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INVESTIGATING THE USE AND DESIGN OF IMMERSIVE SIMULATION TO IMPROVE SELF-EFFICACY FOR ASPIRING PRINCIPALS

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ABSTRACT

Aim/Purpose	Improving public schools is a focus of federal legislation in the United States with much of the burden placed on principals. However, preparing principals for this task has proven elusive despite many changes in programming by institutions of higher learning. Emerging technologies that rely on augmented and virtual realities are posited to be powerful pedagogical tools for closing this gap.
Background	This study investigated the effects of immersive simulation technologies on principals' self-efficacy after treatment and the perceived significance of the design of the immersive simulation experience as an effective tool for adult learners.
Methodology	The investigator employed a multiple-methods study that relied on a purposive sample of graduate students enrolled in educational leadership programs at two small universities in the southeastern United States. Participants completed a two-hour module of immersive simulation designed to facilitate transfer of knowledge to skills thereby increasing their self-efficacy.
Contribution	This paper contributes to a small body of literature that examines the use of immersive simulation to prepare aspiring principals.
Findings	The findings indicate moderate effect sizes in changes in self-efficacy, positive attitudes toward immersive simulation as a pedagogical tool, and significance in the design of immersive simulation modules. This suggests that immersive simulation, when properly designed, aids principals in taking action to improve schools.
Recommendations for Practitioners	Educational leadership programs might consider the use of immersive simulations to enhance principals' ability to meet the complex demands of leading in the 21st century.
Impact on Society	Principals may be more adept at improving schools if preparation programs provided consistent opportunities to engage in immersive simulations.

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Future Research Future research should be conducted with larger sample sizes and longitudinally to determine the effectiveness of this treatment.

Keywords immersive simulation, principals, self-efficacy, school improvement, action review cycle, situated learning, critical pedagogy

INTRODUCTION

Fifty percent of all new K-12 public school principals leave after the first three years, and fewer than 30% remain after five years (Jensen, 2014). Principals play a primary role in school improvement (Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, 2007; Darling-Hammond, Meyerson, LaPointe, & Orr, 2010). Research suggests that principals' quality improves with time, and that their longevity directly affects teachers' ability to sustain school improvement (Yost, 2006). Therefore, high principal turn-over rates are an important factor to consider in school improvement efforts. Because many principals indicate they are underprepared for the task of leading in the 21st century, particularly in applying school law (Militello, Schimmel, & Eberwein, 2009; Painter, 2001; Pauken, 2012), if schools are to improve, better preparation is essential to their retention. Part of the solution for retaining new principals may be enhancing their self-efficacy through an improved understanding and application of school law–legal literacy. Strong legal literacy supports in-the-moment and deliberate decisions that are legal, promote equity, and address structural impediments to academic success (Pauken, 2012). As self-efficacy improves in this area, principals become more resilient and confident in their approaches to improving schools.

Immersive simulation, when intentionally designed, has the potential to alter the conceptualization of teaching and learning and to promote the transfer of skills that leaders need to support the demands placed on them (Yuen, Yaoyuneyong, & Johnson, 2011). Immersive simulation refers to a subset of emerging technologies that aid in the teaching of content knowledge; reinforce it in a timely manner; and, most notably, promote skill acquisition through repeated opportunities to engage in authentic, complex, real-world scenarios (Kaufmann, 2003; Limniou, Roberts, & Papadopoulos, 2008; Mantovani, 2003; Winn, 2002; Youngblut, 1998). Specifically, in the platform used in this study, immersive simulation scenarios are designed to allow students to interact with an avatar on a screen. In a 10-minute session, the avatar can react and respond in real time to the students engaged in the scenario, which includes reading facial expressions and gestures. During this session, participants can pause the simulation and seek guidance from their peers or the professor before re-engaging in the simulation. This type of authentic learning opportunity is identified by Yuen and his colleagues (2011) as having "potential for all fields where rapid information transfer is critical" (p.124). Aldrich (2009) posited that immersive simulation, when properly designed, could add value to a variety of learning situations, particularly leadership. In his book, he stated "improving schools...is the greatest challenge of our generation" (p. 9) and suggested using immersive simulation to support educational leadership development. However, literature on the use of immersive simulation to add value to pre- or in-service principals' development is limited. The primary objective of this multiple-methods study was to examine the impact of immersive simulation on principals' perceived self-efficacy and to determine if the design of immersive simulation experiences is significant in how aspiring leaders perceive its effectiveness for adult learners.

A brief review of the path to principal certification helps to contextualize the design of this study. States have the legal authority to approve and review principal preparation programs. Many use both accreditation and licensure requirements to guide the process (New Leaders, 2012). In the southern United States, several university programs are accredited through the Council for the Accreditation of Educator Preparation, and principals are licensed through professional standards commissions. Despite recognition for innovative educational leadership programs at some universities (Darling-Hammond et al., 2007), in 2008, one state used its authority to impose sunset clauses on all their university educational leadership programs (Mitgang & Maeroff, 2008). Universities in this state responded, in part, by restructuring these programs to incorporate performance-based approaches intended to address the lack in many traditional leadership programs of authentic experiences in real-

world learning opportunities. A shift in focus to these job-embedded, performance-based learning opportunities, however, diminished traditional coursework. Despite agreement that providing real-world experiences is preferable to traditional academic exercises, decreased exposure to content knowledge can be particularly consequential if the internship fails to afford a wide array of experiences, the aspiring educational leader lacks a strong mentor, or both (Darling-Hammond et al., 2007; Darling-Hammond et al., 2010; Davis, Darling-Hammond, LaPointe, & Meyerson, 2005). Most recent changes in certification requirements since 2015 retained an emphasis on fieldwork over courses and failed to address concerns that aspiring principals lack adequate foundations of knowledge on which to build and practice skills (A. Nixon, personal communication, February 4, 2015). To address this persistent challenge, some universities have looked for alternative pedagogical tools that simultaneously aid in content knowledge acquisition and reinforce it in a timely manner through repeated opportunities to engage in authentic learning. In one state, several universities have been early adopters of immersive simulation technologies to address this gap. Adoption of this technology in this state made it possible to execute a study on the value added to principals' preparation through immersive simulation platforms.

Literature Review

Building on a previous study (Gilbert, 2016) that measured principals' legal literacy before and after participation in immersive simulation, this study examined changes in self-efficacy after the same treatment and investigated participants' perceptions regarding the importance of design of the immersive simulation experience and its use as a pedagogical tool for adult learners. The focus on improving legal literacy provided the content through which to assess increased self-efficacy. As such, three constructs were examined in this literature review. These included the importance of (a) the principal to promote school reform, (b) legal literacy and its subsequent impact on self-efficacy in principals, and (c) well-designed immersive simulations for promoting increased self-efficacy through skill development.

Principals, in supporting academic achievement for all students, are second only to teachers (Leithwood, Louis, Anderson, & Wahlstrom, 2004). Large federal grants (e.g., *Race to the Top*), highlight and support this point (Wei, Darling-Hammond, & Adamson, 2010). In fact, shifts in legislation since 2000 emphasize the focus on the principal as key to reform efforts and improving schools. This is explicit in provisions of the *Every Student Succeeds Act* that place more burden on the principal to reform schools than did its predecessor – *No Child Left Behind* (Voelkel, Johnson, & Gilbert, 2016). However, principals are often not up to the task of leading in this context (Levine, 2005) because the skillsets required to lead complex organizations, such as schools in the litigious environment of public education, are not assimilated well in educational leadership programs. Persistent assertions from within colleges of education and in public perception that principals are not up to the task of leading invite exploration of reform efforts.

One effective fulcrum for reform results from a high degree of legal literacy in principals (Pauken, 2012). Legal literacy leverages a principal's advantage to lead effectively by (a) allowing for in-the-moment decision-making necessary to attend to day-to-day transactions that keep a school operating, (b) promoting ethical decision-making that challenges the status quo and contributes to academic success for all students, and (c) minimizing risk of legal entanglement that hinders a principal's ability to act and react appropriately to myriad situations. Another fulcrum for effective reform is tied to principal attrition rates. There is a corollary effect between leadership turnover and teachers' ability to sustain improvement (Herman et al., 2016). While some argue that failing principals need to be replaced, research suggests that they improve with time and training, making a case for developing their resiliency and persistence. As these traits are "strongly related to self-efficacy" (Yost, 2006, p. 61), ongoing professional development aimed at increasing self-efficacy through opportunities to hone critical skills in areas such as legal literacy is a valid focus for improving schools (Herman et al., 2016). Self-efficacy is also strongly correlated with motivation to act (Bandura, 1997), further strengthening the need for its development in principals. Well-designed immersive simulations provide principals

with opportunities to increase self-efficacy through improving their ability to execute high-leverage school improvement practices.

Design of Immersive Simulations

Experiences in immersive simulations, if not properly designed, can serve as nothing more than a "wow" factor. To avoid this loss of potential, well-designed scenarios rely on the use of action review cycles. Several decades ago the U.S. Army developed after-action review cycles to increase effectiveness and execution of tactical strategies (Darling & Parry, 2003). These after-action reviews (AAR) are credited with the army's sustained ability to improve even in the most challenging environments. However, over time the value of pre-planning has also been recognized as a tool for sustained improvement. As such, AARs have evolved to include focus on the entire action review cycle (DeGrosky & Parry, 2011). These action review cycles (ARC) explicitly include both before- and after- action components (referred to as BAR and AAR, respectively) and encompass planning, preparation, participation/execution, and review. Immersive simulation, predicated on situated learning theory, typically includes this action review cycle (Dede, 2009). However, in the literature in the field of immersive simulation, the ARC is often discussed only in terms of the "after-action review cycle," for example, *what do we do after the simulation to create meaning*? In fact, the before action components of the ARC is absent in both design and discussion. Focus on the complete ARC bridges this gap between theory and action by allowing learners to exist in the zone of proximal development (Ash & Levitt, 2003), in the both before- and during- action components of immersive simulation. When properly constructed the before-action review components allow for the participants to grapple with new information in the theoretical realm and to co-construct knowledge. During this time, participants' roles are fluid between learner and teacher, a process that is repeated as participants enter during-action components of the immersive simulation. This upward spiral affords multiple opportunities for movement between the theoretical and practical realms and promotes maximum learning in the zone of proximal development. In this way, immersive simulations can serve to slow down time and interactions to reveal tacit assumptions through reflection and debriefing (Dede, 2009). It can also act as compressor of time to reveal consequences of actions otherwise not assigned any causal relation (Aldrich, 2009).

Marrying the act of knowing and doing through immersive simulations designed to accommodate the complete action review cycles has the potential to increase both principal preparedness and self-efficacy. Exploration of its use in this manner is a worthwhile endeavor given the importance of principals and their self-efficacy for school improvement efforts. Exposure to immersive simulation can provide uniform experiences for aspiring principals and promote more capable 21st century-ready principals through increased self-efficacy.

Theoretical Framework

Situated learning theory and critical pedagogy serve as the theoretical foundations for this study. Situated learning theory suggests that knowledge does not exist absent of social and cultural context (Brown, Collins, & Duguid, 1989; Herrington & Oliver, 1995). Separating tasks of learning and doing fragment the learning process and hinder transfer of knowledge and skills (Dede, 2009). Immersive simulations join the act of learning and doing and, when designed with elements of situated learning, are effective at mimicking real-world experiences and thus promoting transfer of knowledge and skill acquisition (Dede, 2009; Yuen et al., 2011). Critical pedagogy posits that dominant social and cultural ideologies influence learning and render it a political process (Giroux, 1991). Failure by principals to act can sometimes be due to an unwillingness to challenge the status quo (Gray & Streshly, 2008). This highlights the need to design immersive simulations such that deconstruction of the status quo is encouraged through opportunities to learn through doing, with a community of peers. Adult learners learn best when these experiences are anchored in context and experienced in a community (Darling-Hammond et al., 2007; Dede, 2009; Johnson, Smith, Willis, Levine, & Haywood, 2011). As such, the immersive simulation experience was designed to include exposure to authentic scenarios

practiced in cohorts; cyclical opportunities to grapple with ideas to make meaning; and complex, integrated, and realistic, problem-solving scenarios both reactive and scaffolded to individuals' needs. Coaching by peers and the facilitator were also included in the design to promote both learning in the zone of proximal development and the near-transfer of skills.

METHODS AND PROCEDURES

This study replicated and extended previous research on the efficacy of immersive simulation environment as an appropriate pedagogical tool in which principals develop skills necessary for the successful application of school law (Gilbert, 2016). The primary objective of this multiple-methods study was to examine the impact of immersive simulation on principals' perceived self-efficacy and to determine if the design of immersive simulation experiences is significant in how aspiring leaders perceive its effectiveness for adult learners. To that end, the investigator sought to answer two questions. The first concerned changes in participants' self-efficacy after treatment, and the second concerned perceptions of the value of immersive simulation as a tool for adult learners.

RESEARCH QUESTIONS

This study provided descriptive and correlational data to answer the following research questions:

1. What are aspiring principals' perceptions of self-efficacy in their knowledge of school law before and after participation in a module of immersive simulation?
2. How do aspiring principals value the effect of a module of immersive simulation on their school law content knowledge?

RESEARCH DESIGN

Participants

This study relied on a purposive sample drawn from a pool of participants who were enrolled in graduate programs at two small universities in the southern United States. Like other universities in this state, these universities require a law class for aspiring principals and devote a component of their programming to job-embedded, performance-based experiences. The sample consisted of graduate students who met one or more of the following three criteria: 1) students entering an educational leadership or school improvement program at the university, 2) those who had completed a course in school law, or 3) those who were currently participating in (or had participated in) job-embedded leadership training. To minimize the range of foundational knowledge among participants, those who have developed a high degree of legal literacy through several years (3 or more) of experience serving as an assistant principal or principal were excluded.

Demographic data were gathered in a survey at the time of the pre-test (see Appendix A). Frequency statistics were calculated to summarize these data (Table 1). Sixty-seven percent of participants identified as female. Approximately 40% indicated they held a teaching position, while only 30% were currently serving as assistant principals. Thirty percent of participants indicated they held a position other than these two areas (e.g., athletic director, curriculum coordinator, etc.). In school law training, 44.2% indicated they had taken a school law course at a university, while 11.6% indicated their only training was through job-embedded experiences. Nearly half of the participants, 44.2% reported that they had no form of school law training. Time since research participants had taken a university course fell into a median response category of zero to two years ago, but ranged from zero to more than five years ago. Of these participants, 57.1 % rated their course as outstanding or very good, and 42.8 % assigned a rating of good or fair. Time since research participants had received job-embedded learning experiences as their school law training fell into a median response category of zero to two years ago, but ranged from zero to five years ago. Of these participants, 76.9 % of this group rated

their job-embedded experience as very good or good, with 23.1% assigning a rating of fair or less than adequate.

Table 1. Demographic Characteristics of Participants (n = 43)

Characteristics	*n*	%	Characteristics	*n*	%
Sex			School Law Training		
Female	29	67.4%	Course	19	44.2%
Male	14	32.6%	Job-Embedded	5	11.6%
			None Reported	19	44.2%
Roles in Schools					
Teachers	17	39.5%	Rating of School Law Training		
Special Educators	2	4.7%	Course		
Instructional Coaches	6	14%	Outstanding & Very Good	16	37.2%
Athletic Directors	4	9.3%	Good & Fair	12	29.7%
Assistant Principals	13	30.2%	Less than Adequate	0	0.0%
Central Office	2	4.7%	Job-Embedded		
AP / AD	3	7.0%	Outstanding	0	0.0%
Teacher & Special Ed	1	2.3%	Very Good & Good	10	23.2%
Other	3	7.0%	Fair & Less than Adequate	3	7.0%

Data Collection Procedures and Analysis

To determine aspiring principals' perceptions of self-efficacy before and after treatment, a quasi-experimental pre-post survey research design was used to gather data to determine if there was a change from pre- to posttest in the self-efficacy. Dependent samples *t* tests were used to test the null hypothesis that self-efficacy of aspiring principals would not change after participation in a module of immersive simulation. This study lacked a sufficient sample size to conduct a multivariate analysis (Mertler & Vannatta, 2005), thus, pair-wise comparisons were employed and the Bonferroni correction applied to the *p* values to correct for the inflated family-wise error rate (Napierala, 2012). SPSS was used to calculate dependent sample *t* tests statistics and *p* values. Effect sizes were calculated using an online calculator to ascertain *Cohen's d* (http://www.uccs.edu/~lbecker/). Cronbach's alpha, α was calculated for responses to the self-efficacy scales as a measure of internal consistency. Cronbach's α demonstrates the extent to which responses of a related set of items are similar, with Cronbach's $\alpha \geq .70$ considered a strong indicator of reliability (Moore, Notz, & Fligner, 2013).

A questionnaire consisting of nine open-ended items was administered to ascertain the participants' perceived value of learning through immersive simulation. Using Strauss and Corbin's (1990) open, axial, and selective coding, data was analyzed. A constant comparative method served as an internal reliability measure allowing the researcher to reexamine continuously the data and consciously be aware of, and bracket biases at each step (Wagner, Kawulich, & Garner, 2012). Prolonged engage-

ment with the data (Lincoln & Guba, 1985), along with quotes from research participants to mitigate interpretative bias (Cope, 2014) ensures credibility in the process. This prolonged exposure and repeated coding as each group of data became available enabled the researcher to develop and connect categories that allowed her to theorize about research participants' experiences in each stage of the action review cycle.

Procedure: recruitment

Educational leadership and school improvement courses were used as the platform for recruiting participants from each university. News posts for online courses, emails to students, and, when possible, in-class visits also served to recruit. Participation in the immersive simulation module was not anonymous; however, data were anonymized and reported only in aggregate form to promote anonymity.

Implementation and data collection

The design of this module is constructed such that both before- and after-action review are included, thus creating a before- and after-action review cycle (BAARC) to allow more thoroughly for opportunities to address tenets of situated learning theory and critical pedagogy. Therefore, a standardized experience in a module in school law included the following elements:

a. Before-action review:
    i. research participants read one of three scenarios: religion, student rights, employee rights;
    ii. prior to simulation, research participants *grappled* with legal principles and their tensions; and
    iii. prior to simulation, the facilitator and cohort members provided *scaffolding* and *coaching*.
b. During action:
    i. up to three research participants of the cohort *participated* in an immersive simulation together to tackle the law problem;
    ii. the remaining research participants *observed* and took informal notes recording plusses (What went well and why?) and minuses (What didn't go well and why?) of the interaction to be used during debriefing; and
    iii. the *pause simulation* feature, along with coaching, was used to reinforce interaction based on sound legal reasoning, as well as to a tool for redirection.
c. After-action review: After all scenarios were completed, research participants debriefed by:
    i. *debriefing* the experience through discussion of:
        - the legal principle relied on during the interaction,
        - the legal reasoning relied on during the interaction, and
        - plusses (strengths) and minuses (needs redirection) of the immersive simulation, and
    ii. discussing *connections* of the session to broader school law contexts.

Instrumentation

A modified version of the *Principals' Education Law Survey* (Eberwein, 2008) was used to collect data. This survey was modified to include only items relevant to legal literacy in the three high-rate litigation areas of student rights, employee rights, and the separation of church and state. To establish validity, a review was conducted by an expert panel. The panel consisted of three assistant principals, one principal, two central office personnel with experience in school law, and two school law professors at a university in Georgia. Cognitive interviews were performed using concurrent and retrospective think-alouds, probing, and paraphrasing (Tourangeau, Rips, & Rasinki, 2008). Each participant

provided feedback about how well the instrument measured the content it was designed to measure and adjustments were made accordingly. Additionally, a section was added on principals' perceptions of their self-efficacy (see Appendix B).

RESULTS

Research participants demonstrated increase in legal literacy from pre- to posttest ($t(42) = 7.865$, $p < .01$), as the mean increased from $M = .52$ ($SD = .14$) to $M = .72$ ($SD = .12$). A very strong effect size qualified this change, $d = 1.58$, and indicated that the legal literacy of aspiring principals increased after participation in a module of immersive simulation (Gilbert, 2016). Further analyses were also conducted in each of the three subtests representing high-rate litigation areas: student rights, employee rights, and separation of church and state. Changes in the mean from pre- to posttests indicated a significant increase in knowledge in each area (Gilbert, 2016) and are presented in Table 2.

Table 2. Changes in Overall Knowledge and Self-Efficacy

	Pre		Post			
Overall Changes	*M*	*SD*	*M*	*SD*	*t*	*d*
Overall Knowledge	0.52	0.14	0.72	0.12	7.865	1.58
Student Rights	0.48	0.21	0.69	0.14	6.413	1.17
Employee Rights	0.59	0.15	0.68	0.14	2.925	0.66
Separation of Church and State	0.49	0.16	0.77	0.14	8.591	1.80
Self-Efficacy	3.42	0.76	3.88	0.82	2.639	0.58

RESEARCH QUESTION ONE

In the Modified Version of the Principals' Education Law Survey, a five item Likert-style response scale was administered to answer the research question: *What are aspiring principals' perceptions of self-efficacy in their knowledge of school law before and after participation in a module of immersive simulation?* The internal consistency for the data collected using this instrument was found to be very high at pre- and posttest, $\alpha = 0.89$ and 0.92 respectively. A Bonferroni correction was applied for the interpretation of these results with the critical value of $p < 0.01$ after correction. A dependent samples *t* test was calculated and an increase in self-efficacy was observed ($t(42) = 2.639$, $p > .01$, $d = 0.58$) as the mean increased from $M = 3.42$ ($SD = .76$) to $M = 3.88$ ($SD = .82$). While change approached statistical significance ($p < 0.05$ and > 0.01, the Bonferroni corrected critical value of p) it was not sufficient to reject the null hypothesis. This means that perceptions of self-efficacy in knowledge of school law did not change, statistically speaking, after participation in immersive simulation (see Table 2). However, it is important to note that the effect size associated with this change ($d = 0.58$) may indicate that the test was underpowered to detect a statistically significant change under the constraints of the conservative Bonferroni adjustment. Given that the effect size indicates a practically significant change, this will be used as the basis for further discussion of the results (Kline, 2013). These data are supported by research participants' change in ratio from pre- to posttest of answers marked "unsure." If participants felt they lacked sufficient knowledge to make an educated guess, they were instructed to choose "unsure." Answers marked as "unsure" were coded as incorrect responses. On the pretest, 18% of the answers were marked "unsure" while on the posttest, only 3% of the answers were marked as such. This further supports use of immersive simulation to increase self-efficacy as participants had gained enough confidence after their experience in the immersive simulation to make an educated guess.

Research Question Two

Qualitative data analysis was employed to answer the second research question: *How do aspiring principals value the effect of a module of immersive simulation on their content knowledge and ability to apply school law?* Nine open-ended questions were used to determine if aspiring principals value immersive simulation as a tool to promote adult learning (see Appendix C). Eight questions measured participants' perceptions regarding the action-review cycle (ARC) heretofore referred to as the BAARC in this study. The ninth question sought to identify the most valued component of the immersive simulation design. Each of the three stages of the BAARC (before-, during-, and after-review) were comprised of two or more components as follows: a) before action–*grappling* and *scaffolding*; b) during action–*participation*, *observation*, *pause simulation*, and *coaching*; and c) after action–*debriefing* and *connections to broader contexts*. Using the constant comparative method (Strauss & Corbin, 1990), participants' responses were analyzed through an inductive approach. Each stage of the BAARC (before, during, and after) is described below, first by exploring the aggregate effect of the components (described as themes), followed by specific examination of comments supporting the individual components in each stage of the BAARC. Themes for each stage are outlined below in Table 3. Individual responses to each question can be found in Appendix D.

Table 3. Themes for Research Question #2

BAARC	Components of Immersive Simulation	Themes
Before-action review (BAR)	Grappling	Before-action components of grappling & scaffolding prior to immersive simulation increased critical thinking and allowed research participants to practice skills correctly rather than reinforcing the status quo, or in some cases bad habits.
	Scaffolding	
During-action review	Participation	During-action components supported a more reflective practice than traditional learning, which leads to more adept application of legal knowledge. Due to the authenticity of the learning experience (immersive simulation) research participants believed there to be a high degree of transferability of content knowledge and skills to their real-life work experiences.
	Observation	
	Pause Simulation	
	Coaching	
After-action review (AAR)	Debriefing	After-action components support a transfer of skills and knowledge to the workplace. Self-efficacy increased as a result of the after-action components.
	Connections to Broader Contexts	

Pedagogical value of the before-action review stage

Two questions were posed regarding the before-action review (BAR) stage of the BAARC. The first sought participants' perceptions of the pedagogical value of *grappling*, and the second of *scaffolding*. Sixteen codes in *grappling* and nine in *scaffolding* were collapsed into five categories. The five categories were analyzed for commonalities with one theme emerging from data analysis. This theme revealed that research participants felt that explicit engagement with the BAR prior to immersive simulation

increased critical thinking and allowed them to practice skills correctly rather than reinforcing the status quo. For example, one research participant stated, "[This was v]ery important in validating or correcting perceptions about the law and how it should be applied." Further reinforcing this perception were several comments referencing the value of the BAR. The BAR was described as "high value," "the most beneficial," "[an] intense experience...forcing focus and intentionality," "[helpful in] build[ing] comprehension and confidence," "an awesome strategy to assist with clarification on the laws," and as "one of the most valuable parts of the assimilation [sic]." Taken together, these data indicate that when properly constructed, the BAR plays a significant role in adding value to immersive simulation experiences.

Further supporting the value of the BAR were comments made by cohorts at the end of the simulation experience. Many told the researcher that the BAR components of grappling and scaffolding were "extremely valuable." Regardless of previous law training (courses taken in school law, exposure to school law through job-embedded training, or no formal exposure to school law), field notes revealed that this experience, as constructed "from start to finish" (BAARC), was an invaluable means to learn and "an even better experience" than what they had previously encountered with immersive simulation. Comments specific to each component of before-action review were also supportive of the theme of increased critical thinking and are highlighted below.

Grappling. Specifically, *grappling* with peers prior to receiving guidance from an instructional coach prompted participants to consider multiple viewpoints regarding the scenario and helped them to clarify the legal tensions presented therein. Analysis of the data revealed that *grappling* enhanced and deepened learning through this collaboration. Many research participants echoed this sentiment in discussing the value of conferring with colleagues. For example, one indicated, "I enjoyed this because each of us come from a variety of backgrounds. Hearing what other people bring to the table is always helpful," while another stated, "These [opportunities] were invaluable to me as I discussed and heard the strategies and opinions of the other educators in my group from different areas of Georgia." Others spoke more specifically about how it helped them with their understanding of the law. For example, in commenting on *grappling*, one stated, "This [step] allows one to reflect on law and legal principles utilized to handle conflict or conversations with others." These data underscore the importance of immersive simulation experiences that are designed to allow for opportunities to grapple just prior to the during-action review stage.

Scaffolding. Similarly, in commenting on *scaffolding* provided by the coach, research participants also felt this step to be vital to more adept application of legal knowledge as it heightened their legal reasoning. The following remarks highlight the importance of re-direction prior to entering the immersive simulation: "The reflective dialogue amongst [sic] the group members led to deeper discussions about school law and a lot of 'aha' moments, while the input from our instructor provided valuable legal-based guidance to help us appropriately apply the laws," and "This step is helpful in that it provides constructive feedback or support, reminding you of the issue at hand and with fine and bottom lines in legal principles." These comments provide clear evidence that *scaffolding* increased participants' ability to apply the law correctly and led to an increased sense of self-efficacy.

Pedagogical value of during-action review stage

Four questions were posed to analyze the value of the during-action review stage of the BAARC. The first inquired about the pedagogical value of *participation*, the second *observation*, the third about the *pause simulation* feature, and a final question was directed at the *coaching*. Thirteen, seventeen, seventeen, and sixteen codes respectively were collapsed into seven categories. The seven categories were analyzed for commonalities with two themes emerging from data analysis. The first theme indicated that the four during-action components supported a more reflective practice than traditional learning which, in turn, led to more adept application of legal knowledge. The second theme was closely related and suggested that due to the authenticity of the learning experience (immersive simu-

lation), research participants believed there to be a high degree of transferability of content knowledge and skills to their real-life work experiences.

General comments made about the during-action portion of immersive simulation support both themes. Several spoke directly to the theme that immersive simulation provides a more reflective practice than traditional learning. For example, one participant stated "It was awesome. I loved the real-world connection. As an assistant principal, I feel that a class like this would better prepare me versus just reading a book." Comments such as this indicate that learning through immersive simulation surpassed that of traditional methods as during-action components helped to bridge the gap between theory and application. Other comments supporting this theme can be seen in remarks such as the following: immersive simulations "bring us back to 'What does the law say?'" and help to "fully underst[and] the aspects of the situation," it "provid[es] for real world experience and practice with scenarios you would face as a leader." These all point to increased self-efficacy in participants' ability to correctly apply school law.

Experiences of the during-action review stage (that included *observation*, *pausing* the *simulation*, and *coaching*) also supported the second theme that authenticity equaled transferability. Several participants discussed this notion in comments such as: "Interacting with the avatar in the simulation was very similar to how things would be in real life," "I absolutely loved it! This was truly a 'real-world' experience," and "It was intense and real work experience." Furthermore, several comments were specifically directed at the impact this would have in their workplace. For example, comments such as the following were seen throughout: "I look forward to bringing that knowledge back with me to my workplace," and "I think this is a powerful tool that would be a great asset to prepare teachers and administrators for real-life situations but [would also] allow for growth and guidance before it becomes real." These comments indicate that interactions were extraordinarily authentic and, as such, research participants believed the knowledge and skills gained would have a high degree of transferability to the workplace – another clear indication of increased self-efficacy.

The sum of the effect of these four components indicate that during-action review can be designed such that participants find greater value in immersive simulation than in traditional learning and that this value translates to increased skill and self-efficacy in the work place. Comments specific to each of the four components of during-action review were also supportive of the two themes (a more reflective practice that leads to better application of the law, and transferability) and are highlighted below.

Participation. *Participation* in immersive simulation was reported to mimic real-life scenarios and research participants reported it could serve as effective professional development in school law. For example, one research participant stated, "The avatar surprisingly had the same attitudes and mannerisms as many of the parents and educators that I come in contact with daily. Therefore, it was just like being in a conference with a person." Participation also allowed for a risk-free learning opportunity to address challenges currently facing them as 21st-century principals. This is echoed in the comments of several research participants, one of whom stated "This was very informative. Using the avatar was so helpful because it allowed me try out a conference without fear of retribution," while another indicated "It was good practice to apply school law in a comfortable environment." These comments highlight the importance for aspiring and sitting principals to encounter risk-free environments in which to develop the type of reflective practice needed to withstand the pressures of leading in the current educational context.

Observation. *Observation* was reported to be equally valuable as participation in the immersive simulation but for slightly different reasons. *Observation* promoted deeper learning by allowing time to contemplate legal tensions as they unfolded in the scenario. And, by not being in the hot seat, time was afforded to deconstruct incorrect application of the law as participants had seen it applied in their own schools. The words of one participant summed up sentiments of several others when comparing participation to observation:

> I loved the ability to actually be involved with a simulation. I think that this process was advantageous since I have the ability to practice these actual issues that I currently see in my school environment. The first two scenarios were extremely relevant, since they have recently occurred at my school; therefore, it was great to be able to see others reply and conduct the sessions and see how I would have handled it differently or how I could improve on a conversation that I'd already had with a parent or teacher.

Further supporting the idea that observation helped to deconstruct and contemplate legal tensions were comments such as the following: "This aspect helps you consider valuable information you may not have considered," "It was interesting to see their approach and mentally compare what I would do," "It helped me think of what I would do differently and get some good ideas for ways to handle a situation," and it "helped me to think critically about the situation." It is clear from research participants' comments that *observation* afforded opportunities for critical thinking that supported reflective practice, thereby enhancing transferability.

Pause simulation. The use of the *pause simulation* feature of immersive simulation was among the top-rated components of the experience. In the words of one research participant "[It was] super helpful. The most important part of the experience." Another stated "This was my favorite feature. I wish we could freeze actual people sometimes." This feature allowed participants to pause the simulation at any time and ask for support from the coach and/or the observers. Participants reported that this feature allowed them to "reboot information and gather thoughts" so that they could proceed in a more thoughtful manner. As one participant stated, "This was a great way to gather your thoughts and get help from other members in the classroom." When used, research participants collectively discussed the legal tensions of the situations and strategized a course of action for properly implementing it. The effects of this strategy can be seen in comments such as the following: "I absolutely loved it! It was truly helpful and so interesting...I truly enjoyed being able to pause and discuss with others to give all aspects a thought." While this feature was used to varying degrees, most research participants used it more than once during a ten-minute interaction with its use allowing for a constructivist approach based on the collective knowledge and experiences of the people in the group. Comments regarding the value of this approach were plentiful and mentioned throughout several research participants' surveys. For example, participants made comments such as the following: "It was great to have the opportunity to pause and consult with peers," "I used the pause personally to get clarification on a law," "This was great for training on clarification and guidance," and "I really liked that we could do this. It gave me a chance to ask questions and to clarify issues." *Pause simulation* comments served to highlight the value perceived by participants in the critical pedagogy design of the immersive simulation in relation to their ability to deconstruct the status quo and think critically.

Coaching. *Coaching* was deemed a "crucial" component to "keep moving forward" during action. Research participants reported that it promoted growth and guided them to think more critically about legal principles. For example, several echoed the sentiments of one research participant who stated that "coaching was effective and allowed me to think more critically about these situations." Other comments centered on remarks like these: "I learned the most," "Awesome, yes, coaching is important and helped gain confidence in crucial conversations," "Immediate feedback makes the experience better stick in my mind," and "Coaching was effective and allowed me to think more critically about these situations." These comments regarding *coaching* highlight how the design of critical pedagogy contributed to participants' learning as they moved fluidly between learner and coach. Several comments emphasized the value in this aspect of learning. For example, one participant stated that "Coaching was great because we were able to collaborate," while another indicated that "The more we worked together, the more confident I would be giving feedback." This collaboration allowed participants to gain the confidence needed to more adeptly apply knowledge to in-the-moment decisions. Additionally, research participants conveyed that having the opportunity to serve as a "coach" was equally useful to their learning process. This idea was summed up in one of the participant's comments who stated, "Both watching and helping other students and participating myself

was a great value." These comments, in combination with others regarding during-action components, show that each component of during-action review was not seen as a discrete entity. Rather, they highlight the interconnectedness and fluidity of each in adding to the sum of the during-action experience. The cyclical fashion of this portion of the experience, (*observation* allowed for active *participation*, *pausing* allowed for *coaching*, *coaching* allowed for deconstruction of the status quo and prompted more reflection, etc.) boosted critical thinking and transferability as the cohort relied on their past lived experiences to guide their actions.

Pedagogical value of after-action review stage

Two questions were posed to investigate the value of the after-action review (AAR) stage of the BAARC. The first sought to examine the pedagogical value of *debriefing* the simulation, and the second, the *connections to broader legal contexts*. Eighteen codes for *debriefing* and twelve for *connections to broader contexts* were collapsed into six categories. The six categories were analyzed for commonalities with two themes emerging from data analysis. The first theme indicated that research participants believed that AAR would support a transfer of skills and knowledge to the workplace. The second theme suggested that participants felt an increase in self-efficacy as a result of participation in immersive simulation.

In support of the first theme, which indicated that AAR supported transfer of skills and knowledge to the workplace, one research participant stated, "The connections and notes are going to be beneficial." Another participant who was not yet a principal stated, "I definitely will apply the scenarios in future interactions." In other words, the skills that were just practiced would be immediately applicable to the practicing principal. However, the experience was powerful enough that even aspiring principals felt their learning would have an impact on their skill execution, albeit in the future.

In support of the theme of increased self-efficacy, research participants reported that the processes of *debriefing* and making *broader connections* increased their sense of self-efficacy as it continued their learning beyond the simulation and helped to solidify a few key legal principles. For example, several comments made by research participants parallel the following remarks: "I learned how to apply school law in a broader context," "The discussion made me aware that there is some disparity between the Supreme Courts and the district courts," "The legal reasoning made more sense after the discussions," and "I love making real-life connections and feel like being able to apply it to my school setting will help me immensely." Specifically, research participants felt that the process of *debriefing* and *broader connections* continued their learning beyond the simulation. These attestations provide evidence that connections afforded through the AAR simultaneously support a belief in the ability of a transfer of skills to the workplace and increased sense of self-efficacy in their application. Comments specific to each of the components of after-action review were also supportive of the two themes (increased self-efficacy and transferability) and are highlighted below.

Debriefing. Like other elements of the BAARC, the AAR component of *debriefing* promoted reflective practice and prompted connections to school experiences. This is reflected in the comment by one research participant who shared, "I enjoyed *debriefing* since I could ask other questions that related personally to my situation and get clarity on how to proceed and information that I could take to back to my school site." Several participants commented on the fact that while the during-action experience was highly valued, the *debriefing* was instrumental in continuing the learning process. For example, one participant stated, this "increased my knowledge tremendously, while another said, it "allowed me a chance to learn more!" Not only did *debriefing* extend the learning cycle, it also increased meta-cognition with participants stating that it highlighted what they didn't know, as well as what they could do better in the future. Comments such as "I was really able to see where I could have done better with her…this solidified my understanding" and "This allowed me to make final connections with the learning, rather than just leaving on the experience" represent a common sentiment expressed by many. These data indicated that debriefing allowed participants to continue their engagement and sharpen their understanding of school law.

Connections to broader context. Research participants also felt that *connections to the broader context* helped to solidify a few key legal principles useful in guiding many legal decisions, in turn supporting a sense of increased self-efficacy. For example, comments such as the following were common among research participants: "I learned how to apply school law in a broader context," "connections are real world and help prepare for real-world scenarios," and "There are so many laws, but seeing how they connect really intrigues and helps me." Many felt that the *broader connections* of the AAR were an "excellent reinforcement" and helped to give meaning to the legal reasoning. This can be seen in the comment: "The legal reasoning made more sense after the discussion." Taken together, these data show that even after the debrief of the execution of scenarios in immersive simulations, to enhance participants' learning it is not excessive to follow up with a broader conversation connecting the experience more generally to other applicable school law principles.

Most valued component. In the final qualitative question, research participants were asked to comment on the most valued component of their experience in the school law module of immersive simulation. On this subject, the highest rating was awarded to the sum of the components as that which made their immersive simulation experience so powerful. Receiving sixteen votes, 38% of the participants rated this as the top feature. The *pause simulation* feature and *debriefing* were also highly valued, receiving seven and six votes respectively. Actual *participation*, *observation*, *coaching*, and *scaffolding* were also mentioned each receiving three, two, two, and one votes respectively. In the following research participant's response, one can read the challenge in assigning value to individual components of the simulation, preceded by a favorite feature.

> It's hard to determine, it was all very helpful. I'd love to use this in the future. I think it was very helpful to be able to pause and ask for help-that increased my willingness to try and it also increased the value of the activity since it didn't have to get off track.

Similar sentiments were echoed by several others who also struggled to identify a component of the simulation that might be deemed the most valuable, followed by a comment about what they most enjoyed. Although all components of the BAARC were mentioned by research participants, ultimately, the sum of the components were most frequently discussed. Several made comments such as "I love it all," "Each part has value as a part of the whole," and "It was all helpful." These data reinforce the value of explicit focus on each component of the action review cycle as highlighted in the BAARC.

UNANTICIPATED FINDINGS

An unanticipated finding of the study was how many research participants listed learning in a "face-to-face" environment as their favorite feature of the immersive simulation experience. In fact, it was assigned the second highest component rating of immersive simulation, with eleven endorsements. Twenty-six percent of the participants rated it as the top component even though it was not listed, or mentioned (unlike the other eight components) as one of the components of immersive simulation. Research participants also wrote statements such as: "[I] would much rather learn in this kind of environment," "I wish I could take a face-to-face law class," and "The experience was great and the face to face was fantastic." Adding to this finding, field notes of comments documented by the researcher supported participants' written statements. These notes highlighted that research participants were very reluctant to leave at the conclusion of each session and frequently inquired as whether or not the university would consider adding this as a face-to-face component of their graduate degree. Other participants asked if they could simply come back on their own to practice with their peers.

SUMMARY

In this multiple methods study, research question one used quantitative methods to measure the potential increase in self-efficacy after a module of immersive simulation. Although a very strong effect size qualified the change in overall legal literacy change from pre- to posttest, $d = 1.58$, after participation in a module of immersive simulation (Gilbert, 2016), despite this increase in legal literacy the

change in self-efficacy ratings, only approached statistical significance ($p < 0.05$ and > 0.01) after Bonferroni's correction. However, the moderate effect size, $d = 0.58$, and the decrease in answers marked "unsure," along with the qualitative data suggest that the change was practically significant. The moderate effect size indicates that the statistical test may have been underpowered given the number of comparisons computed. This suggests a larger sample size would yield statistical significance. Given these data, a positive change in perceptions of self-efficacy in knowledge of school law will guide the discussion.

Research question two employed a qualitative method using nine open-ended questions to ferret out participants' perceptions regarding the efficacy of immersive simulations in adult learning. Analysis of these data revealed five themes supporting the intentional design of before-, during-, and after-action review, referred to as the BAARC in this study. These themes (found in Table 3) highlight the effectiveness of immersive simulation in increasing self-efficacy when intentionally designed. The final open-ended question revealed the most valued component of immersive simulation to be the sum of its parts. Additionally, this study highlighted an unanticipated finding of the value of face-to-face learning among aspiring and sitting principals.

DISCUSSION

While many immersive simulation studies focus on increases in self-efficacy as a primary measure (e.g., Badiee & Kaufman, 2015; Bautista, 2013; Peterson, 2014), very few examine this in relation to educational leadership. Findings of moderate effect size suggest the ability for immersive simulation to increase self-efficacy in principals. It was clear that, despite the lack of statistical significance in these data, a perceived increase in self-efficacy was evident. Both qualitative comments by research participants and field notes that captured several participants' reflections helped to explicate how their experience in immersive simulation made them feel much more comfortable to tackle the difficult aspects of their jobs as principals. With attrition rates for principals after five years (Jensen, 2014) and the likelihood of facing a lawsuit (Hopkins, 2004) alike estimated to be over 70%, an increased sense of self-efficacy is an important attribute for principals' motivation to act, success, resiliency, and longevity in the field. This finding suggests that not only is self-efficacy improved after exposure to immersive simulation, but more importantly, that the increase in confidence is based on an actual increase in knowledge and skills as opposed to a false sense of confidence from having "survived" a difficult interaction. In other words, because of the design of the immersive simulation, users can be guided in proper application of skills in their first encounter. This ability to practice the skill properly before meeting with real-life challenges increases self-efficacy and may be one piece of the solution in decreasing high rates of principal turn-over. For those preparing future principals, the use of immersive simulation should be considered, if for no other reason than to create more confident, persistent and resilient principals – traits supported by new research for improving schools (Herman et al., 2016).

Research question two addressed how aspiring principals value the effect of immersive simulation as adult learners. The BAARC was examined across three stages of the action review cycle (before-, during-, and after-action). The before-action components of *grappling* and *scaffolding* prior to immersive simulation increased critical thinking and allowed research participants to practice skills correctly rather than reinforcing the status quo. During-action components of *participation*, *observation*, *pausing*, and *coaching* supported a more reflective practice than traditional learning that led to more adept application of legal knowledge. Due to the authenticity of the learning experience (immersive simulation), research participants also indicated that these components supported a higher degree of transferability of content knowledge and skills to their real-life work experiences than traditional learning. After-action components of *debriefing* and making *broader connections* supported a near transfer of skills and knowledge to the workplace, as well as provided an increased sense of self-efficacy. When combined, these findings indicate that the value of immersive simulation is enhanced by an intentional design that includes an explicit focus on every stage of the BAARC. Many participants stated that they had been involved in previous educational leadership simulations at the university. They com-

mented that this was more useful because of the focus on the before-action review components of *grappling* and *scaffolding*, as well as the during-action component of the *pause* simulation. These components, when situated in an intentional design of the BAARC, promoted an atmosphere of critical pedagogy and allowed participants to benefit from the collective wisdom of their peers both in the theoretical and application phases of the BAARC. This design highlighted the value of explicit focus on all aspects of the BAARC and the findings suggest benefit in moving from design and discussions focused mainly on AAR, to an intentional inclusion of all before-, during-, and after-action components, with attention placed on the before- and during-action components of the BAARC.

Research question two also asked participants to identify the most valued component of the immersive simulation. As previously indicated, overwhelmingly, participants stated that it was the "sum of the parts" that made this experience so valuable and even exceed previous experiences with immersive simulation. Despite the fact that the "face-to-face" aspect of the immersive simulation was not listed as a choice, it was rated as the second most-valued component with more than one quarter of the participants stating it was the best component of the immersive simulation experience. These data speak to the isolation faced by principals (Ylimaki & Jacobson, 2012) and the value placed on learning when the experience is designed to promote critical pedagogy that allows for the student to be both the learner and the teacher.

CONCLUSIONS

Analysis of the data and an examination across both research questions led to two significant conclusions regarding the use of immersive simulation in educational settings. First, the design of immersive simulation can increase learning of principals by enhancing the ARC through the addition the BAR components of *grappling* and *scaffolding*, and the intentional use of the *pause* simulation feature. Second, educational leadership certificate programs, devoid of face-to-face interaction, miss out on invaluable learning opportunities that occur naturally and fluidly in face-to-face coursework. Immersive simulation can help fill that gap. Each will be explored in this section.

INTENTIONAL DESIGN OF IMMERSIVE SIMULATION (BAARC) PROVIDES VALUE ADDED

Effective learning experiences bridge the gap between theory to practice, particularly in educational leadership (Darling-Hammond et al., 2007; Davis et al., 2005; Levine, 2005). To scaffold development of knowledge and the ability for in-the-moment decision making, the ARC is a necessary component in educational leadership learning opportunities (Storey & Cox, 2015), and yet the BAR components are frequently missing from most immersive simulation designs. The BAARC considers these missing components and provides for repeated opportunities for principals to bridge the gap between theory and practice. Learning opportunities designed with explicit focus on the BAR and *pause simulation* components bridge this gap by allowing learners to exist in the zone of proximal development in the theoretical realm of *grappling* and *scaffolding* and then to re-enter it in the application phase when making use of the *pause* simulation. In *grappling* and *scaffolding*, principals have opportunities to wrestle with real-world scenarios in a cohort of their peers, receive timely coaching and scaffolding, and engage in a reflective practice aimed at improving their skills, all in the theoretical realm prior to action. These interactions with concepts and potentially new ideas invite conversation and active deconstruction of the status quo as principals contemplate action. In moving from theory to action, principals once again spiral through the zone of proximal development when they take advantage of the *pause simulation* feature and seek direction and guidance from either their peers, the instructional coach, or both.

Learning experiences designed in this manner avoid two common pitfalls of other types of preparation. First, participants do not find themselves going through an entire practice session (role-play, scenario, or real-life) only to find they have made errors or misjudgments that cannot be pulled back. While *debriefing* (AAR) – typically included in most immersive simulation designs – is used to point

out the lack of adept skill application or provide ideas for better ways to execute the skills the next time, it is an inadequate substitution for practicing the skill properly the first time. One point of risk-free learning is not simply to provide an environment for learners to reinforce content knowledge and practice application of new skills, but to provide a risk-free environment in which to practice adept application of new skills. Pausing, coaching, and resetting allows the participant to recognize missteps immediately and focus on proper skill development. Second, because this feature allows for proper application of the skill at first attempt, although it may not be polished, it provides opportunities for the near transfer of properly executed skills that is absent in many learning scenarios.

When combined, these features add another dimension of usability to potential users who are already proficient in a variety of skillsets. Those who execute a skill adequately the first time can "be paused," by a facilitator or coach so that a nuance of the situation can be discussed, thus allowing experienced users to hone existing skillsets. This makes the use of this platform extremely powerful as an on-going professional development tool and allows principals who are already in the field a rare opportunity of a risk-free environment in which to enhance their skills.

The Value of Face-to-Face Interactions in Educational Leadership Programs

Many educational leadership programs have moved to fully or partially online. The convenience of learning through online courses has provided avenues for learners to participate in courses that might otherwise be inaccessible for a variety of reasons. It also allows universities to attract greater numbers of students. The ability to engage in asynchronous learning is also a benefit of online courses. However, researchers are learning that programs that are completely conducted online, while having numerous benefits, have substantial trade-offs as well, including a sense of isolation for those whose jobs may be quite isolating themselves (Ylimaki & Jacobs, 2012). The value of face-to-face aspect of immersive simulation was an unanticipated finding and, in fact, not even listed as a choice for the most valued component. Whether revealed by design of the simulation, or because of a sense of isolation experienced by principals, it is clear they desire learning opportunities that either provide or simulate learning opportunities with other humans. As such, immersive simulation could be a key element for enhancing the human interaction in an online environment while simultaneously bridging theory to practice. For hybrid programs, immersive simulation can be incorporated into class time to the same end. Because augmented reality demands presence – human physicality in a space – the findings of this study suggest that the value of immersive simulation for principals extends beyond its efficacy as a teaching and learning tool to allowing face-to-face learning opportunities with peers. In other words, immersive simulations, although technology based, may ironically be the key to bringing a "human" element back into online leadership preparation programs.

Implications

Analysis across all findings led to two compelling implications of this study. These implications, outlined below, are pertinent to those designing immersive simulations, those charged with developing either educational leadership programs at universities or with the responsibility to extend and implement professional development for in-service principals, and those interested in improving schools through large-magnitude reform efforts.

Immersive Simulation

Design and use of immersive simulation is relatively new in the field of education preparation especially when used as a developmental tool to enhance preparation of future principals. This study found that when constructed using intentional instructional design and grounded in critical pedagogy and situated learning theory (BAARC), immersive simulation is very effective. Findings suggest that those involved with the design of immersive simulation experiences might adopt the BAARC to bring awareness and attention to all aspects of the ARC. Because immersive simulation is new and

exciting, most who encounter it report experiencing a "wow" factor. Before-action review components commonly exist in the form of an explanation of what immersive simulation is and how the task will connect with recent readings or discussions. To mitigate the potential for immersive simulation to serve as a sort of babysitting mechanism and a new toy, before-action review components need to be replaced by meaningful pedagogical strategies such as *grappling* and *scaffolding* prior to participation in the simulation. This process ensures construction of a learning experience that includes time spent in the zone of proximal development. While contemplating in the theoretical realm of the problem, students grapple with the challenge presented in the scenarios before being supported by appropriate scaffolding that is delivered according to the learners' needs. This opportunity to engage in the research-based best practices of allowing for *grappling* followed by *scaffolding* occurs again when students move from the theoretical realm of discussing their knowledge and contemplating a plan of action, to the practical realm of application once in the simulation. Missteps while participating in the scenario indicate that *grappling* is again taking place as learners transition from theory to action. This also serves as a cue that the learner is once again operating in the ideal zone of proximal development. However, the immersive simulation will only serve as an effective adaptive tool if combined with the *scaffolding* necessary to extend the student's comprehension and abilities. This can be accomplished through the directed use of *pause simulation* to allow coaching from peers or a knowledgeable coach. In effect, *pause simulation* allows principals to develop and hone necessary 21st-century skills as they re-encounter the BAR components of *grappling* and *scaffolding* while making an upward spiral through the during-action review stage. This design not only builds a concrete connection between theory and practice, it also allows for much of the learning cycle to exist in the zone of proximal development for students.

Part of the effectiveness of immersive simulation is that it is immediately adaptive to each user's ability, which allows for ideal learning opportunities. Participants in immersive simulations miss out on the opportunities for deeper learning when this cyclical repetition and upward spiral of grappling and scaffolding are absent. Similarly, professors miss out on opportunities to maximize zones of proximal development and uncover misconceptions and misunderstanding of content knowledge and skill application throughout the learning process. This shift in focus could enhance principals' learning and overall self-efficacy in the field.

Findings from this study also suggest that developers of immersive simulation platforms remain aware of the effect of presence in their design. While the literature shows (Badiee & Kaufman, 2015; Storey & Cox, 2015) that this delivery format is successful in achieving notable results in education preparation programs, there is pressure from consumers to develop an online version that would eliminate the need for presence. For fully online programs, however, the current technology is not as available. To date, the immersive simulation platform used in this study has not been able to deliver a comparable online format for their immersive learning experiences. The platform not only demands physical presence on the part of the user, it also requires a human in the loop on the provider's end. This requirement for presence by humans (learners, instructors, and simulations specialists guiding the avatar) is unlikely to stay static as technology changes and expands. Given the findings of this study that show the value of the human interaction, simulation creators should factor in the perceived value of the human element as the technology evolves, especially so that the effective use of before-action components and pause simulation are not lost. If the evolution of immersive simulations provides for sessions to be conducted from the comfort of one's home, and these elements are not lost, immersive simulation could become a key tool to enhance those ineffable qualities of learning that extend beyond acquisition of content knowledge and skill development.

Educational Leadership programs and Improving Schools

By adding well-designed immersive simulation modules that expose principals to a range of topics, educational leadership programs at universities could address some pervasive and persistent challenges in preparing them. First, consistent use of immersive simulations throughout a degree or certificate program could re-introduce the "human element" currently lacking in many fully online pro-

grams. These face-to-face interactions could build a cohort of learners thereby reducing the isolation experienced in-service principals and those in online programs. Second, universities could address their struggle to provide consistent opportunities for quality on-the-job experiences. Immersive simulations would allow for individualized programming to meet the unique and contextual needs of each learner while ensuring a quality experience. Whether for a pre- or in-service principals, on-going professional development could increase overall self-efficacy through the development of a variety of skill sets. This could result in reduced attrition rates for in-service principals and an increased likelihood that pre-service principals are up to the task when entering the profession – both of which contribute to potential for school improvement over time.

LIMITATIONS

Access to immersive technology and the time needed to complete a module in an immersive simulation limited this study to a small, purposive sample. Consequently, there is a decreased ability to generalize and observe statistical significance. Given that this sample is only representative of aspiring principals at a certain point in their study, this further limits generalizability. Another factor to be considered is the ability to replicate the study given that the quality of the immersive scenario design is dependent on the experience of the simulations specialist. Because this platform is not fully software driven, and there is a human in the loop, precautions were taken to standardize the experiences. A "moderate behavioral level" was designated for each interaction and the all necessary legal arguments were provided to the simulation specialist prior to the scenarios. To support a standardized experience further, the researcher completed two training sessions per scenario with the simulation specialist. Finally, careful design and execution of the complete BAARC is necessary to replicate this study.

FUTURE RESEARCH

Additional research is recommended with a larger sample size with participants who have experienced several other immersive simulations. This would allow the researcher to investigate the differences in effects of design further. Researchers could also explore the explicit use of the BAARC and the pause simulation feature in a variety educational leadership contexts to generalize their effects further. Finally, there is much room for researchers to ferret out the value and desire to include face-to-face learning through immersive simulation to fill gaps in educational leadership programs.

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APPENDIX A. DEMOGRAPHIC SURVEY

1. What is your gender?
   a. Male
   b. Female
   c. Other
   d. Prefer not to answer
2. What is your title in your current position? (Please check all that apply.)
   a. Paraprofessional
   b. Teacher
   c. Special educator
   d. Instructional coach
   e. Athletic director
   f. Assistant principal
   g. Principal
   h. Central office personnel
   i. Other - please specify
3. Please indicate the current level of degree you have completed.
   a. Bachelor
   b. Master
   c. Ed.S. (or C.A.S)
   d. Ph.D or Ed.D
4. Please indicate the level of programming in which you are currently enrolled.
   a. Master
   b. Ed.S. (or C.A.S)
   c. Ph.D or Ed.D
   d. Certificate program only
   e. I am not yet enrolled in a program
5. What type of school law training did you receive?
   a. A school law course at a university
   b. Job-embedded training but no school law course
   c. A school law course and job embedded training
   d. I have not yet taken a course in school law, nor have I started any job-embedded training
   e. Other - please specify
6. If you took a school law course, how long ago did you take this course?
   a. 0 - 2 years
   b. 2 - 5 years
   c. more than 5 years ago
7. If you took a school law course, how would you rate it in terms of teaching you school law content knowledge?
   a. Outstanding
   b. Very good
   c. Good
   d. Fair
   e. Less than adequate
8. If you participated in job-embedded training, how long ago did this take place?
   a. 0 - 2 years
   b. 2 - 5 years
   c. more than 5 years ago
9. If you took were involved in a job-embedded training program, how would you rate it in terms of teaching you school law content knowledge?
   a. Outstanding
   b. Very good
   c. Good
   d. Fair
   e. Less than adequate
10. Is there anything else you would like the researcher to know regarding your school law preparation?

APPENDIX B: SELF-EFFICACY SCALE QUESTIONS

This section will ask you five questions regarding your comfort with school law knowledge and your application of it. Use the 5-point *Likert* scale provided in this section for each of the questions.

1 = Strongly Agree

2 = Agree

3 = Neither agree nor disagree

4 = Disagree

5 = Strongly Disagree

*The option to choose, I have not yet had any training will also be available where appropriate.

1. I feel my training in school law provided me with a strong knowledge base.

   1 2 3 4 5

2. I feel very confident in my overall knowledge of school law.

   1 2 3 4 5

3. I feel my training in school law adequately prepared me to apply school law effectively in variety of decision-making settings.

   1 2 3 4 5

4. I feel very confident in my overall ability to apply school law properly in a variety of decision-making settings.

   1 2 3 4 5

5. I am (or will be able to) make good legal decisions regarding school law.

   1 2 3 4 5

APPENDIX C: OPEN-ENDED SURVEY QUESTIONS

This section will ask nine open-ended questions regarding your experience in immersive simulation. Please answer as honestly and as thoroughly as possible.

Please comment on the perceived value of each of the pedagogical aspects of this immersive simulation design:

Before Action:

1. Grappling (reading the scenario, discussing possible strategies and legal principles with your cohort for addressing the scenario).
2. Scaffolding (feedback provided by the researcher prior to the scenario)

During Action:

3. Participation (interacting with the avatar in the simulation)
4. Observation (watching your cohort members participate in the simulation)
5. Pause simulation (stopping the interaction for clarification or redirection)
6. Coaching (guidance and feedback provided either during or after simulation)

After Action:

7. Reflection (discussing how you felt the simulation went) & Debriefing (discussion of simulation with cohort members)
8. Connections (discussion of connection to broader school law context)

9. Is there one (or several) parts of simulation that you found more valuable than others? If so, what were they and why?

APPENDIX D: QUALITATIVE DATA

Individual comments on items in Appendix C

Q.1 PEDAGOGICAL VALUE BEFORE ACTION: GRAPPLING (READING THE SCENARIO, DISCUSSING POSSIBLE STRATEGIES AND LEGAL PRINCIPLES WITH YOUR COHORT FOR ADDRESSING THE SCENARIO).
Valuable-familiarized me.
Extremely valuable
I grappled with the right to access the cell phone passwords
These were invaluable to me as I discussed and heard the strategies and opinions of the other educators in my group from different areas of Georgia.
Difficult
Great feedback and helpful
High value in self assessment.
Enjoyed this part
Yes this helped tremendously.
It was good. A few typos that made the scenarios slightly ambiguous.
Very important. It is always helpful to have other perspectives.
This was beneficial because it generated reflective dialogue amongst [sic] the group members led to deeper discussions about school law and a lot of 'aha' moments, while the input from our instructor provided valuable legal-based guidance to help us appropriately apply the laws."
I was able to obtain necessary information to have an intellectual conversation.
Valuable
Very helpful especially since we had a range of previous experience.
I really enjoy working with this group of ladies. Hearing their input really gave me a different perspective.
It was very beneficial to debrief and review they facts of each scenario.
This step is one if no the most valuable part of the assimilation. This allows one to reflect on law and legal principles utilized to handle conflict or conversations with others.
Great job!
We were able to share strategies before the simulation and that helped with preparation to complete the activity

This helped me make the best decisions during the simulation. It was beneficial, because it helped guide my deliverance. I learned a lot!
Extremely helpful. It helped me feel more confident going into the meeting.
Very helpful in understanding specific situations.
Very beneficial.
I think it gave us all a chance to get a sense of the scenario and to think of our ideas ahead of time.
Love the discussions with different viewpoints.
I enjoyed this because each of us come from a variety of backgrounds. Hearing what other people bring to the table is always helpful.
I was glad to be made aware of the scenario prior to the simulation.
It was tough to defend policies I was unfamiliar with.
Very important as it helped me understand the situation and laws better.
Very helpful, interesting and insightful.
Beneficial
Very helpful and applicable
Great
Good chance to clarify concerns and be prepared for simulation.
Very worthwhile to set the tone.
This gave me confidence to participate.
I think it was helpful and effective.
I think this was essential in feeling confident going into the scenario.
I think discussing the scenario prior to speaking with the avatar really helped to ease the nervousness on the student side, and also got the presenter(s) in a good state of mind.
I highly valued the opportunity to read the scenario and discuss possible strategies with my cohort. I was able to use that discussion to formulate my response to the situation.
I think it was good to discuss the legal issues at hand with each scenario. As someone who has never done a simulation, it prepared me for what to say, how to act and how to address the situation at hand.
Extremely valuable! It was an intense experience to quickly grapple with the task, but it forced focus and intentionality. It provided a great framework for learning.

Q.2 Pedagogical Value Before Action: Scaffolding (feedback provided by the researcher prior to the scenario)
Very valuable. Helped me be prepared for simulation and my content knowledge
Extremely valuable
It was insightful to have discussions with other professionals
The researcher was extremely knowledgeable and provided valuable insight into the legal aspects of simple things that happen in the school everyday.
Useful
Helps to clarify material
Helped to build comprehension.
We were all engaged
Yes because we needed information to proceed with a conversation
Good. Kristen was very helpful and open.
Very important in validating or correcting perceptions about the law and how it should be applied.
The researcher took the time to explain the scenario an ensured that the participants focused on the problem that specifically addressed school law.
Good information was provided.
Valuable
Very helpful
You have this energy that really brings this alive! I cannot tell you how much I learned from you tonight! Thank you!
It was great to receive feedback by the researcher.
This step is helpful in that it provides constructive feedback or support, reminding you of the issue at hand and with fine and bottom lines in legal principles.
Great job!
The input from our instructor provided valuable legal-based advice on how to complete the activity
Awesome strategy to assist with clarification of the law(s)
Very helpful for making an action plan.
Very helpful in understanding situations. Would highly recommend such activity.

Very beneficial. I was unaware of what a simulation is, so this support helped me visualize the experience.
I liked that the researcher discussed the scenarios with us and allowed us to discuss these situations prior to the simulation.
This was particularly valuable to hear the insight of the researcher because it allows for me to see where the lesson is heading. Gives good clarification.
This to me was the most beneficial. I loved being able to hear Mrs. Gilbert's advise and personal situations. I found it very easy going and laid back. I felt like I could ask any question I had and I knew it would be answered.
This built upon my existing knowledge of leadership and school law.
We were given very adequate feedback before, during, and after the simulations.
The scaffolding helped me feel more confident before entering the simulation.
Excellent - it helped me focus my thoughts and remember what the legal reasoning would be
Beneficial
Very helpful, especially since I haven't taken any school law classes yet.
Great
Provided confidence and clarity regarding scenarios.
Excellent to provoke stimulating conversations.
This helped me gather my thoughts and check to make sure I was on the right track
Very helpful!! The researcher was incredibly knowledgable and easy to follow.
It helped to know legal reasoning before going into the simulation.
Same
I thought it was very valuable because I felt more prepared for the scenario.
I understood how to approach the situation and how to address the parent/faculty.
Well-delivered. The amount of "priming" was perfect; I neither felt under-prepared or over-instructed.

Q.3 Pedagogical Value During Action: Participation (interacting with the avatar in the simulation)
Very valuable.
Extremely valuable
The interaction prepared me to think deeply about the laws regarding students rights to freedom of speech
The avatar surprisingly had the same attitudes and mannerisms as many of the parents and educators that I come in contact with daily. Therefore, it was just like being in a conference with a person.
This was very informative.. Using the avatar was so helpful because it allowed me try out a conference without fear of retribution.
Challenging and awesome
Good practice at working through tough situations.
All of us participated and was a unit
This was a great benefit to see that a real experience and how we would handle.
Wonderful. It was valuable to gain facility with the awkwardness and tension of interacting in difficult circumstances. I wish that I could do this more.
I can't believe how nervous I was. I think EVERY student in a leadership program should have ample opportunities to participate in the simulation. I know administrators would benefit from the practice.
I loved interacting with the avatar. She posed really good questions that made me reflect on my understanding of the law and my communication skills.
It was fun and realistic.
Valuable
The avatar was very very life like.
She was infuriating! She was hilarious! She left me confused. I loved it.
This was a great hands-on activity to learn about school law.
This aspect of the simulation Provides for a real world experience and practice with scenarios you would face as a leader.
Great job!
It was very realistic and we were able hear and get feedback from what a parent and/or colleague might say in serious interaction
Extremely authentic!!!

This felt like I was engaging with some of the parents I frequently see.
Very helpful in understanding situations. Would highly recommend such activity.
Very beneficial. I enjoyed the pausing of the simulation to phone a friend.
It was difficult but effective. I found myself a bit intimidated by the avatar because it presented many situations and angles that I don't think I was ready to address.
This was awesome! Ms. Adkins and I bonded! This is a great tool. Wish I could have had this earlier in my career.
This was the best. I've never had this situation before and I felt it was the most helpful. I wish I could have these parent conversations via avatar before I speak to parents. :)
It was just as intense as a live person. I was glad to have an out when I needed help.
The avatars were very intelligent and adaptive to me.
The simulation was a fun experience that provided needed experience in applying the concepts of school law.
Challenging! It helped remember that sticking to the legal reasoning and avoiding the emotional pitfalls helped properly direct the conversation
Beneficial
Very helpful and actual rubber-meets-the-road activity
Very effective and real life situations.
Sometimes difficult to stay on topic. It is very important that you focus on the job as described.
Excellent. Provides a safe environment to practice.
I was nervous, but thoroughly enjoyed it and would like to do it again.
Although at times uncomfortable, the simulation helped me personally grow and better handle situations involving school law.
It was helpful and felt like a real world experience.
The avatar was amazing. She responded just as a parent would in a real-life situation and kept the student's on their toes.
Interacting with the avatar in the simulation was the most beneficial experience. I was able to learn a lot in a short amount of time.
Interacting with the avatar in the simulation was very similar to how things would be in real life. Though I did not participate as much as I felt I should, I learned a lot through watching the others.
Enjoyable and challenging! It forced me out of my comfort zone and caused me to synthesize experiences with newfound knowledge.

Q.4 Pedagogical Value During Action: Observation (watching your cohort members participate in the simulation)
Very valuable
Very beneficial
There are areas regarding specific laws in which we need to remain abreast of
I liked being able to see how others would handle the situations.
Very helpful
Helps to prepare and grow professionally
Good to observe how they worked through the process and learn from their work.
Watched the others structure helped
Wanted to help them and gained experience from peers and caught mistakes.
Also, valuable. Beneficial to see how others respond.
I appreciated being able to learn from the others.
It was quite beneficial because it made me reflect on past experiences in my school setting that dealt with similar situations.
It allowed me to think about what I would say.
Valuable
I really enjoyed seeing how others respond to situations.
They did such an awesome job. They will make great administrators.
It was great to listen, help, and offer feedback during their simulation. - Experienced AP - 1 year
This aspect helps you consider valuable information you may not have considered.
Great job!
I liked the way we were able to collaborate on what strategies. It was interesting to see the way that sometimes we gave advice, but the the simulated person would not respond as we hoped. Then we could stop and collaborate to see if another strategy would help
This gave me time to think, since I wasn't in the "hot seat"
It was very helpful to see how others react to the situations.
Very helpful in understanding situations. Would highly recommend such activity.
I learned the most from watching others as they attempted to deal with the difficult adults.

It was a bit more comfortable seeing someone else in the hot seat. I enjoyed being able to help my peers in this situation.
It was interesting to see their approach and mentally compare what I would do.
I enjoyed that I didn't have to go first. As a five year teacher, I haven't seen a lot of confrontations and legal discussions so this was helpful.
It was helpful to watch body language as well as asking for help when needed.
I enjoyed the opportunity to watch others deal with similar issues.
This helped me to think critically about the situation to provide support.
Their experience was evident, it was interesting to see the varied approaches
Beneficial
Very helpful since they did a great job handling difficult situations
Great opportunity to go along with the members as they were going live.
Good to see other people in action.
Excellent. Allows us to learn and critique.
It helped me think of what I would do differently and get some good ideas for ways to handle a situation.
Just as helpful as actually sitting in the "hot seat".
It was helpful to be able to sit back and analyze the situation. You see more when you are watching.
I enjoyed watching other members and hearing their responses to different issues. In my head, I compared and contrasted their responses to how I would have responded.
I enjoyed watching my cohort members participate in the simulation because it provided me the opportunity to reflect on how I would have responded in the given situation.
I learned much through watching my other classmates participate in the survey. I learned how to diffuse situations and how to approach situations without getting off topic.
It was enlightening to see my peers complete the simulation, and it was comforting to realize that I wasn't the only one to experience difficulty.

Q.5 Pedagogical Value During Action: Pause simulation (stopping the interaction for clarification or redirection)
Extremely valuable.
Very beneficial
The pauses were used effectively as a self-reflection piece
This was great as we needed clarification for some parts of the simulation and were able to get more information about how to proceed. I wish we could sometimes hit a pause button when we are actively engaged in conferences at school.
I wish I would have paused and asked the others because I was very unsure of myself This is an awesome feature.
Good tool because you can reboot information and gather thoughts
Good to check for understanding.
Asking for help....good idea
Yes yes yes. This was great for training on clarification and guidance.
Definitely helpful for (re)direction.
This was exceedingly necessary.
I Like the pause option because it provided the opportunity to regroup.
Gave me time to gather my thoughts.
Valuable
Could we make this a feature in real life? Sometimes you must need to pause, collect your thoughts, or check your facts, etc.
This was my favorite feature. I wish we could freeze actual people sometimes.
This was a great way to gather your thoughts and get help from other members in the classroom.
Helps gather thoughts.
Great job!
I liked that we were able to stop and restart the simulation. It was helpful to stop when I did not know what to say
Great way to gather thoughts!!!
Super helpful. The most important part of the experience.
Excellent way to catch your breath and think about what to say before it comes out.

Loved!!
I really liked that we could do this. It gave me a chance to ask questions and to clarify issues.
It was great to have the opportunity to pause and consult with peers.
I loved this as well. Again, I wish that I could do this all the time.
I used the pause personally to get clarification on a law.
It worked well to get instruction on how to proceed.
Very beneficial. Helped ease the tension during the simulation.
Very helpful - I wish I could do this with every F2F meeting
Beneficial
Extremely helpful and extremely useful
Very helpful to be able to stop and discuss with the class.
Great chance to get immediate feedback.
Great if individual hits a snag.
A useful tool that I would be nervous to use if others didn't.
This was powerful bc it allowed for advice and guidance.
This was helpful to take a breath and get feedback from those watching.
This is an excellent feature. Although there is no pause button in the real world, it helped to have this option for our first experience with the avatar.
I thought it's very helpful to be able to pause during the simulation. At this point I was able to gather my thoughts and ask for advice in order to respond in a positive manner.
It was nice to be able to pause the situation and ask for help. The others were able to give ideas and views I may not have thought about.
I appreciated this functionality as it allowed me and my peers to receive assistance on the task. It quite possibly kept us from bombing the entire presentation.

Q.6 Pedagogical Value During Action: Coaching (feedback provided either during or after simulation)
Learned the most.
Extremely beneficial
The follow up regarding the student being able to return to school immediately was critical
The coaching provided was a tremendous asset. This has made me excited about my Fall class in school law.
Helpful
Very good and allows you to grow
Needed at times.
Each participate was encouraging
Awesome yes coaching is important and helped gain confidence in crucial conversations.
Definitely helpful for (re)direction.
Very beneficial and necessary
The coaching piece was critical because it allowed me to reflect on my practices and hear my partner thoughts.
It gave me ideas to keep moving forward.
Valuable
Very helpful.
This was great, too. This really helped me learn. You were great.
It was great to receive guidance.
Support is helpful in applying legal principles.
Great job
Coaching was great because we were able to collaborate.
This was beneficial to help get feedback from others
Immediate feedback makes the experience better stick in my mind.
Very helpful in understanding situations. Would highly recommend such activity.
Very helpful. It's true that it speeds out the learning and also slows it down.

Coaching was effective and allowed me to think more critically about these situations.
Great guiding and clarification.
This is very very helpful. I truly enjoyed Dean Hoff and Mrs. Gilbert's advise, expertise, and knowledge.
The teacher kept bringing us back to "What does the law say?"
Coaching was very adequate in all three if the simulations.
Very beneficial in making sure I fully understood the aspects of the situation.
I appreciated the instructor's guidance and will try to remember these thoughts in contentious parent meetings
Beneficial
Very helpful- wish I had it in real life settings
Great to have feedback from other students.
Good to work with partner during simulation.
Excellent. Peer evaluation is always appreciated.
The more we worked together, the more confident I would be giving feedback.
Very effective and well laid out.
It was helpful to have coaching if we got off track.
It was beneficial to hear the feedback of classmates on things that were done well and things that could be improved.
The coaching was highly valuable.
It was helpful to listen to the others give feedback after the simulation.
Optimal!

Q.7 Pedagogical Value After Action: Debriefing (reflection and discussion on simulation)
Very valuable. Increased my knowledge tremendously.
Very beneficial
The discussion made me aware that there is some disparity between the Supreme Courts and the district courts
I enjoyed debriefing since I could ask other questions that related personally to my situation and get clarity on how to proceed and information that I could take to back to my school site.
This was the most helpful because of the opinions of others and how it would relate to our jobs as administrators.
Good to help learn from mistakes
Good to hear the different perspectives on each case.
Allowed a chance to learn more
Reflecting was great because as we debrief the learning from the experience came out and we questioned current practices.
Great. Very informative and engaging. Wish we had more time.
Was helpful in solidifying my understanding of the scenarios.
It was a powerful tool to learn from the researcher and my peers.
Helpful
Valuable
Very helpful and educational.
I was really able to see where I could have done better with her. She's just relentless.
It was an effective way of promoting class participation and assess student knowledge!
Review of legal principles strengthens knowledge of school law.
Great job!
Again- great collaboration.
I was able to see ALL the right and wrong things I would have done. Def an eye opener
Surprisingly fun. Knowing how others saw the experience helps me find common ground and builds self confidence.
Very helpful in understanding situations. Would highly recommend such activity.
Great

Debriefing allowed me to engage even more with these situations.
Great to see the bigger picture.
I think that this was great because we receive both helpful feedback as well as positive comments. I've never had any experience with law before so I was pleasantly surprised that I was able to do this simulation
It was made clear how the law protects all stakeholders for a safe environment.
We were given the opportunity to debrief with one another after each simulation.
Essential part of the understanding process.
This was the most interesting aspect. Taking thoughts from before and during the interaction and debriefing was informative
Beneficial
Yes, excellent and necessary for learning
Great opportunity to reflect and discuss what we were learning
Great chance to grow professionally
Excellent. Again, a safe environment to critique and share conversation.
It gave us the chance to ask questions I thought of throughout the simulation.
This was helpful and where I gained the most knowledge.
It was good to talk about what worked and how we could have handled the situation differently.
same
The reflection was highly valuable.
It helped to debrief after the simulation to reflect on what could have been done differently.
This allowed me to make final connections with the learning, rather than just leaving on the experience.

Q.8 Pedagogical Value After Action: Connections (discussion of connection to school law in the broader context)
Very valuable. Loved hearing the connections and real life scenarios.
Extremely beneficial
There are ways that my school is using the religious groups in the correct manner
The connections and notes are going to be beneficial. I'm going to love this class. Oh I already said that.
The conversations were engaging and informative
Allows us to see different points of view
Helps to see the broader context.
Trying to get the district thought to the law
Helped see where issues are mishandled or misused.
Great. Very informative and engaging. Wish we had more time.
N/A
I definitely will apply the scenarios in future interactions.
It made the situations come to life.
Valuable
Made it a lot more fun
There are so many laws, but seeing how they connect really intrigues me.
This bridges a sense of community within the class and we were able to apply what we read in a real world application.
Connections are real world and help prepare for scenarios.
Great job!
It was great to make connections with current events
As a an after school program director and administrator assistant, I wAs able to make many connections and learn from them!
These are situations we see often and it was nice to get a better legal understanding.
Very helpful in understanding situations. Would highly recommend such activity.
I enjoyed being able to ask questions that pertained to my experiences in the classroom.
I learned how to apply school law in a broader context.

The connections to real cases allowed me to see liability and such at my work.
I love making real life connections and feel like being able to apply it to my school setting will help me immensely.
I can see where my school may be bending some rules on personal beliefs.
I feel like I dud learn quite a few things due to the connections that were made during the simulation.
Very interesting discussions with real world information from my colleagues.
The legal reasoning made more sense after the discussions
Beneficial
Very applicable discussion
The connection to law was real life situations that come up and to be able to act them out and have to understand school law was helpful
Great opportunity to ask professor about current issues you are dealing with.
Excellent reinforcement.
It was nice to get to apply it to what we actually see.
This was fun and validated assumptions from simulations.
It was helpful to make connections afterward.
There is a huge connection to broader school law content.
The discussion was highly beneficial.
I found it beneficial to to show me how to interact with parents and other faculty.
Essentially, this experience functioned as a primer for the class I am preparing to take. If nothing else, it whetted my appetite. I'm looking forward to more!

Q.9 Is there one (or several) parts of simulation that you found more valuable than others? If so, what were they and why?
The discussions before and after because one prepared us and the discussion after took my knowledge to the next level.
The debriefing
No
No, I liked every part.
Simulation and debrief
Discussion about simulation and the feedback from others
Each part has value as a part of the whole.
Trying to understand how to have that dialogue with a teacher
The experience was great and the face to face was fantastic and gained a ton of experience in just an hour
Being in the hot seat and having to actually manage difficult circumstances with a conversation with an unreasonable person was invaluable. AgIn, I wish that this was a part of the regular curriculum.
No, the entire experience was fantastic.
I enjoyed interacting with my peers and learning from the rich discussion.
I thoroughly enjoyed this.
All were great and very helpful.
I just like that she was able to respond to anything that we said. We never threw her.
The discussions with you and the class really helped me understand. Studying laws is not fun, but you made them real.
The actual simulation and participation from fellow classmates as well as the facilitator/researcher.
Pause and feedback
Great job!
The interaction with the avitar and the collaboration was the best part
Love the confrontation. It's real world!!!! Loved it!
Being able to pause and talk through the simulation was the most valuable part.
All the different parts of the simulation where very helpful.
I felt all parts worked together for an overall very informative experience.

I think the most valuable were the simulations themselves.
It was all valuable.
The avatar simulation was the most helpful. I've never had anything like that before
I wish I had this at my school to help my staff grow. It was great. I would definitely be interested in participating again.
No, I thought they were all informative.
The discussions with my colleagues and facilator.
Watching as well as participating were helpful
N/A
It's hard to determine, it was all very helpful. I'd love to use this in the future. I think it was very helpful to be able to pause and ask for help- that increased my willingness to try and it also increased the value of the activity since it didn't have to get off track.
The debrief and class interaction was most helpful.
The debriefing and feedback.
The after simulation discussion because everyone had a chance to read the case and witness a simulation.
The actual simulation as well as the feedback was excellent.
I thought it was a cool experience and I'm glad I was able to participate.
All was helpful
The most valuable part was actually participating in the simulation with the avatar.
The interaction with the avatar was the most beneficial because I felt as if I was able to prepare for a real life situation.
I found watching others very beneficial.
N/A. The entire experience was well-planned and valuable.

BIOGRAPHY

Kristen Gilbert is an Assistant Professor at Augusta University in the department of Teaching and Leading. Her research interests center on educational leadership for educational equity. This includes school law and policy, leadership preparation, and leadership practices in schools as they relate to creating more equitable educational experiences for all students. She recently completed her dissertation at the University of West Georgia where she examined the use immersive simulation to teach school law.