School Administrators' Perceptions of Electronic Portfolios and the Hiring of K-12 Teachers

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The unprecedented pace of technological advances in online interactions and digital identity have created challenges for educators and the communities they serve. Electronic portfolios (ePortfolios) have become a substantive tool that facilitates transference and access to the pertinent achievements highlighting competency, allowing administrators to weigh those strengths against the positions they are trying to fill—yet ePortfolios have limitations maximizing access to digital footprints. The purpose of the study, using mixed-methods, was to determine the views of school administrators involved in the use of ePortfolios during the hiring process of K-12 preservice teachers. Participants' survey responses were used to investigate four research questions regarding pros/cons, school administrators' needs, delivery method, and improvements of ePortfolios for increased use. One important outcome showed 59% of the participants had used ePortfolios in the past two years, and they would be more willing to use ePortfolios if there was a standard format for candidates to follow. Researchers found ePortfolios were a viable asset for the hiring officials in this study; however, new challenges are evident and must be addressed.

Creating an electronic portfolio (ePortfolio) in teacher preparation programs has become a common practice at the university level due to the increase in use of technology (Parkes et al., 2013; Strudler & Wetzel, 2005). An ePortfolio is an electronic compilation of artifacts of learning that show that a candidate has met their educational proficiencies, is qualified for employment (Watty & McKay, 2015), and reflects a student's professional practice. It is a showcase for individuality serving as a catalyst for self-reflection and a vehicle for making an impactful first impression. ePortfolios emphasize "assessment, appraisal, accreditation, graduate employability, application, and evidence of professional competency" (Downer & Slade, 2019, p. 529), but also exhibit the strengths of the candidate. In higher education, ePortfolios are used to develop understanding and create learners who self-reflect and significantly engage in their own learning.

As technology has expanded and become a universal function in the field of education, the ePortfolio has enhanced the learning tool into a product to showcase current competencies and potential demonstrations of professional growth (Chatham-Carpenter et al., 2010). There are three main types of educational ePortfolios that are based on the original tenets of traditional portfolios (O'Keeffe & Donnely, 2013; Wuetherick & Dickinson, 2015). The learning portfolio is focused on student learning. The evaluation portfolio is focused on assessing and evaluating preservice teachers' competencies, and the showcase portfolio is focused on employment and individualized preparation for a position (Ciesielkiewicz, 2019; Ritzhaupt et al., 2008).

The impact that ePortfolios have on hiring and the perceptions of school administrators are underdeveloped in the literature. Creating and replicating a survey to study this can magnify the challenges of the platform and frame or shape higher education faculty's understanding of what is needed and how to focus on ePortfolio data through course work. The data from this study also reinforce other literature that researched technology and older adults (Mariano et al., 2021; Mitzner et al., 2019), which shows that the more exposure they have to technology, the more they are willing to use it. The research reinforces the understanding that technology has become an integral part of society. The age of the user or decision-maker has no bearing on the impact that the digital footprint can make, if presented in an accessible and thorough manner.

Literature Review

A review of the literature shows much of the research on ePortfolios was done in the late 1990s and early 2000s. In the last three to four years, there has been a re-introduction by researchers exploring the changes to ePortfolios because of the increase of requirements from the Council for the Accreditation of Educator Preparation (CAEP) for aggregated data, the ability to use management systems (TaskStream and others), and the changes in technology (Anderson, 2019; Karpf, 2012, 2019; Ruch, 2020). While the stakeholders (e.g., universities, students, and K-12 districts looking to hire) stay the same, the needs have changed.

Universities are following liability mandates, increasing the pressure for supporting the credentials of the achievement of standards (Henard & Roseveare, 2012). The accrediting agencies require organized data and access to a students' work. They want to see evidence of mastery. In addition, electronic data also provides confirmation that the bodies of higher education have met national accreditation standards, state certification requirements, program goals, or institutional objectives (Holba et al., 2019; Meyer & Latham, 2008).

Use of ePortfolios in Higher Education

The creation of ePortfolios should not be a one-and-done culminating project; they should be a living, breathing document (Anderson, 2019). While they are created within a framework for establishing learning, faculty guidance is critical as the preservice teacher develops it. An ePortfolio is an active learner practice, with the preservice teacher taking responsibility in their learning, reflection, and process of learning (Watson et al., 2016).

When looking at ePortfolios, students are the key stakeholders in this process. They are writing for an audience with a broad spectrum of needs. Their work is what is being evaluated by the university (who sets clear guidelines), but, as Ndoye et al. (2012) pointed out, school districts looking to hire teachers often provide vague expectations, leaving students to guess what might be needed. Preservice teachers want to showcase their creativity and illustrate their strengths and progress toward improvement, illuminating their potential as great educators. The stakeholders at the universities are looking for CAEP data and possible program improvements. Administrators who are looking for fit, engagement, and behavior management (Fiedler et al., 2009) have less interest in the disparity between the diverging uses and applications of this resource. Some of the stakeholders have no say in what products are included in the ePortfolio to showcase a preservice teacher's abilities. Implementation of an ePortfolio system also requires sufficient access to technology, an adequate campus technology infrastructure, and continual user support (Downer & Slade, 2019; Mayowski, 2014).

Benefits of ePortfolios

Suggestions to improve the process have dominated the latest research. Preservice teachers should have direct instruction on what is included in an ePortfolio as well as the broader benefits, self-reflection (Slepcevic-Zach & Stock, 2019; Torre, 2019), and choice of which technology to use. The development of student-owned platforms, more flexibility (Daim et al., 2016) and team-teaching are also key components of choice. Preservice teachers' awareness of technology improvements and other practices that administrators might be looking for within the ePortfolio (Gulzar & Barrett, 2019) should also be included. When preservice teachers participate in courses where they learn the importance of ePortfolios, they are more likely to produce higher quality portfolios. Additionally, they can better explain what they know, how they know it, and how they will utilize it in their own classrooms; in turn, this increases their self-efficacy when it comes to the higher process and teaching experience (Ring et al., 2017).

Previous research studies identify time constraints as one of the major complaints about the use of ePortfolio as a recruiting tool (Theel & Tallerico, 2004; Ward & Moser, 2008), as well as the ways that ePortfolios were delivered previously on disks and thumb drives (Britten et al., 2003). While in the early part of the century, the ePortfolio became more accessible for students to market their skills in a professional manner (Strawhecker et al., 2007), technology has changed (availability of the internet and websites such as Wix, FolioSpaces, and even Google), and ePortfolios have become much more personal and can include the teaching pieces administrators desire (Ring et al., 2017). Now, with the increase of web-based sites, ePortfolios permit transparent assessment practices, making it easier to show stakeholders that student learning is happening. ePortfolios "[organize] student evidence, assessment practices, and assessment reports, thereby allowing faculty and administrators to more easily 'close the loop' between teaching, assessment, and outcomes" (Strawhecker et al., 2007).

Few current studies have focused on what administrators want (Douglas et al., 2019; Eynon & Gambino, 2017; Posey et al., 2015), and those that do only mention the subject. There are currently no large-scale studies on preference from administrators. Adoniou and Gallagher (2017) noted that ePortfolios serve as a way for administrators to focus on the product that preservice teachers provide, rather than focusing on how they present the information. They are often used to weed-out the preservice candidates who should not be in the field. Strawhecker et al. (2007) noted administrators found the ePortfolios can provide information that is not necessarily applicable to the classroom. Leivens (2014), however, looked at it in a different light. In this era of difficulty hiring teachers for the right position, and increasing numbers of teachers leaving the field, ePortfolios can lead to better job matches, so mismatched and unfilled positions in a district are minimized. Administrators may find viewing ePortfolios for the final candidates for a position might make it more manageable (Gaudin & Chaliès, 2015; Parker et al., 2012; Wray, 2007). Overall, administrators and preservice teachers benefit from using ePortfolios to personalize the benefits of a position to the candidate (Ciesielkiewicz et al., 2020). Schiele et al. (2017) noted that using ePortfolios serves as a document that can stimulate the success of a preservice teacher.

The impact that ePortfolios have on hiring decisions is underdeveloped in the literature. Replicating a survey to study the use of ePortfolios for higher purposes can help better understand the challenges of the platform and frame or shape higher education faculty's knowledge of what is needed and how to focus ePortfolio data through course work. The

current study is a replication of a study conducted by one of the co-authors (Strawhecker et al., 2007). The previous study found that school administrators' past use of ePortfolios and years of experience as hiring officials were found to be statistically significant predictors of future ePortfolio use. The participant data pool for both studies were from the same Midwestern state, and both studies utilized the same survey tool.

Research Method

The primary purpose of this study was to investigate school administrators' perceptions of using an ePortfolio in hiring teachers. More specifically, we aimed to answer the following research questions:

1. What are the pros and cons of using portfolios in the hiring process?
2. What would school administrators desire in an electronic employment portfolio?
3. What delivery method would be preferred, due to changes in technology?
4. What factors predict school administrators' likelihood of using electronic portfolios, and what potential improvements to electronic portfolios would increase school administrators' use of them in the hiring process?

Research Instrument

The research instrument is a similar survey designed in a previous study by Strawhecker et al. (2007), but with the change of completing it in the online format. According to Strawhecker and colleagues, there were 19 questions asked in the 2007 study. For our study, the survey was condensed to 15 questions that gathered the same types of information. The survey consists of two main parts. The first part includes collecting demographic information: participant's gender, age, working experience, and working context. This differed slightly from the original survey used in 2007 in that participants' gender was included. The second part includes statements where participants select the answers that are most relevant to them or write in an option. An example survey item is: Which of the following would increase the likelihood of using electronic portfolios to evaluate candidates in the future? (a) A standard format for candidates to follow, (b) Training on the technology needed to assess portfolios, (c) A standard procedure or

rubric for assessing electronic portfolios, or (d) Other (Please specify). The general theme of the survey was school administrators' perceptions of ePortfolios and the hiring of K-12 teachers. We wanted to discover whether school administrators use ePortfolios in the hiring process, and whether this has changed from the previous study. We also were seeking to find out whether there was change in the most desired ePortfolio artifacts based on the perceptions of school administrators.

We accessed the list of school administrators' emails in a non-Common Core Midwestern state and sent out the research invitation via that email list. The survey was administered over a 2-month period, first with the initial request and then with a follow-up message. The goal was to achieve a minimum of 50 responses in two months so that the next phase of data analysis and reporting could be entered. We were unable to identify the exact number of school administrators in the state due to state data errors, but a minimum of 50 school administrators was determined to be a solid participating number, given the fact that each school building had only one school administrator according to state records (Department of Education for state X).

Participants

The survey was administered online over a period of two months and yielded 70 responses, two of which were incomplete, so they were removed from the response pool. The total eligible number of responses included in this research was reduced to 68. The resulting participants' demographics are reported in the table below.

Data Analysis

As a mixed-method study, research question 1 was investigated using the qualitative data and research questions 2-4 were investigated using the quantitative data. For data analysis, the qualitative data were analyzed via the content analytic technique. The quantitative data were analyzed through the multiple linear regression to model the relationship between five explanatory variables and a response variable by fitting a linear equation to observed data. Specifically, the five independent predictors variables included: age, years of experience, school population size, self-assessed technology competencies, and gender. The dependent variable was portfolio type, which ranged from none, paper, electronic portfolio, and both paper and electronic portfolio.

Table 1

Demographics

Female participants	Male participants	Participant age	Years as hiring official	No. of students served
n	n	M	M	M
13	55	46.3	10.1	345.78

Content analysis allowed a systematic coding of collected data by organizing the information into recognizable categories to discover patterns unnoticeable by merely reviewing the transcripts (Neuendorf & Kumar, 2015; Ritchie et al.,1994). The process of data coding was divided into two stages. The first step was the preliminary coding in which we identified emerging ideas among the conversations by reviewing the participants' responses, selected keywords most frequently mentioned by participants and created relationship diagrams. The second step was focused coding where we eliminated and combined the coding categories identified in the first step to reach the results (Charmaz, 2006).

Findings

Qualitative

For research question 1, "What are the pros and cons of using portfolios in the hiring process?", we asked participants to provide pros and cons for using ePortfolios during the hiring process. This was done because we wanted to discover if age or gender played a role in perceptions of school administrators about ePortfolios. The data were originally organized by age range to determine if there were any similar themes based on age, and presumably experience as a hiring administrator. Table 2 shows the most common pros and cons for each age group. With only one participant in the 20-29 age range, the data cannot be extrapolated to other hiring administrators of a similar age. The groups that yielded most data are the 30-39, 40-49, and 50-59 age ranges.

The pros of the 30-39 group focused on ePortfolios providing more candidate information in a better organized format, while the cons expressed concerns that ePortfolios might not be a true representation of the candidate by including only the best examples of the candidate's work. The largest of the participant age ranges was for the 40-49 age range. The pros focused on the use of ePortfolios to showcase talents of non-core subject area teachers, such as art, PE, and music. They also identified ePortfolios as being easily accessed, less cumbersome, and a quick way to compare candidates. The cons for the 40-49 age range focus on the extra time and overwhelming amount of material that is often provided in ePortfolios. These hiring administrators found ePortfolios can mask a candidate's true abilities, including comments such as "Good writing can mask deficiencies; bad writing can mask exceptional educators" and "All candidates should be able to put together a quality portfolio; a bad one is telling."

While ePortfolios provide quick information and can highlight talents for non-core subject area teachers, the 40-49 age range group tends to focus more on interpersonal experiences such as talking to references and watching the candidate teach.

The 50-59 age range was the next largest participant group. Like the 40-49 age range, this group's pros included things such as ease of access, a great way to pre-screen and compare candidates, and giving a better picture of the candidate prior to the initial interview. The cons for this group included concerns such as unfairness in ePortfolio training between higher education institutions, accessibility issues for hiring administrators, and candidates failing to update the information provided to the school and/or position for which they are applying. For some administrators in this age range, ePortfolios are often considered an unreliable and detrimental resource that deprives the candidate of an edge. For the final age range group of 60-69-year-olds, there were only three participants. They, too, focused on ePortfolios allowing for ease of use and accessibility, while furthering the assertion that ePortfolios provide valuable information for screening and initial interviews. The cons from the 60-69 age range group can be summed up in one comment: "[ePortfolios do not] give insight to the heart of the candidate."

We wanted to see if the qualitative information from the pros and cons question yielded results along gender lines (Table 3). Because there were fewer female participants ($n = 13$) than male ($n = 55$), the findings for male participants are more easily extrapolated than those for the female participants. Ease of sharing the information and being provided a quick glance of candidates' experiences are the two most common pros for the female participants, while the males gave pros such as showcasing talents, less cumbersome, provides evidence of candidates' organization, and give insights into technology mastery. The cons for the females include a concern that ePortfolios take more time to look through versus typical application materials, and the that "Good writing can mask deficiencies; bad writing can mask exceptional educators." Male participants also expressed a concern that ePortfolios take extra time with an overwhelming number of materials to look through. They also felt that great portfolios can mask poor writing skills, but they differed from females in their belief that there are sometimes accessibility issues (e.g., broken website links or formatting issues from one platform to another), higher education institutions not providing similar trainings, and interpersonal experiences providing more beneficial information than ePortfolios.

Table 2
*Comparison of Pros and Cons by Age Range (*n = 68)

Age range	Pros	Cons
20-29 (*n* = 1) 30-39 (*n* = 14)	• Readability • Grammar • More examples of candidate work • Better organization • More wealth of knowledge	• Extra time • Lack of effort by some applicants • More fluff • Loss of a standard for info • May not be true representation • Only shows best of the candidate (phone calls to references yield more info) • If candidate has to pay college to send portfolio for each application
40-49 (*n* = 28)	• Showcase talent/abilities (especially for non-core) • Highlights organization, work ethic, experience • Less cumbersome • Easily accessed and saved • Show the candidate's work and implementation in district • Helps to compare candidates • Quick glance of evidence	• Never looked at one; do not plan to look at one • Overwhelming amount of material • Takes extra time • Seeing a person teach is the game changer • Good writing can mask deficiencies; bad writing can mask exceptional educators • All candidates should be able to put together a quality portfolio; a bad one is telling • Experiences and calling references provide better info
50-59 (*n* = 22)	• Goes beyond resume • Easy to access • Good as a screener • More info for F2F interview • Less paper • Insight to tech mastery • More info to review prior to interview • More evidence of experience and quality of work • Consolidation of paperwork • Including lesson plans, student work, and teacher skill set • Better picture of candidate	• Accessibility issues • Not updating based on school/position they are applying for • Never examined portfolios • Great portfolio but not great writing skills • Different institutions provide differing ePortfolio training (unfair to compare) • Take extra time • Portfolios have never given an edge; sometimes a detriment • Unreliable
60-69 (*n* = 3)	• Ease of use • Ease of access • Provides relevant info • Use for initial screening • Provides info on candidates' background and experiences	• Too many forms (no time to look at ePortfolios?) • Does not give insight to heart of candidate

Table 3
*Comparison of Pros and Cons by Gender (*n = 68)

Gender	Pros	Cons
Female (*n* = 13)	• Ease of sharing info • More info of candidate's experiences • Quick glance of evidence of hands-on experience	• Never examined portfolios • Takes extra time • Good writing can mask deficiencies; bad writing can mask exceptional educators
Male (*n* = 55)	• Readability • Grammar • More examples of candidate work • Showcase talent/abilities (especially for non-core) • Goes beyond resume • Comes down to quality, background, and experiences • Highlights organization, work ethic, experience • Less cumbersome • Easily accessed and saved • Ease of locating and printing • Organization of candidates • Clear pictures of candidates' organization skills • Ease of access • Screening/Comparing candidates • More evidence of experience and quality of work • Give insight into tech mastery • Consolidation of applicant materials	• Extra time, Lack of effort by some applicants • Accessibility issues • Not updating based on school/position they are applying for • Never looked at one; do not plan to look at one • Overwhelming amount of material • Seeing a person teach is the game changer • All candidates should be able to put together a quality portfolio; a bad one is telling • Experiences & talks with references are better info • Accessibility issues • Not updating based on school/position they are applying for • Never examined portfolios • Great portfolio but not great writing skills • Different institutions provide differing ePortfolio training (unfair to compare) • Take extra time • Portfolios have never given an edge; sometimes a detriment • Unreliable • Does not give insight to heart of candidate

Quantitative

For research question 2, "What would school administrators desire in an electronic employment portfolio?", participants were presented with a list of 14 artifacts to discover which artifacts school administrators desired in ePortfolios used for hiring teachers. There was no limit to the number of artifacts a participant could select. An optional write-in question was also provided to give participants an opportunity to recommend additional artifact choices. Three of the participants made unique recommendations for additional ePortfolio contents. Table 4 displays the artifacts that were selected in rank order by percentage, including the participants' write-in recommendations.

For research question 3, "What delivery method would be preferred, due to changes in technology?", survey question 3 asked participants to rank order (1-4) the school administrators' preference for how the ePortfolio was delivered. After more than a decade from the earlier study (Strawhecker et. al., 2007) and changes in technology, we wanted to discover what delivery methods school administrators preferred in ePortfolios during the hiring process. Utilizing the current data, we reviewed the initial publication for a comparison. School administrators far preferred a website address in both 2007 and 2021, with noticeable changes being from 51.4% to 94.1%. When considering the use of Compact Disks (CD) to access ePortfolios on a computer, the percentage dropped from 22.9% to 1.5

Table 4
*School Administrators' Desired ePortfolio Artifacts by Percentage (*n *= 68)*

Desired portfolio artifact	Percentage of participants choose this response
Candidate's resume	95.6%
References	89.7%
Letters of Recommendation	86.8%
College transcript	85.3%
Candidate's previous work experience	75.0%
Candidate's teaching philosophy statement	70.6%
Student teacher evaluations	66.2%
Evidence of reflection on teaching experiences	61.8%
Video clip of candidate interacting with students in a classroom setting	50.0%
Sample lesson plans	42.6%
Sample tests / other assessment instruments	26.5%
Artifacts to document experience with ethnic and cultural diversity	22.0%
Examples of candidate's work in college methods classes	20.6%
Artifacts that document community service-learning activities	16.2%
Other open-response recommendations provided by participants:	
Experience outside of school, such as extracurricular activities	1.5%
Special hobbies and interests	1.5%
Short videoclip of the candidate answering basic interview questions	1.5%

%. The change can be attributed to many things, from outdated technology to the fact that many computers/laptops no longer have a drive for CDs. The percentage also dropped for using Digital Video Disks (DVD) to play on a computer or television from 25.7% to 1.5%. Similarly, this may be contributed to it being outdated, as fewer people have access to this type of technology. Finally, for the category of "other," the percentage of participants selecting this delivery method increased from 0.0% to 2.9%. Comments included, "I don't think anything will increase my likelihood to them to use more than I do"; "I would prefer none - (instead) work on real-life experiences relationships, behavior management, and working with families"; and, "I feel like these are a lot of work and don't show much of teaching."

To answer the first part of research question 4, "What factors predict school administrators' likelihood of using ePortfolios and what potential improvements to ePortfolios would increase school administrators' use of them in the hiring process?", the data were run through a multiple regression summary analysis in SPSS for five predictors (independent variables) of ePortfolio usage in school administrators' hiring decisions (*n* = 68). The predictors included age, years of experience, school population size, self-assessed technology competencies, and gender. The dependent variable was portfolio type, which was coded from 0-3. A score of 0 indicated none, 1 indicated paper, 2

indicated electronic portfolio, and 3 was both paper and electronic portfolio. Table 6 provides a summary of the analysis results.

The overall regression model was significant, $F_{(5, 62)}$ = 2.703, p = .028, R = .423, R^2 = .179. As shown in Table 6, age, years of experience, school population size, and technology skill level all had a significance level greater than 0.1, to conclude that these independent variables were not good predictors for our dependent variable, ePortfolio usage by hiring officials. Gender showed statistical significance to predict the likelihood of using electronic portfolios (B = .316, t = 2.576, p = .012). Results for this study indicate that male school administrators were more likely to use electronic portfolio than their female counterparts.

For the second part of research question 4, descriptive analysis was conducted with the results depicted in Table 7. Descriptive analysis was chosen, as it is considered the gold standard (Heymann et al., 2014) among researchers looking at descriptive analysis. Data indicates that the factor of "a standard format for candidates to follow" is the one that likely increases the chances of using ePortfolios by the school administrators. The finding correlates with the qualitative data presented earlier, which found ePortfolios that were easily accessible, straightforward in example, and a quick way to assess the candidates were the ones that school administrators preferred. No other category scored higher than 20% leaving a clear and concise answer.

Table 5
School Administrators' Preference in ePortfolio Delivery Method

Preferred delivery method	Percentage of participants choosing this delivery method
Website address to view in a computer browser	94.1%
CD to play on my personal computer	1.5%
DVD to play on my computer or television	1.5%
Other (write in response)	2.9%

Table 6
Multiple Regression Summary Analysis (N = 68) for Five Predictors (Independent Variables) of ePortfolio use in School Administrators' Hiring Decisions

Independent variable (Predictor)	Standardized weight (Beta)	t
Gender	.316	2.576*
Years of experience	.223	1.409
Self-reported technology skill level	.103	0.816
School population	.024	0.197
Age	-.002	-0.011

Note. R^2 = .179, multiple correlation = .423, F (5, 62) = 2.703, p < .05.

Table 7
School Administrators' Responses to Options for Increasing ePortfolio use in the Hiring of Teachers

Option for increasing electronic portfolio use	Percentage of participants choosing this option
A standard format for candidates to follow	64.0%
Training on the technology needed to assess portfolios	4.7%
A standard procedure or rubric for assessing electronic portfolios	19.8%
Other (Please specify)	11.6%

Discussion

For the current study, we chose to focus on the school administrators' perceptions of all three types of ePortfolios (i.e., learning, evaluation, and showcase) as a whole, as hiring officials look at these components as one product. To address research question 1, the participants were asked to identify the pros and cons of using ePortfolios in making hiring decisions, and this is where the findings between the two studies can be compared. In the study conducted by Strawhecker et al. (2007), the pros for using ePortfolios in the hiring process were that they are easier to manage and lead to better job matches. On the other hand, in our study, the pros focused on ePortfolios allowing for the opportunity to see more examples of candidate work, including the candidates' organizational skills. Moreover, the ePortfolio provides school administrators with a quick overview of candidates to make comparisons. The cons from the previous study were the obstacles for school administrators in viewing the ePortfolios, which included the different formats as well as a concern for a lack of time to navigate and view the ePortfolio artifacts.

Similarly, the current study also yielded con responses that focused on a time restraint, the lack of reliability, loss of standard information, and accessibility issues.

The question about reliability issues mentioned by some participants is unique to this study. Because the survey did not request any follow-up information, we are left to speculate what the participants who stated lack of reliability as a con meant. With any portfolio submission, a candidate provides specific materials that highlight their strengths and indicate why they would be the best candidate for the job, which is typical of application materials that are gathered in the hopes of the candidate putting their best foot forward to impress the hiring administrator with their successful past. Reliability may come into play with the creation of the ePortfolio itself. One would hope the materials are truly a product of the applicant's work and that they are not including lessons and materials that others have created; however, if a candidate is using the ePortfolio itself to promote a strength in technology, there is a chance someone else might have created the ePortfolio for them, thereby further bringing reliability into question.

The theme of a time constraint for using ePortfolios in the hiring process as a con is consistent with previous studies (e.g., Theel & Tallerico, 2004; Ward & Moser, 2008). School administrators' concern that ePortfolios take more time to review than other application materials is one of the consistent reasons why they are not more generally accepted. Given the advancements in technology from 2004 to 2020, ePortfolios are still more onerous than hiring administrators have time for, which indicates teacher candidates should not spend time creating detailed, content-heavy ePortfolios because hiring administrators may not have time to appreciate all the extra work that went into them.

A theme from this study that is inconsistent with previous studies is the usage of the ePortfolio in the hiring process. In previous studies, school administrators indicated they used ePortfolios in the final stage of hiring to ensure that they have selected the best candidate (e.g., Adoniou & Gallagher, 2017; Ring et al., 2017). In this study, hiring administrators indicated they used ePortfolios in the initial stages of the interview process for an overview of the candidates and to narrow down the applicant list. Changes in this usage seem to identify a shift in hiring needs, as current administrators presumably take a cursory glance at ePortfolios to decrease the number of applicants from which to choose to bring for an interview, while five years ago, administrators were spending more time looking at just a few ePortfolios to make their final decision. This shift is likely to be an indicator for teacher education students—and the instructors who are helping them—that ePortfolios should contain a very quick overview of their best practices, theories, and goals as a future educator. Spending time preparing an ePortfolio that overwhelms the hiring administrator with in-depth analyses of created resources and lessons may not be appreciated during a cursory glance at the start of the interviewing process.

When examining research question 2, there is a void in large-scale research to describe what items administrators want in ePortfolios when making hiring decisions (e.g., Douglas et al., 2019; Eynon & Gambino, 2017; Posey et al., 2015). Despite advancements in technology over the past decade, no distinct change was detected for the types of desired artifacts in showcase portfolios (Ciesielkiewicz, 2019; Ritzhaupt et al., 2008). When comparing our ePortfolio study with a previous study (Strawhecker et al., 2007), we noted that the administrators' desired artifacts in portfolios—including the top four rankings as well as the bottom five artifacts—were in identical order. Interestingly, the top four artifacts may be viewed as more "traditional" in that other employers may request similar items, such as resumes and college transcripts, to screen applicants. We can conclude that the list of choices reflects what school administrators desire, leaving little choice for prospective hires to showcase their abilities in an ePortfolio (Fiedler et al., 2009). Over the last 14 years, there were several educational changes in technology, standards, expectations, and assessments, yet school administrators still value the same collection of items for inclusion in ePortfolios during the hiring process.

The current study revealed there has been a change in school administrators' preferences for electronic portfolios, which addresses research question 3. Specifically, they dominantly preferred websites as a format for electronic portfolios which was a different finding from what previous studies found (Ritzhaupt et al., 2008; Strawhecker et al., 2007). Strawhecker et al. (2007) found that school administrators' preferences for electronic portfolios were quite diverse, including websites, CD/DVD, etc. While this change shows a noticeable difference between our study and previous ones, it reflected the technology trend in which CDs and/or DVDs were less popular and was consistent with current literature about how electronic portfolios were built in the last decade (Douglas et al., 2019).

Strawhecker et al. (2007) revealed that the previous use of portfolios, whether paper or electronic, as the predictive factor to determine the likelihood of ePortfolio usage in school administrators' hiring decisions. The results of the current study indicated that gender was the only factor to predict the likelihood of using ePortfolios in hiring decisions by the school administrators, despite the low number of female participants to address research question 4. The literature shows no other studies that compare and analyze predictive factors for electronic portfolio usage in making hiring decisions. However, in the study by Strawhecker et al. (2007), participant gender was not included as a survey question, which may explain the discrepancy.

Limitations

As with other research studies, this study has limitations. Despite sending the online survey to all public school administrators in one Midwestern state, the timing was such that educators were amid a global pandemic and may not have prioritized completion of the added responsibility. Additionally, one metropolitan, large school district contacted us to deny participation in the study. The reason for this was to limit outside distractions during remote teaching. The research questions for this study aligned with a previous survey project by one of the authors and only represented one data point. Combining a survey with another method helps to triangulate the data (Jentoft & Olsen, 2017).

A limitation was there was a lack of reliability that is unique to this study. The survey did not request any follow-up information, forcing us to speculate what the participants meant when an answer was unclear.

Allowing for follow-up questions would require this study to include interviews, which would be next to impossible given the *n* and the time constraints of that process. However, it would lead to interesting implications that otherwise would not be understood.

Implications and Future Use

The implications of this replication study are unique, as it has uncovered and addressed some of the underdeveloped areas of the ePortfolio, especially the influence that ePortfolios have on the thoughts and perceptions of school administrators, and the effect that ePortfolios can have on hiring. School administrators are interested in an online resource that has a standard format focusing on everything from the typical resume to a web-linked video clips of candidates teaching. Samples of work and other artifacts from learning, while important to universities, are less important to school administrators and other hiring professionals. As CAEP has become a larger part of higher education for teacher education programs, and changes are needed due to their requirements (Anderson, 2019; Ruch, 2020), app technology has been critical for data collection. For this study, it is particularly important, as university faculty need to know what school administrators and other officials are looking for when hiring teachers, offering a broader scope of expectations and trackable evidence of professional growth and actionable learning. With changes in technology, Karpf (2012, 2019) explained that, while it has been shifting quickly to meet the needs of consumers, there is a slow-down in internet changes and more of a focus on the applications of what can be utilized by it, including individual websites. Universities need to create ePortfolios with preservice teachers based on what administrators are looking for in order to make them useful to the preservice teachers and to administrators.

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