An Exploratory Study of the Impact of Hybrid Online Courses on Teaching Practices of Two Pre-service K-5 Teachers

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Abstract

Teacher preparation programs must ensure that course and clinical work provide a solid practice and theoretical foundation upon which new teachers can grow and thrive. Part of this process is the need for theory and research learned in coursework to mesh and enrich classroom practices. In this study we interview two teacher candidates enrolled in a two-year hybrid graduate program to investigate how theory and research impacted their classroom practice. Both teacher candidates were in the second year of their program having spent a minimum of 80 days working in classrooms in year one and five days per week during year two. Both had completed a majority of their methods courses. Analysis of responses from the two teacher candidates indicate a limited recall of theoretical frameworks for teaching and learning. Both teacher candidates could provide examples of where coursework impacted, influenced or guided their teaching practice. However, it was not possible to decipher if these examples were gleaned from interactions with their mentor teachers or from coursework. Also, both teacher candidates identified strategies that were not based on established research and theory, but either instructional tools or personal theories of teaching and learning. Responses to specific questions and free response to follow-up questions indicate that mentor teachers have a significant impact of teacher candidates' practices. Further study should include larger sample populations, a close review of course syllabi to identify theoretical and research frameworks and a re-tooling of research questions to better reflect what teacher candidates cover in coursework and how it might apply to their emerging classroom practices. Implications and suggestions for future efforts to improve links between research, theory and practice are offered.

Introduction

My interpretation of the evidence is that teachers are born and not made. Erick Hanushek (taken from Hanford, n.d.)

The Erick Hanushek quote reflects an adage that has been widely debated in P-12 education and across society. Embedded in this statement is that teaching requires a specific set of skills, knowledge and dispositions that cannot be developed through study or apprenticeship. What follows is that a "teacher" cannot be molded and those with the proper constitution must somehow be found and encouraged to pursue a teaching career despite significant social, cultural and economic challenges endemic to the teaching profession.

Hanushek's adage, of course, requires us to define the boundaries and metrics of what constitutes a "teacher," or, more specifically, a great teacher. We also have to define a time scale for expectations; even great teachers likely require some nurturing, cultivation and maturing. And perhaps some teacher candidates who do not have the "great teacher" genetic trademark may have the disposition, knowledge and skill to become a great teacher. Sticking to this adage would likely cull far too many teacher candidates who have the professional, personal and emotional potential to positively impact students' lives and career paths. In other words, we all cannot be great teachers – but perhaps we can grow good and effective teachers. Maybe even great ones? Also, an extreme adherence to Hanushek's idea places any teacher preparation efforts, whether university preparation or K-12 apprenticeship, not only in bad light, but also in peril.

A second common adage from classroom teachers is that coursework taken as part of their degree programs lacks applicability to classroom practice (Darling-Hammond & Hammerness, 2005). If true, this brings into stark light the potential that university preparation of teachers is a waste of time and money for both students and institutions. Further, this means that the teacher profession is more of an apprenticeship best served by training in schools from senior, expert teachers and

administrators rather than through study and reflection on educational, psychological and cognitive research and theory in combination with usually brief episodes of "student teaching." What is true in both models – university training with student teaching and apprenticeship practices in school – is that teachers require deep subject matter content knowledge (Hattie, 2012), which comes from immersive study and research opportunities (even for non-science content areas) offered in university learning experiences.

If we consider these adages as hypotheses – great teachers are born and university coursework is ineffective for learning about classroom practice – we need to identify what data is best to test the hypotheses. Student test data? Student social emotional learning? Teacher job satisfaction? Student satisfaction with their teachers? Also important is whether these two adages are connected – do great teachers find university coursework less effective in molding their teaching abilities? Again, the importance of testing these hypotheses will have economic and societal implications for how teachers are prepared for classrooms.

In this paper, we contribute a small and humble amount of information to an already vast corpus of data on teacher preparation, specifically around teacher candidates' knowledge of research and theory learned from university coursework. We focus on the second adage of the effectiveness of teacher preparation courses in modeling or impacting classroom practice. Specifically, we investigate if teacher candidates enrolled in a graduate Masters of Arts in Teaching (MAT) program (with licensure) taught in a hybrid format used research and theory presented in coursework during their clinical work in K-5 classrooms. Findings from an interview study have implications for adjusting coursework content and pedagogy to enhance connections and applicability of research and theory to practice. The findings may also inform more broadly the usefulness of university teacher preparation programs in terms of better preparing teachers to work in classrooms.

Connection between Research and Theory and Teaching Practice

Educators have access to two general types of theoretical frameworks and research results to inform their instructional practice. The first category consists of research on how people learn or cognitive science, which includes aspects of psychology, linguistics, philosophy and computer modeling (Cognitive Science, 2018). More recently, aspects of brain physiology, structure and chemistry have also been incorporated into models and strategies for teaching and learning, although the efficacy of this approach has yet to be proven (Wolfe, 2010; Immordino-Yang, 2018). The books *How People Learn* (National Academies of Science, Engineering and Medicine, 2000) and *How People Learn II* (National Academies of Science, Engineering and Medicine, 2018), which includes the role of context and culture in the learning process, are important summaries of cognitive science and learning.

The second type of research are studies that examine the impact of various education reforms or instructional strategies on student learning. These studies include descriptive, primarily qualitative studies that include ethnographic and case studies; associational research that seek to examine correlational or causal basis of interventions; and intervention studies that aim to measure the impact of an intervention on teaching and/or learning (see for example: Weston & Bain, 2014; McDonnough & Matkins, 2010). Designs of intervention studies include experimental, quasi-experimental and action research.

A focus of educational research is on informing the teaching and learning of students; that is, unlike basic scientific research, educational research has an additional focus of informing practice. Research in medicine has a similar character where research informs the practice of doctors, nurses and other health professionals. That being said, it follows that the investment in educational research is justified if results, models, theories and frameworks are used by educators to inform practice.

A secondary application is in the use and application of educational research and theories in the preparation of teachers. The alternative to a research-based approach to teaching (teaching-practices-based careful experiments, observations and theoretical frameworks) is teaching practice guided by experiences of the practitioner, which is influenced by local factors. In this scenario, gaining skill at teaching is a trial and error process, dominated by skill development (rather than intellectual, reflective work) and influenced by local mentors and school culture. This describes an apprenticeship model for teacher preparation, which might be effective but is also likely to be strongly (and potentially wrongly) influenced by mentor teachers and local conditions.

In-service Teachers Use of Research and Theory

The use of research as part of teachers' practice has also been examined through teacher focus groups. Drill, Miller and Behrstock-Sherratt (2013) and a study sponsored by the American Institute for Research (2011) both asked teachers about the influence, usefulness, transfer and barriers of research to practice. Teachers reported that barriers in using research include lack of clear relevance and connection to practice; lack of practical examples where research was applied and successfully improved student learning; and lack of time to conduct the research, read articles and enact changes in their practice. Teachers reported that they turned to research when there was a pressing need and after they have consulted more efficient avenues, including "in the moment" resources such as colleagues, the Internet and their own intuition (American Institute for Research, 2011).

Research from focus groups also provided suggestions toward increasing or improving translation of research to practice including development of research/teacher collaborations; presentation of research results in clear and user-friendly manner with practical examples; and emphasizing how results can solve or address immediate classroom issues or dilemmas (Behrstock-Sherratt, Drill & Miller, 2011; Drill & Behrstock-Sherratt, 2013). Suggestions for pre-service or early career teachers include experience in university coursework in how to use research efficiently and effectively, follow-up with teachers after program completion and making clear to teacher candidates the need for additional research once they start teaching (Drill & Behrstock-Sherratt, 2013).

Pre-service Teachers' Use of Research and Theory

During most university education preparation programs (EPPs) teacher candidates take a combination of coursework and internships or practicum where they work with mentor teachers in classrooms. This coherence provides an opportunity to intentionally link research and theory covered in university courses with classroom applications and, therefore, strengthen the research/theory and practice connections (Darling-Hammond & Hammerness, 2005). However, research in the 1990s highlighted the disconnect between teacher preparation programs and classroom practice where practice trumped research and theory and, at the extreme notion, university preparation programs overemphasized learning and teaching theories at the expense of preparing new teachers for the realities of classrooms. For example, Waghorn and Stevens (1996) reported that while teacher candidates learned relevant theories in university coursework there was little evidence of use or extension of this knowledge in their student teaching. Waghorn and Stevens (1996) proposed that the disconnect is due to lack of communication between education research and classroom practice, the general belief that teaching does not require a theoretical base and application of theories that student teachers learned was mitigated by the practicum settings. Further, part of the "practicum setting" disconnect was due to contradictions and local knowledge or practices of classroom teachers and supervisors that was, at times, contrary to theories covered in university coursework.

The role of clinical or mentor teachers (colloquially sometimes referred to as cooperating teachers) and supervisors in teacher candidates' application of research and theory is a recurrent theme or issue across several studies. Kwenda, Adendorff & Mosito (2017) found that teacher candidates understood the role of theory in practice and the importance of research-based practices, but this knowledge and application were sometimes challenged by clinical teachers who pressured teacher candidates to teach in a specific way based on personal theories of teaching. Landrum, Cook, Tankersley and Fitzgerald (2002) outlined that practitioners' use of research and theory depends on trustworthiness, usability and accessibility of the information and teacher candidates found other teachers and workshops had higher value in these modalities than college courses and research from journals. Allen and Wright (2014) also report on the dislocation between university coursework and practicum experiences where teacher candidate confusion was, in part, due to the lack of clarity around roles and responsibilities among university and school staff.

School Leaders and the Use of Research and Theory in Practice

Both teacher candidates and current classroom teachers report that principals, policy makers and other administrators are important in encouraging faculty to utilize research and theory in their practice (Nelson, Leffler & Hansen, 2009). Nelson et al. (2009) report that many principals and other policy makers are skeptical of research, especially noting the lack of application to their context. They also record several barriers to using research including time, the overwhelming amount of research, accessibility and applicability. Facilitators for using research include graphics, case studies, brief reports and case studies that match the educational context. Reports from research institutes, think tanks, partners and trusted individuals are valued by many administrators although professional intuition and local resources are frequently cited as equally if not more important than research as vital to good decision making (Nelson et al., 2009).

In a national survey of leaders in large school districts Penuel, Briggs, Davidson, Herlihy, Sherer, Farrel and Allen (2017) found that leaders reported high levels of research use (although survey results may be influenced by self-reporting and socially desirable behavior bias). Professional associations are important access avenues and the social and cultural aspects of schools impact research use. Penuel et al. (2017) proposed that long-term research-practice partnerships and the communication of findings in a clear, jargon-free way may help facilitate the application of research in educational settings.

Study Design

This study was conducted as part of a research project funded by the Oregon State University Ecampus Research Fellows Program. Data was collected from teacher candidates enrolled in a hybrid online Masters of Arts in Teaching program with an option in Clinically Based Elementary Education (MAT-CBEE). In the clinically based option program, coursework and teaching experiences follow a "medical model" whereby teacher candidates (called practicum teachers in year one and resident teachers in year two) work in classrooms from the beginning of their teaching preparation program. The work in classrooms is referred to as "clinical practice" rather than "student teaching" and teacher mentors are identified as clinical teachers. Furthermore, working with partner school districts in Oregon, we have developed models whereby teacher candidates are able to be paid either as restricted substitutes, part-time resident teachers or full-time teachers working with a restricted teaching license. This model follows a decade's long development, implementation, and evaluation of teacher residency programs that are present in several states (National Council for Accreditation of Teacher Education, 2010).

Coursework in the MAT-CBEE is organized in a hybrid online format that includes three types of classes. Fully online courses are asynchronous

where all work is conducted online without any required and scheduled face-to-face meetings. Modules are one to two weeks in length and include readings, video recorded lectures and other resources related to the topic. Every module has required discussion forums that are monitored by the instructor and are built to stimulate discussion and reflection of the weekly materials.

Hybrid online courses are the second type of course and include all of the teaching methods courses: math, science, literacy, social studies, art and health. These courses required 3-4 meeting times per 10-week term. Activities and work during face-to-face meetings are planned around integrating coursework materials (e.g., research and theory) into what teacher candidates are seeing and doing in classrooms. For example, in a science methods course, teacher candidates read and watch videos related to model-based inquiry (Windschitl, Thompson & Braaten, 2018) during the week, either practice or observe this strategy during their classroom experience and then reflect and practice more during the face-to-face meeting. All methods courses are co-taught by university instructors and a classroom teacher from the district. One course, classroom management, was taught exclusively by a classroom teacher.

The final course type are practicum and seminar courses, which are also fully online. A portion of the required time for these courses is part of the teacher candidates work in classrooms. There is also a light amount of reflective writing, an occasional paper to read or video to watch and recording of clinical time.

The "clinical" focus of the MAT-CBEE program means that teacher candidates are required to spend extensive time in classrooms. The two teacher candidates in this study followed a clinical program that required them to spend two days per week during year one (and maybe more if they are substituting in the same classroom or school on the other days) and five full days per week during year two. Also, teacher candidates are welcomed as faculty members by the school in which they work and attend grade and school level meetings and professional development opportunities. This goes far beyond more traditional models (and state requirements) that involve some part-time "student teaching" and a minimum of 14 weeks of teaching when the teacher candidate is responsible for all classroom instruction for the mentor teacher.

An advantage and a challenge for the MAT program and teacher residencies is that program faculty and staff work closely with participating school district partnerships in the design and implementation of many program components including teacher candidate recruitment and acceptance, recruitment of clinical teachers, teacher candidate clinical experiences and design and co-teaching of program courses.

We chose to study teacher candidates in their second year of the MAT program. In the second year, teacher candidates are referred to as resident teachers and are assigned to work in a classroom full-time under the close supervision of a clinical teacher. Each clinical teacher mentors two resident teachers spending half time with each candidate. Resident teachers are responsible for all classroom activities (routines, planning, management, teaching, assessment) with significant assistance where needed by the clinical teacher.

Our initial study design involved observation of the resident teachers during classroom instruction followed by a semi-structured interview. Because of complications in getting permission to observe in school district classrooms, we chose to narrow our data gathering to the semi-structured interview only. We sent requests to all teacher candidates (n=11). Three (n=3) replied to the invitation of which one withdrew from the program prior to the interview. In-person interviews were conducted by a paid research assistant who submitted transcripts of the interviews to a third party who numbered the interview, which de-identified the interview transcript for both the principal investigator and the interviewer. Each interview took approximately one hour.

Our interview questions (listed below) were constructed around two research questions:

1. How do teacher candidates manifest the connection between research, theory and practice in their course and clinical work?
2. How do university hybrid online and fully online course materials and activities provide opportunities for students to apply research and theoretical knowledge to practice?

Two interview questions (4&5) addressed research question one by asking about teacher candidates' perceptions of evidence-based teaching practice. Three interview questions (1-3) addressed the second research question by asking teacher candidates to make specific connections between teaching practices and coursework. We did not ask about any specific course or academic year, but the teacher candidates recalled instances from both year one and two of their coursework. Two follow up questions were included: we asked teacher candidates what more they would like to learn about theories and research; we anticipated that this information might be useful for updating or redesigning coursework. We also asked teacher candidates if they wanted to share anything else to provide an opportunity for gathering general information about their teaching and learning experience thus far.

The two interview transcripts were read by the principal investigator. The transcripts were highlighted and annotated to identify important details related to the intersection between the interviewee's teaching practice and their coursework. From highlighting and annotation, major themes were identified.

Interview Results

Question 1. From your OSU coursework, can you recall some examples of where the activities, assignments or discussion forums addressed the application of research and theory and classrooms and student learning?

Both of the teacher candidates mentioned the work of Lev Vygotsky as one of the theories that was presented in their course work. Teacher candidate 2 also included "Piaget's Theory of Learning." Teacher candidate 1 expanded their response indicating that theories are helpful in guiding their instruction, providing support and helping to look at their own assumptions about their teaching. Teacher candidate 1 also reflected upon two other frameworks: "nurse's syndrome," which according to the teacher candidate is a focus on maintaining high student achievement and Cheuk's NGSS model, which is a standard-based framework used to integrate science, literacy and math instruction (Cheuk, 2013). Teacher candidate 1 also noted that theories help teachers to adjust instruction, meaning that theory provides support for teachers when they find that some instructional strategy may not be producing the anticipated learning goals and need to make a shift in their practice. Teacher candidate 1 also noted that "adjusting instruction" is also informed by practice-based input such as gaining more teaching experience and mentoring.

Question 2. How has your OSU course work provided you with opportunities to apply research and theoretical knowledge to understand the needs of diverse learners?

Teacher candidate 1 reflected that OSU coursework provided practical resources for teaching. They also outlined that coursework has provided guidance on how to adapt instruction for struggling students. Teacher candidate 1 gave an example where coursework learning assisted them in learning and teaching content specific vocabulary.

Teacher candidate 2 identified five specific items learned from coursework that have impacted their teaching: 1. lessons based on the workshop model, which is a specific instructional strategy that involves a sequence of short lecture, group practice, individual practice and back to group practice; 2. encouraging students to share ideas using pair and sharing strategies; 3. scaffolding instruction. Examples of scaffolding instruction

include building from simple to more complex examples and/or from concrete to more abstract concepts. Instructional scaffolding can include using visual aids, multiple examples and using metaphors and analogy; 4. the importance of student-centered classrooms and; 5. use of sentence stems where teachers write out most of a sentence and then have students complete the "stem." An example of a sentence stem frequently used in science is "My claim is _____, which is based on the _____ and is supported by the evidence because _____." Teacher candidate 2 grouped each of these items under the umbrella of allowing students to have more time to work on specific instructional and learning tasks and the importance of students talking with each other. They also provided a specific instructional example for a student who struggles with being overwhelmed by assignments. Specifically, the teacher candidate provides one-half of any task to the student who then turns it in to the teacher, the teacher and students discuss any issues, the teacher provides encouragement and support and then the student moves onto the second part of the task.

Question 3. From your clinical work, can you recall an instance(s) where what you learned in OSU coursework immediately transferred or was applicable to your teaching?

Teacher candidate 1 used a science (methods) course to illustrate one example where OSU coursework transferred to teaching practice. The science (methods) course was co-taught with an OSU instructor and second grade classroom teacher who was leading the development of standards-based curriculum in the school district. Teacher candidate 1 was teaching the same grade and the practical examples used by the course instructor were immediately used by the teacher candidate. In a follow-up question used to bring about more examples, teacher candidate 1 also mentioned "child development," "more of the pedagogy theories," "more of what is diversity and inclusion" and "how to decorate the classroom" that provides a "baseline to go by" where they seemed to indicate that coursework provided a starting point from which they could add their own signature.

Teacher candidate 2 also reflected on the importance of learning about "great ideas for setting up our classroom at the beginning of the year," which was part of the first class taken during the program. A second example from teacher candidate 2 included learning about math workshop in a course ("was very helpful") where they learned how to "facilitate rotations, three act tasks, gallery walks and math congress." This example was also connected with a school district classroom teacher who was the co-instructor for the math method courses.

Question 4. What does evidence-based practice mean to you?

Question 5. Which resources do you primarily use to identify evidence-based practices?

In questions 4 and 5 we asked teacher candidates about their ideas of evidence-based practices and the resources they used to identify or find examples of evidence-based practices. Teacher candidate 1 defined evidence-based practices as a strategy that has been done in the past with groups that are representative of all classrooms. Teacher candidate 2 identified evidence-based practices as research based and made a personal connection to "something that I think is working in my classroom and have evidence of that." Teacher candidate 2 also linked textbooks as an example of something that is evidence-based.

Question 6. What more would you like to learn about the theories and research on teaching and learning?

Teacher candidate 1 reported interest in "a happy marriage between best practices, theory, and what is going on in the classroom or in the district." They also indicated the importance of the need to understand learning progressions and what students did and learned in previous grades to inform their practice. Teacher candidate 1 also expressed an interest in learning from coursework more about where to find information on child development, especially cognitive development

and "what students already can do." Teacher candidate 1 used the term "Goldilocks" level for their teaching describing a need to be advised about modifying their instruction so that it was not too hard or too easy.

Teacher candidate 2 expressed specific interest in learning more about behavioral strategies as, in their clinical setting, they reported that many students with behavioral issues including ADHD, emotional disturbance and anxiety.

Question 7. Anything else to add?

We concluded the interview by providing the teacher candidates an opportunity to share other information. Teacher candidate 1 discussed that they had received conflicting guidance on instruction from the clinical teacher and university supervisor, especially where rubrics were used by the supervisor during observations.

"Sometimes, for some of us, there may be conflicting information where your cooperating teacher is saying you are doing great and then when a supervisor sees us they base that on the rubrics and they say they do not see it there. However, when you talk to the cooperating teacher, they say our rubrics read differently."

In the hope of increasing their marketability as a future teacher, teacher candidate 1 also suggested that the program make more of a connection with the school district. Teacher candidate 2 also discussed the lack of coherence between the teacher preparation program and the school district in which they worked – "course instructors do not seem to know much about school district curriculum." Teacher candidate 2 also voiced concern over whether university instructors understood the time commitment required for classroom teaching, especially curriculum development, and coursework. They suggested more collaboration between the university instructors and district teachers.

Interpretation of Interview Data

The big picture that we wanted to explore in this study was the usefulness and applicability of university courses to the teacher candidates as they were engaged in a full-time clinical experience. A part of the picture is the question of whether candidates were able to apply research and theory to their classroom practices. Another question related to teacher candidates' knowledge of evidence-based practices includes resources that are used to identify such practices.

Based on interview data we infer that both teacher candidates have limited recall of teaching and learning research and theory and the application to classroom instruction.

Both teacher candidates remembered only Piaget and Vygotsky's work on learning. Teacher candidate 2 indicated that Piaget's theories are best represented as "students learn by doing activities" whereas both candidates identified classroom practices that exemplified application of Vygotsky's zone of proximal development including scaffolding and "I do, we do, you do." Both candidates failed to identify the specific course where they gained this information or experience and we suspect that these answers are primarily molded by their work with classroom teachers and not course instructors. This is supported by a statement made by teacher candidate 1 indicating that application of theory and research "comes with experience and help from school teachers;" they did not mention university instructors or coursework. Also, teacher candidate 1 referred to a science integration tool that has no research base (but is never-the-less useful) as an example of research and theory, thus confounding tools with research/theory. Teacher candidate 1 also told the story of "nurse's syndrome" as an example of the application of research and theory that is a concept or instructional approach that they "use" in making students accountable. This example does not seem to be part of any teaching or learning theory or framework and is likely a personal theory that guides the teacher candidate's instruction. The limited recall and application may be due to the absence of these opportunities in course activities, but may also be part of being a new teacher with limited classroom experience. More research into

specific course content is required to further investigate this question.

Willingham (2018) states that many teachers, both new and seasoned, are unfamiliar with basic educational psychology, learning theories and child development principles. Compounding this is the resiliency in classroom instruction of misconceptions about learning such as learning styles, which has no research basis yet is still referenced and used by a majority of teachers. Willingham continues that teaching is largely improvisational and build upon "craft knowledge" and teachers own beliefs on cognition, emotions, motivations and values. Further, the tentative and evolving nature of theories as more data to collect and the sheer number of competing theories render learning and application in classrooms a formidable task.

Hemsley-Brown and Sharp (2004) propose that teachers' observed lack of knowledge in research and theory represents a fundamental separation between a culture of research and practice; researchers are more interested in knowledge growth whereas teachers want applicability. Orchard and Winch (2015), however, highlight that teachers need educational research and theory to understand what they are doing and why they are doing it. Research and theory provide avenues for teachers to think intelligently about how to improve teaching and learning. Wilson and Peterson (2006) add that research on learning and teaching have guided all educational reforms and, therefore, teachers need to have knowledge of the basis for what they do in classrooms, and perhaps challenge initiatives that may not be consistent with their own professional knowledge. Wilson and Peterson continue that teaching is intellectual work with deep ethical and moral components requiring a variety of strategies, reflection and study (e.g., action research). Research and theory are fundamental to these processes.

Both teacher candidates are strongly influenced by classroom teachers both as mentor clinical teachers and course instructors.

Because of the clinically-based emphasis of the teacher preparation program, teacher candidates spend copious time with mentor classroom teachers and therefore are strongly influenced by their mentors perhaps beyond university coursework.

The data that supports the influence of classroom teachers includes teacher candidate 2's common reference to university courses that are co-taught with classroom teachers – these seem especially valuable to them. Teacher candidate 1 related their connection with a course that was co-taught by a district classroom teacher who was also developing district science curriculum. Both teacher candidates reflected on the importance of learning about setting up a classroom, which was covered in a course taught solely by a classroom teacher as well as being a focus of year one clinical practice guided by classroom teachers and district administrators.

This inference is also supported by teacher candidates' response to the question about where they find examples of evidence-based practices; they indicated these resources were obtained from their co-workers through sharing of books. Teacher candidate 1 reported using other resources including peer-reviewed materials and relied on their clinical teacher and reported being "lucky to have been situated with a Master teacher." Further support comes from the teacher candidates' responses to the request for additional information where they explicitly asked for more connection of university instructors with the district classroom teachers and curriculum. We postulate that they anticipate that it is the university instructor's role to make this connection and adjust the curriculum to fit the school district constraints. This is supported by teacher candidate 1's need for the connection to make them more marketable to school districts, hence creating the hierarchy of school district before university needs. Also, teacher candidate 2 clearly states their lack of knowledge on the demands from the district in writing curriculum and the need to make this accommodation in their instruction.

Teacher candidates deferring to the advice of mentor classroom teachers is consistent with other research into the connection between research and theory and practice. Waghorn and Stevens (1996) report that student teachers have ideas and theories about how they want to teach, but those are frequently mitigated within practicum settings. Results by Landrum, Cook, Tankersley and Fitzgerald (2002) indicated that new teachers found teacher colleagues and workshops more trustworthy, useful and accessible than college courses and research journals.

Implications

To better understand these limited results, we need to establish if research and theory is a mainstay of university coursework and in which courses. Given that the teacher candidates are at the beginning of their professional journey it is not surprising that they have limited recall of specific ideas in educational research and theory including the application to classroom practice. On the other hand, since the teacher candidates have recently completed most of their university coursework one might expect greater recall if they indeed had been exposed to more contemporary ideas, theories and research. One interpretation of the data is that there is a strong undercurrent of the importance of classroom practice over educational research and theory and that the classroom practice is learned from and conveyed by the classroom teachers that they interact with on a nearly daily basis. The importance of clinical practice is supported by the immersion promoted by the school district and individual schools that teacher candidates are members of the faculty and at least partially take on full teacher duties in both years. This finding is consistent with the clinically-based foundations of the teacher preparation program that values and promotes time working with children from the start of the program and the importance of the wisdom of practice delivered by current classroom teachers.

There are two areas of concern when teacher preparation is dominantly dictated by school districts and classroom teachers with a lower and possibly nonexistent role of university coursework and research expertise. First, teacher candidates who navigate this type of program may lack a diversity of experience to work in other districts that are not part of the partnership. For example, if teacher candidates are exposed to only one set of practices for classroom management and not taught fundamentals that underlay student development then it may be more difficult for teacher candidates to be hired or move to another school district. From an instructional perspective, if teacher candidates learn one math pedagogical model that is idiosyncratic to the school district and not widely practiced at the expense of being exposed to teaching and learning fundamentals, their future teaching may be jeopardized if curriculum changes and/or teachers change jobs.

A second concern is the potential overreliance on the expertise of a clinical mentor teacher who, though may be a good clinician, lacks the knowledge and application of research and theory or, possibly even more detrimental, eschews the use of research and theory in classroom practice. For example, despite the lack of research that supports learning styles (Willingham, Hughes & Dobolyi, 2015) many teachers still subscribe to a learning styles approach to their teaching. We have personally witnessed this in school districts where both administrators and classroom teachers subscribe to this (and other) frameworks that lack strong research support.

Limitations and Future Directions

A limitation of this study was the small sample (n = 2). The small size hinders the ability to make solid assertions, inferences and implications. More data from both year one and two teacher candidates and perhaps different school districts would help to support and expand on some of the results from this study and perhaps bring new ideas to light.

Future studies should include a review of program syllabi to determine the courses that specifically cover research and theory in teaching and learning and which frameworks, theories and models are used. This data would better frame the responses

and allow for more specific lead-in and follow-up questions to better understand how coursework is connected, influences and is influenced by the teacher candidates' classroom teaching experience.

The interview protocol used in this study had limitations and could be improved. Our questions asked about "evidence-based" practices when we meant "research-based." This may have been confusing for the teacher candidates and influenced their answers to these questions. We might also consider developing questions around specific courses that have a focus on research and theory and classroom practice. Finally, we might consider developing specific questions around the role of the mentor teacher and their knowledge (from the perspective of the teacher candidates) or research and theory and how they use this information in their instruction.

The conclusion reached in this study that mentor teachers strongly impacted these teacher candidates' instructional behaviors, perhaps above coursework and other university activities is noteworthy, and requires additional study. This finding is not a surprise; teacher candidates spend a lot of time in schools and classrooms, which is a priority and goal for the "clinically-based" program. However, we know that some mentor teachers subscribe to instructional frameworks (e.g., learning styles) that have limited research support. We also know that some of the clinical teachers are resistant to changing their instructional stance, especially if they perceive these strategies as "working." A recommendation is to establish a working group of university instructors, researchers, school district teachers and administrators that is focused on application of contemporary ideas, models, frameworks and theories to classroom practice. Results from this effort should be used to inform university coursework and integrated into current classroom practices where possible.

References

Allen, J. M., & Wright, S. E. (2014). Integrating theory and practice in the pre-service teacher education practicum. *Teachers and Teaching, 20*, 136-151.

Behrstock-Sherratt, E., Drill, K., & Miller, S. (2011). *Is the supply in demand? Exploring how, when and why teachers use research*. Washington, DC: American Institute for Research.

Cheuk, T. (2013). *Relationships and convergences among the mathematics, science, and ELA practices*. Palo Alto, CA: Stanford University.

Cognitive Science. (2018). In Stanford Encyclopedia of Philosophy. Retrieved from https://plato.stanford.edu/entries/cognitive-science/#Concepts

Darling-Hammond, L., & Hammerness, K. (2005). The design of teacher education programs. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world* (pp. 390-441). San Francisco, CA: Jossey-Bass.

Drill, K., Miller, S., & Behrstock-Sherratt, E. (2013). *Brock Education,Teachers' Perspectives on Educational Research, 23(1)*, 3-17.

Hanford, E. (n.d.). Testing Teachers. *American RadioWorks*. Audio retrieved from http://americanradioworks.publicradio.org/features/testing_teachers/index.html

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. London: Routledge.

Hemsley-Brown, J. V., & Sharp, C. (2004). The use of research to improve professional practice: A systematic review of the literature. *Oxford Review of Education*, 24 (4), 449-470.

Immordino-Yang, M. H. (2018, November). How we can use brain science to inform educational innovation: First – understand how relationships matter. *USC Rossier Magazine*, *Fall/Winter 2018*, 23-24. Retrieved from https://rossier.usc.edu/magazine/fall-winter-2018/how-we-can-use-brain-science-to-inform-educational-innovation/

Kwenda, C., Adendorff, S. & Mosito, C. (2017). Student-teachers' understanding of the role of theory in their practice, *Journal of Education*, *69*, 139-159.

Landrum, T. K., Cook, B. G., Tankersley, M., & Fitzgerald, S. (2002). Teacher perceptions of the trustworthiness, usability, and accessibility of information from different sources. *Remedial and Special Education*, *23*(1), 42-48.

McDonnough, J. T., & Matkins, J. J. (2010). The role of field experience in elementary preservice teachers' self-efficacy and ability to connect research to practice. *School Science and Mathematics*, *110*(1), 13-23.

National Academies of Science, Engineering and Medicine (2018). *How people learn II: Learners, context and cultures*. Washington, DC: The National Academies Press. https://doi.org/10.17226/24783

National Academies of Science, Engineering and Medicine (2000). *How people learn: Brain, mind, experience, and school*. Washington, DC: The National Academies Press.

National Council for Accreditation of Teacher Education (2010). *Transforming Teacher Education through Clinical Practice: A National Strategy to Prepare Effective Teachers*. Washington, D.C.

Nelson, S. R., Leffler, J. C., & Hansen, B. A. (2009). Toward a research agenda for understanding and improving the use of research evidence. Portland, OR: Northwest Regional Education Laboratory. Retrieved from https://educationnorthwest.org/sites/default/files/toward-a-research-agenda.pdf

Orchard, J., & Winch, C. (2015). What training do teachers need? Why theory is necessary to good teaching. *Impact*, *22*, 1-34.

Penuel, W. R., Briggs, D. C., Davidson, K. L., Herlihy, C., Sherer, D., Hill, H. C., Farrel, C., & Allen, A-R. (2017). How school and district leaders, access, perceive and use research. *AERA Open*, *3*(2), 1-7.

Waghorn, A., & Stevens, K. (1996). Communication between theory and practice: How students teachers develop theories of teaching. *Australian Journal of Teacher Education*, *21*(2), 70-81.

Weston, M. E., & Bain, A. (2014). Bridging the research-to-practice gap in education: A software-mediated approach for improving classroom instruction. *British Journal of Education Technology*, *46(*3), 608-618. doi:10.1111/bjet.12157

Willingham, D. T. (2018). Unlocking the science of how kids think. *Education Next*, *18*(3), 43-49.

Willingham, D. T., Hughes, E. M., & Dobolyi, D. G. (2015). The scientific status of learning styles theories. *Teaching of Psychology*, *42*, 266-271.

Wilson, S. M., & Peterson, P. L. (2006). *Theories of learning and teaching. What do they mean for educators.* NEA Working Paper. Washington, DC: National Education Association.

Windschitl, M., Thompson, J., & Braaten, M. (2018). *Ambitious Science Teaching.* Cambridge: Harvard Education Press.

Wolfe, P. (2010). *Brain matters: Translating research into classroom practice*. (2nd ed.) Alexandria, VA: ASCD.

About the Research Unit at Oregon State Ecampus

Vision

The Ecampus Research Unit strives to be leaders in the field of online higher education research through contributing new knowledge to the field, advancing research literacy, building researcher communities and guiding national conversations around actionable research in online teaching and learning.

Mission

The Ecampus Research Unit responds to and forecasts the needs and challenges of the online education field through conducting original research; fostering strategic collaborations; and creating evidence-based resources and tools that contribute to effective online teaching, learning and program administration.

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