lead to more of a focus on skill development. These skills can be social-emotional, behavioral, and an academic need (Flowers, 2019).

Reflective practice has the capability of enhancing the benefits of instructional coaching. Video analysis provides access for teachers to reflect with instructional coaches (Crane & Patrick, 2014). Instructional coaches are able to coach teachers by breaking down a teacher’s lesson and providing feedback. “When we do video coaching correctly, reflection becomes the driving factor and continuous improvement becomes second nature” (Flowers 2019, p. 37).

Video analysis use by instructional coaches has obstacles to overcome to effectively impact the performance of teachers. Feedback on technical skills such as positioning in the room and broadcast of material is not typically taken personally by the feedback receiver. When feedback is complex and focuses more on teaching practice, people are more likely to be defensive about what they hear (Knight, 2014a). These barriers must be eliminated for growth to take place. “Suggestions on classroom management are usually harder to listen to than suggestions on how to use a computer program” (Knight, 2014a, p. 40). If teachers are able to understand and learn the benefits of video analysis for the purpose of improvement, personal and professional growth will occur (Flowers, 2019).

Video Use by Administrators

Administrators can also benefit from the use of video analysis in the area of teacher evaluation. In post conferences where administrators discuss evaluations with teachers, video analysis can enhance the level of conversation and feedback (Brunvand, 2010). To illustrate the benefit of video analysis in evaluation conversations, principals do not have to spend their time talking about memories of the lesson but can speak to specific points in time (Knight, 2014a). Video allows principals to provide specific feedback by reviewing the film with teachers. The review of lesson videos takes away principals having to recall actions and allows for coaching moments that otherwise would not take place without video evidence (Brunvand, 2010). The use of video analysis makes it possible for teachers and administrators to analyze the same moment in time from different perspectives. This is something that direct observation is incapable of providing (Brunvand, 2010).

There are perceived negative aspects of principals reviewing film that must be overcome to increase the use of video analysis by teachers. If video cameras are tools used for control, teacher morale in school buildings could decline and positive change due to increased video analysis by teachers would not occur (Knight, 2014a). Additionally, teachers must know the use of administrator film analysis of classroom performance is not punitive but used as a tool for professional growth. If administrators believe that teachers work better under pressure or fear, they are mistaken. “Negative inner work has a negative effect on the four dimensions of performance: People are less creative, less productive, less deeply committed to their work, and less collegial to each other when their inner work lives darken” (Amabile & Kramer, 2011, p. 3). It is

important for administrators to make sure their staff know that learning must take place in a professional culture. For this to be understood in schools, the principal must provide a clear picture of desired teaching in the classrooms. Progress must be measured to monitor professional development goals. Video analysis provides a measurement tool and can also make a strong impact on learning by students and teachers (Knight, 2014a).

Another obstacle for administrators to overcome in order for teachers to see the benefit of video analysis is trust. It would be problematic for administrators to make video analysis mandatory for their staff (Gallwey, 1974). Gallwey (1974) stated, "When you insist, they will resist" (p. 71). As previously mentioned, mandatory video use could lead to a damaged school culture and develop a lack of trust between administrators and teachers. Administrators must first build trust to help teachers understand the value of video analysis before implementing it school wide (Knight, 2014a). Administrators will need to prove to staff the importance, relevance, and reliability of video before widespread use takes place (Brunvand, 2010).

Video Use by Teachers

Preservice teachers in colleges and universities are being trained by analyzing classroom video. Preservice teachers are seeing real-life situations unfold and are taught how to fix mistakes and build upon successes by what they view on video (McCreary, 2019). If preservice teachers are learning how to be better educators by viewing real-world teaching film, then practicing teachers can use film in the same manner for improvement (van Es & Sherin, 2009). The preservice teachers will be viewing film of situations they will encounter before they ever step in the doorway of their own classroom (McCreary, 2019). This method of instruction for teachers in order to teach

and overcome obstacles in the classroom has been criticized by those who feel a camera in the classroom will not capture authentic interactions (van Es & Sherin, 2009).

On the other hand, many believe that because video is easy to use, and because it can lead to measurable change, it will lead to increased teacher performance (Knight, 2014a). The measurable changes provided by video analysis are things such as classroom management, time on task, transitions, comprehension, and student achievement (Knight, 2014a; McCreary, 2019). Many teachers realize that there is much to be learned from watching video of their lessons. The setbacks are that teachers want to know that their video will not go public for fear of what the video will reveal. Classrooms are personal places where teachers pour their lives and hearts into their profession, and this must be respected (Marzano &Toth, 2013). If teachers can understand the ingredients that lead to success with video analysis, the benefits are endless. The ability to see themselves in live practice and be able to deconstruct it and analyze it can become a game changer in professional growth (McCreary, 2019). Knight (2014a) stated, "Teachers usually recognize that they can learn a lot by watching a video of one of their lessons, but they want to be assured they will not have to conduct that learning publicly" (p. 23). Lastly, it has been shown that the use of video analysis by teachers can lead to changes in teacher beliefs and can help teachers engage in reflective practice. Video analysis can help teachers see how to model their own practice and reach a level of desired practice (Wang & Hartley, 2003).

Problem of Practice

Teachers are not using video analysis to improve practice effectively. More specifically, teachers are not using video analysis as a self-reflective tool to improve

instructional practices (Flowers, 2019; Knight, 2014a). The issue is the need for professional growth, helping people improve performance. “When speaking about education directly, when you mention video observation, fear often spreads across teachers’ faces as if they just woke up from a recurring nightmare” (Flowers, 2019, p. 36). In order to solve this problem, educators must be able to understand why video reflection of practice is beneficial. There are fears teachers must overcome. “Watching ourselves on video can truly be unsettling. First, people are never satisfied with their appearance. More important, though, watching a video of themselves forces people to rethink who they are and what they do as professionals” (Knight, 2014a, p. 22).

Watching video of yourself can challenge the emotions of people. People have a hard time embracing video reflection unless they feel they can view the film in a safe environment (Knight, 2014a). The challenge is illustrated more by Flowers (2019): “The main challenge with video coaching is overcoming the coach’s and teacher’s discomfort with hearing and seeing themselves on video” (p. 38). The daily schedule of an educator can present obstacles to film analysis. Teachers have many responsibilities and limited time between classes. There is also limited time after school for professional development (Gibbons & Farley, 2019). It is important to make time to watch video and have discussions with peers and coaches to receive feedback (Knight, 2014a).

Purpose

Video analysis has many purposes in the educational environment of today. Video analysis can encourage personal growth, and the cost is minimal. Video can also be used by administrators for the purpose of evaluation (Gibbons & Farley, 2019). This study sought to discover how teachers, administrators, and instructional coaches can effectively

use video to improve performance. It is known that film analysis can lead to improved performance in athletics (Jones, 2019). It must be used more in education to build teacher capacity. Video has the ability to increase the desire of teachers to reach their full potential (Knight, 2009). When people see themselves on video, they can spot areas for improvement that they would not be able to see otherwise (Knight, 2014a). Video can provide a clear view of the classroom and can provide a progress measurement. In regard to professional learning, video can impact student learning (Knight, 2014b). The use of video reflection is the use of the reflective practice. As shown in the figure, teacher reflection is an essential aspect of the teaching profession that can lead to improvement. "Engaging in reflective practice is generally considered a core standard and benchmark within the teaching profession" (McCullagh, 2012, p. 139).

Figure

North Carolina Educator Evaluation System Standard 5 Rubric

North Carolina Teacher Evaluation Process

Standard V: Teachers Reflect on Their Practice

Observation	Developing	Proficient	Accomplished	Distinguished	Not Demonstrated (Comment Required)
	Element Va. Teachers analyze student learning. Teachers think systematically and critically about student learning in their classrooms and schools: why learning happens and what can be done to improve achievement. Teachers collect and analyze student performance data to improve school and classroom effectiveness. They adapt their practice based on research and data to best meet the needs of students.				
	☐ Recognizes the need to improve student learning in the classroom.	. . . and ☐ Provides ideas about what can be done to improve student learning in their classroom.	. . . and ☐ Thinks systematically and critically about learning in their classroom: why learning happens and what can be done to improve student achievement.	. . . and ☐ Provides a detailed analysis about what can be done to improve student learning and uses such analyses to adapt instructional practices and materials within the classroom and at the school level.	
	Element Vb. Teachers link professional growth to their professional goals. Teachers participate in continued, high-quality professional development that reflects a global view of educational practices; includes 21st century skills and knowledge; aligns with the State Board of Education priorities; and meets the needs of students and their own professional growth.				
	☐ Understands the importance of professional development.	. . . and ☐ Participates in professional development aligned with professional goals.	. . . and ☐ Participates in professional development activities aligned with goals and student needs.	. . . and ☐ Applies and implements knowledge and skills attained from professional development consistent with its intent.	
	Element Vc. Teachers function effectively in a complex, dynamic environment. Understanding that change is constant, teachers actively investigate and consider new ideas that improve teaching and learning. They adapt their practice based on research and data to best meet the needs of their students.				
	☐ Is knowledgeable of current research-based approaches to teaching and learning.	. . . and ☐ Considers and uses a variety of research-based approaches to improve teaching and learning.	. . . and ☐ Actively investigates and considers alternative research-based approaches to improve teaching and learning and uses such approaches appropriately.	. . . and ☐ Adapts professional practice based on data and evaluates impact on student learning.	

Note. This figure shows Standard 5 of the Teacher Evaluation System. *Teachers. NCEES Information and Resources* (https://sites.google.com/dpi.nc.gov/ncees-information-and-resource/teachers; North Carolina Department of Public Instruction [NCDPI], 2015).

North Carolina Educator Evaluation System–Standard 5 Reflection

The North Carolina Educator Evaluation System (NCEES) is used by administrators to evaluate teachers. Standard 5 of the evaluation rubric pertains to

teachers and their reflective practice. Teachers are rated at five different levels. The levels start at not demonstrated, followed by developing, proficient, accomplished, and distinguished.

NCEES's Standard 5 for teacher reflection of their practice correlates directly with the study, especially the aspect of teacher reflection. As shown in the figure, Standard 5 of NCEES, teachers must have evidence that they think systematically and critically about student learning in their classrooms and schools. Teachers must also provide evidence that reflection and thought are put towards why learning happens and what can be done to improve achievement. Teachers must adapt practice based on research and data to best meet student needs. This can correlate closely with video reflection. The data can be from notes of self as well as coach input. Professional growth being linked to professional goals can directly correlate to video reflection as well. Goals can be derived from one's video reflection of performance. The element of teacher understanding that change is constant and that they must actively investigate and consider new ideas that improve teaching and learning also correlates to video reflection to improve performance. Teacher self-reflection using video will force the issue of understanding change (Knight, 2009).

North Carolina Digital Learning Competencies for Classroom Teachers

NCDPI (2019) developed digital learning standards for teachers beginning in the 2020-2021 school year. The digital competencies were composed with knowledge from the International Society for Technology in Education and the International Association for K-12 Online Learning. The North Carolina Professional Teaching Standards were also part of the development of the competencies and are to be viewed as an extension in

regard to the way digital technologies affect schools (NCDPI, 2019). According to NCDPI (2019) teachers and administrators should put the competencies into practice in order to enhance their professional practice and improve student learning. The digital teaching and learning competencies for teachers are

1. Leadership in Digital Learning–Teachers will demonstrate leadership in accelerating their integration of digital teaching and learning pedagogies.
2. Digital Citizenship–Teachers will model and teach digital citizenship by the ethical, respectful, and safe use of digital tools and resources that support the creation of a positive digital school culture.
3. Digital Content and Instruction–Teachers will know and use appropriate digital tools and resources for instruction.
4. Data and Assessment–Teachers will use technology to make data more accessible, adjust instruction to better meet the needs of a diverse learner population, and reflect upon their practice through the consistent, effective use of assessment (NCDPI, 2019).

North Carolina Digital Learning Competencies for School Administrators

The North Carolina Depart of Public Instruction also developed digital teaching and learning competencies for administrators. The competencies are to be viewed as extensions of the North Carolina Standards for School Executives. NCDPI (2019) believed administrators should use the competencies to build staff capacity, improve practice in their building, and improve student learning. Administrators should also be models of the competencies they expect from school staff. The digital learning competencies for school administrators are

1. Vision and Strategy–Administrators will create and communicate a vision for digital teaching and learning in their schools, embedding it into the strategic plan for implementation and execution.
2. Content and Instruction–Administrators will be the "lead learners" in their schools, modeling appropriate instruction.
3. Human Capacity and Culture–Administrators will leverage digital tools and resources to further develop a positive culture of learning that seeks continuous improvement among staff and students.
4. Personal Growth and Connectedness–Administrators will develop a personal learning network and demonstrate a dedication for continued growth and excellence.
5. Community–Administrators will engage all stakeholders in the purpose and function of the school, leveraging multiple types and points of connection and communication to ensure the constant, effective flow of information and input (NCDPI, 2019).

Research Questions

The following research questions guided the study:

1. How do sport coaches use video analysis to improve performance?
2. How do teachers use video analysis to improve performance?
3. How do instructional coaches use video analysis to improve performance?
4. How do administrators use video analysis to improve performance?

Significance

The leaders of the technology world agree that video recordings can be useful in

education. Bill Gates provoked an explosion of commentary when he suggested in his May 2013 TED Talk that a video camera should be in every teacher's classroom (Knight, 2014a). The use of video analysis as a self-reflection tool used for improvement in the educational classroom can provide authentic feedback and help teachers improve their trade of teaching. "Video not only lets us see more closely into our classrooms, but it also gives us access to ourselves. It allows for the closer examination of our practice, particularly the contribution of self" (McCullagh, 2012, p. 146). The most crucial goal of video reflection is self-improvement. Video analysis is far from looking at how you look but how you act, respond, motivate, speak, and teach (McCullagh, 2012). The use of video analysis will help people in their approach in future situations. The individual can reflect back on the film of what transpired previously and learn from mistakes and capitalize on strengths. Video enables people to be better equipped and use different techniques that will improve past performance (McCullagh, 2012).

Setting of Study

This study was conducted in a medium-size, rural school district in western North Carolina. The school district consists of 26 schools: 14 elementary schools, five middle schools, four high schools, one special needs school, one alternative school, and one middle college-high school. The district serves approximately 12,500 students and employs approximately 1,263 teachers. Of the 1,263 teachers, 312 are considered "beginning teachers," determined by the state of North Carolina as teachers in the first 3 years of their careers. The school district has 32 employees who are instructional coaches. The instructional coaches are spread across seven departments including elementary, secondary, exceptional children, technology, academically and intellectually

gifted, career and technical education, preschool, and English as a second language. Information was gathered from the district's human resources department.

The school district employs 48 school administrators. Of the 48 school administrators, 27 are principals and 21 are assistant principals. The added number to the total number of schools reflects the lead administrator for the virtual academy that was created in the summer of 2020 due to the Covid-19 pandemic.

Along with teachers, instructional coaches, and administrators, this study also gathered information from athletic coaches who taught academic subjects at the high school level.

Overview of Methodology

Data were collected in this qualitative study through one-on-one semi-structured interviews with 20 participants. The 20 participants were in groups of five. The four groups were high school varsity athletic coaches, teachers, instructional coaches, and administrators. Themes were determined from the interviews and analyzed with coding.

Role of Researcher

In my experiences as an athletics coach, teacher, athletic director, assistant principal, and now as a principal, I have been able to see how video is utilized and under-utilized in a variety of lenses. The roles of note are instructional coaches, athletic coaches, teachers, and administrators. From the various perspectives of my career, my perspective and research show a deficiency in the use of video analysis to improve performance in the academic setting, versus video analysis use in the athletic world to improve performance. In my current position, it is evident that many teachers, instructional coaches, and administrators lack a comprehensive understanding of how

video analysis can be used to improve performance in the classroom. Additionally, it has also become clearer to me during my career that teachers, instructional coaches, and administrators do not have the frameworks needed to use video effectively to improve performance.

Summary

The use of video analysis to improve performance has the potential to be a game-changer in regard to personal growth in education. While literature supports the use of video analysis in education, research around the use of video analysis in education shows a major underuse and portrays obstacles that prevent the widespread use. The drivers for the increased use of video analysis in education are instructional coaches and school administrators. Teachers are the main workforce that can see the most benefit from personal video analysis. It is important that instructional coaches and administrators use research-based implementation strategies to increase video analysis use, otherwise video analysis will be added to the list of initiatives that have failed in education.

This study was designed as a qualitative case study to explore how athletic coaches, teachers, instructional coaches, and administrators in the district use video to improve performance. The purpose of the study was to gain an understanding of how video analysis is being used in the district and inform educational leaders of research-based practices to enhance the use of video analysis. The study identified barriers that impede the use of video analysis and provided strategies for individuals to overcome those barriers. The study also identified professional development needs of instructional coaches, teachers, and administrators to better understand and utilize video analysis to improve performance of classroom teachers and themselves.

Definition of Key Terms

The following definitions are included to provide clarity of terms used throughout the study.

Coach

One who trains a person or team of people. Someone who gives special attention to a particular subject in order for the improvement of the person or team. A coach is one who attempts to bring out the full potential of their pupil (Knight, 2007; Trevino, 2015).

Instructional Coach

One who helps teachers grow professionally and use new strategies by modeling, co-planning, and co-teaching in order to raise student achievement (Killion & Harrison, 2017).

Reflective Practice

Thinking critically on prior performance with the goal of improving future performance based on the lessons learned from previous action (Crane, 2017; Knight, 2014a).

NCEES Standard 5

A professional standard that is part of a rubric used to support the ongoing professional growth of K-12 educators in North Carolina. Standard 5 is based on teachers' reflective practice.

Video Analysis

Using video to capture events, moments in time, and actions to learn from mistakes and capitalize on positives for growth (Knight, 2014a).

Chapter 2: Literature Review

Introduction

The literature review for this study falls into four categories: research on the reflective learning theory by John Dewey (1933, 1938), research on video reflection to improve performance, research on instructional coaching, and research on the professional development of educators. The focus of the study, video analysis, has been suggested for use as a reflection tool for teachers who can take away opinions and provide accurate information that can lead to teacher change (Flowers, 2019; Knight, 2014b).

In North Carolina public education, the theme of professional growth and development is at the core of NCEES, which is a tool used to evaluate all educators from teachers to administrators in the K-12 setting (Henry & Guthrie, 2015). The use of video analysis to improve performance is a tool that can be used to enhance professional growth and elevate the evaluation of educators. Education professionals who can benefit from video analysis are instructional coaches, teachers, and administrators (Crane, 2017; Flowers, 2019; Knight, 2014b).

Theoretical Framework

The theoretical framework is grounded in Dewey's (1933, 1938) reflective learning theory. This study explores if and how video analysis improves performance through factual reflection. Video is the tool that is used, and it is hoped that reflective learning theory and the frameworks that were derived from the research will lead to improved performance. Reality, opposed to recall, provides a more accurate representation of actions. Understanding reality is the precursor to personal growth

(Knight, 2014a).

Dewey's work is considered seminal and has proven to have a positive and widespread impact on the thinking of educators and the power provided through reflection (Bauer, 1991; Beauchamp, 2005; Phipps, 2000; Rodgers, 2002). In the education world, educators also look to Dewey's theories about the preparation of teachers (Rodgers, 2002). Dewey has a vast influence in the western world, but his work is universally credited for providing ideas about how reflection is understood (Phipps, 2000; Rodgers, 2002).

Dewey (1933) defined reflection as, "the active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of grounds that support it, and the further conclusions to which it tends" (p. 118). Increasing people's ability to reflect demands a deeper understanding of how people process and manage information (Dewey, 1933).

Dewey (1933, 1938) held reflection in high regard as a process that makes meaning of experiences systematically. The use of others in a collaborative setting was also determined to be useful. Dewey (1933, 1938) also thought reflection was guided more efficiently through collaboration with others while maintaining a growth mindset. Reflection as part of the responsibility of the learner is intertwined in his mindset, which was strongly moral. Dewey (1933, 1938) urged against a routine mindset and strongly advocated for intentional consideration of the reflected-upon actions. Dewey (1933, 1938) distinguished his thoughts on reflection from types of thought, such as belief and stream of consciousness. Dewey was adamant that reflection resulted in knowledge gained and the meaning of an idea is truly seen by viewing its consequences

(Beauchamp, 2005).

In education, the reflective theory of Dewey (1933, 1938) speaks to the capability of educators to think about their own practice and find areas for improvement. The strengths and weaknesses of the individual are monitored over a period of time to gauge improvement (Dewey, 1933). Reflective practice must be intentional in order to be effective. The enabling of reflective practice is the planning of the reflective learning piece. Much time and effort are spent by teachers thinking of how they can improve poor lessons and enhance good ones. Learning is the end goal; if the teacher notices by virtue of assessments that learning did not take place as much as desired, improvements must be made. This is an example of reflective practice in education (Phipps, 2000).

The reflective theory in regard to education, as stated by Dewey (1933), pertains to the capability of professional educators to reflect on their personal practices and identify strengths and weaknesses. The ability of the reflector to monitor the progress over time is essential. To increase the effectiveness of reflection, it must be consistent, intentional, and active. If not, the education professional will not continually improve in their development (Dewey, 1933; Knight, 2014a).

According to Dewey (1938), reflection itself is not enough. The thought process and study that lead the person to reflect towards an inner willingness to improve their practice yield the most results. Sherin and van Es (2005) agreed with Dewey (1938) and echoed his stance by implying that the desire to improve is essential; without the personal desire, the reflection will not yield positive results. In order for the reflection to lead to personal growth and improve performance, the reflection must be intentional. The recollection of events from memory and reflecting with the purpose of improving are

vastly different (Hamel & Viau-Guay, 2019; Sherin & van Es, 2005). Sherin and van Es (2005) argued that stating occurrences from a lesson and telling the story of what occurred in the classroom are typically referred to as reflections; however, it is not a true reflection that causes the reflector to internalize the actions that took place and the reactions they caused during that period of time. A true internalization of the actions and the consequences of the actions, whether positive or negative, must take place in order for the reflection to cause internal change in the individual in order for actual change to take place (Dewey, 1938).

According to Dewey (1938), the reflector must enter reflection with an open mind. The reflector must understand that the desired outcome of the action and the actual outcome of the action reflected upon may be far apart. Dewey (1938) acknowledged that human nature leads the reflector to have a predetermined bias towards self as well as the desire to be defensive. If the reflector is able to put away bias and let their guard down, they are more likely to experience personal growth (Dewey, 1933). With learning being the desired outcome of reflection, it is maintained that learning cannot take place without reflection (Sugerman et al., 2000). Dewey (1933) had an understanding that it was the intentional selection of experiences that was connected to the commitment to reflection upon the experiences. Those same experiences form the base for newly attained knowledge and learning (Dewey, 1938).

Dewey (1938) developed a process related to his reflective learning theory called the model of experiential learning. The process involves three stages: (a) observing surrounding conditions after impulse or action, (b) obtaining knowledge from recollection of past experiences, and (c) gaining judgment from these observations and

experiences (Dewey, 1938). The culmination of the process lends itself to the notion that reflecting opens a door to real learning and provides the environment necessary for the opportunity of reflection. It is said to be a spark that lights the fire of learning (Dewey, 1933). According to Dewey (1938), new experiences must constantly be made sense of in order for the professional to use the learning that is presented in the future. More specifically, what an individual "has learned in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow" (Dewey, 1938, p. 34). Likewise, Dewey (1938) went on to state, "The process goes on as long as life and learning continue" (p. 44). Dewey (1938) believed that experiences educate. Experience cultivates knowledge and awareness that build intelligent action for those who reflect, according to Dewey (1938). Those who reflect move forward in their learning rather than remaining stationary (Rodgers, 2002).

Dewey (1938) also pointed to routine over non-habitual action in his reflective learning theory. Rodgers (2002) agreed with Dewey (1938) and felt that if reflection is done intentionally, with a desire for personal growth, the reflection will yield personal learning. Dewey (1938) noted that connections can be made to activities. During activity, what happens is a consequence of previous action. Learning from prior experiences aids the development of a new more informed action derived from past reflection (Dewey, 1938).

Dewey (1933) also discussed five specific steps that would be advantageous during reflection. These steps were logical in nature. The steps start with the difficulty level, location, and definition. Dewey's (1933) reflection steps end with the suggestion of a solution. The initial steps prompted the development by reasoning of suggestions and

the further observation and experiment that lead to acceptance or rejection of the solution (Dewey, 1933). The steps are numbered distinctly 1 through 5.

1. The occurrence of a difficulty
2. Definition of the difficulty
3. Occurrence of a suggested explanation or possible solution
4. The rational elaboration of an idea
5. Corroboration of an idea and formation of a concluding belief (Dewey, 1933, p. 90).

Dewey (1933) implied that the thinking that takes place between self-evaluation is at the beginning and the end of the observation. At the beginning of the observation process, the viewer determines the difficulty of what needs to change; at the end, the observer tests the value of a hypothetically entertained conclusion (Dewey, 1933).

As previously mentioned, Dewey (1933, 1938) viewed reflection as having the characteristics of process and product. In speaking about the process, he believed it had to do with recognizing a problem through reflection and working to find a solution to the problem. The working out of the problem has multiple steps. The steps are identifying, suggesting solutions, experimenting, and determining a pathway to action (Dewey, 1933). In Dewey's (1933, 1938) theory of reflection, the process begins with a situational problem and ends with a resolution to the situation. The steps suggested by Dewey (1938) do not have to always follow a distinct sequence, but he stated that the steps he identified are indispensable traits of reflective thinking (Dewey, 1933). Dewey (1933, 1938) believed that the reflective process involves emotional and cognitive aspects of the reflector.

> Human beings are not normally divided into two parts, the one emotional, the other coldly intellectual. The one matter of fact, the other imaginative. There is no integration of character and mind unless there is fusion of the intellectual and the emotional, of meaning and value, of care and imaginative running beyond fact into the realm of desired possibilities. (Dewey, 1933, p. 278)

Dewey (1933, 1938) acknowledged there were risks involved in reflection. A risk of a non-precise reflection is that in the modern age of measurement, observable learning will take priority. The reflection could be dismissed because people do not know what to look for (Rodgers, 2002). Dewey (1933, 1938) believed that reflection is a complex skill that is rigorous, intellectual, and emotional. Consequently, it takes time to learn how to reflect well. Dewey (1933, 1938) gave people a way to speak about reflection and the reflective practice it requires so it does not become useless. Dewey instead helped people see that reflection is richer and more complex as a result of the conversation it produces (Rodgers, 2002).

Case Studies Utilizing Reflective Theory

Multiple studies have been conducted that utilized the reflective theory in the field of education. Boud and Walker (1998) studied professional development and determined that there were problems in the reflection process. The researchers found that in regard to professional development, reflection was seen as thinking and not learning. Boud and Walker also felt that reflective theory did not pay attention to the emotional aspect of reflection. The ideas Boud and Walker developed enhanced the reflective process to determine the processes of reflection affected by the context.

Donnelly (1999) studied teacher education and its use of the reflective learning

theory. The problem Donnelly found was that cognition as the basis of reflection was not appropriate. Donnelly believed there should be more emphasis put on self as part of the action that is derived from the context of reflection.

Conway (2001) determined the reflection process not only involves memory but also imagination. The results of Conway's study led to the belief that reflection promotes individuals to create a professional identity and that reflection must transition from personal to professional. McLaughlin (1999) preceded Conway in his study's findings that reflection should move beyond personal thoughts and into a richer account of teaching and learning. The problem McLaughlin discovered is that reflection is more than a process. McLaughlin's finding led him to believe that reflection is a continuum between systematic explicit reflection and implicit intuitive reflection.

Critiques of Dewey's Ideas on Reflection

Three critiques were examined of Dewey's (1933, 1938) thoughts and ideas about reflection. One overarching question was if Dewey (1933, 1938) thought reflection took place before or after action. Additionally, the question remains if he determined reflection to pertain to actions or the effects of the actions. The researchers had mixed reviews of Dewey's work in reflective practice (Clark, 2001, Morrison, 1995; Rodgers, 2002). Rodgers (2002) determined that Dewey considered the action as the final outcome of reflection. Rodgers's statement is the most commonly accepted thought on Dewey's ideas.

Morrison (1995) had concerns about Dewey's reflective learning theory being difficult to comprehend. Morrison's studies led him to believe that reflection was an exercise used only for solving problems. Morrison believed that emotion should play a

part in Dewey's reflective process. Morrison implied that during reflection, the practitioner should use both intellectual and emotional abilities and that judgments would then be made to reach solutions (Morrison, 1995). Morrison's study concluded that Dewey's reflective theory has the potential to empower, but the strengths of the process are practical and must lead to concrete action. Morrison thought Dewey included both cognition and affect in the reflection process. Morrison also stated that Dewey's view is action-oriented and potentially empowering. Morrison did determine that Dewey's reflective process can produce results when blended with other practices.

Clark (2001) was critical of Dewey's ideas on reflection. Clark's concerns centered around the ability to confirm facts through reflection. Clark claimed that this thought process is embedded in Dewey's work on reflection. Clark further believed that Dewey's works were confusing and unclear about the connectivity between action and reflection. Clark ended his study with questions for further research. The questions asked if reflection took place before or after action and if reflection was about action or the effects of the action itself (Clark, 2001). Clark stated that Dewey's idea of reflection as a process of verification of fact is not legitimate. Clark also concluded that Dewey's ideas about reflection and action are problematic. The timing of the reflection was the biggest question for Clark. The lasting question for Clark remains if reflection was on the actions or the effects of the actions.

Rodgers (2002) concluded that Dewey included affect as part of the reason to make meaning of the process of reflection. Rodgers determined that Dewey believed reflection is done for moral reasons, to improve the person. The results of the reflection were also studied by Rodgers, and she decided that the results of reflection in regard to

education address student learning, promoting student and teacher reflection and reflecting on reflection that leads to personal growth (Rodgers, 2002). It is commonly accepted that reflection is and can be a powerful tool for personal and intellectual growth (Clark, 2001; Morrison, 1995; Rodgers, 2002).

Dewey Summary

Dewey identified several modes of thought which included belief, imagination, and the stream of consciousness; however, he was most interested in reflection (Rodgers, 2002). Although Dewey's reflection theory was developed almost 100 years ago, his details of the concept of reflection still are not familiar to all (Rodgers, 2002). According to Rodgers (2002), many teacher education programs proclaim to develop reflective practitioners; however, a thorough exploration of the reflective process and the true purpose of reflection as outlined by Dewey is minimal or absent altogether (Rodgers, 2002). The work of Dewey (1933, 1938) has basics that characterize the concept of reflection he formed. The reflection must move a learner from their experiences into a better understanding of the connection to other experiences and ideas (Dewey, 1933, 1938). Dewey's (1933, 1938) reflection theory is also disciplined, systematic, and rooted in scientific inquiry. He advocated for reflection to take place in interactions with one another and the community. Lastly, Dewey wanted reflection to require an attitude that the reflection process is personal and essential for the intellectual growth of self and others (Dewey, 1933, 1938; Rodgers, 2002).

History of Film Analysis

The use of video feedback started in the 1960s with numerous populations including athletes, alcoholics, and the emotionally disturbed. Video feedback was also

used in various disciplines such as psychology and medicine (Wright, 1998). The education field has used video reflection predominantly in preservice teaching programs. Thanks to video, humans have the capability to watch their actions and reflect on themselves in a variety of activities. Early in the 1960s, the usefulness of video was credited to its capability to provide instant feedback (Tochon, 1999). Tochon (1999) noted that video feedback is impactful to student and teacher learning in education.

Early Video Use–Microteaching

The early uses of instructional video in the 1960s were due to the invention of portable video equipment. The use of video was expanded tremendously in the 1990s with the development of digital cameras (Fullam, 2017). The examples in the infant stages of video use for reflection started with video being used for training purposes and focused on specific instructional strategies. Fullam (2017) stated, "The most notable early example of instructional video is microteaching, a procedure developed in 1963 by education researchers at Stanford University" (p. 134). Microteaching is a procedure that was used to train teachers on various skills such as lecturing, leading discussion, and questioning (Fullam, 2017). Fullam found that "trainees would implement the skills in 5 to 15 minute 'micro lessons' with small groups of three to five students. These scaled-down lessons were videotaped to provide trainees with opportunities for repeated viewings and immediate feedback" (p. 135). The microteaching structure was highly analyzed and deemed beneficial by many (Borg, 1972; Fullam, 2017).

Microteaching was highly researched in the 1960s and 1970s (Allen & Ryan, 1969; Borg et al., 1969). The majority of the research on microteaching determined it to have a positive impact on teaching. Reflection was a key component of all microteaching

models. The components of microteaching were mostly based on modeling, feedback, instructional practice, and supervision (Allen & Ryan, 1969). The quartet of Borg et al. (1969) developed a study on a mini-course model focusing on the improvement of 12 teaching behaviors related to the classroom. The model used videotaped examples of specific classroom behaviors and a videotaped teaching lesson with no feedback involved (Borg et al., 1969). The study was deemed important as it is one of the limited studies that used direct measurement of teaching behaviors.

Borg (1972) completed his own independent study that investigated in-service teachers in their own classrooms using the microteaching approach he studied with Kallenbach and Gall (1969). In Borg's study, teachers videotaped their lesson before the microteaching course and again a week after the course. Teachers would then film themselves 1 month, 4 months, and finally 39 months after the course to gauge the lasting effects of the course (Borg, 1972). After the first immediate filming, the teacher's classroom performance was better than before any teachings on microteaching. It was also found that there was no significant regression after the 4-month recording of teaching. The teacher's progression after 39 months remained substantially better than the teacher's practice before microteaching training (Borg, 1972).

As video analysis studies progressed, researchers began looking into stimulated recall and the process of past thinking. The research shifted to metacognitions and the reflection of the video process itself (Tochon, 1999). In 1973, researchers, as well as educators, increasingly put test subjects in a mindful state that allowed them to express their beliefs while being able to verbalize thoughts that arose while watching video of themselves (Tochon, 1999). By completing the study in this manner, it allowed the

viewer to shift from simply remembering and studying to more understanding their own thoughts that emerged from the self-reflection (Tochon, 1999). This approach was a systematic feedback loop that improves knowledge and control of the person's own actions. The results of the study led to other video-based research that stemmed from microteaching and led to sharing reflections in a collaborative group setting (Tochon, 1999).

Collaborative Video Use

In addition to video being used for self-reflection, in the 1990s, a more collaborative approach was developed called video clubs. Video clubs were notable because of the reflective approach that was used with instructional video (Borko et al., 2008). The video club program was reliant on video from teacher classrooms and was intentional about creating a collaborative community where members of the group felt comfortable learning from each other's videos (Borko et al., 2008). The video club model had four phases (Borko et al., 2008). Phase 1 focused on teachers selecting a self-diagnosed instructional problem. Phase 2 implemented a facilitator working with the teacher to document the actions that took place in the video. Phase 3 consisted of the teachers in the group viewing video together and discussing the teacher's role in implementing instruction based on lesson plans and facilitating learning. The fourth and final phase of the model had teachers view the video again and collaborate about student thinking as the lesson progressed. The cycle is long term and is repeated for the span of 1 to 2 years (Borko et al., 2008).

The use of the video club model was found to be successful by teachers who participated in more than one cycle. The cycle produced teachers who were able to

engage in collaborative inquiry about common instructional problems (Borko et al., 2008). The model pushed teachers to take a more comprehensive, focused, analytical approach related to teaching and learning. The video club along with other similar models using video feedback are deemed effective in engaging teachers to develop an attitude of inquiry and reflection concerning their own practice. Lastly, video feedback models pushed teachers to make connections to their instructional practices and their effect on student learning (Borko et al., 2008; Fullam, 2017; Tochon, 1999).

Summary

Video analysis techniques have improved considerably over the last 60 years. The emphasis on video analysis and the feedback that follows have shifted from reconstructing and recalling past thinking to more of a focus on post-reflections (Borko et al., 2008; Fullam, 2017). The conclusion of the viewer's analysis of their video is now geared toward constructive and shared reflections with others on current and future actions (Tochon, 2008). The earliest studies of video analysis and its usefulness discovered the value of instant feedback (Borg, 1972). Instant video feedback remains highly valuable to today's practitioners. Video continues to provide information about oneself and can be used as a witness and as an analytical tool (Tochon, 2008). The videotaping of oneself can help raise awareness of actions and can allow the viewer to understand their own practice and improve future actions (Fullam, 2017; Knight, 2014a).

Video Reflection for Improvement

The idea that video reflection leads to improvement has been studied by multiple researchers (Marsh & Mitchell, 2014; Tripp & Rich, 2012; Wang & Hartley, 2003). Wang and Harley's (2003) review showed that the use of video by teachers in education

leads to changes in the belief of teachers when they observe themselves (Hamel & Viau-Guay, 2019). Wang and Hartley also observed that video reflection helps teachers be more engaged in a reflective analytical process when they observe their peers in addition to themselves. Wang and Hartley determined that video reflection can also be used as a modeling tool for novice teachers when more experienced teachers collaborate and share video (Hamel & Viau-Guay, 2019; Wang & Hartley, 2003). In addition to education, video analysis is used in a variety of professions for the purpose of improving the person and the product (Flowers, 2019).

Protocols/Frameworks for Video Use

Kane et al. (2015) conducted one of the most extensive studies on video analysis up to this point in time. The results of Kane et al.'s study provided educators with five categories to help structure professional development centered around video analysis. The structure includes video use for self-reflection, video use for collaboration, virtual coaching, video for use in the evaluation process, and video libraries (Kane et al.'s 2015). Kane et al.'s study benefits teachers but does not provide specific frameworks for principals and instructional coaches to implement a lengthy video analysis process for improvement over time.

Other widely used models of video reflection use include up to three formats. The formats were compiled by (Zhang et al., 2011). The formats include the viewing of one's own video privately or with an instructional coach, viewing with a collaborative group, and viewing public classroom film from websites or libraries for the purpose of learning from others. Tripp (2010) studied the influence of video analysis on teaching exclusively. Tripp determined that video analysis is best utilized following a 6-part process. The

process includes the following considerations: reflecting on tasks, facilitation, collaboratively reflecting, length of video, quantity of reflections, and the measurement of reflection (Tripp, 2010). Tripp expressed that researchers should continue to examine the benefits of video use by teachers to gain a better understanding of the usefulness of video analysis in schools. Tripp especially wanted to know if the investment of time that is part of video analysis is worth it to schools. Tripp preceded statements by Knight (2014b) and Flowers (2019) that specific frameworks have not been developed based on video analysis research. Tripp suggested that future researchers look into the practicality of video analysis in schools. Additionally, Tripp believed that if teachers were informed of the results that can be garnered from video analysis, along with coaching on how to approach video feedback, more buy-in would be received.

Knight (2014a) introduced guidelines for introducing video to working professionals. Knight (2014a) developed six points: establish trust, make participation a choice, focus on intrinsic motivation and safety, establish boundaries, walk the talk, and go slow to go fast. Knight (2014a) routinely circled back to his idea that video analysis can improve practice, but the way video is used must be taken into careful consideration. Knight (2014b) spoke to the importance of video users embracing the use of video and keeping an open mind. Knight (2014b) also developed boundaries for educational leaders to consider when offering feedback on videotaped teacher lessons: focus on the data; be nonjudgmental; respect the complex nature of teaching; be positive, respectful, and supportive; and offer suggestions for improvement only after being asked.

Frameworks

Falter and Barnes (2020) created what is known as video analysis sessions. The

video reflection process has 10 steps: record, watch, reflect, select, transcribe, reflect, inquire, share, reflect, and lastly adapt (Falter & Barnes, 2020). Along with the frameworks, a protocol for the video analysis sessions was also created with time parameters. First, the presenter would introduce their clip and provide context for 5 minutes. The next step is clarifying and is where other members of the peer feedback group can ask questions. The viewing of the clip is then limited to 10 minutes. After viewing, a 10- to 15-minute session of peer feedback takes place. Following the peer feedback session, the presenter then reflects for 2 to 3 minutes. Finally, the group debriefs for 2 to 3 minutes, and the session concludes (Falter & Barnes, 2020).

Knight (2014b) developed an alternative approach for singular use by teachers without peers involved. The method Knight (2014b) suggested sought for the teacher to become their own coach. The overarching theme of Knight's (2014b) method was for the teacher to have focused attention for better learning from video. The first watch of film is done to get the teacher to learn how to operate the camera and determine an area of focus. The second watch of the same film has the teacher go deeper with multiple aspects to look for (Knight, 2014b). The two different "look fors" are for the teacher to watch himself and for the teacher to watch the students in the room as well. Knight (2014b) suggested that while watching themselves, teachers should look at teacher talk time compared to student talk time. While analyzing the talk taking place in the room, the viewer should look for instructional and noninstructional time. The ratio of interaction between student and teacher, as well as the type of questions and feedback the teacher is giving to students, should be recorded (Knight, 2014b).

The second watch, according to Knight (2014a), should focus on the students in

the room. While watching students, Knight (2014a) proposed multiple look fors. The look fors are the number of responses, making note of the students who participate in the response; the number of correct responses; the number of thoughtful responses; and the number of incorrect responses. Apart from students answering questions, the time on task, number of classroom disruptions, authentic engagement, and respectful interactions should be documented (Knight, 2014a).

Danielson (2008), an author and educator, categorized frameworks for teaching practice. Danielson's four domains were planning and preparation, instruction, classroom environment, and responsibilities of professionals. The four domains Danielson determined are the same domains Knight (2014b) and Flowers (2019) determined as areas of educators to observe using video.

Swivl

The use of the Swivl camera in education is becoming an increasingly popular trend (Franklin et al., 2018). A Swivl camera is a recording technological device used for clinical practice. NCDPI requires reflective practice for teachers in NCEES. The added video component is a certain way to guarantee self-reflection occurred (Franklin et al., 2018). According to Franklin et al. (2018), the device itself does not generate teacher reflection or measurable improvement of practice; however, the device is a recording tool that enables teachers to change perspectives from teacher to observer of their own practice.

Swivl, which is its own company, claims that it is a body-tracking video camera that has promise for the improvement of teaching practice (Swivl, n.d.). The device itself is a robotic piece of equipment that rotates 360 degrees and follows a digital signal that

comes from a transmitter that is worn on the user's clothing (Swivl, n.d.). The Swivl device holds an iPad which serves as a medium for the recording of videos. The wireless transmitter that is worn by the user has a microphone in it that helps ensure adequate audio quality for the video (Swivl, n.d.). Following a recording by the Swivl application, videos are uploaded to a secure cloud for the viewer. The application allows the user to download the video to their own device as well as share the video link with others (Swivl, n.d.)

It was noted by Franklin et al. (2018) that video reflection has been taking place since the 1960s, as previously researched, and it continues to evolve. Franklin et al. understood that times change quickly, and the capabilities of video recordings do as well. Kpanja (2001) studied preservice teachers and their use of video recordings of their teaching. Kpanja found that teachers in the study increased their confidence and proficiency as well as the positivity they have towards their lessons. The students in the study who did not use video recordings had less proficiency and a bleaker outlook on their practice (Kpanja, 2001).

Based on teacher feedback by Kpanja's (2001) study, teacher candidates reported that Swivl works properly and is easily used. Swivl has been identified as a tool that is easily used in teacher classrooms. The perspective given to teachers from the Swivl was noted by Kpanja to provide beneficial reflection and growth. The study supported widespread use of Swivl in education classrooms for the purpose of teacher professional development (Kpanja, 2001).

Barriers to Video Analysis

Knight (2007, 2009; 2014a 2014b, 2018) is a seminal researcher in video analysis

in regard to teacher change and has completed many studies on video analysis as well as studies on instructional coaching in education. Knight (2014a) was especially able to determine multiple barriers to video analysis use in the educational setting. Knight (2014a) stated,

> Because video is so easy to use and because it can lead to measurable, positive changes in student attitude, behavior, and achievement, education leaders and policymakers might be tempted to push its use in a heavy-handed, compulsory way. That is a recipe for disaster. (p. 21)

Knight (2014a) also revealed that if video cameras were used as control tools, it could damage school culture as well as teacher morale. Video as a tool for improvement would then decrease and positive change would be unlikely to occur (Knight, 2014a). Knight (2014a) also found that from a humanistic perspective, many people become unsettled when viewing themselves on film. People are almost always never satisfied with how they look on film (Knight, 2014a). Knight (2014a) proclaimed that watching video of yourself forces you to rethink who you are and what you do as a professional. The reality of what is viewed on film can be harsh to the viewer (Knight, 2009).

Taking a further examination into why video analysis fails, Knight (2014a) stated, “telling people they must do something almost ensures that they won’t want to do it” (p. 22). Teachers also understand that there is a lot to be learned from watching their own film of lessons but want to be guaranteed they will not have to show their film in a public setting (Knight, 2014a).

Flowers (2019) spoke more to the negative mindset educators have about video analysis. Flowers stated, “but when you mention video observation, fear often spreads

across teachers' faces as if they have just woken up from a recurring nightmare" (p. 36). Video analysis is still not the norm in schools across the United States. Flowers argued that teacher interactions can have long-term effects on students, more so than any other profession; however, video observation is not widely used to see what may have been missed, rather what can improve instruction, relationships, and communication in the classroom for the betterment of students (Flowers, 2019). Flowers echoed Knight's (2014b) findings in the discomfort that is self-video reflection: "The main challenge with video coaching is overcoming the coach's and teacher's discomfort with hearing and seeing themselves on video" (p. 38).

Video reflection, in theory, is widely seen as beneficial to improving professional practice; however, video reflection alone is not enough. McCullagh (2012) stated, "without specific criteria, reflection becomes difficult to engage with and any sense of progression may be hard to identify" (p. 139). Considering McCullagh's statement on the lack of criteria being the downfall to video reflection, it is essential to consider the frameworks the literature provided previously in the literature review.

The teacher change process involved in the use of video analysis as a tool has been left out by many, according to Schon (1983). Schon expressed that reflection involves much more than an understanding of situational teaching and that the reflection leads to teacher action. Schon believed that teachers should determine the direction of their change in reference to their own reflection. Tripp and Rich (2012) agreed that in modern times, educational leaders are not aware of how much video analysis influences the teacher change process.

The obstacles in the way of video analysis being used to improve performance

remain centered around beliefs about teacher change over time (Pfeffer & Sutton, 2000). The majority of people have the ability to identify their own poor habits. The issue lies in people gaining an understanding of how to fix the habit that exists (Darling-Hammond et al., 2009). The gap that exists between unwanted habit and teacher change is the difference in professional development that is meaningful to educators. Developing a new skill and even changing a learned skill takes time and effort. Wiliam (2018) determined that learning and developing a new skill that is learned from reflection needs feedback, practice, and repeated reflection as opposed to only a transfer of knowledge. Darling-Hammond et al. (2009) and Wiliam both pointed to time as a key factor in the measurement of progress. The use of video analysis is not a one-time professional development opportunity that is going to lead to increased teacher change. The use of video analysis over time, and the development of a habit for the process that is used in the video analysis will lead to measurable growth (Wiliam, 2018).

Summary

Based on the literature, it is seen that in order to develop best practices, you must know the barriers that must be overcome. Knight (2014b), Flowers (2019), and McCullagh (2012) were all able to identify barriers to video analysis as well as offer advice to develop best practices to maximize the usefulness of video analysis. Tripp and Rich (2012) researched multiple case studies on the use of video reflection. Tripp and Rich determined that presenting the potential results of video analysis first, for the purpose of improvement, would be essential for buy-in. Each researcher had one common denominator: Buy-in must be achieved with the target audience in order for the tool of video analysis to be effective (Flowers, 2019; Knight, 2014a; McCullagh, 2012; Tripp &

Rich, 2012).

Video Analysis in Sports

The use of video analysis in sports is much more widespread than in education (Knight, 2014b). Video usage in sports is centered around coaching athletes to improve; more specifically, the coaching that takes place before and after gameplay. The most essential benefit of using video analysis in sport practice is the capability to provide feedback immediately to players (Pedicini, 2014). Using video, coaches can identify and correct mistakes immediately for their players. The players can see what they are doing on video and gain a better understanding of their actions when they see what they did or did not do. The viewing of film by players and coaches allows both parties to look at individual performance as well as skills (Pedicini, 2014). Most coaches will agree that practice time is valuable for the coaching staff. The coaching staff's use of video as a tool for analysis enables the staff to quickly and efficiently provide feedback that will address mistakes and build on weaknesses that will culminate in success for the player and team (Pedicini, 2014).

Constine (2015) wrote an article about the use of video analysis in sports and discussed its benefits to athletic teams. Constine reported that using video provides coaches with the ability to monitor progress along with tracking the individual skill progression of players. Constine recognized film study as having a long-standing role in the evaluation of opposing teams before gameplay. In years past, the use of viewing game film was time consuming and difficult to navigate with the type of equipment that was in use. In modern times, with the use of technology such as phones, laptops, and iPads, video is easier to use and much more accessible for players and coaches (Constine, 2015).

The use of digital files instead of hard copies of films led to its ease of exchange between coaches, players, and opposing teams.

Tracking progress and skill development is a key aspect of coaching in sports. The use of video provides coaches with the ability to see the progress and skill acquisition on film. The process of using film to track progress is beneficial to coaches and players as they continually seek improvement (Pedicini, 2014). Coaches often use video to show their players form and technique and how they compare to others as well as their past selves. The key aspect to viewing film is to visually see how improvement can be made (Pedicini, 2014).

Improvement in Sports

Video analysis is also considered to be important in the sports world (Jones, 2019; Napolitano, 2014; Trevino, 2015). Jones's (2019) observations of film use led him to believe that the use of film, especially from an elevated perspective, enhanced athletes' abilities to improve their skills from being able to see their actions in motion. Jones also observed film use by athletic coaches. Jones spoke specifically about video clips being shown to athletes that utilized practice and game clips. Notable examples were used to drive home coaching points within the clips (Jones, 2019). Jones found video analysis to lead to increased feedback between athletes and coaches. Coaches shared feedback with athletes based on film clips and allowed athletes to share the reasons behind their actions. In turn, the coach was able to gain an understanding of what the athlete was thinking during that moment in time. The use of film in athletics, as studied by Jones, shows a valuable tool that links coaches and athletes together for the purpose of improved performance.

Hudl

Hudl is an application that players and coaches use that allows them to view and analyze their film. Hudl is the leader in the sports industry in regard to video analysis for the purpose of improvement of the team and athlete (Salem, 2019). The film can be any recorded event from practice to gameplay, as well as opposing team scout film (Trevino, 2015). Hudl's increasing capabilities allow the application to be used on smartphones, iPads, and computers. Hudl prides itself on its ease of use and accessibility. For example, a coach can record video of a weightlifting session on their phone and upload it directly to the Hudl website for the athlete to view within minutes. To express how far video has come in athletics, coaches in the past had to have game film recorded on a VHS tape, make a copy, and mail the tape in order to exchange film before games for scouting purposes (Constine, 2015). In order to watch game film in a team setting, the VHS tape had to be fast-forwarded and rewound in order to view certain plays. Now, Hudl breaks down each individual play in its own clip. Coaches are able to interact with the film to earmark plays that need to be revisited (Trevino, 2015).

Hudl was created by David Graff, John Wirtz, and Brian Kaiser. The three were friends who met while they were students at the University of Nebraska (Constine, 2015). The three pitched their idea to the head football coach at Nebraska at the time, Bill Callahan. Coach Callahan was a big supporter of the program mainly because of its ease of use (Salem, 2019). The first client of Hudl was the University of Nebraska football program. The use of Hudl has grown tremendously with over 15,000 clients at all levels of sports. The greatest feature of Hudl is its shareability. McCullagh (2012) echoed the sentiment, "in capturing experience as a sharable entity, video enriches dialogue and

collaboration and therefore acts as a mediating tool for reflective practice" (p. 138). Hudl's application and its ability to act as a storage library increase its ease of use. Jones (2019) pressed that videos recorded in support of training should be stored in a database as well as cataloged for use in the future. Hudl does just that (Jones, 2019).

Video Analysis Studies in Sports

Video analysis studies have been conducted in various sports. The first study analyzed is that of Napolitano (2014). Napolitano found that in aerobic gymnastics, the introduction of video analysis is of fundamental importance. Napolitano noted the difficult elements existing in aerobic gymnastics that are difficult to coach without video feedback to the learner. In aerobic gymnastics, actions take place quickly and the technique is not easily seen while in live speed. Video allows coaches to analyze the movements of the gymnasts in slow motion, which helps them critique movement and coach skill. The detail that film analysis allows helps the coach to improve overall performance. Specifically, the ability to slow down the video, pinpoint action, and walk the gymnast through their movements is beneficial (Napolitano, 2014).

Ice hockey at the elite level was also found to use video analysis for the purpose of feedback for improvement (Nelson et al., 2014). Nelson et al.'s (2014) study sought to find out the effects of video-based feedback on skill acquisition as well as game performance. The focus group of the study consisted of mainly interviews of players and coaches and their thoughts on video feedback. The interviews were semi-structured and considered to be in-depth. Coaches and players agreed that mutual trust and respect were vital for feedback to enhance personal growth. The younger generation of athletes, when compared to veterans, desire more feedback. An open mind and a willingness to accept

feedback, versus a closed mindset and an objection to feedback, was a trend in younger athletes when compared to older athletes (Nelson et al., 2014). Overall, the study proved that video analysis can help improve performance, and self-video reflection when paired with coaching feedback simultaneously leads to improved comprehension of desired skills (Nelson et al., 2014).

At West Virginia University in 2012, the New York Times reported the soccer team was using a video system to track performance (Thomson, 2012). Performance analysis software is becoming more common in sports with all levels of teams seeking to improve performance (Thomson, 2012). In this particular circumstance, the West Virginia soccer teams used software that tracked shots on goal assists, passes, defensive moves, and miscellaneous kicks. The analysis system also gave coaches and players the ability to use film to study their movements in different parts of the game instead of having to watch the entire game film. The ability to pinpoint feedback to certain movements and moments in time is invaluable to coaches and players alike (Thomson 2012).

Video-based performance feedback was used in elite youth soccer, proving again that video can be used at all levels of sports (Groom et al., 2012). Groom et al. (2012) conducted qualitative research analyzing coach-athlete talk in interaction with the delivery of video-based performance feedback. In this qualitative study, conversations between coaches and their athletes were recorded during gameplay. It was determined that the athlete was not allowed enough communication with the coach, and the feedback was one-sided. Feedback is best when the conversation is two-sided instead of a one-way conversation (Groom et al., 2012). The understanding of individual athletes and their

unique personalities, along with their preferred feedback delivery method, is a combination the coach must understand in order to grow the athlete (Groom et al., 2012).

In regard to video analysis, the conversation between player and coach was analyzed. The coach and the players viewed film together as a group. During the film session, the coach provided feedback to each player when coaching moments arose. It was witnessed that when the players engaged in conversation with their coach instead of only coach speak, the players were able to verbalize their understanding of the feedback. The players were able to let their coach into their mindset of action in specific plays (Groom et al., 2012).

The sport of baseball has long been a user of video analysis to improve performance (Shaver, 2017). In baseball, the most commonly filmed skill is hitting. Hitting is analyzed at various angles and speeds, followed by pitching. Players and coaches spend countless hours watching themselves and others in order to gain a competitive advantage (Shaver, 2017). Shaver (2017) studied the psychomotor learning theory, with a focus on baseball hitting. The differences in hitting among athletes are understood. It is said that all players have their own unique hitting style and swing (Shaver, 2017). Coaches must help their players be the best they can be with their own body style, build, arm length, hand size, and bat speed. The batting stance is one of the most important body positions in baseball (Shaver, 2017). The stance, swing, and point of contact were studied.

Shaver's (2017) study consisted of 23 participants who were college baseball players. Video was used to view ball exit velocity and hit quality. Video was viewed before and after participants completed each skill. The pretest consisted of the

participants going through the drills without viewing themselves on film. The posttest was conducted after the participants had an opportunity to view themselves on film during their pretest. The study found that 15 of the 23 participants improved or maintained their skills from their pretest. The use of video analysis in this study considered each participant's openness to change, emotional stability, liveliness, and consciousness of rules. Overall, the use of video analysis was found to improve performance (Shaver, 2017).

Bristow (2011) conducted a unique study that used virtual simulation, as well as video game technology, to assess situational awareness and decision-making of collegiate quarterbacks. Bristow believed that the use of virtual reality, as well as the use of video to record the quarterbacks, would lead to improved performance. When people are able to view their performance from the outside looking in, they are able to pick up on details and actions that cannot be recalled after action takes place. Video has the ability to take away opinions of what occurred and bring people face to face with reality (Bristow, 2011). The ability of the study to put quarterbacks in simulated game-like situations and assess their instincts has the capability of being a game changer in the coaching of quarterbacks at all levels. The study provided coaches with the ability to view how, when, and why quarterbacks make certain decisions in a variety of game-like situations. Important aspects of the quarterback position, such as spatial awareness and decision-making ability in a controlled environment that is recorded for analysis, provide player and coach invaluable information (Bristow, 2011). Oftentimes, video in football is used to preview opposing teams, view game film, and study practice; however, the added aspect of virtual reality simulation enhances the capabilities of video analysis use in

football (Bristow, 2011).

Summary

The use of video analysis for the purpose of feedback that leads to improved performance in sports is deemed vital for success to occur (Menickelli, 2004). Video analysis in sports is said to provide a self-controlled learning environment. Video allows participants to be active in their own learning environment. Athletes and coaches can use video to manage motivation, construct and modify team and player performance goals, and improve tactics that lead to measured progress (Menickelli, 2004).

In athletics, video analysis has obvious benefits (Pedicini, 2014). In the research of video analysis in sports, the most common use of video is the immediate feedback that can be provided to the athlete. The ability to show positives and negatives instantly is perceived to be valuable (Pedicini, 2014). When coaches and players can watch themselves on video and are able to see exactly what they did or did not do to achieve success, the obstacle of self-recall is taken away (Jones, 2019).

Lessons can be learned in education from how the athletic world uses film to improve performance. From little league to professional and novice teacher to veteran, individuals can improve their performance by watching video of their own performance (Knight, 2014b). When you watch yourself in action and seek ways to improve viewed actions, personal growth can take place to make individuals more effective (Knight, 2014b). When video analysis is done correctly and reflection becomes commonplace, improvement is inevitable. This can be said in both education and athletics (Flowers, 2019).

Video Analysis in Education

Research has shown that video reflection can be used as an effective feedback tool to help teachers improve their practice. Video analysis tools are becoming increasingly popular, by becoming more accessible and viable to help facilitate teacher reflection (Rich & Hannafin, 2009a). Since the increase in studies on video reflection as a tool for educators, there have been more studies that focus on the benefits of helping teachers reflect (Tripp & Rich, 2012). Rich and Hannafin (2009b) pointed to two benefits of video analysis by teachers: the improvement of the ability to evaluate teaching and the changes that can be made to teaching.

In education, it is not if but how video analysis can improve performance. McCullagh's (2012) study determined that video analysis can turn a fast-paced environment into one that can be broken down in order for the viewer to improve their overall performance. The study McCullagh conducted was developed by requesting videotaped segments of teaching from veteran teachers that would be used in preservice teacher training. When the veteran teacher viewed their own teaching, they were very critical of their own performance (McCullagh, 2012). The veteran teacher critiqued their own teaching practices as well as the learning environment for which they were responsible. McCullagh learned that prior to the teacher viewing their own classroom film, the teacher was satisfied with their overall job performance. It was not until after viewing the video that the veteran became aware of their opportunities for growth. Since the study was originally for the purpose of training preservice teachers and the veteran's reflection was not accounted for originally in McCullagh's work, it became an unintentional case study.

A recent qualitative study by Falter and Barnes (2020) looked directly at how video analysis sessions can impact the performance of educators. Falter and Barnes studied the importance of the comfort zone in preservice teacher evaluation. The evaluations came from video analysis sessions that were used as a tool for enhanced reflection (Falter & Barnes, 2020). Although the study looked specifically at secondary English teachers, it can be of value to all educators. Falter and Barnes made it a point to address what prior literature has conveyed, that what reflective practice entails is not clear. The comfort zone in this study was viewed initially as the place the most self-inflicted learning takes place. Falter and Barnes argued that if risks were too high for the participant of the video reflection, then going out of the comfort zone would result in damage to self-esteem. Safety and security, as well as challenge, are the words that aligned most closely with the phrase comfort zone in the study (Falter & Barnes, 2020). It was noted that self-reflection with others can cause fear and that may work against the process of change the video reflection seeks to provide. Falter and Barnes determined if participants can move past the fear of failure in front of others, great progress can be made. The ability to critically reflect with others can enhance the sense of community and rapport among a collaborative group (Falter & Barnes, 2020).

Improvement in Education

Marsh and Mitchell (2014) completed a review on video reflection in education that focused on the continuous education of teachers. The review pointed to video reflection as a professional development tool teachers can use to improve their practice (Marsh & Mitchell, 2014). Marsh and Mitchell's study served as a confirmation that video can be used effectively in teacher education. The basis of the study included the

development of the ability to reflect on the teacher's own skills (Marsh & Mitchell, 2014). Engaging in video analysis leads to a deeper reflection, which can link the improvement of pre- and post-video-analyzed actions.

Sherin and van Es (2005) studied the benefits of watching video to understand one's performance. They came to the conclusion that the usefulness of video analysis is dependent on three factors: the ability to determine what is most important to pay attention to while viewing video; the ability to make connections between multiple events in the video, and the ability to be able to use background knowledge to make judgments about what was seen (Sherin & van Es, 2005). The three components that were deemed crucial for video analysis to be useful to the viewer were seen as nonnegotiable if change is the desired outcome of the viewer. If video is not used for the purpose of improvement by teachers, they are only using personal recollection. McCullagh (2012) stated, "our memory cannot always be reliable. Crucial details and subtleties of context can often remain unnoticed or may be misinterpreted" (p. 139). The research shows that video analysis can be a driver for professional development and personal growth. Video has the ability to increase the amount of reflection that is completed as well as improve teaching and learning. Video can show teachers the truth and take out the opinion factor by portraying the teaching practice clearly and truthfully (Knight, 2014a; Sherin & van Es, 2005).

As previously presented in the research, microteaching has been used widely in education, especially in preservice teaching programs, as well as teachers involved in National Board certification (Tochon, 2008). It was noted by Tochon (2008) that the use of video reflection and microteaching was never meant to fix the recorded lesson itself,

but to improve the lessons that follow the reflection (Tochon, 2008).

If improvement is the desired outcome of video analysis, it must be understood that change does not occur quickly. Bryan and Recesso (2006) observed that teachers who were active participants in video reflection two times per month did not make a significant impact on student achievement data that school year; however, the same teachers who continued to use video as a reflective tool saw their student achievement data improve nine points the next school year. The study determined that the use of video reflection requires purposeful viewing. It was found that teachers who watch video with a focus on improving certain aspects of their teaching, instead of watching the video holistically, showed more improvement overall. Bryan and Recesso found that an increase in the implementation of video analysis correlates directly to teachers watching video with an intentional focus on improvement.

Napolitano (2014) recognized the need for video analysis for the purpose of showing others how to improve. Napolitano stated, “the process of teaching and learning is too often taken for granted, learning is inevitable and automatic when a person shows to another what he knows or is able to do” (p. 491). McCullagh (2012) studied video analysis and stated its importance: “Our memory cannot always be reliable. Crucial details and subtleties of context can often remain unnoticed or may be misinterpreted” (p. 139). McCullagh went further to proclaim that without specific criteria during video analysis, reflection becomes difficult, and progress may be hard to identify. Video can provide vivid detail of real-life experiences and lead the viewer to draw upon their experience and alter their practice accordingly (McCullagh, 2012).

Case Studies Utilizing Video Reflection

Several studies (Athanases, 1993; Brawdy & Byra, 1994; Griswold, 2005; Powell, 2005; Rich & Hannafin, 2008) have been done that utilized video reflection. In the studies, participants recorded their own lessons and viewed their performance on video. After viewing their own video, they then reflected on their performance.

Brawdy and Byra (1994) analyzed physical education teaching majors' use of reflective practice. The procedures consisted of 10 minutes of fundamental teaching of motor skills. The class was divided into two groups: one group analyzing their own video and setting objectives; and the other group meeting with their supervisor, looking at the frequency of feedback given, and making plans to improve feedback (Brawdy & Byra, 1994). The results of the study indicated personal growth of the teaching majors with an increased frequency of specific positive statements and the reduction of general statements in lessons following the initial reflection.

Athanases (1993) studied a cohort of teachers with 1 to 15 years of experience that recorded different sizes of class groupings. The groups reflected on two 3- to 5-minute episodes from their lessons that looked for successes and failures that existed. After personally reviewing the film, the groups then met with an examiner to review the same video. This study lasted 9 months and consisted of interviews during and after the study. Athanases concluded that the teachers reported growth in their own teaching.

Griswold (2005) studied 13 K-8 teachers from different schools in the same school system. The teachers filmed at least 30 minutes to an hour of segmented teaching. After viewing their own segment, they then chose a 10- to 15-minute portion to share with their peers for review. Teachers then reflected with peers, viewed each other's film

segment, and offered feedback. After feedback was given, the teachers journaled their thoughts on the process. The data collection was described as self-reflective writing followed by a concluding survey. The results revealed that sharing classroom video performance with peers can be used as a professional development tool. The key takeaway from the study was that videotaped performance altered the self-perceptions of teachers (Griswold, 2005).

Powell (2005) conducted a study of six veteran teachers using video analysis. The teachers were filmed for 30 minutes during their teaching with research-based learning strategies. The teachers then reflected on their video using a reflective framework that focused on perceptual awareness, critical reflection, and intended teaching. The data collection was audiotaped recordings of the dialogue the teachers had after their viewing of video. The results were that video recordings gave teachers a context for investigating the dimensions of their professional practice (Powell, 2005).

Rich and Hannafin (2008) studied a small group of elementary education student teachers who used a video analysis tool three times during their student teaching assignment to analyze the decisions they made instructionally. The student teachers viewed their videos and noted their instructional decisions and why they made those decisions to determine their focus. The study's results showed that the instructional decisions made were student-centered, and classroom management issues provided an obstacle to increased comprehension (Rich & Hannafin, 2008).

Summary

The use of video analysis has been proven to lead to improvement according to literature. Flowers (2019) completed widespread studies on video analyses that contain a

variety of fields. “Professional athletes spend hours honing their skills through video analysis; attorneys video themselves practicing opening arguments or coaching clients; plumbers, mechanics, and electricians video their craft to demonstrate their work” (Flowers, 2019, p. 37). Each professional field mentioned by Flowers revealed the importance video analysis plays in helping people improve their performance.

Administrator Video Analysis

Research on the use of video analysis by school administrators is limited (Hawkins & Park Rogers, 2016). Hawkins and Park Rogers (2016) stated their understanding of the benefits of video analysis use in regard to supporting reflective practice; however, the widespread use by administrators is not evident. It was noted by Hawkins and Park Rogers that the conversations that take place after evaluations are critical. The use of video has the capability to facilitate a critical examination of teaching. Meaningful conversations were also found to be a product of video analysis. The conversations may also lead to professional growth (van Es & Sherin, 2009).

Administrators should lead the video analysis initiative in their schools (Salem, 2019). To further implementation, administrators should start by filming themselves at faculty meetings and sharing their own personal goals based on the video analysis. If administrators take part in the same task they are asking teachers to do, it will show vulnerability and cultivate a growth mindset in the building (Salem, 2019). In addition to modeling, administrators should ask veteran staff in the building to share their videos of what they are working on professionally. These types of activities could be done in professional learning communities, department meetings, or faculty meetings. By modeling with administration and veteran staff, the process of video analysis can give the

perception of a culture of improvement (Salem, 2019). Echoing Knight (2014a), Salem (2019) agreed that reducing the pressure of using video analysis can lead to an increase in motivation and open-mindedness.

The research surrounding administrator use of video analysis is centered around the implementation of video use in school by teachers (Knight, 2014a). The administrator has the power to create an environment for video use in their school. Administrators also have to create motivation for use by teachers without being seen as a negative tool that searches for weaknesses. This remains a challenge for administrators (Knight, 2014a). If administrators can create a culture of professional development that is connected with video analysis of teachers, the growth and improvement of staff in the building are imminent (McCreary, 2019). Administrators must determine the level of training their staff need in order to be successful with using video as a tool for improvement. The principal using self-video to model for others may impact the school positively in the acceptance of video analysis as a tool for improvement (Hamel & Viau-Guay, 2019).

Summary

The research of McCullagh (2012), Tripp and Rich (2012), and Knight (2014a) fully supports the use of video analysis in education as a tool used for the improvement of educators. The frameworks of Danielson (2008), Falter and Barnes (2020), and Knight (2014a) provided strategies for the use of video analysis in education that improve the process. The process of video analysis for the purpose of improvement is seen as extremely important in the literature.

Perceived barriers in education do exist. Gibbons and Farley (2019) found that teaching in the 21st century involves many competing responsibilities. The time between

classes, after-school activities, and district- and school-initiated professional development may impede the use of video analysis (Gibbons & Farley, 2019); however, the literature findings are clear in that if and when teachers are reflective of their practice, they are able to identify strengths and weaknesses. Teachers are also able to grow professionally and improve the overall quality of their teaching (Gibbons & Farley, 2019). Although literature supports the use of video analysis, it is not the norm in schools across the United States. Educators have more long-term impact on professional skills than any other field, but the potential has yet to be seen (Flowers, 2019).

Instructional Coaching

The use of video analysis to improve performance can be enhanced with the use of a coach. Instructional coaches are employed in school districts throughout the country to put into motion the instructional coaching model (Galey, 2016). Teachers are assigned instructional coaches to offer support as well as improve performance. Instructional coaches often provide professional development as well as help teachers put what they have learned in professional development into practice (Gulamhussein, 2013). Coaches train and support teachers through professional learning instead of leaving learning from professional development sessions to chance with no follow-through (Galey, 2016).

School districts across the country put forth a considerable amount of funding towards the professional development of educators (Wiliam, 2018). In order to carry out professional development activities and make the learning worthwhile, instructional coaches are leaned on to close the gap between the actual professional development and progress of educators (Galey, 2016). In terms of district funding, video analysis equipment and instructional coaches are inexpensive in comparison to professional

development trainings that offer little to no follow-up and continuation of support after the initial training (Joyce & Showers, 2002). Video analysis equipment that can be shared between instructional coaches, teachers, and administrations in a school district is far more effective than a one-time conference (Knight, 2014b). When instructional coaches pair their own feedback with the use of video feedback, the personal growth possibilities are limitless (Knight, 2014b).

Knight (2014a) discussed the power video possesses to improve instructional coaching models. Knight (2014b) interviewed more than 50 teachers. The culmination of the interviews determined that video has the capability to be a game changer in education. When used effectively, video can be a major change agent that leads to the improvement of teaching and learning by instructional coaches, teachers, and administrators (Knight, 2014b). Video reflection, when used effectively, means that teachers gain beneficial information that leads to change. Instructional coaches use video to empower teachers to take control of their own professional development (Knight, 2014a).

Instructional Coaching Structure

Since the early 2000s, the number of instructional coaches in public school systems has been on the rise (Galey, 2016). The constant improvement of videotape technology has allowed the recording of lessons to be more easily accomplished than ever before with the use of Swivl, phones, iPads, and laptop computers (Swivl, n.d.). If instructional coaches and teachers do not use video for goal-setting purposes, improvement is then solely based on recall, which has been proven to be less accurate (Sherin & van Es, 2002). Viewing video-recorded performance allows teachers and

coaches to increase their own reflection, improve feedback, and enhance teaching and learning (Knight, 2014b).

The relationship between teacher and instructional coach is vital to the success of the teacher (Debacker, 2013). The use of video analysis by instructional coaches would need to be clearly defined as a coaching tool in order for the tool to have continued success (Galey, 2016). Instructional coaches who focus on improving their assigned pupils through all means necessary, including video analysis, are destined to see a changed teacher practice over time that leads to the success of students and teachers (Aguilar, 2013).

Coaching structure is vital in school districts in regard to involving others in reflective practice (Dewey, 1933). Aguilar (2013), an educational consultant, admitted administrators put coaches in place but do little to implement a coaching program that focuses on the growth of teachers. Aguilar provided a 10-part coaching plan that will help build or solidify a coaching plan. The aspects are articulating a vision, considering context, choosing a coaching model, setting goals, hiring the right coaches, building relationships, understanding coaching, protecting confidentiality, evaluation, and providing professional development for coaches (Aguilar, 2013).

Galey (2016) had a similar approach to building the capacity of coaches to Aguilar (2013). Galey looked to provide more of a balance between mentoring teachers and whole school improvement. Galey believed that instructional coaches had to complete three roles well in order to be effective. The effective roles of an instructional coach are cognitive, organizational, and reforming (Galey, 2016).

Table 1 displays the goals Galey (2016) believed led to a successful instructional

coaching program.

Table 1

Evolving Roles of Instructional Coaches in U.S. Policy Contexts

Role attribute	Cognitive role	Organizational role	Reform role
Area of focus	Teacher development	Instructional capacity-building	Coherent and effective policy implementation
Main activity	Work with individual or groups of teachers to improve instruction	Charged with knowledge management and building structures for teacher's collaboration and professional development	Positioned as part of a larger reform effort and/or in the context of other reform efforts and must adapt and modify new policy information given local context
Drivers	Informal social influence and semi-structured interactions	Formal organizational influence and semi-structured time-driven interactions	Formal and informal political influence and reform accountability/ fidelity driven interactions

Note. "Evolving Role of Instructional Coaches in U.S. Policy Contexts," by S. Galey, 2016, *The William & Mary Educational Review*, *4*(2), as cited in "A Case Study on the Self-Perceptions of the Role, Responsibilities, and Professional Development Needs of Instructional Coaches," by K. D. Auton, 2020.

In Table 1, Galey (2016) gave an overview of the attributes of an instructional coach in the three different roles of cognitive, organizational, and reform. The development of the teacher by improving their instructional capacity is at the heart of the overall goal of coaching (Crane, 2017). Table 1 provides a clear overview of what each instructional coach role focuses on as well as the main activity in which the coach takes part. The last part of Table 1 shows the drivers of the roles. The words informal and formal are used to show the level of interaction the coach has with the teacher in each different role setting.

Video Analysis Training for Instructional Coaches

Training is needed for instructional coaches to be able to facilitate video analysis in order to provide coaching for teachers (Hong & Riper, 2016). According to Bryan (2020), the goal of video analysis is to provide resources that display vital information about activity that can be utilized to improve the feedback process from instructional coaches. The steps in the video process for an instructional coach can follow a timeline. The timeline consists of capturing video, observing, registering, analyzing, and providing feedback that will lead to improvement (Bryan, 2020). The instructional coach must know what they are attempting to find to improve the teachers assigned to them (Hong & Riper, 2016). Instructional coaches must be taught how to break down the video into manageable moments in time in order to coach teachers through different parts of their lessons. Video coaching must be explained to instructional coaches as coaching for improvement and not judgment (Bryan, 2020).

Cassada (n.d.) determined that effective coaching can increase engagement with teachers and instructional coaches through feedback, observation, and empowering teachers. Video coaching can connect teachers' day-to-day work and the increase in performance they desire (Cassada, n.d.). The open dialogue about the video between the teacher and instructional coach that is sustained over time can lead to improvement (Cassada, n.d.). Instructional coaches should facilitate discussion by watching video with teachers by playing, pausing, and reflecting by rewatching video in order to provide the most effective feedback. Instructional coaches can take more time to gain a deeper understanding of the instruction taking place by using video analysis (Hong & Riper, 2016). The participation of instructional coaches in the video analysis model is a key

aspect in future frameworks.

Three skills are associated with professional practice for instructional coaches to provide meaningful coaching to teachers: “being able to identify what is important in the teaching situation; making connections between specific events; and determining broader principles of teaching and learning” (van Es & Sherin, 2009, p. 245).

According to Knight (2019), instructional coaches involved in video coaching should follow five steps. The coach should videotape at least two of their teacher’s lessons. The coach then will upload video for the coach and teacher to watch separately. Third, the coach will have the teacher develop a goal that is related to student outcomes or an instructional practice by the teacher. The fourth step is for the coach to model the desired instructional practice while the teacher observes. The last step is for the coach to record the teacher’s performance of the newly desired instructional practice, reflect on the lesson, and set new goals if needed (Knight, 2019).

Summary

In either coaching setting, formal or informal, the relationship remains the most important aspect of instructional coaching (Crane, 2017). Without the relationship aspect of instructional coaching, as well as the trust factor, feedback may not be heard clearly (Crane, 2017). When the teacher is allowed to make choices and discuss their teaching, the coach is able to take part in the open line of communication and help the teacher take ownership of their own progress (Knight, 2014b).

Galey (2016) and Aguilar (2013) have common beliefs on instructional coaching. Each researcher believed in the structure and building capacity of the teacher while ensuring the coach is fully prepared to provide feedback and grow their pupils (Aguilar,

2013; Galey, 2016). The use of video feedback, when paired with an instructional coach, takes the coaching of teachers to the next level that will provide a maximum growth experience (Knight, 2014b).

Professional Development

Video has the potential to enhance professional development. In regard to putting video analysis into practice, there are several questions that must be answered (Knight, 2014a). The questions that must be answered are

1. What kind of lens do I need?
2. How important is the sound?
3. How easy is the camera to use?
4. How easy is it to share the video (Knight, 2014a, p. 29)?

Once the basic questions of video recording are answered, video users must move on to practical use questions:

5. Who should record the class?
6. How much of the class should you record?
7. How do you keep video from being a distraction? (Knight, 2014a, p. 30).

Knight (2014a) posed simple yet important questions that must be answered before video recording takes place.

Feldman (2019) believed that actional feedback is the missing element in school improvement. In all domains of human endeavor, useful feedback is critical in order for consistent learning and continuous improvement to take place (Feldman, 2019). Hattie (2009), in his research on effect size, found that actional performance feedback has an effect size of .79. In sports, the arts, and business much time and energy are spent trying

to understand how to provide feedback that will improve performance (Hattie, 2009). The majority of teachers report that meaningful feedback is limited and almost always only exists on personal evaluations and does not lead to improved teaching and learning (Hattie, 2009). According to Feldman (2019), this is where video analysis can become part of every school's professional development toolkit. Meaningful feedback helps to create a collaborative culture where feedback is sought out, valued, and put into use (Feldman, 2019). Video feedback where teachers start by watching video of other teachers and then move to self-observation followed by sharing film with trusted teaching partners, instructional coaches, and administrators is an avenue for highly productive professional development (Feldman, 2019; Hattie, 2009; Knight, 2014a).

Teachers watching themselves teach is highly unnerving. Teachers know they should continue to grow as professionals through professional development but are hesitant to record themselves and believe their own memory should be enough to learn and reflect on what may have been done right or wrong (Henderson, 2019). When video analysis is used as a professional development tool, teachers can gain a more accurate reflection of their lesson and see how their teaching relates to student outcomes (Henderson, 2019; Knight, 2014a).

The use of video reflection provides the viewer with specifics, and teachers can even intentionally record a lesson they feel they have weaknesses in. Teachers can look for patterns in their instructional practice as well as classroom nuances such as participation and teacher positioning (Henderson, 2019). Video reflection as a professional development tool can provide honest feedback from which both veteran and beginning teachers can learn. Video reflection is authentic and provides feedback in a

rigorous way (Feldman, 2019; Henderson, 2019). No one enjoys seeing their flaws in action; however, in order to improve, professionals must know what needs to be improved. Video reflection is uncomfortable at first for many, but personal growth is not always comfortable. Getting comfortable being uncomfortable leads to growth (Crane, 2017; Henderson, 2019).

Conclusion

The research surrounding the reflective learning theory blended with research examining the use of video analysis to improve performance shows there is a deficiency in the use of video analysis in the education profession. This case study investigated the use of video analysis by sport coaches, teachers, instructional coaches, and principals. The study determined the current strengths and weaknesses of the process and helped develop a framework for improved use by those in the realm of education. The study focused on the mentioned school personnel in a midsize school district in Western North Carolina. Recommendations for the implementation as well as the enhancement of video analysis that improves performance will be proposed to the district at the completion of the study. Improved professional learning and growth is the overarching goal of the case study.

Chapter 3: Methodology

The purpose of this study was to explore how teachers, instructional coaches, administrators, and sport coaches can effectively use video to improve performance. This chapter explains the research methodology that was used to collect and analyze data.

The literature review reveals the problem with video analysis is that educators are not using video to improve practice effectively. More specifically, teachers are not using video analysis as a self-reflective tool to improve instructional practices. The issue is the need for professional growth, helping educators improve their performance as they work to help students be more successful; therefore, this study explored the usage and perceived effectiveness of video analysis as well as the barriers that impede the use of video analysis as a professional growth tool.

The research problem is examined more specifically through the following research questions:

1. How do sport coaches use video analysis to improve performance?
2. How do teachers use video analysis to improve performance?
3. How do instructional coaches use video analysis to improve performance?
4. How do administrators use video analysis to improve performance?

Research Design

This qualitative study on video analysis to improve performance focused on the identified research issue pertaining to social and human perceptions surrounding the use of video analysis. According to Creswell (2014), “Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (p. 23). Using a qualitative approach for this study provided attention

and insight to understanding how human beings derive meaning or make observations from information in a nonnumerical way, thus enabling people to make observations and interpretations from concepts, phenomena, meanings, symbols, or characteristics (Creswell, 2009). The process of qualitative research includes questions and procedures as well as data usually collected in the participant's own setting. The data analysis is built by the particulars of general themes and codes determined by the researcher who makes meaning of the data collected (Creswell, 2014).

The concluding report has a flexible structure that allows the researcher to use the data to make inductive observations focused on individual meaning, therefore allowing its data to be used as an essential aspect of reporting the situation's complexity (Creswell, 2014). Creswell (2014) echoed Merriam (2009) by Creswell's interpretation of the steps taken after research is completed. After data collection is complete, the researcher develops themes and interprets data in a way that the integrity of the data is not lost (Merriam, 2009). Creswell (2009) believed researchers should focus on relationships and identify associations between human beings and the study being conducted in order to interpret meaning. Qualitative research places strong importance on the relationship between the research and the researchers and is therefore recognized by the researcher as subjective to avoid a bias or generate a preconceived hypothesis (Creswell, 2009). Qualitative research is focused on learning from the participants and their associations with what is studied in order to interpret the meaning behind the information gathered (Creswell, 2009). Qualitative research is viewed as subjective due to the relationship between what is being studied and the researcher. It is best practice that the relationship between the research and the researcher be acknowledged by the researcher to avoid a

bias or preconceived hypothesis (Creswell, 2009).

In addition to Creswell (2009, 2014), Tracy (2010) identified eight criteria that he believed to be excellent criteria for qualitative research. In order, Tracy identified worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence. A worthy topic is of high importance, as the research must be deemed to add to the field of research of the topic selected. A worthy topic is one that is significant, timely, and rigorous. Qualitative researchers must understand the biases that may be held when conducting research (Tracy, 2010).

Case Study Research

In order to collect qualitative data, several methodologies are available to allow the researcher to collect data best suited for the research topic, including interviews, surveys, observations, or any combination of the three. Qualitative researchers must maintain flexibility in order to select the most appropriate and beneficial research option for their research (Creswell, 2009). The use of qualitative data enables the researcher to "learn from the participants" (Creswell, 2015, p. 17), because the data provide a greater understanding of the stated problem by the researcher, as participants of the study have an opportunity to provide insight not considered by the researcher and to document noted trends in the findings. It is of utmost importance for the data collection to communicate participant experiences in a descriptive manner.

This study on video analysis to improve performance used the case study research method to gain insight from 20 individuals in various roles in the same school district. According to Creswell (2015), a case study is the exploration of a bounded system such as events, activities, processes, or individuals derived from an extensive collection of

data. Starman (2013) indicated that case studies are more than a single type of qualitative research, as they are a path that allows researchers to enter a field that is unknown and with well-known borders. Mesec (1998) believed that a case study is a description or analysis of a case with the purpose of identifying forms, structures, and variables between participants in the situation that is being studied.

Additional research from Simons (2009) explained that a case study is an exploration that is extensive, using multiple perspectives of the uniqueness and complexity of a specific policy, program, project, or system in a real-life manner. Simons emphasized that case studies should not be seen as a method alone but as a design framework that can use multiple methods. Simons echoed Stake (2005) but went further to describe a case study as not only a methodological choice but more of a choice of what is going to be studied. The method chosen by the researcher is not limited and could be viewed holistically, analytically, or culturally; however, the researcher must concentrate on the case (Stake, 2005).

Case studies have long been considered a valid research approach that has withstood the test of time. In fact, the use of case studies was one of the first research types to be implemented in qualitative methodology (Starman, 2013). In today's research studies, they are used frequently in fundamental sciences including education, history, psychology, and medicine. The value of case studies has been identified in practice-oriented professions such as social work, administration, and management (Mills et al., 2010). Moreover, the majority of what is known about the empirical world is derived from case study research (Starman, 2013). Baxter and Jack (2008) indicated that this is likely due to the notion that case studies offer encouragement for those who choose case

study research and stated,

> A case study can be helpful when we are eager to answer the questions of "how" and "why," when we cannot influence the behaviour of those involved in the study, and we want to cover contextual conditions because we believe they are relevant to the phenomenon under study or when the boundaries between the phenomenon and context are not clear. (Baxter & Jack, 2008, p. 545)

Case study research seeks to gather real-life perceptions from people who are active in their field. The qualitative data collected from participants give an instrumental understanding of the research topic (Hodkinson & Hodkinson, 2001). Hodkinson and Hodkinson (2001) further brought the idea of the case study to a more operable sense to the researcher by speaking to the usability of the information that cannot be gathered from a large-scale study. The research on the benefits of case studies led this study on video analysis to improve performance to collect authentic data on purposefully selected participants in a single district. It is the expectation that this study will bring attention to the usefulness and practicality of video use that can improve performance in the education field. Also, the case study will be used to inform the work of the district and other educator professionals to gain an understanding of the benefits of video analysis that can lead to improved performance of teachers, sport coaches, instructional coaches, and administrators.

Participants

A specific and purposeful sampling method was used to select 20 educators including five sport coaches, five teachers, five instructional coaches, and five administrators to participate in this study. It was the expectation that all participants

selected would be willing to provide consent in this study. The five sport coaches came from the high school varsity level. The reason the coaches came from the varsity level is because the varsity high school level is where film analysis is most widely used when preparing for competition (Pedicini, 2014). Specifically, the coaches were teachers who also coached varsity-level sports. The five teachers came from each grade span of the school district: elementary, middle, and high. The five instructional coaches and administrators derived from elementary, middle, and high schools. The participants who were selected were all from the same single school district. The goal of the selection was to gain an understanding of how video analysis is currently used to improve performance at each level of the school system.

The selected participants for each category (athletic coach, teacher, instructional coach, and administrator) were purposely selected. The selection was based on their current roles in their schools and their usage of video analysis. The athletic coach category consists of four head high school varsity level coaches and one assistant varsity level coach. The academic content areas the coaches have taught include exceptional children, math, English, history, and science to represent academics across content areas and specialties. The teachers selected for the study consist of one fifth-grade elementary, one seventh-grade science, one sixth-grade math and science, one high school math, and one high school science. Three of the teachers selected are also National Board certified. The instructional coaches selected are from the elementary, middle, and high school levels. The two elementary instructional coaches selected cover elementary Grades 3-5, and elementary reading kindergarten through fifth grade. The one middle school instructional coach selected covers sixth- through eighth-grade math. The two high

school instructional coaches cover English and social studies. The administrators selected are two elementary, one middle, one high, and one district-level administrator who covers beginning teacher support.

The meaning the participants hold in the study is a trademark of qualitative research. The researcher's focus must be centered on learning from the participants while keeping in mind the meaning the participants hold related to the issue or problem of the study (Creswell, 2014). Additionally, Creswell (2014) described the importance of a holistic account, stating, "Qualitative researchers try to develop a complex picture of the problem or issue under study. This involves reporting multiple perspectives, identifying the many factors involved in a situation, and generally sketching the larger picture that emerges" (p. 258). The body of work gathered from the participants is not a straightforward cause and effect data point but a model of many factors that interact. While qualitative research provides a small sampling of data, the participants of a qualitative study are said to mirror real life and situations that take place in the world (Creswell, 2014).

Data Collection

Interviews

In this video analysis study, I conducted individual face-to-face interviews of all 20 participants in a neutral setting to be able to have an open dialogue without fear of scrutiny from colleagues. This protocol was used in order to adhere to best practices. This qualitative study also used a limited amount of unstructured, open-ended questions as Creswell (2009) recommended that this approach is designed to gather opinions and views from the interview participants (Creswell, 2009). The advantages of interviews are

that they are useful to the researcher when the participants are unable to be observed directly. Also, the participants had the capability of providing historical information from past experiences and that gives the researcher control of the questions being used (Creswell, 2014).

Jamshed (2014) believed that the most popular data collection method in qualitative research is interviews. In this study, I collected data from 20 participants using one-on-one semi-structured interviews, meaning the interviews were planned, but other questions could be added in order for me to gain a deeper understanding from the answers given. The semi-structured interview technique provided a structured framework for the interviews. In fact, Ryan et al. (2016), a strong advocate of the semi-structured interview approach, stated that "it permits the exploration of spontaneous issues raised by the interviewee" (p. 310); therefore, this approach also provides the researcher interviewer flexibility to go beyond the listed questions to ask follow-up questions that often are not in the interview protocol to provide clarity and insight (Jamshed, 2014). Such flexibility is granted in the semi-structured approach by allowing the interviewer to go beyond the interview protocol and ask clarifying questions to follow up when the interview deems it to be necessary (Ryan et al., 2016). One-on-one semi-structured interviews using open-ended questions help the researcher navigate the discussion during the interviews.

Interview Protocol

Creswell (2014) encouraged the use of a plan for questioning that is developed for the interview protocol. The protocol includes a plan for how the questions will be asked and recorded. In addition to recording the interviews with an electronic recording device,

the researcher should plan to take handwritten notes in the event the equipment fails (Creswell, 2014). In conjunction with best interview practices, this study used audiotaping and I had a plan in place for the transcription of the recording using Google voice to dictate the recording. The one-on-one interviews used both clarifying questions that asked the participants to elaborate to obtain necessary information for the study. The participants, being a purposeful sample, were pulled from individuals who were able to speak from different perspectives.

Instrumentation

I conducted one-on-one interviews using an electronic voice recorder to document 20 interviews that took place between me and participants. This allowed me to scribe transcriptions to get the interviews in written form. The written transcription allowed me to gather all information, review the information, and compare and interpret the data.

One-on-One Semi-Structured Interview Protocol

Research Questions

1. How do sport coaches use video analysis to improve performance?
2. How do teachers use video analysis to improve performance?
3. How do instructional coaches use video analysis to improve performance?
4. How do administrators use video to improve performance?

Research Question 1: How Do Sport Coaches Use Video Analysis to Improve Performance?

1. How do you use video analysis to improve the performance of your athletes?
2. What should be included in a framework for using video to improve performance?

3. How can teachers use video to improve performance of students? Of teachers?
4. What are the advantages of video analysis?
5. What are the barriers to video analysis in public education?
6. What kind of training do you need to utilize video analysis?

Research Question 2: How Do Teachers Use Video Analysis to Improve Performance?

1. How do you use video analysis to improve your own performance?
2. How do you use video analysis to improve the performance of your students?
3. What should be included in a framework for using video to improve performance?
4. What are the barriers to video analysis in public education?
5. What are the advantages of video analysis?
6. What kind of training do you need to utilize video analysis?

Research Question 3: How Do Instructional Coaches Use Video Analysis to Improve Performance?

1. How do you use video analysis to improve your own performance?
2. How do you use video analysis to improve the performance of your students?
3. What should be included in a framework for using video to improve performance?
4. What are the barriers to video analysis in public education?
5. What are the advantages of video analysis?
6. What kind of training do you need to utilize video analysis?

Research Question 4: How Do Administrators Use Video Analysis to Improve Performance?

1. How do you use video analysis to improve your own performance?
2. How do you use video analysis to improve the performance of your students?
3. What should be included in a framework for using video to improve performance?
4. What are the barriers to video analysis in public education?
5. What are the advantages of video analysis?
6. What kind of training do you need to utilize video analysis?

Data Analysis

The final step in the qualitative research study is data analysis. An integral part of data analysis is to determine the most significant data and eliminate insignificant data in order to develop themes from the interview dialogue. Baxter and Jack (2008) determined that data analysis and data collection are congruent phases of qualitative research. Qualitative research data can produce a plethora of data that at first can be substantial to beginning and veteran researchers (Baxter & Jack, 2008). After the interviews were conducted in this study and transcribed, I generated a description and determined themes. Coding was also used to categorize themes to analyze. Creswell (2014) determined that five to seven themes are adequate for a research study.

Coding

Coding is the process of arranging, segmenting, and labeling data text to form themes in the data collected. In order to analyze the data collected in qualitative research, I coded the data from the transcribed text. I analyzed the data gathered from interviews

using coding to form a blend of information for the literature review and me. I analyzed by hand, and I read the transcribed data, marked by hand, and then divided the information into parts (Creswell, 2015). The coding process allows the researcher to make sense of the data collection. The coding aspect enabled me to examine codes for redundancy and categorize coding findings into overarching themes (Creswell, 2015). The coding process narrows down data into focused themes called inductive processing, which allows the researcher to disregard insignificant data collected in the study and focus on data that are important. Creswell (2015) provided a framework for coding to assist the researcher, although there is no definite procedure involved according to his findings. Several coding types were used in this video study, including categorizing findings by using vivo codes or words used by the participants during the interview (Creswell, 2015). Lean coding was also used in this study as not every sentence was coded. After coding took place, the themes that were determined by me enabled me to group them into categories which allowed me to form an analysis.

Data Display

I displayed the data by coding interview transcripts through the identification of common themes while drawing conclusions in relation to video analysis. The coding of the common themes is displayed in Table 2. The data collection consisted of the transcription of the 20 one-on-one semi-structured interviews. Each research question was posed to specific individuals, including sport coaches, instructional coaches, teachers, and administrators. All participants answered five questions in their interview.

Table 2

Correlation Between Research Questions and Themes

Research questions	Emerging themes
1. How do sport coaches use video analysis to improve performance?	Based on this research question, the following themes emerged: • The eye in the sky does not lie • Highlight mentality • Skill development • Film logistics
2. How do teachers use video analysis to improve performance?	Based on this research question, the following themes emerged: • Getting out of the comfort zone • Rewind, reflect, reteach • Seeing is believing • Improved teaching strategies
3. How do instructional coaches use video analysis to improve performance?	Based on this research question, the following themes emerged: • Increased collaboration • Improving coaching capability • Classroom management improvement • Lesson modeling and sharing with teachers
4. How do administrators use video analysis to improve performance?	Based on this research question, the following themes emerged: • Enhanced teacher evaluation • Specific feedback • Cultivating a growth mindset • Targeted focus on student needs
1-4: How do sport coaches, teachers, instructional coaches, and administrators use video analysis to improve performance?	Based on all research questions, the following themes emerged: • Lack of use of video analysis • The need for frameworks and training

Research Question 1: How Do Sport Coaches Use Video Analysis to Improve Performance?

Research Question 1 was answered by specific questions targeted to sport coaches as well as questions that required the coach to relate video analysis back to teaching in education. Selected coaching participants were dually employed as both high school classroom teachers and serve as coaches. The reason for this specific selection was to see if there is a correlation between athletic film analysis and teaching film analysis. This protocol allowed the collection of data indicating advantages, barriers, and suggested frameworks, as well as how coaches utilize video analysis to improve performance.

Research Question 2: How Do Teachers Use Video Analysis to Improve Performance?

Research Question 2 was answered with specific questions targeted to teachers from each grade span, elementary, middle, and high school. The questions asked were used to determine current teacher use of video analysis to improve their instructional performance and how they are using it to enhance teaching and learning. The questions determined the advantages and barriers of the use of video analysis in classrooms.

Research Question 3: How Do Instructional Coaches Use Video Analysis to Improve Performance?

Research Question 3 was answered by instructional coaches who received similar questions to those asked of teachers. Instructional coaches offered a different perspective because of their roles of coaching multiple teachers across the school district. Instructional coaches were asked how video analysis improves their own performance as well as the performance of teachers they are assigned to. Advantages and barriers were derived from the interview dialogue with instructional coaches.

Research Question 4: How Do Administrators Use Video Analysis to Improve Performance?

Research Question 4 targeted administrators who are considered to be the instructional leaders overseeing video analysis at the school level. Due to the duty of administrators to supervise all parties involved in the process of video analysis, it was important to gain their perspectives on managing this instructional protocol. The questions asked how administrators use video to improve personal performance as well as teacher performance in the school. Advantages and barriers were derived from the interview dialogue.

Setting

Interviews for this qualitative study were held at the district's central office. This location was deemed the most neutral location to conduct this study. Although I conducted 20 interviews, each interview was conducted separately. The semi-structured interview process allowed me to engage with the participants and ask clarifying questions.

Audiences

The video analysis research was based on the ideas and perceptions of sport coaches, teachers, instructional coaches, and administrators. The findings impacted each category of personnel who participated. Not only did the findings impact those in the roles participating, but they also had an impact on the studied school district and others who wish to use video analysis as a tool for professional development, especially those focused on reflection for improvement. The conclusions drawn from the research findings will be shared with the school district-level administrators, instructional coaches, school-

based administrators, and sport coaches as well as local and regional superintendents.

Chapter 4: Results

The purpose of this case study was to explore how teachers, instructional coaches, administrators, and sport coaches can effectively use video to improve performance. There were 20 participants in the study. The participants consisted of five sport coaches, five teachers, five instructional coaches, and five administrators in a rural, midsize North Carolina school district in the western part of the state. The 20 participants completed a 6-question, semi-structured, one-on-one interview that directly correlated to the research questions. This chapter reports the results of the one-on-one interviews.

The data are presented in the order of the research questions related to each group interviewed. The themes that emerged from the research are reflected as subheadings under each research question as they relate to each group of participants.

Research Questions

The qualitative case study was designed to explore the social and human perceptions surrounding video analysis. The study explored the usage and perceived effectiveness of video analysis as well as the barriers that impede the use of video analysis as a professional development tool. The research problem was examined more specifically through the following research questions:

1. How do sport coaches use video analysis to improve performance?
2. How do teachers use video analysis to improve performance?
3. How do instructional coaches use video analysis to improve performance?
4. How do administrators use video analysis to improve performance?

Instrumentation

Twenty interviews were conducted using an electronic voice recorder. The audio

recordings were then transcribed to gather all information, review the information, and compare and interpret the data. Each research question had six questions that were used to gain an understanding of the perceptions of each role: sport coach, teacher, instructional coach, and administrator. Each interview was 20-30 minutes in duration.

Interview Participants

A specific and purposeful sampling method was used to select 20 educators, including five sport coaches, five teachers, five instructional coaches, and five administrators. All participants selected chose to participate in the study. Data detailing work experience in education are detailed in table format.

Participants were identified by an assigned pseudonym. Table 3 provides a description of each sport coach's pseudonym identifier, years of educational experience, coaching experiences, and sport coached.

Table 3

Sport Coach Profiles

Participant	Years of educational experience	Years of coaching experience	Sport coached
Sport Coach 1	17	17	Football
Sport Coach 2	13	2	Golf
Sport Coach 3	21	21	Basketball
Sport Coach 4	18	18	Basketball
Sport Coach 5	29	29	Baseball

Sport Coach 1 is a head varsity football coach with 17 total years in education and coaching.

Sport Coach 2 is a head men's and women's golf coach who also assists men's basketball and baseball. Sport Coach 2 has 13 total years of educational experience with

2 years as a teacher.

Sport Coach 3 is a head varsity women's basketball coach who also assisted men's and women's soccer and tennis. Sport Coach 3 has 21 years of educational and coaching experience.

Sport Coach 4 is a head varsity men's basketball coach. Sport Coach 4 also assists track and field teams. Sport Coach 4 has 18 years of educational and coaching experience.

Sport Coach 5 is a head baseball and basketball coach. Sport Coach 5 has 29 years of experience in teaching and coaching.

Table 4 provides a description of each teacher's pseudonym identifier, years of educational experience, years of teaching experience, and subjects taught.

Table 4

Teacher Profiles

Participant	Years of educational experience	Years of teaching experience	Subjects taught
Teacher 1	11	11	Grades 2-5
Teacher 2	22	22	6-8 History
Teacher 3	3	3	6-8 Math
Teacher 4	25	25	9-12 Math
Teacher 5	17	17	9-12 Science

Teacher 1 is a current fifth-grade teacher with experience in Grades 2-5 with 11 years of educational experience and teaching.

Teacher 2 is a current seventh-grade social studies teacher who has taught Grades 6-8. Teacher 2 has 22 years of educational experience and teaching.

Teacher 3 is a current sixth-grade math teacher with 3 years of educational and

teaching experience.

Teacher 4 is a current high school math teacher with 25 years of educational and teaching experience.

Teacher 5 is a current high school science teacher with 17 years of educational and teaching experience.

Table 5 provides a description of each instructional coach's pseudonym identifier, years of educational experience, years teaching experience, subjects taught, and years as an instructional coach.

Table 5

Instructional Coach Profiles

Participant	Years of educational experience	Years of teaching experience	Subjects taught	Years as instructional coach
Instructional Coach 1	18	10	6-8 Math	8
Instructional Coach 2	28	24	9-12 ELA	4
Instructional Coach 3	16	13	K-5	3
Instructional Coach 4	16	9	K-5	7
Instructional Coach 5	18	10	K-5	8

Instructional Coach 1 is a current middle school instructional coach specializing in math with 18 years of educational experience. Instructional Coach 1 taught math for 10 years and has been an instructional coach for 8 years.

Instructional Coach 2 is a current high school instructional coach with 24 years of educational experience. Instructional Coach 2 taught English for 24 years and has been an instructional coach for 4 years.

Instructional Coach 3 is a current elementary instructional coach with 16 years of educational experience. Instructional Coach 3 taught in grades kindergarten through fifth

grade for 13 years and has been an instructional coach for 3 years.

Instructional Coach 4 is a current elementary instructional coach with 16 years of educational experience. Instructional Coach 4 taught kindergarten through fifth grade for 9 years and has been an instructional coach for 7 years.

Instructional Coach 5 is a current elementary instructional coach with 18 years of educational experience. Instructional Coach 5 taught kindergarten through fifth grade for 10 years and has been an instructional coach for 8 years.

Table 6 provides a description of each administrator's pseudonym identifier, years of educational experience, years teaching experience, subjects taught, and years as an administrator.

Table 6

Administrator Profiles

Participant	Years of educational experience	Years of teaching experience	Subjects taught	Years as administrator
Administrator 1	20	10	6-8 Math	7
Administrator 2	18	10	K-5	8
Administrator 3	13	6	6-12 PE	7
Administrator 4	11	5	French	6
Administrator 5	18	5	Counselor	13

Administrator 1 is a current high school principal with 20 years of educational experience. Administrator 1 taught middle school math for 10 years and has been an administrator for 7 years.

Administrator 2 is a current elementary school principal with 18 years of educational experience. Administrator 2 taught grades kindergarten through fifth grade for 10 years and has been an administrator for 8 years.

Administrator 3 is a current middle school principal with 13 years of educational experience. Administrator 3 taught middle school physical education for 6 years and has been an administrator for 7 years.

Administrator 4 is a current elementary school principal with 11 years of educational experience. Administrator 4 taught French for 5 years and has been an administrator for 6 years.

Administrator 5 is a district-level administrator with 18 years of educational experience. Administrator 5 was a school counselor for 5 years and has been an administrator for 13 years.

Common Themes Emerged

Each group of five sport coaches, teachers, instructional coaches, and administrators acquired four themes that emerged from the one-on-one semi-structured interviews. Table 2 portrays the themes as they related to the four research questions.

Research Question 1: How Do Sport Coaches Use Video Analysis to Improve Performance?

Interview Questions.

1. How do you use video analysis to improve the performance of your athletes?
2. What should be included in a framework for using video to improve performance?
3. How can teachers use video to improve the performance of students? Of teachers?
4. What are the advantages of video analysis?
5. What are the barriers to video analysis in public education?

6. What kind of training do you need to utilize video analysis?

Summary of Findings From Interviews for Research Question 1–Sport Coaches

Research Question 1 is related to the views of sport coaches on how they use video analysis to improve performance. Four themes emerged from the interviews with sport coaches. The first theme is the eye in the sky does not lie. The second theme is highlight mentality followed by skill development and film logistics. It is noted that all the sport coaches concluded that they do not use film analysis often, or even at all, in the educational setting.

The Eye in The Sky Does Not Lie

Removing opinion and no longer relying on recollection of events was a theme that stood out in interviews with sport coaches. Facts were imperative for sport coaches in their why behind using video analysis to improve the performance of their athletes. Sport coaches were also able to make the connection between the classroom and the athletic realm by pointing out that facts are facts, and the eye in the sky never lies when it comes to recorded actions.

Sport Coach 1 shared his perceptions as,

> We use video analysis to show the correct way to do things. We also use it to fix mistakes in practice and gameplay. We like video because we can show the players detailed information about the correct steps to take and things like that. The film takes the guesswork out and shows exactly what happened, and we can visually see what happened. We tell the kids the eye in the sky does not lie. A teacher can use video in the classroom if they want honest criticism. A teacher can watch their classroom film just like a team watches game film to see what

> happened. You can see yourself teach and see what you need to work on to improve.

I asked Sport Coach 1 to elaborate on memory recall of events and the importance of being able to view past events instead of relying on memory. Sport Coach 1 stated,

> The video teaches people to take ownership; you can see what you did or did not do. The film is going to show us the facts- it takes the lying out of it. It really breaks down the owning of your mistakes and understanding that it is ok to make mistakes. The film allows you to see what happened and go back and fix what needs to be fixed to improve for next time.

Sport Coach 2 echoed the sentiment that film does not lie:

> My favorite thing to say about film is that it's what happened. It doesn't lie, and it is not up for judgment. Whatever you see on that film is exactly what happened. Film allows you to reflect on what happened and see for yourself how you are performing. You know you could see what you are doing well and things that you see that you are not doing well at. Sometimes teachers create their own little classroom that has their own private world, and they may not want to know the truth about what is really happening in the classroom. The film will unveil the total truth and open people's eyes about their performance.

Sport Coach 3 agreed that the truth is unveiled in video analysis as well:

> You don't always pick up on things that are happening during the game. During the game, you can't fully understand what you are doing incorrectly. After the game, we show the film, and we can slow it down and see exactly what took place. You know in teaching you may not really know how you come across to

> your students. The film can show you how you sound and how you come across to students. As a teacher, you will know if you taught things correctly when you hear and see what you actually did, versus what you think you said and did. You know self-reflection is hard. It's hard to look at things when you are looking at yourself. You have to get out of your comfort zone in order to grow and be able to accept the facts about yourself. There is no better person to learn from than your past self on film.

Sport Coach 4 touched on facts and the importance of seeing yourself versus basing your opinion on what you think happened throughout his interview:

> You know the good part about film is that it allows the players to see things the way us coaches see things. During film review the coaches sometimes see things differently than how they remembered them in the moments of gameplay. The film gives us a bird's eye view after the fact. You know there is the sideline view, and it feels a certain way and it looks a certain way, but when you watch the film, it doesn't always match up with what you thought until you get the whole picture on film. Things don't always register in the moment, but when you see it on film, it is sometimes eye opening. You can specifically point to certain moments and get your athletes to understand what is going on.

Sport Coach 4 tied video analysis to classroom teaching:

> You can go back and watch what literally happened. When I watch myself as a coach- and a teacher can do the same thing; see their mannerisms, their stance, their body language. The film allows a person to see the little things that they do that may be affecting others in a positive or negative way. Film allows a person to

> process what happened and take all opinions out of it. A teacher can see what really happened in a lecture, a behavior issue, or even a presentation and use it to do better the next time.

Sport Coach 5 highlighted several key aspects of video analysis use that echo the remarks of other sport coaches:

> During video analysis, the subjectivity is taken out of evaluation. It shows facts and what you did or did not do. The student athletes do not understand what a coach sees during active play. The film allows the athletes to see what the coach is talking about, but also the athlete can ask clarifying questions about what happened and how to improve for next time. Video analysis really helps us see what we may have missed as coaches and players in a controlled setting. Things happen fast on the court, and we cannot always remember exactly what happened. However, film takes the remembering out of the equation and shows us everything that took place, so we don't have to go back and try to remember what did or did not take place.

Highlight Mentality

Sport coaches concurred that one of the advantages of video analysis was seeing the great things that happened. Sport coaches also agreed that teachers will be able to see the great things that occur in the classroom as well. The highlight mentality is a common theme that was derived from interviews with sport coaches when asked about the advantages of video analysis.

Sport Coach 1 believes in the use of highlights to enhance the use of video analysis by athletes and teachers:

> When we watch film, we often see some great things that took place. Throughout competition and practice, great things do happen. I think it is important to compile clips of the great things and show coaches and athletes what can happen when things are done correctly. I think that if teachers could do the same thing and record great moments of instruction it would not only build confidence in the teacher but also make others want to do great things that would be considered a highlight moment. People seem to always respond when they know the good things are seen and highlighted for them to see. People love to be justified and bragged on. The highlights that are made are a way to reinforce correct actions and make others yearn to reach those highlight moments. Overall, the highlight tapes make people want to be better because people want to see clips of things they are doing correctly.

Sport Coach 2 was hesitant when encouraging the use of film for the use of highlights: "I don't think you should make a huge deal out of the plays that were executed correctly, you want correct execution to be the standard, too much praise can be a bad thing." Regarding an educational environment, Sport Coach 2 stated,

> I think highlights are great if you are trying to build confidence in a new teacher or show a struggling teacher the things that are being done correctly. However, again too much praise takes the coaching aspect out of the film review.

Sport Coach 3 mentioned the use of pinpointing great actions to encourage athletes to continue to work at doing things correctly. Sport Coach 3 was more focused on the praise aspect in how she uses video analysis to improve performance: "When we are able to capture highlights, it motivates athletes to do better in gameplay in order to

have those highlight moments that can be shown to the team or added to a highlight film."

Sport Coach 4 spoke of the advantages of film analysis leading to the theme of highlight mentality:

> I will watch every single game we play and watch it repeatedly for lots of reasons. Overall watching film is positive and we look for the good things that happen and we try to show our athletes the good that can come in games when you listen and do what you are taught.

Sport Coach 5 echoed the benefit of compiling actions that highlight the positives:

> Student athletes often do not understand what a coach sees during active game play. Players feel like sometimes that the coaches are always on them about something. If we as coaches can show multiple clips of things that did go right it will help to build confidence in players that will in turn raise the level of play.

It is understood by the interviews with sport coaches that the use of highlights is a strategy that can be used by sport coaches and education teachers to improve performance. The sport coaches often spoke of reviewing what was done right in film review over what was done incorrectly.

Skill Development

Skill development is a common theme that resonated with sport coaches when asked, "How do coaches use video analysis to improve the performance of their athletes," and "How can teachers use video analysis be used to improve the performance of students?"

Sport Coach 1 stated,

> Video analysis is huge regarding helping kids learn the basics. Some kids are kinesthetic learners, and some are visual learners and I think having a video tool in front of them to show the correct way to do it helps fix mistakes. In the weight room especially when we are dealing with younger students, we can show them proper technique. A teacher could use film to break down how they are teaching skills to see if they covered the correct material. It will also allow teachers to see and hear if they gave the right coaching and teaching for students to be successful in the skill they taught.

Sport Coach 2 tied skill development closely to the mechanics of specific skills. Sport Coach 2 cited film use in golf: "We use it a lot with swing analysis; it is just one of those things we use to look at stance, club position, body turn, contact point and follow through."

Sport Coach 2 made the connection to teachers:

> Film analysis can be used in the classroom by helping the teacher adjust based on what is seen in film review. It could be the teacher's placement in the classroom or how they explained a problem. I really think of classroom management as the main skill that can be helped by watching film of yourself teaching. Film analysis can help you refine your teaching practices overall because you can watch everything. You can see and hear what the students heard. It may help teachers adjust their teaching strategies or help students better if they can see what worked and what didn't.

Sport Coach 3 connected film analysis with skill development in terms of helping individuals improve their performance:

> We break down film into clips and look at specific moments, whether it be a set play we called or a transition in the game that we felt was important. Video allows us as a staff to stop the tape and go back to certain points in time to reteach skills that will help us in our game play. When I think of video analysis, I really think of the ability to stop, rewind, and fast forward. We can learn a ton by pausing and replaying events and showing our athletes what happened and what can be done to improve next time.

Sport Coach 3 also spoke of how teachers can use video analysis to reinforce skills in the classroom:

> A teacher can use film to do the same things we do in sports, stopping, rewinding, and replaying events that took place in the classroom and making corrections to improve for the next time the lesson or specific skill is taught.

Sport Coach 4 focused on the growth of individuals and the team via video analysis:

> We can grow our team from watching film, regardless of how each individual performed. Film helps us prepare as individuals and as a team. Teachers can do the same thing by helping fix individuals that will lead to a more successful classroom.

Sport Coach 5 focused more on self-reflection versus team building:

> Self-Reflection by myself and the team is one of the best things you can do to make changes or improvements to performance. I think it is a good idea to allow teachers and students to analyze performance and self-reflect on what they see, both good and bad. Before sitting down in a group setting to discuss aspects of

performance it provides a knowledge base for the viewers. Each player and coach can self-reflect on what they could have done better, and it all goes back to skills.

Skill development enhancement is an area that can be improved by video analysis according to sport coaches. All sport coaches related the viewing of film to improved skill sets in both athletes and coaches. Teachers were also mentioned in how they can also improve themselves and their students by watching film and self-reflecting.

Film Logistics

Film logistics is a topic that is circulated frequently in conversation with sport coaches. The data that can be compiled through viewing film and the who, when, and where were topics that were divulged when asked about advantages and barriers of video analysis.

Sport Coach 1 spoke of being intentional about video use: “We select clips specifically that correlate with a certain topic that we are trying to improve, and oftentimes it deals with statistics we are trying to improve.” Look fors is a word that was repeated three times by Sport Coach 1:

> When you sit down to watch film, whether it be from the weight room, classroom, or ball field, you must have look fors. You need to know what you are trying to fix, and not just watch film to watch film.

A platform for storage and use of the film once it is recorded was mentioned as a must. Sport Coach 2 stated, “We use Hudl as our platform, Hudl stores the film, breaks down clips, and enables us to tag film, which gives us the needed data we need to make improvements.”

Sport Coach 3 spoke more of the logistics of film use:

> Once the film is recorded, we are able to go back and mark points in time and collect stats of what transpired. Teachers can do the same thing with topics like time on task, number of students called, number of answers that are correct, and how many times students were redirected.

Sport Coach 4 agreed with logistics being important: "You have to make the film work for you, the film can give you all kinds of information, but you must be able to tag moments that you want to revisit during video review."

> Sport Coach 5 touched on the shareability of film to increase collaboration:
>
> We use Hudl and it helps us share film with our players, other teams, and college recruiters. Being able to share the film and mark it up to rewatch certain parts of game action helps us save time on rewind and fast forward.

All sport coaches agree that film must be used to your advantage. You must have a platform in place where film can be stored, shared, and tagged. The sport coaches really brought to attention the aspect of the platform Hudl that allows you to mark moments in time that you can go back and revisit. The sport coaches believed this was also a way teachers can save time in film review by having moments tagged where they can go back to specific coachable moments.

Research Question 2: How Do Teachers Use Video Analysis to Improve Performance?

Interview Questions.

1. How do you use video analysis to improve your own performance?
2. How do you use video analysis to improve the performance of your students?
3. What should be included in a framework for using video to improve performance?

4. What are the barriers to video analysis in public education?
5. What are the advantages of video analysis?
6. What kind of training do you need to utilize video analysis?

Summary of Findings From Interviews for Research Question 2–Teachers

Research Question 2 related to the views of teachers on how they use video analysis to improve performance. Four themes were derived from the interviews: getting out of one's comfort zone; rewind, reflect, reteach; seeing is believing; and improved teaching strategies. It is noted that although teachers can determine the usefulness of video analysis to improve performance, it is not used consistently.

Getting Out of the Comfort Zone

One interview question posed to teachers asked, "What are the barriers to video analysis use in education?" This question was posed to see the perceptions of teachers and why video analysis is not used consistently.

Teacher 1 shared,

> Well, it's uncomfortable, isn't it? It feels like I think I don't know, I'm just speaking for what I think, but I think it feels intrusive. Despite the best efforts of administration, I still think that it is intrusive. There are a great many teachers that are uncomfortable being observed. For one reason or the other, and so I think a certain level of discomfort goes along with that. If you know you're asking teachers to volunteer for video analysis, you will probably not get many of them to do it. I think that more people would use it if the results were not punitive. If it becomes a familiarity with a camera in the classroom, more teachers will be willing to do it. If teachers are willing to use it, you will see more growth compared to teachers not willing to use it if you are looking at using video

analysis as a professional development tool.

Teacher 2 spoke more about the fear teachers have and the need for teachers to break away from fear to grow professionally:

> The opponent to cameras in the classroom is fear. I think that some teachers might be afraid about what may actually get recorded and it be used against them in some way, shape, or form. I think depending on the climate of the particular school or school district, video use would be accepted or rejected by teachers. I could see some red flags being raised from teachers if they were asked to film their lessons. If teachers were to watch film for the purpose of growing their skill sets, they may come away with many thoughts that no one else could give them.

Teacher 3 felt that getting out of your comfort zone was the first step towards personal growth. Teacher 3 recognized that there were barriers to video analysis, but none bigger than the obstacle of self:

> I hate watching myself on film. When I go back and watch my recordings it is really painful. I don't think anyone enjoys that, but I think it's the biggest piece in the puzzle of success. People overall don't want to watch themselves on film. It is embarrassing to hear and see yourself on film, and I would rather not watch. People are self-conscious naturally, but if people can get past that part of it, I can see how it can really be helpful in helping teachers and students improve.

Teacher 4 was brief in her remarks about the barriers to video analysis:

> Teachers have a lot on them right now with everything dealing with Covid-19 and we don't need one more thing to do like video analysis. We are working on getting students caught up from learning gaps and don't have time for that.

Teacher 4 shared she would be "open to video analysis as a professional development tool as long as it was not used punitively," when questioned further.

Teacher 5 is National Board certified and has been through the process of video analysis:

> I have used video analysis to improve my own performance through my national boards process. Through the national boards process, I was required to spend many hours reflecting on and writing about the conversations I have with students in my classroom. The process forced me to evaluate both myself in my role, and my effectiveness as a teacher. The process forced me to leave my comfort zone and get tough on myself. I think others would greatly benefit from self-reflection if they can get past seeing and hearing themselves on film.

The comfort zone was a theme that provided insight into the mind of a teacher. All teachers alluded to the fact that once you get out of your comfort zone in film analysis, you can find things that will lead to professional growth.

Rewind, Reflect, Reteach

The question, "What are the advantages of video analysis," led to the theme of rewind, reflect, and reteach. When responses to the interview questions were reviewed, the importance of each aspect of film review was highlighted. Each participant alluded to rewind, reflect, and reteach in similar fashion. Teacher 1 explained the technique that should be used more commonly in education:

> The first thing I think should be done is see what the students are doing, I can rewind to parts of the lessons that I want to re-visit and see how it went. I can go back and see if the students are focused, are they on task, are the students

> improving? I really want my students to improve, so if I go back and see how my lesson went and I can have takeaways from the lessons and make changes to do it better the next time. Also, if I see that students were not getting the concepts that I was teaching, I can go back the next time and teach it a different way that may help more students grasp the concepts. I think it is interesting to reflect on the answers students give and see if it matches up with what you had planned to cover content wise. Lastly, I would say that video analysis lets teachers be honest with themselves about what they need to improve, and I include myself in that, so knowing you can be better will make you better if you are willing.

Teacher 2 shared the benefit of being able to go back to planning to see if the intention met the action: "Being able to rewind the lesson helps me to see if my intentions on paper matched up with what actually happened. It causes me to go back and re-think my lessons for the future."

Teacher 3 added to the theme of rewind, reflect, reteach by stating, "If I am able to rewatch my lessons and take notes of the good, the bad, and the ugly, I can plan to add, delete, and enhance the lessons to be better the next time the same lesson is taught." Teacher 3 also added,

> It would be nice to have film of the class to see where maybe something went wrong, and you can go back and see what caused the action to take place. I am really thinking about students with accommodations or behavior plans in this instance. We can use film to our advantage to coach ourselves through situations.

Teacher 4 was more specific about reflection:

> I think it is important to give teachers time to reflect on video and give themselves

> feedback, before receiving feedback from others. Once you view the video with whoever you decide to share it with then you can go back to the tape and get suggestions for improvement. You can then explain what you think needs to happen and tell your peer what the look fors are in the video. When you start reflecting on the lesson and start developing new strategies that is where the video pays off.

Rewinding, reflecting, and reteaching is a takeaway from the interviews that will help in the development of a framework for teachers to utilize video more effectively.

Seeing is Believing

In the interviews, "seeing is believing" is a common theme that developed among teachers. The theme specifically came to fruition in discussion of the questions, "How do you use video analysis to improve your performance," and "What are the advantages of video analysis?"

Teacher 1 shared,

> The camera can help me see how students respond to me throughout my lesson. The camera can show me how much I am talking or who I am calling on. When I think back on a lesson, I think I can remember what happened, but the camera can show me what really happened with my opinion out of it. Also, I may notice who is not focused during my lesson. If a student was to question their behavior, I can show them on film what they did or how they acted. Sometimes I think I may have taught a good lesson, but when I go back, I can see what really happened. This also works in the other direction. You may have thought the lesson was poor, but when you go back and watch the tape you didn't do as bad as you thought.

> Film can build confidence, but overall, it is showing you the truth about your teaching and your classroom environment.

Teacher 2 explained how he noticed things about himself and his teaching style that he had not thought about before:

> When I watch film, I notice that I haven't been carrying myself the way that I should be carrying myself. I notice my placement in the classroom. I can see how I look to students, especially my body language and tone of my voice. Film can really show you your tendencies in the classroom. For example, where you stand most of the time, who you call on, who you call down, and where you focus your attention. With video analysis, you are able to visually see the flow of the lesson and see if it went as planned. You can really clearly see the truth about your teaching with film analysis.

Teacher 3 made strong connections to the views of Teachers 1 and 2. Teacher 3 stated, "I notice what students are doing, and how the behavior is different in the front and back of the room. The film shows you things that you may not be able to pick up on in the moment."

Teacher 4 shared additional views that tied to seeing is believing:

> When you are collaborating with other teachers about their use of film, and you talk about what was on film some people wouldn't believe what you told them. I think viewing film to see what really happened is the biggest advantage to reviewing film. Teachers don't have to worry about trying to remember what they did or said, they can just go back to the film and review it. If a student said they couldn't understand the concept the way the teacher explained it, they can literally

> go back and watch how they explained and try to assist the student better the next time.

Teacher 5 agreed with the other teachers in the statement,

> When I am looking at data of a test, and I see that some students did poorly, I could go back to my lecture and see how I taught the content. It may reveal some shortcomings in my teaching that I can improve on before the next test. If I review lessons that led up to a test and fix what went wrong with student comprehension, I can help them improve the next time.

The theme of seeing is believing is a selling point for educators to use video analysis. If teachers can see the who, what, when, where, and why of their teaching compared to the results, it can help them improve their trade.

Improved Teaching Strategies

The recurring theme of "improved teaching strategies" was a common conversation piece with teachers during interviews. When asked, "What are the advantages of video analysis?' and "How do you use video analysis to improve the performance of your students," improved teaching strategies was mentioned often.

Teacher 1 stated,

> When I think of strategy, I would like to know more about my questioning to students. Video analysis can show me how many students raise their hands and the frequency of students answering questions. It could help me do a better job of having questioning strategies throughout my lessons. In order to really improve my teaching, I think video cannot just be done a time or two. You have to be willing to use video analysis consistently to improve performance. You will then

see how the strategies you are working on improve over time.

Teacher 2 also had opinions that related to improving teaching strategies:

> You know at least once a marking period, maybe even to start the marking period you should video yourself. You should do this to see if the way you are teaching is accomplishing the goals you set for yourself. The video would not be an observation like with administration, but something you could share with others on your hall. You could talk with others about what they see and help you strategize on ways to improve your teaching. They may also see something on your video that they may like and want to add to their teaching. There have been times over the 22 years where I wished there was an actual camera recording the happenings in my classroom.

Teacher 4 believes in the benefits of video analysis used as a self-reflection tool leading to improved performance:

> I think it is a great idea to video lessons to try and see what I am doing effectively and ineffectively. I need to see what I am doing to try to improve my test scores. I think it is a good strategy, but at the same time, I think it needs to be approached in a specific way.

Teacher 5 echoed that videotaping lessons and reflecting over time is needed for teaching strategies to improve:

> You cannot improve overnight. I think too many times people think once they set goals that it is not going to take long to achieve them. Videotaping yourself one time is not going to fix your teaching mistakes. You must watch yourself consistently and continue to tweak your teaching techniques. I think that you must

try to video yourself at least once a week if you are really focused on being better. You have to give yourself time to reflect on the video and know that this is a marathon, and you will grow as a teacher, just not overnight. There is some strategy to improving while using video.

Research Questions 3: How Do Instructional Coaches Use Video Analysis to Improve Performance?

Interview Questions.

1. How do you use video analysis to improve your own performance?
2. How do you use video analysis to improve the performance of your students?
3. What should be included in a framework for using video to improve performance?
4. What are the barriers to video analysis in public education?
5. What are the advantages of video analysis?
6. What kind of training do you need to utilize video analysis?

Summary of Findings From Interviews for Research Question 3–Instructional Coaches

Research Question 3 related to the views of instructional coaches on how they use video analysis to improve performance. Four themes were revealed from the interviews: increased collaboration, improving coaching capability, classroom management improvement, and lesson modeling and sharing with teachers. Instructional coaches acknowledged the usefulness and benefits of video analysis but agreed it is not used as often as it should be.

Increased Collaboration

The theme of increased collaboration was derived from the responses of three of

the interview questions to instructional coaches: “How do you use video analysis to improve your own performance,” “How do you use video analysis to improve the performance of your students,” and “What are the advantages of video analysis.”

Instructional Coach 1 shared,

> I really like it when I can kind of make it the teacher’s idea to do this kind of reflective practice. This way when I offer suggestions, they can take it up without any kind of being told to do it, and that is best. If I watch video with one of my teachers I can help them with things like classroom management, or really anything they are struggling with. When I watch video with teachers it helps me build a relationship with them, and it really helps me be a true coach. After watching video, I like to ask teachers what caught their eye, and what went well, and what do you think you need to work on before I offer any of my own feedback. I feel like video just opens the door for more communication and collaboration with my teachers.

Instructional Coach 2 spoke of the ability to have increased feedback due to the collaboration aspect video analysis with teachers brings:

> When I view a teaching session and then give myself time to develop feedback while allowing the teacher time to self-reflect, I see many positives. I think as a coach when I watch teachers with the goal of giving them feedback, I can be intentional about looking for things that will help them improve. When I meet with teachers, I can be sure to listen more carefully to the interactions with their students. We can collaborate and then the teacher can go back and reteach to the whole class or go back to individual students who didn’t understand something. I

> want teachers to know that when I watch their film, that I am here to help them be better, and I am not trying to find only the bad moments. Video can also help me collaborate with more teachers than I would be able to without it. I usually only see teachers once a week because I go from school to school, but if teachers sent me video, I would have more access to their classes and more opportunities to provide feedback.

Instructional Coach 3 noted that having the opportunity to watch video of her assigned teachers provides her with more opportunities to communicate and collaborate for improvement:

> Video of my teachers would allow me to ask more questions and to really reflect on what I am seeing in classrooms. Since I don't have time to view everyone all the time, I would prefer to have videos to view in order to be a more effective instructional coach. If the teacher has had time to reflect on questions I have asked about the taped lesson, I can refer to those questions during our group reflection. When we both have the same questions to look at while viewing tape it gives us a common reflection point and helps us both focus on the needs of the teacher. Often with reflection, a teacher is not just going to do it on their own. Teachers need the dialogue with an instructional coach so we can dig to the next level and then improve the performance of the students from the feedback. It is all about going into the teacher's classroom and sitting with them to process. It has usually not been with video, but if the lesson was taped it would be more effective.

Instructional Coach 4 also touched on the ability of video allowing improved

collaboration between instructional coach and teacher:

> Film allows the teacher to pick a few pieces that they want to try to work on. Sometimes it can be overwhelming to think about the whole lesson, but if it is broken down it is more manageable. Many teachers truly want to improve their practice. That means being willing to listen, and I think people are more willing to listen if they are both talking about the same things. By same things, I mean they literally watched the exact same thing on film. I think having that common ground with film makes a true collaboration possible.

Instructional Coach 5 added that coteaching could be utilized for teachers to collaborate with instructional coaches and improve feedback by analyzing film:

> The camera could give the teacher and I a chance to go back and provide feedback to each other. It could also help us gauge the level of engagement during different teaching styles so we can pick up on what students may have found more effective. With video you can cite evidence, so your feedback becomes more powerful when you are both looking at the video and the data at the same time, and you're analyzing what you are seeing together.

Improving Coaching Capability

Instructional coaches advocated that video analysis can provide them with improved coaching capabilities. The discussion of improving coaching capabilities came directly from the question, "How do you use video analysis to improve your own performance?"

Instructional Coach 1 shared,

> As a coach video can allow me to sit down with teachers and we can develop a

> focus for what we want to improve on. If we both know what we are looking for it can help us to try to notice the same things. I like to use what do you notice and what do you wonder type of questions. Video would help me be more reflective. I would have time to stop the tape and look back at specifics that I want to help the teacher improve on. I feel like as coaches we set goals, and video is a way of tracking progress of the goals that we are working on. It is my job to make my teachers better, and viewing video with the goal of improving what I see on film can help me do a better job of coaching.

Instructional Coach 2 again explained that video helps her do a better job with feedback, which she believes makes her a better coach. Instructional Coach 2 explained how video improves her feedback to teachers:

> Well, I think I can use their video as a coach to support you know with the feedback that I give them and help them to improve their practice as teachers. The video would allow me to point back to certain moments in time, or a lesson really, to show them exactly what I am talking about. It is hard if you don't have a video because you depend on memory, and most times you can't remember. I mean, if I want to give a specific example and I have no video, the teacher is going to have a hard time understanding the feedback I am trying to give. If I have video I can point to, the teacher will know exactly which part of the lesson I am referring to. I feel like video gives me validation and more credibility with my feedback.

Instructional Coach 3 focused on what she is seeing in classrooms and how she can better see if she has time to watch more often with the capabilities of video:

> As an instructional coach when I go into a classroom, and I am observing a

> teacher I am very quick to see things that I like and dislike. It could be positives and negatives or areas of weakness and areas of strength, however you want to phrase it. So, I often make those quick judgments as a coach. By recording, I have noticed it gets me to stop and think and see the lesson as a bigger picture and then see the reasons for things that teachers do or don't do. Video allows me time to reflect on teacher's thinking and then watch video again to then come up with more meaningful talking points when we get together.

Instructional Coach 4 also spoke of how video helps her be more specific and goal-oriented with the use of video to enhance coaching capabilities:

> When I am trying to help a teacher and I am looking at what the teacher is doing against what the student is doing, video allows me to see things more clearly. I like to make a tally chart of the questions that were asked. Sometimes that is hard to do in a live classroom. Video would give me more time to make sure I am getting things right for the teacher. Many teachers really want to improve their practice or truly want to improve student performance. I think they can use video analysis as a beautiful thing that they can always use to look for ways to improve. I can help them think outside of the box and even show them video of others maybe teaching the same content to get ideas from.

Instructional Coach 5 explained how her prior use of video can help her help teachers:

> I have used a camera in the past to record myself delivering professional development to others. I liked to go back and watch myself to give myself critiques. My prior use of video for the purpose of improving myself gives me a

why to share with my teachers. I would like to have my teachers use the camera in the classroom and provide me with their own critiques, and then I can watch as well and see what I can offer. In the times I have used it, I like to give myself a goal. I think if I give teachers a goal while watching their own film, I can better help them see the things that can help them reach their goals.

Classroom Management Improvement

The theme of "classroom management improvement" emerged often in interview dialogue with instructional coaches. According to interviews, classroom management is the number one aspect of teaching that instructional coaches spend their time coaching. Instructional coaches agreed that the use of video analysis would help them coach to improve classroom management.

Instructional Coach 1 shared,

> If teachers are struggling with classroom management and they notice that in video, then the next time we could use the video to see any kind of improvements and proximity or clarity of instructions or wait time, you know, consistency. Those kinds of things being seen on film would impact their classroom management. I just think of things like checks for understanding, small group work, and station work, none of these can be done properly with poor classroom management. If I can show a teacher what is hindering part of their lesson from being productive on film then I feel like I can do a better job helping them with their issues. I mean, you know that way they can see first-hand what I am seeing specifically.

Instructional Coach 2 added several examples where video analysis can help

improve classroom management:

> A lot of times I can help teachers understand that there is a lot more teacher talk and a lot less student talk happening in the classroom. A video would really drive home what I am trying to get teachers to understand about their management. I think sometimes when they are in front of the class, they don't fully realize it, but if they watch video they can go back and see what they have been doing. I could help teachers see what went wrong and then they can go back and give more to the students. I just think that with video I can help my teachers understand what I have seen in my notes. It is like my notes become reality and we can watch it together and work harder the next time to not make the same mistakes.

Instructional Coach 3 shared how she would be able to point out specific scenarios on video to help teachers improve:

> When I think of how I am helping my teachers improve overall I think of things like classroom management. I think to specifics, like when a teacher calls on a group of students repeatedly and they don't see that, and by me recording it I can point out how that group does the majority of answering in the class. I can then discuss ways to include other students in class to kind of involve everybody and them just not being focused on a certain side of the room. Frankly, if they are teaching at the front of the room, they kind of know what's going on in the front of the room. If they don't go to the back of the room, I don't think they really know what is going on. Video would allow me to show them where they usually stand in the classroom so they will be more cognizant of their placement while teaching.

Instructional Coach 4 also made mention of how she can improve classroom management of her teachers by utilizing video analysis:

> I could use video to observe things like classroom management concerns. I must think, "is this going to be used for me to just watch student engagement or just specifically look at student discourse?" You must know how you are going to use it to best help the teacher.

Instructional Coach 5 spoke of directly impacting classroom management with the use of video to analyze classroom management:

> I think I could show teachers what their level of student engagement is better if I had film to show as proof. The film would help me show teachers what I think was done incorrectly which overall affected their lesson. I could also use it to show some of the good classroom management techniques that I saw in the lesson. I think I could really do a good job of pulling clips out of a lesson and coaching my teachers off those clips. I could have them record again after they feel like they have been working on their skills long enough to see if they are making improvements. I could then again take clips of the lessons and show them their progress based on the precious filmed lesson.

Lesson Modeling and Sharing With Teachers

Lesson modeling and sharing with teachers is a common theme that circulated with the instructional coaches. Instructional coaches often co-teach with their assigned teachers to model lessons. Instructional coaches noted that they could film themselves performing a certain piece of the lesson to model for teachers.

Instructional Coach 1 shared,

> There are two things that I feel like video analysis would help in my continuous improvement as an instructional coach. I could share great lessons that teachers have filmed with other teachers, and I could film myself modeling lessons and share it with others. I like the capability you have with video to share it with others. You know I think we can all learn from each other. If I show my own video or videos of other teachers, they can get a real life look at teaching in action. There is only so much you can say to a teacher about improving without showing them. I can't think of a better way to show someone how to do something better than to show them a video. I just think of how many times we go to YouTube to learn something, so why not have videos of teachers and instructional coaches showing how to do something in education for other teachers to watch.

Instructional Coach 2 talked about modeling and how she can use video to improve. She also can show teachers how they can self-reflect from watching their video as well:

> If I was to video myself teaching and then sit with teachers I am working with and show them how I critique myself, I think that would be beneficial. I think some teachers don't really know what to look for. If I model how to self-reflect with video with myself, I think I could get more buy-in with teachers. If we are willing to be vulnerable ourselves and do video analysis ourselves and share that with others before they do it, I think many more would be willing to try. They would know they are not alone and they would have an example to go by.

Instructional Coach 3 spoke of next steps for teachers in terms of coaching.

Instructional Coach 3 felt that video analysis provides next steps that are not available without video:

> I like for teachers to think of their next steps after I meet with them. I always want us to have something we are working on to improve. Usually, I say, "Well next time I come see your class, I want to see this or that." I also kind of have the same goals with each grade level or beginning teachers. I tend to compare progress of each teacher throughout the year to see if my coaching is effective. If I was to have video analysis as a tool to help my teachers improve then I could store their videos. I could track their progress over time with video. With their permission of course, if a teacher is struggling with something, but I have a video of a teacher doing it well I could share that with the other teachers. Sometimes like you hear a lot, the best professional development is right down the hallway.

Instructional Coach 4 shared the same thought process as the others in terms of showing video to others: "Some teachers say, 'I wish I could just go see someone else teach, but I have class.' I would be able to show them another teacher in action if I had video they could watch."

Instructional Coach 5 agreed that she can be more helpful if she can model for others by videoing:

> Modeling a lesson sometimes I will use a Swivl camera during that time and then give it to a teacher who is struggling to watch. Once the teacher has a chance to watch it, we can go through it and talk about what kind of feedback they would need to be given in order to improve. I do this to try to build trust with my teachers. If they know I am willing to record myself and share with them, then

they are more open to trying it themselves. After the teacher has given me feedback on my shared lesson, we can then video them to see how they do with the same topic. We would repeat the process of giving and receiving feedback based on the film.

Research Question 4: How Do Administrators Use Video to Improve Performance?

Interview Questions.

1. How do you use video analysis to improve your own performance?
2. How do you use video analysis to improve the performance of your students?
3. What should be included in a framework for using video to improve performance?
4. What are the barriers to video analysis in public education?
5. What are the advantages of video analysis?
6. What kind of training do you need to utilize video analysis?

Summary of Findings From Interviews for Research Question 4–Administrators

Research Question 4 related to the view of administrators on how they use video analysis to improve performance. Four themes emerged from the interviews: enhanced teacher evaluation, specific feedback, cultivating a growth mindset, and targeted focus on student needs. All administrators spoke highly of video analysis use, but they are not using it enough to improve performance according to interviews

Enhance Teacher Evaluation

Administrators shared that the use of video analysis had the capability of enhancing teacher evaluations. The responses from the questions, “How do you use video analysis to improve the performance of teachers and students,” and “What are the

advantages of video analysis use in education," prompted the following responses.

Administrator 1 shared,

> When I think about teacher evaluations, I think of how the camera could be used. During an evaluation, the camera could see how the lesson goes once the administrator leaves. You know, I mean I know that when the administrator is in the room things go a little differently. You know I could show a teacher their film and say what are your takeaways from watching that lesson as the viewer. In Standard 5 about reflection, video analysis could be a huge piece. The standard that talks about facilitating learning, the video can show the teacher how they facilitated learning and give themselves feedback as I also give feedback. You could also tie video analysis into a teacher's professional development plan. You could even take the North Carolina Educators Evaluation System rubric and have teachers go through it and rate themselves using video analysis before the post-conference. I could then assist them as they go through the rubric so they can understand what is being looked for during evaluation. Video analysis could really help the teacher grow as they see first-hand what I am seeing and what I am looking for in each standard of the rubric.

Administrator 2 made one statement on how video analysis can enhance teacher evaluation:

> If video analysis was to be used as a tool for professional growth, I think it would make evaluations more effective. You could stop the video and show the teacher exactly why you rated them this or that. The video would serve as evidence and add an accountability piece for the administrator for their ratings.

Administrator 3 spoke of the recollection of events with the use of video aiding in teacher evaluation:

> During post conferences of evaluations if a teacher was to challenge something, or if they don't have a recollection of the instance we can very quickly go back to the recording and utilize the tape. That way it isn't really a gotcha but to say listen we have talked about this before now this is what I am seeing in the observation. It is just another level of accountability that we can use for not only ourselves to grow professionally, but also the staff around us that we serve. I could also use film as artifacts with end of year summative conferences to show growth of teachers throughout the year. I just think you have to be strategic about how you use it.

Administrator 4 agreed that video analysis could be used during evaluations and classroom walkthroughs to enhance the evaluation process: "We all use the same evaluation instrument, so I think if we get everyone using video analysis looking at the same protocols, we will see a lot of professional growth if we know what we are trying to improve."

Administrator 5 believed that video analysis can enhance the teacher evaluation process as well:

> I would tailor video analysis use more towards administrators and instructional coaches. Administrators and instructional coaches could develop an environment where feedback from video could be given properly so it can be heard. A culture of trust and vulnerability could be cultivated in the evaluation process through the use video. If we could help teachers filter the video and analyze what they saw,

we would find more benefit in our post conferences with teachers.

Specific Feedback

Specific feedback is a common theme that arose in conversation with administrators when asked about the advantages of video analysis.

Administrator 1 shared,

> If I could use video to record my feedback to teachers, I think I would be more effective. I could see things like my tone and how I came across. I could also tell if my feedback was spoken the way I would want to hear it. It would really help me to see if I am getting the right message across to my staff. With a recording, you can really catch things that you are looking for. It could be providing feedback on something you are looking for or something the teacher has asked you to look for. The good thing about video is you can drill down to very specific things you want to show and discuss with teachers. I just think the main thing is just how specific you can get with video.

Administrator 2 shared specific situations where feedback is needed to help others improve:

> Sometimes it's really helpful for teachers to be able to see their proximity to where students are in relation to the classroom to hear the questions they are asking. So, I think it's great for us as administrators to be able to give teachers feedback on things they can see on video. It gives me an opportunity as the principal of the school to highlight things that I see they're working really well at and things that I think they can improve upon. Also, teachers can highlight things that they think they did really well, but they can also point out some things that

they wish they had done differently. These would be areas of improvement that they can reflect on when they are attempting to improve their practice.

Administrator 3 detailed how he could use video analysis to provide more specific feedback:

> I would think you could use video analysis as an eye-catcher tool. If folks want to grow, we need to know what they are wanting to grow in. We as administrators have goals for our staffs, but educators themselves have goals they are working on. The video would allow me to sit down with teachers and they can tell me hey this is my goal help me reach it. We could watch video and I could coach them on the specifics I see that will help them reach their goal. I think that would serve as a great connection point between the administrator and the teacher to have more dialogue that would improve the feedback given.

Administrator 4 also shared how video would enable her to be more specific with feedback to teachers:

> You can look at film with a teacher if you are looking for procedural things that can be improved. It can also be open-ended where you are watching film with a teacher and you both can take notes about what you see that you think you could do better with. It could be things that you would like to change or things that you did well that you want to do again so you want to see how you did it. The video allows for a wider lens of feedback for me as the administrator and the teacher as the viewer. You can really focus in on certain aspects of teaching and stop the tape and give specific feedback on what you are trying to coach with the teacher.

Administrator 5 explained how she can use video analysis to improve feedback by

allowing teachers to see for themselves:

> I think from a feedback standpoint we can be very direct with our feedback to others. We can zoom in on what we are giving feedback on. I can only explain so much of what I am seeing in a classroom when giving feedback to a teacher. The film would give so much more power to feedback because then the teacher can see for themselves real in-the-moment action. The film would give them buy-in I think if they were able to see what the feedback giver is trying to tell them. As a human, you always think someone doesn't really understand the true meaning of what you mean or do, but with the film added with the feedback makes it authentic. I really think the film will improve feedback and make it more easily heard when seen.

Cultivating a Growth Mindset

Throughout interviews with administrators, the common theme of "cultivating a growth mindset" was present. When asked about the barriers and advantages of video analysis in public education, the allusion to a growth mindset was at the forefront of the discussion.

Administrator 1 shared,

> If the people who use video analysis in the school will share how their recordings have influenced their teaching strategies in the classroom at faculty meetings, I think we would get more people on board. I also think that self-reflection leads to growth. Video analysis allows a person to be more reflective and helps them realize their strengths and weaknesses. This would not only be for teachers but also students. You can show students what they are doing as well to help them

grow as students.

Administrator 2 spoke of the importance of the growth process in the utilization of video analysis:

> So, I think video analysis can be super effective in terms of personal growth for educators because it can be tracked over time. If you use video consistently, you should be able to see how you hopefully progress. You would have to be specific about the goals you set and the things that you pick that you want to work on. You would have to decide on things that you can see growth with. The video would allow me and the teacher to track their progress. I think once a teacher sees I improve on film it will catch fire with others. I know we use data to track progression, but video would be an added piece.

Administrator 3 commented that video analysis enables growth to take place by acting as a catalyst for stagnant educators:

> A lot of us want to make big changes to improve our schools. Growth is needed for the big changes to occur. For growth to occur you must have transparency. You must know where you are and where you want to go. Video can do just that for us in education. Video can show us exactly where we are whether we want to admit it or not. Video can also show us how far we have come after we have worked to improve. I would use video to get the people who are not operating at a high level and show them the areas they need to work on. Video would help me not to leave things for chance and hope things change. Video would allow me to monitor the changes that I want to see.

Administrator 4 spoke of video analysis being a tangible tool for administrators

and teachers to monitor growth:

> It is a tangible tool, it's right there, you don't have to sit there and try to remember how something played out. You can sit there and view it as many times as possible. I also think it's a good growth tool. I think it's a cool way for teachers and administrators to see growth. It could be a particular teacher that has had an area that they needed to grow in, but they need that extra coaching. The video can provide that extra boost they need to improve.

Administrator 5 spoke specifically about the growth of beginning teachers:

> Beginning teachers focus on creating their own classroom environment that is conducive to learning. Beginning teachers come in with curriculum knowledge, but don't always know how to run a classroom. I have no doubt they know how to plan and know their curriculum, but the structures, routines, and expectations are the challenge. Video would allow me to show teachers the effectiveness of their structures, routines, and see the follow-through or lack thereof, of their expectations. I could then sit down with them and talk about what is going on and what we can do to fix it. I believe that video would aid in the growth process of beginning teachers.

Targeted Focus on Student Needs

A targeted focus on student needs is a common theme that emerged when administrators were asked how they use video to improve the performance of students.

Administrator 1 shared,

> I think administrators should look at student engagement. So, I think if you have teachers record their classroom, they can see what students are doing during the

> lesson. You miss things when you are teaching that the film would be able to show you. All teachers want their students on task and engaged with the lesson. If students are not engaged that usually means they are not learning. Film would allow teachers to make note of the students who are off task and try to do things that would keep the class more engaged. You don't want to lose students while you are teaching. The film could provide those light bulb moments for teachers to see things that went well that can be shared in a faculty meeting.

Administrator 2 was specific in her interview about how she could use video analysis to be more focused on students:

> A video can be used to have teachers be reflective and analyze students. Usually, I would have teachers watch themselves. However, if I have teachers watch students in stations, group work, and independent work you can see what the students are doing. You can see if the task the students were working on is helpful. You can see if students are struggling or if the task is not challenging enough. You can really use video to pick up on how students are responding to lessons.

Administrator 3 connected lesson planning to video analysis use in the goal of improving student comprehension:

> In lesson planning when we look at the planning process and then delivering those lessons, we could look at the tape to see if the lesson aligned with the plans. We can then see if the film reflects the learning targets that the teacher planned.

Administrator 4 echoed the remarks of administrators by taking a more focused look at students on film: "I think if teachers watch film of their class and have them ask

things like what do you notice about what the student task is, and how students are reacting you will have a better grip on student understanding."

Administrator 5 again spoke specifically of beginning teachers and how they impact students:

> It is our mission to inspect what we expect in the classroom of beginning teachers. As beginning teachers move forward you must inspect the relationship piece with students. You must have the foundation piece solidified. If a beginning teacher can see for themselves on video their relationships with students, they will be able to see their impact. Beginning teachers for the most part struggle with relationships and it would be good to show them what a positive relationship versus a negative relationship looks like on film. Once the beginning teacher knows what a solid classroom looks like, they can monitor their classroom on film to see if they are creating the student-centered environment they want.

Common Themes by All Participants

Two common themes all groups of interview participants shared were the lack of use of video analysis and the need for a framework to follow.

Lack of Use of Video Analysis

According to interviews with the 20 selected participants, the use of video analysis in education is not commonplace in the district.

Sport Coaches

Sport Coach 1 stated, "I watch film all of the time for football, but to be honest I have never used it outside of football. Based on this interview and everything I have talked about; I probably should start." Sport Coach 2 explained, "I haven't used video

analysis at all in the classroom, but I can see the connection between sports use and classroom use." Sport Coach 3 shared, "I have not used video in the classroom to improve my students, but I think it is a good idea." Sport Coach 4 shared, "I mean I guess video could be used in a similar fashion as to basketball, I just have never thought about it." Sport Coach 5 stated, "I use film to improve my coaching, but no I have never used it in math."

Teachers

Teacher 1 shared, "I do use video analysis occasionally in my own classroom but not that often." Teacher 2 stated, "I have only used video in my classroom for the purpose of my national boards process." Teacher 3 explained,

> I used video analysis when I was student teaching because I had to, but I haven't thought about using it since then. I know it can be helpful and it was helpful student teaching, I just haven't done it since then.

Teacher 4 had an honest statement, "Honestly, if I'm not intentionally recording for a certain purpose, I don't think to record my lessons unless it's a specific scenario I am working on."

Instructional Coaches

Instructional Coach 1 shared, "I have used video analysis with my teachers, but I would say I don't use it often enough. I know I could use it more." Instructional Coach 2 shared, "Well, as a coach I don't know that I have videoed myself coaching somebody, but I have used video analysis myself as a teacher which builds into my coaching. I also used it during my national boards process." Instructional Coach 4 explained, "I need to back up a little bit, I really only videotaped myself a few times when I was a teacher. It

ended up being a good tool for me as a teacher." Instructional Coach 5 stated, "I have used the Swivl camera during professional development sessions. I am trying to get more of the teachers I coach to use it for their own personal growth."

Administrators

Administrator 1 shared,

> I used video a lot during covid with my faculty. I really didn't use it much before then. I was able to get online and watch my teachers' videoed lessons and provide feedback. We had to do some evaluations that way during Covid.

Administrator 2 explained, "I have used video analysis for myself as an administrator several times. I have modeled for my staff and been self-reflective." Administrator 3 shared,

> Covid forced me to start using video. Whether I was recording myself for meetings and parents or viewing my own teachers on video, that is when I started seeing how I could use video to improve myself and my school.

Administrator 5 stated, "I have seen video analysis used and know about it, but I have never actually used it on myself. I have had teachers use it, but have never really thought about using it myself, but I know the benefits." Administrator 5 shared, "I use video analysis to help support beginning teachers with their growth, particularly in the area of classroom management."

Framework Needs

Participants in the study agreed that they would be more likely to use video analysis and it could be used more effectively if they had a framework to follow. Participants gave ideas for what they thought should be included in a framework. All

participants were asked, “What should be included in a framework for using video to improve performance?”

Sport Coaches

Sport Coach 1 stated, “I think if you had some type of checklist that could be used while you are watching film with specific questions, that would be helpful to everyone.” Sport Coach 2 shared, “I think you need to keep a tracker of some sort. You know to track certain things you are looking for.” Sport Coach 3 shared, “I think you should have a sheet that you can keep a tally on things you are looking for. You can also make notes of things you want to come back to and address.” Sport Coach 4 explained, “I think that you should have spot checks as you watch film. I think you need to have some predetermined things that you know you are wanting to track.” Sport Coach 5 added, “I think you need to use the same platform; whatever you use for video it needs to be the same, so everyone is on the same page.”

Teachers

Teacher 1 shared,

> I have a couple of suggestions. I think you need to have a first watch. I think you just need to write down what you see and what you notice. I also think you need a rubric of some sort to rate yourself on, then you look at the frequency of actions.

Teacher 2 stated, “I think you need to have the same setup for everyone. As far as where you are putting the camera, how long you are recording, and what is the goal of the recording.” Teacher 3 elaborated on the need for goals:

> I think you need specific goals while you watch film. You need to analyze each aspect of the class from beginning to end. You need to have something where you

look at instructional strategies and a reflection about how it went.

Teacher 4 discussed reflection:

> You need to make it where you give teachers time to reflect. Give them specifics about how much time to spend and a deadline. I think it's only effective for a certain time before you lose it. I do think you have to have look fors for sure.

Teacher 5 shared, "A list of questions that help the person focus on the reflection process. They could then use those questions to write about the process."

Instructional Coaches

Instructional Coach 1 shared, "I think you should have several questions to answer during reflection. What caught your eye, what went well, what surprised you, what would you do differently next time are some things I would ask." Instructional Coach 2 stated, "You should write down what your biggest concerns or issues are first. Then I think you add in your what do you notice and what do you wonder questions." Instructional Coach 3 shared, "Short answer reflection questions. I would also have pre-determined specific questions based on the current coaching you are giving to the teacher. I would have pre- and post-questions to generate reflection." Instructional Coach 4 stated,

> I think there should be some kind of purpose or goal set prior to viewing. The viewer has to know why they are viewing film and what they are looking for. Really they need to know what the end goal is so they can be looking for things to fix or build on.

Instructional Coach 5 shared, "I think there needs to be a pre-planning piece before you record. I also think you need to have a goal in mind and a reflection form."

Administrators

Administrator 1 stated,

> I think you need to look at the basics, what is the teacher doing, what is the student doing, what is the task, and it needs to be on a form. I think you really have to do it more than once, there needs to be a series of videos that you watch, probably at least three lessons.

Administrator 2 shared,

> The framework needs to include a process. For example, I think teachers need to meet with their instructional coach or administrator and get a plan. Then you give them specific things to look for. After that, you need to have a time for reflection and repeat the process until you see goal progression.

Administrator 3 stated,

> I think you start with an agenda and accentuate the positives first, then give things for the viewer to work on. This could be like a scaffold, here is what I want you to watch for and take note of, then reflect on what you saw and make suggestions on how you can do better next time.

Administrator 4 shared, “A framework for video use should be like an open-ended reflection tool. I would have it use the notice and wonder protocol to focus on the teacher as well as the student engagement.” Administrator 5 explained, “The foundation of the framework should be a trusting relationship with your collaborator. You need to have pre-planned questions as well as multiple watches, one alone, one with coach, and one together.”

Training Needed

It was important to gain an understanding of what the participants felt they needed as far as training is concerned to utilize video analysis to improve performance effectively. All participants were asked, “What kind of training do you need to utilize video analysis?” Overall, the participants identified training in how the video would be set up and utilized, focusing on directions for use.

- Sport Coach 1: “The daily usage of it, the video and the loading of the film. The step-by-step process of video and uploading it, editing, it and then using it to breakdown.”
- Sport Coach 3: “Just how to use whatever specific program the school decides to use. The editing and the clipping would be what I think most people would need.”
- Sport Coach 4: “I think the training would need to be more geared towards how to evaluate yourself, learning how to use whatever rubric or evaluation is going to be used.”
- Teacher 2:

  > I think we all need to be on the same page, and all use the same platform. Then training on how to use the equipment and a guide or rules of what you are going to do with the video.

- Teacher 5: “We need practice of how to go through the process. An example or how to video needs to be provided for people to understand or to go back to if they need help.”
- Instructional Coach 1:

If you are using Swivl, it would be nice to have a little kit with the camera with instructions for use so you can do it yourself and not have to rely on someone else. Then that it is private, and no one has to know you are filming today.

- Instructional Coach 2: ‘How to share videos with other teachers and instructional coaches and understanding the selected platform.”
- Instructional Coach 3: “Best practice videos to help others see what you are looking for and what to do. The how-to video would need to cover the whole process from start to finish.”
- Administrator 2: “Understanding the structures in place. Understanding what the pre-planned questions are and how to spot them in the video. How to recognize positives and negatives. If not, you will get lost watching a long clip.”
- Administrator 5: “It should be tailored more towards instructional coaches and administrators. We need to learn more about how feedback is given and heard. I also think people need to be taught how to filter through video.”

Conclusion

Findings were presented in this chapter that provided an understanding of how sport coaches, teachers, instructional coaches, and administrators use video analysis to improve performance. Four research questions guided this study to develop an understanding of how video analysis is used to improve the performance of educators and students. The advantages and barriers were discussed as well as input on what type of frameworks and training would be helpful that would help promote the use of video

analysis. The responses generated ideas and feedback on what the district needs for video analysis to be used as a professional development tool for educators. The next chapter further analyzes the findings of this study and relates the findings to the existing body of literature.

Chapter 5: Discussion

According to the body of research, it is not if but rather how video analysis can improve performance. Today's fast-paced education environment can be broken down by video analysis for the viewers to improve their overall performance (McCullagh, 2012). The increase in availability and accessibility of video analysis tools will help facilitate teacher reflection (Rich & Hannafin, 2009a). The research paired with the case study affirmed Flowers's (2019) statement that few educators use video to analyze their practice for consistent self-improvement. This study provides evidence that if teachers were to capitalize on video reflection, they could enhance the impact they have on students. Sport coaches, teachers, instructional coaches, and administrators agreed that the use of video analysis can and will improve the performance of not only themselves but their pupils. The research and data are aligned in the statement, "It could be argued that teachers' interactions have more long-term impact than any other professional skill, yet video observation and reflection is not yet the norm in schools" (Flowers, 2019, p. 37).

Discussion of Findings

The purpose of this study was to explore how teachers, instructional coaches, administrators, and sport coaches can effectively use video to improve performance. I conducted a qualitative case study in which the data analyzed were from five sport coaches, five teachers, five instructional coaches, and five administrators. Qualitative research was the most ideal method of inquiry to use to gain a deeper insight into understanding how video analysis is used in a rural western North Carolina school district. I utilized semi-structured interviews to determine how each participant is using

video analysis to improve performance.

The literature review led me to the issue of the need for professional growth, helping educators improve their performance as they work to impact student learning. Therefore, this study explored the usage and perceived effectiveness of video analysis as well as the barriers that impede the use of video analysis as a professional growth tool. Additionally, participants were asked what should be included in a framework for using video to improve performance as well as what training participants would need to utilize video more efficiently.

The research problem was examined more specifically through the following research questions:

1. How do sport coaches use video analysis to improve performance?
2. How do teachers use video analysis to improve performance?
3. How do instructional coaches use video analysis to improve performance?
4. How do administrators use video analysis to improve performance?

Analysis of Findings

The findings of this study are in order of each research question. Each question is analyzed to interpret the data collected in this study. The interview results were broken down into common themes by category of participant.

Research Question 1: How do sport coaches use video analysis to improve performance?

To answer Research Question 1, sport coaches were asked six questions. Common themes emerged: the eye in the sky does not lie, highlight mentality, skill development, and film logistics. According to the interview question responses, it is

evident that sport coaches are using video analysis to improve performance in the sports realm. The interview responses echoed Knight's (2014a) stance of video analysis in sports being much more widespread than in education; however, sport coach interview responses concluded that sport coaches do not use video analysis as commonly in educational classrooms.

The Eye in the Sky Does Not Lie

The sport coaches in the study stated the need for factual evidence of action is necessary when coaching for the purpose of improvement. The sport coach's desire for facts agrees with Pedicini (2014), who acknowledged that coaching staffs use video analysis to quickly and efficiently provide factual feedback to address mistakes and build on weaknesses that will ultimately culminate in success for the player and team. Sport Coach 1 shared, "The film takes the guesswork out and shows exactly what happened, and we as coaches can visually see what happened." Sport Coach 2 provided,

> Sometimes teachers create their own little classroom that has their own private world, and they may not want to know the truth about what is really happening in the classroom. The film will unveil the total truth and open people's eyes about their performance.

Sport Coach 3 added perspective on the need for facts: "As a teacher, you will know if you taught things correctly when you hear and see what you actually did, versus what you think you said and did." Sport Coach 4 provided a metaphor: "The film gives us a bird's eye view after the fact."

Sport coaches agree that action happens fast during practice and gameplay. The sport coaches agreed that the same could be said for an education classroom. Coaches

and teachers need film to help them remember exactly what happened during times of reflection. Sport Coach 5 added, “film takes the remembering out of the equation and shows us everything that took place, so we don’t have to go back and try to remember what did or did not take place.” The sport coach data linked with Napolitano's (2014) study on gymnastics. Napolitano noted that film gives the coach the ability to slow down the video, pinpoint action, and walk the gymnast through their movements, showing correct techniques. The study substantiates that the need for authentic video of events is imperative to the reflection process of educators with the goal of improvement in mind.

Highlight Mentality

Sport coaches concurred that one of the advantages of video analysis was seeing the great things that happened. Teachers will also benefit from video analysis as they, too, can see great things that occur in classrooms. Marsh and Mitchell (2014) concluded that video analysis provides teachers with the ability to reflect on their own skills and leads to a deeper reflection. The responses of the sport coaches paired with the current research of video analysis prove that observing oneself on video can provide positive reinforcement for teachers when they are able to see that what they are doing is beneficial. The benefits of video analysis by teachers include the ability to evaluate teaching and enact positive changes to the learning environment (Rich & Hannafin, 2009b).

Sport Coach 1 spoke of the compilation of positive film clips: “People love to be justified and bragged on, highlights are a way to reinforce correct actions and make others yearn to reach those highlight moments.” Sport Coach 3 echoed the benefits of compiling highlights: “When we are able to capture highlights, it motivates athletes to do

better in gameplay in order to have those highlight moments." Sport Coach 5 tied highlights to education: "Student athletes, like students in a classroom, may feel like their coach or teacher never sees the good in them. If we can show multiple clips of things that did go right it will help build confidence."

Skill Development

Sherin and van Es (2005) studied the benefits of watching video to understand one's performance. One of the factors Sherin and van Es (2005) highlighted was the ability to determine what is most important about the videoed lesson. The ability to reflect and improve skills will build knowledge for future action (Sherin & van Es, 2005). The study paired with research cements the findings of McCullagh (2012). Video can increase the amount of reflection that is completed as well as improve teaching and learning (McCullagh, 2012). In the study, sport coaches pointed to the improvement of skills being one of the ways they use film to improve performance. Sport Coach 1 shared, "A teacher could use film to break down how they are teaching skills to see if they covered the correct material." Sport Coach 2 stated, "Film analysis can help you refine your teaching practices overall because you can watch everything." Sport Coach 3 made the connection between athletics and teaching: "A teacher can use film to do the same things we do in sports, stopping, rewinding, and replaying events that took place in the classroom and making corrections to improve."

Film Logistics

Sport coaches spoke of the importance of the where, when, and how of video analysis use. Sport coaches made connections with the logistics of film use on the playing field and the classroom throughout interview dialogue. According to the literature, film

logistics is an area that needs improvement and further guidance in the educational setting (Franklin et al., 2018). Knight (2014a) concluded that because video is easy to use and it can lead to measurable change, education leaders may be tempted to push its use in a heavy-handed way.

Sport Coach 1 shared, “I think the athletes get more out of watching film when it is their own personal choice, and it is not a directive from the coaching staff.” Sport Coach 2 shared, “You have to know what you are trying to look for and have the right viewpoint.” Sport Coach 4 stated, “You have to make the film work for you; the film can give you all kinds of information, but you must be able to tag moments you want to revisit during video review.” Between the literature and the interview of sport coaches, it is evident logistics are important in the use of video analysis to improve performance.

Research Question 2: How do teachers use video analysis to improve performance?

To fully address the second research question, participants were asked six interview questions. Common themes emerged: getting out of the comfort zone; rewind, reflect, reteach; seeing is believing; and improved teaching strategies.

Getting Out of the Comfort Zone

The reality of what is viewed on film can be harsh to the viewer (Knight, 2014a). According to the research and the case study, educators have a negative mindset about video analysis. When video observation is mentioned, teachers feel fear (Flowers, 2019). Teacher 1 shared, “There are a great many teachers that are uncomfortable being observed. For one reason or another, I think a certain level of discomfort goes along with that.” Teacher 3 stated, “People overall don’t want to watch themselves on film. It is embarrassing to hear and see yourself on film, and I would rather not watch.” Research

aligns with the findings as teachers agree once you leave your comfort zone, you begin to grow. Teacher 5 shared,

> The video analysis process in my national boards piece forced me to leave my comfort zone and get tough on myself. I think others would benefit greatly from self-reflection if they can get past seeing and hearing themselves on film.

The literature echoes the finding: There is much discomfort with video reflection; the biggest challenge is overcoming fear in hearing and seeing yourself on video (Flowers, 2019).

Rewind, Reflect, Reteach

The findings of the study pointed to the advantages of rewinding, reflecting, and reteaching. The power of video recordings was recognized regarding the capability of improving after viewing prior performance. The findings of this study corroborated the findings of Bryan and Recesso (2006), who noted that teachers who watch video with a focus on improving certain aspects of their teaching instead of watching the video holistically, showed more improvement overall. Tochon's (2008) research also aligned with the findings that the use of video reflection was meant to improve lessons that follow the reflection. The act of viewing the action, reflecting on the facts, and reteaching with the goal of improving prior performance is documented as beneficial to educators (Tochon, 2008).

Teacher 1 provided opinions of how video reflection should be completed: "The first thing I think should be done is see what students are doing. I can rewind to parts of the lessons that I want to re-visit and see how it went." Teacher 2 added, "Being able to rewind the lesson helps me to see if my intentions on paper matched up with what

actually happened. It causes me to go back and re-think my lessons for the future." The literature and the findings of the study provided a catchphrase for the process of video analysis in the theme of rewind, reflect, and reteach.

Seeing is Believing

The literature was clear in the sentiment that when someone sees their action on film, it helps them to grasp reality more effectively. The power of video in its ability to provide vivid detail of real-life experiences led the viewer to draw upon their experience and alter their practice accordingly (McCullagh, 2012). Participant statements solidify the literature. Teacher 1 shared, "Sometimes I think I may have taught a good lesson, but when I go back, I can see what really happened." Teacher 3 shared, "The film shows you things you may not be able to pick up on in the moment." Data were also mentioned in participant discussions. Teacher 5 stated, "If I review lessons that led up to a test and fix what went wrong with student comprehension, I can help them improve the next time." Griswold (2005) aligned with the findings of the study in the results of his study providing the thought that self-reflection from a taped performance on video will alter the self-perceptions of teachers.

Improved Teaching Strategies

The participants concluded that one of the main benefits of video analysis is the improvement of teaching strategies. Several of the participants believed that video provided the benefit of improving teachers' skillsets. Participants provided examples of video improved their strategies. Teacher 1 shared, "Video analysis can show me how many students raise their hands and the frequency of students answering questions. It could help me do a better job of having questioning strategies throughout my lesson."

Teacher 4 stated, “I think it is a great idea to video lessons to try and see what I am doing effectively and ineffectively. I need to see what I am doing to try to improve my test scores.”

Flowers (2019) completed widespread studies and proved that video analysis leads to improved teaching strategy. Powell’s (2005) study aligned with this case study’s findings by concluding that video can focus on teacher skillsets and provide teachers with a visual of their teaching. The teaching that is viewed on film gives the viewer the ability to critique strategy and work to improve in the future (Powell, 2005).

Research Question 3: How do instructional coaches use video analysis to improve performance?

Instructional coaches were also asked six research questions to address the third research question. Common themes emerged among instructional coaches: increased collaboration, improving coaching capability, classroom management improvement, and lesson modeling and sharing with teachers.

Increased Collaboration

Increased collaboration was believed to be an advantage of video analysis for instructional coaches. Video analysis equipment that can be shared between instructional coaches, teachers, and administrators in a school district is far more effective than a one-time conference and leads to more collaboration opportunities (Knight, 2014b). Instructional Coach 1’s thoughts align with Knight (2014b): “I feel like video just opens the door for more communication and collaboration with my teachers.” The findings of the study revealed that video can help put teachers and instructional coaches on the same page as far as understanding what is occurring in classrooms. Once the teacher and

instructional coach have the same information provided by video, their ability to collaborate and improve is enhanced. The relationship between teacher and instructional coach is vital to the success of the teacher in general (Debacker, 2013).

Instructional coaches in the study touted video as being one of the strategies that binds coaches and teachers together in the instructional coaching process. Teachers sometimes believe instructional coaches do not truly understand what is going on in their lessons, but when both teacher and instructional coach watch the same film, a better understanding is had by both parties. Instructional Coach 2 stated,

> With film, I can watch with the teacher, and we can discuss the lesson. I can provide feedback, and then I can come back again to see if my feedback is helping the teacher improve. Really the film is a way to increase my collaboration efforts with my teachers.

Instructional Coach 5 added to the conversation on collaboration: "With video, the collaboration piece becomes more powerful. When you are both looking at the same video, you are analyzing and seeing things together on common ground."

Improving Coaching Capability

Video analysis is proven to improve instructional coaching capabilities, according to the literature and findings of the study. Video, having the capability to help teachers and instructional coaches alike, increases reflection, improves feedback, and enhances teaching and learning, cementing the idea that viewing video-recorded performance helps people see practice objectively. If instructional coaches and teachers do not use video for goal-setting purposes, improvement is then solely based on recall, which has been proven to be less accurate (Sherin & van Es, 2002).

The findings of the study add to the literature's conclusions that video analysis improves coaching capabilities. Instructional Coach 1 stated,

> I feel like as coaches we set goals, and video is a way of tracking progress of the goals that we are working on. It is my job to make my teachers better and viewing video with the goal of improving what I see on film can help me do a better job of coaching.

Instructional Coach 2 spoke of the value of video in the role: "If I have video I can point to, the teacher will know exactly which part of the lesson I am referring to. I feel like video gives me validation and more credibility with my feedback."

Classroom Management Improvement

The theme of classroom management improvement emerged often in interview dialogue with instructional coaches as well as the literature surrounding instructional coaches and video use. Cassada (n.d.) determined that effective coaching can increase teacher engagement through feedback, observation, and empowering teachers. Hong and Riper (2016) concluded that video enables instructional coaches to gain a better understanding of the classroom as a whole; specifically, what impedes or aids learning to occur.

Instructional Coach 1 agreed that video helps instructional coaches understand the effects behavior has on learning in the classroom. Instructional Coach 1 shared,

> If teachers are struggling with classroom management and they notice that in the video, then the next time we could use the video to see any kind of improvements and proximity or clarity of instructions or wait time, you know, consistency.

Instructional Coach 2 solidified the literature remarks on management:

> A video would really drive home what I am trying to get teachers to understand about their management. I think sometimes when they are in front of the class, they don't fully realize it, but if they watch video they can go back and see what they have been doing.

Instructional Coach 5 added more ideas of how video can be used for classroom management improvement: "I think I could really do a good job of pulling clips out of a lesson and coaching teachers off those clips."

Lesson Modeling and Sharing With Teachers

According to the literature and the findings, video provides instructional coaches with the ability to model and increase sharing of skills and materials with teachers. Knight (2014b) found that when instructional coaches pair their own feedback with the use of video feedback, the personal growth possibilities are endless. Gulamhussein (2013) determined that the sharing of video clips between teachers is one of the most beneficial professional developments possible, and it can happen on the same hallway.

The findings of the study confirm the work of many in the literature in terms of video acting as an instructional tool that can be provided to teachers and shared among instructional coaches. Instructional Coach 1 stated, "I could share great lessons that teachers have filmed with other teachers, and I could film myself modeling lessons and share it with others." Instructional Coach 2 provided a statement that she believes will develop buy-in: "If we are willing to be vulnerable ourselves and do video analysis ourselves and share with others before they do it, I think many more would be willing to try." Instructional Coach 4 addressed the need for sharing of film: "Some teachers say I wish I could go see someone else teach, but I have class. I would be able to show them

another teacher in action if I had video they could watch."

Research Question 4: How do administrators use video analysis to improve performance?

Administrators were also asked six research questions to address the fourth research question. Common themes emerged among administrators: enhanced teacher evaluation, specific feedback, cultivating a growth mindset, and targeted focus on student needs.

Enhanced Teacher Evaluation

Hawkins and Park Rogers (2016) determined that the conversations that take place after observation are crucial to the feedback process. The use of video has the capability to facilitate a critical examination of teaching. Meaningful conversations take place during evaluations, and the use of video analysis will aid the conversations and lead to professional growth (Sherin & van Es, 2005). The findings of the study helped solidify the conclusions of the literature as it pertains to video enhancing teacher evaluation.

Administrators shared that the use of video analysis had the capability of enhancing teacher evaluations. Administrator 1 stated, "Video analysis could really help the teacher grow as they see first-hand what I am seeing and what I am looking for in each standard of my rubric." Administrator 2 added to the literature's stance of videos improving evaluations:

> I think video would make evaluations more effective. You could stop the video and show the teacher exactly why you rated them this or that. The video would serve as evidence and add an accountability piece for the administrator in their ratings.

Specific Feedback

The findings of the study aligned closely with the literature on video analysis use among administrators. Salem (2019) determined that administrators have the capability of improving the feedback they give to teachers with the use of video. The use of video allows administrators to recall exact moments in time instead of having to rely on memory during evaluation conversations (Hawkins & Park Rogers, 2016).

> Administrator 1 detailed her enhanced feedback capabilities with the use of video:
>
> If I could use video to record my feedback to teachers, I think I would be more effective. I could see things like my tone and how I came across. I could also tell if my feedback was spoken the way I would want to hear it.

Administrators agreed that viewing themselves giving feedback would help them improve while also improving others.

> Administrator 3 added to the specifics with which video could aid:
>
> The use of video would allow me to sit down with teachers and they can tell me hey this is my goal, help me reach it. We could watch video and I could coach them on the specifics I see that will help them reach their goal.

Cultivating a Growth Mindset

The literature provided several key points that point to video analysis cultivating a growth mindset in the building. The principal using self-video to model for others may impact the school positively in the acceptance of video analysis as a tool for improvement (Hamel & Viau-Guay, 2019). If administrators can create a culture of professional development that is connected with video analysis of teachers, the growth and improvement of the staff in the building are imminent (McCreary, 2019).

The findings of the study echo the conclusions of the literature. Administrator 2 shared, “I think video analysis can be super effective in terms of personal growth for educators because it can be tracked over time.” Administrator 4’s beliefs are on track with literature as well: “You can sit there and view it as many times as possible. I also think it’s a good growth tool. I think it’s a cool way for teachers and administrators to see growth.”

Targeted Focus on Student Needs

According to Knight (2014a), video analysis is centered on the needs of students that are ultimately determined by school administrators. The administrator has the power to create an environment for video use in the school. Administrators also must create motivation for use by teachers without being seen as a negative tool that searches for weaknesses. Ultimately, the needs of students become the selling point of video analysis that administrators must determine and attack (Knight, 2014b).

Administrators in the study spoke of the many needs of students and how the use of video analysis could aid them in the continuous focus on meeting the needs of students. Administrator 1 shared,

> Film would allow teachers to make note of the students who are off task and try to do things that would keep the class more engaged. The film could provide those lightbulb moments for teachers to see things that went well that can be shared at a faculty meeting.

Administrator 5 added strong comments that tie back to the literature: “It is our mission to inspect what we expect in the classroom and video analysis can add meat to our observations.”

Overall Analysis

While sport coaches, teachers, instructional coaches, and administrators provided many ways to use video analysis, it became evident that video analysis is not commonly used. The literature provided multiple barriers that were confirmed to be true by the study. The participants of the study also revealed that educators desire an understanding of how to use video analysis and frameworks for implementation.

Lack of Use of Video Analysis

According to the literature, the use of video analysis is limited in the educational setting. Knight (2014b) found that from a humanistic perspective, many people become unsettled when viewing themselves on film, which leads to the lack of usage. Time often gets in the way of people trying new things for self-improvement. Developing a new skill and even changing a learned skill takes time and effort, something many lack (Wiliam, 2018). Hawkins and Park Rogers (2016) determined that video analysis use by administrators and instructional coaches is limited.

Participants in the study confirmed the conclusions of the literature in the belief that there is a lack of video analysis use among educators. Sport Coach 5 stated, “I use film to improve my team, but I have never used it in math class.” Teacher 1 shared, “I do use video analysis occasionally in my own classroom but not often.” Instructional Coach 1 added, “I have used video analysis with my teachers, but I don’t use it enough.” Administrator 5 shared, “I have seen video analysis used and know about it, but I have never really thought about using it on myself, but I know the benefits.”

The Need for Frameworks and Training

Tripp and Rich (2012) studied the influence of video analysis on teaching

exclusively. Tripp (2010) believed the use of video analysis required a process for use. Knight (2014b) determined that there was a need for guidelines for video to be used more effectively. Tripp suggested that future researchers investigate the practicality of video analysis in schools.

Participants in the study agreed that they would be more likely to use video analysis, and it could be used more effectively if they had a framework to follow. Participants gave ideas for what they think should be included in a framework. Sport coaches pointed to the need for checklists, while teachers pressed for the need for consistency in the questions asked of video analysis users. Instructional coaches spoke of the need for goal setting and look fors as well as a plan for consistent use. Administrators pushed a focus on the basics of use. Administrators pointed to the need for frameworks for evaluators and teachers alike to follow when completing the video analysis process.

Implications for Practice

The qualitative case study's findings are based on the perceptions of five sport coaches, five teachers, five instructional coaches, and five administrators of how video analysis can be used to improve performance. After analyzing the data from this study, frameworks for how districts and individuals could use this research to provide a professional development tool to improve the performance of educators were determined. Additionally, the study provided several implications.

- School districts should provide training on how to properly use video analysis as a professional development tool. Teachers, instructional coaches, and administrators will need to be trained separately, as each will use video analysis differently.

Participants noted the need for training on how to properly use video as a video analysis tool. A common process for video analysis use is essential to have consistency when leading a large number of practitioners (Tripp, 2010).

District and building administrators cannot expect teachers to use video effectively unless they are properly trained (Kane et al., 2015). The study revealed common perspectives on training from each participant group.

Participants were asked what kind of training would be needed for video analysis to be implemented. Sport coaches agreed that video analysis training is necessary. Sport Coach 1 stated, “The daily usage of it, the video and the loading of film. The step-by-step process of video of uploading it, editing, and then using it to breakdown performance.” Sport Coach 4 was more interested in the overall process: “I think the training would need to be geared towards how to evaluate yourself, learning how to use whatever rubric or evaluation that is going to be used.”

Teachers echoed the coaches’ remarks in the belief that a common process must be identified. Teacher 2 stated,

> I think we all need to be on the same page, and all use the same platform. The training on how to use the equipment and a guide of rules of what you are going to do with the video would be helpful.

Teacher 5 noted the need for an example: “We need an example of how, or a how-to video to be provided to help people understand how to use the tool.” Teachers also had a common perspective that everyone who uses video analysis should understand the mission and overall goal of video analysis as a professional development tool. Teacher 2 stated, “If I am going to be asked to use something, I want to know why, and what is the

overall purpose of the initiative."

Instructional coaches highlighted the need to understand the process of viewing and sharing with others. Instructional Coach 2 stated, "I need to know how to share videos with other teachers and instructional coaches and understanding the selected platform."

Administrators pointed to the need to understand feedback, Administrator 5 stated, "We need to learn more about how feedback is given and heard. I also think people need to be taught how to filter through video." Administrator 2 shared, "An understanding of what the preplanned questions are and how to spot them in the video and how to recognize positives and negatives would be helpful."

Teachers, instructional coaches, and administrators may understand the importance of video analysis for the purpose of improving performance, but the frameworks are limited. Practical frameworks should be offered to each group to ensure the fidelity of the use of video as a professional development tool.

- Due to Covid-19, remote learning and the need for asynchronous and synchronous video teaching is now a priority for school districts. Covid-19 also exacerbated the need for school district-based virtual academies. Quality matter's rubric for remote learning can be used to enhance remote teaching. Specifically, video analysis can play a role in meeting quality matters standards (Gregory, 2018).
- The findings of the case study in addition to current literature on video analysis prompted my development of a framework for practical use for school districts to consider. The video analysis framework includes initial

steps, a 6-step process, and questions for the viewer to consider while viewing their video-recorded lessons.

Frameworks for video analysis use are limited in the education realm (Knight, 2014a). Participants in the study made it known their desires for a video analysis framework that a school district could use to increase usage as a professional development tool. Participants were asked specifically what should be included in a framework for using video to improve performance.

Sport coaches gave several suggestions for use that are closely related to how video is used in the athletic realm. Sport Coach 1 stated, “I think if you had some type of checklist that could be used while you are watching film with specific questions, that would be helpful to everyone.” Sport Coach 3 spoke about look fors that are important while viewing: “You know you need to track certain things you are looking for. You can make notes of things you want to come back to and address.” Sport Coach 4 spoke to goals: “I think you need to have pre-determined things that you know you are wanting to track.”

Teachers concluded that expectations need to be in place for instructional coaches and administrators. The steps educators take for video analysis use as far as the process is concerned were also addressed. Teacher 1 stated, “I think you need to have a first watch. I think you need to write down what you see and notice. I think you need to be able to rate yourself and look at frequency of your actions.” Knight (2014a) proposed multiple look fors that relate to student and teacher interactions, questioning, and tasks. Teacher 2 shared, “You need to analyze each aspect of the class from beginning to end. You need to look at instructional strategies and reflect on how things went.” Teacher 5 spoke to the

importance of questions to answer while reflecting: “Viewers need a list of questions that help the person focus on the reflection process.”

Instructional coaches added specifics that should be asked when users of video analysis are self-reflecting. Instructional Coach 1 shared specifics: “What caught your eye, what went well, what surprised you, what would you differently next time are some of the things I would ask.” Instructional Coach 4 related questioning back to goals: “I think there should be some kind of purpose or goal set prior to viewing. The viewer has to know why they are viewing film and what they are looking for.” Instructional Coach 4 spoke to pre-video expectations: “I think there needs to be a pre-planning piece before you record, I also think you need to have a goal in mind and a reflection form.”

Administrators were more concerned with alignment to goals and discussion of next steps after video analysis has been conducted. Administrator 1 stated, “I really think you have to conduct video analysis more than once and plan for consistent use.” Administrators need to be the site-based drivers of video analysis. The connections to evaluation and video analysis were noted by administrators; therefore, expectations will need to be set by instructional coaches and administrators. Lastly, collaboration is the foundation of video analysis for success to occur (Knight, 2014b). Administrator 5 shared, “The foundation of the framework should be a trusting relationship with your collaborator.”

Participants in this study provided insight into what would be needed in a video analysis framework for practical use in school districts. The literature provided evidence to support recommendations made by the participants. The initial steps of video analysis suggested a framework for use and questions to consider while participating in video

analysis. These questions were developed from participant interview responses and the body of literature.

Initial Steps of Video Analysis

Step 1. Establish a mission for video analysis use and connect to teacher reflection (Standard 5 of NCEES–Teacher Reflection)

Step 2. Assess the environment and determine the best camera setup to suit the needs

Step 3. Provide video analysis training (camera operations/uploading/sharing/ audio)

Video Analysis Framework

Step 1. Determine goals/look fors (teacher talk/student talk-engagement-questioning-tasks)

Step 2**.** Set expectations with coach/administration

Step 3. Film lesson(s)

Step 4. Video self-reflection

Step 5. Video analysis alignment with goals/look fors (independently/ collaboratively)

Step 6. Discussion of next steps (new goals/look fors)

Questions for Video Viewers

- What did you notice?
- What did you wonder?
- What do you think went well?
- Did the desired results occur from the action viewed?

- What impeded the goal from being accomplished?
- What should be improved next time?
- What supports need to be put into place to help you be successful?

Recommendations for Further Research

This study explored how teachers, instructional coaches, administrators, and sport coaches can effectively use video to improve performance. The perceptions were those of 20 individuals in the same rural western North Carolina school district. Recommendations for additional studies include the following:

1. The study was limited to 20 participants. Future researchers could expand this study to include more participants. The arts are areas in education that could also see benefits from video analysis. An investigation into band, chorus, dance, and other performing arts would be beneficial.
2. This study was limited to western North Carolina. Future researchers could expand the study to include additional settings.
3. This study was limited to five participants for each group: sport coaches, teachers, instructional coaches, and administrators. Future research could highlight the difference between how beginning teachers and veteran teachers use video to improve performance and a comparison of their impact on performance.
4. Future researchers could create professional learning communities with a focus on video analysis and track progress over time. A control group could be used to gauge the impact of video analysis on student performance data.
5. Future researchers could pair video analysis with live coaching. Live coaching

consists of having a coach in the room who communicates with the teacher via an earpiece to determine added effectiveness of live coaching.

Limitations and Delimitations

The findings of this case study are limited to the rural western North Carolina district that was selected; therefore, the findings of this case study cannot be used to form generalizations of all sport coaches, teachers, instructional coaches, and administrators. The reason is because the study is only representative of the perceptions of the participants in the study. The small sample size of 20 participants makes the case study restrictive.

The sport coaches were limited to only head coaches. Assistant coaches may have offered a different perspective. Instructional coaches were made up of an odd number of elementary, middle, and high school coaches. A broader lens of instructional coaches could have provided a glimpse into more content areas. Only building principals were utilized in the study. A sampling of assistant principals as well as district-level administrators could have enhanced the lens and added perspective to the study.

It is imperative to draw attention to the fact that participants may have had limited opinions on video analysis due to their limited experiences with the concept. The varied years of experience added variety to the field of participants but also could have been limiting. Adding experience stipulations on the selection of participants could alter data either positively or negatively.

As a former sport coach, teacher, and current administrator. I had a baseline understanding of the perspectives. It cannot be guaranteed that results were not minimally impacted by this fact. Due to the small sample size of the study and my familiarity with

the participants and the district, it cannot be certain that the results of the study were not influenced on some level.

The cost of one Swivl camera package which includes the Swivl account, robot, voice recorder, carrying case, USB cables, and floor stand range in pricing from $1,000 to $1,300 (Swivl n.d.). An iPad is also needed for filing; iPads range in price from $400-$1,200. It would be ideal for each school to have its own Swivl camera for use; however, the cost may be problematic depending on the overall needs of the school.

Regardless of the limitations of the study, the case study has the capabilities to provide school districts insight into how to implement a video analysis professional development program that will improve the performance of educators. Not only will educators improve, but also, in the end, the students will be the ones who reap the benefits.

Conclusion

Video analysis has the potential to be a game changer in the education field. School improvement, increased student achievement, and improved teacher effectiveness are capabilities, thanks to the tool of video analysis. The strategic use of video analysis by school districts will determine the outcomes of video analysis as a possible district initiative. If school systems adopt consistent frameworks for the use of video analysis, they will be providing a common language for an entire district. Consistent use of the frameworks will help instructional coaches and administrators not only improve teachers but also improve themselves in terms of feedback and evaluation.

This study has produced data that has led to recommendations and conclusions for schools and school systems to provide video analysis as a professional development tool

that will reap benefits. The benefits for students, teachers, instructional coaches, and administrators are endless. The use of video analysis for the purpose of improving performance can be a key factor leading school systems to improve district-wide instruction and skill sets that will result in student learning outcomes and improved teacher effectiveness.

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