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Preservice Teachers Identifying High Leverage Practices Within Virtual Field Experiences

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An exploratory, within-subject study examined the extent to which 34 preservice teachers noticed the implementation of high-leverage practices (HLPs) in special education classrooms within three virtual field experiences (VFEs). The purpose of this study was to examine the extent to which preservice teachers could accurately identify HLPs across a variety of classroom settings that embedded different instructional models (i.e., explicit teaching versus inquiry-based models). Overall findings indicated that preservice teachers consistently observed strategies to promote active engagement with high accuracy and observed the implementation of cognitive strategies and scaffolded instruction with low accuracy. Furthermore, preservice teachers identified HLPs with this highest accuracy within classrooms using explicit instructional settings. Implications for teacher educators on how to scaffold VFEs to promote accurate identification of HLPs across settings are provided.

In fall 2020, teacher preparation programs around the world were forced to create and develop alternative field experiences as schools closed their doors to preservice teachers due to safety risks associated with the COVID-19 pandemic. Many programs also moved the majority of their preparation courses to a virtual platform and faced many challenges to developing authentic learning experiences. While the use of video-based modeling and analysis (Nagro et al., 2017) is not by any means a new form of instructional practice in teacher preparation programs, it quickly became one of the only ways in which candidates could observe, decompose, and learn to operationalize concepts taught while isolated from aligned field experiences (Vu & Fisher, 2021).

The analysis of videos in teacher preparation serves as an opportunity to systematically introduce the concept of noticing to preservice teachers (Santagata et al., 2021). The concept of noticing, as a process by which teachers can attain to and observe specific practices, is grounded in a cognitive psychological perspective (Sherin et al., 2011). This study balanced that perspective with an expertise-related perspective (Berliner, 1988) that identifies the expertise and experience of a teacher as the precursor of one's ability to notice instructional elements during classroom teaching.

The field of special education has specifically defined 22 effective elements of classroom teaching and student learning, referred to as High Leverage Practices (HLPs; McLeskey & Brownell, 2015). Teacher educators have a responsibility to expose preservice teachers to opportunities in which they can observe the HLPs being implemented in classroom settings and help them attain to the implementation of these practices across settings. Examining ways in which teacher preparation programs can do this effectively through hybrid or online learning is warranted.

The purpose of this study was to examine the extent to which preservice teachers could accurately identify HLPs across a variety of inclusive classroom settings that embedded different instructional models (i.e., explicit teaching versus inquiry-based models). The classrooms included both students with and without disabilities receiving their content area instruction in a general education setting with the support of general and special education teachers. Specifically, the study sought to explore which HLPs preservice teachers observed most accurately and how these observations may differ across instructional settings.

Literature Review

As with many fields, teacher preparation programs in higher education have experienced drastic shifts in the preparation and curriculum focus of their programs, searching for ways to balance preservice teachers' knowledge and practice (Zeichner, 2010). Over the last decade, researchers in the field of teacher education have emphasized the need for a stronger practice-based approach (Ball & Forzani, 2011; Brownell et al., 2010; Grossman et al., 2009). This emphasis on practice-centered learning was in response to the increasing accountability for student progress and the widespread assumptions about teacher quality (National Council for Accreditation of Teacher Education, 2010). More specifically, special education teacher preparation programs began to redesign and

more effectively prepare teachers as service delivery models in the field began to change (Brownell et al., 2010). As the number of students with disabilities receiving instruction in general education settings increased, additional questions surfaced over the specialized roles and practices required of high-quality teachers.

Across many disciplines, researchers began to seek answers to questions raised about the most effective teacher preparation approaches, with the intention of improving the overall quality and practice of teachers (Ball & Forzani, 2011; McLeskey & Brownell, 2015; Windschitl et al., 2012). Given the unique academic and behavioral needs and outcomes for students with disabilities, researchers designed a set of core practices specific to developing teachers to support students with disabilities (McLeskey & Brownell, 2015).

The initial outcome from this ongoing work was a list of 22 HLPs approved for use in teacher preparation in 2016 by the Council for Exceptional Children (CEC). Four aspects of practice help to organize the HLPs: (a) Assessment, (b) Collaboration, (c) Social/emotional/behavioral, and (d) Instruction.

HLPs related to the Assessment domain include analyzing student data and articulating assessment data to parents. These practices make up three of the 22 practices. An additional three practices are related to the Collaboration domain and address the communication that exists between teachers, support staff, families, and related agencies. The six Social/Emotional and Behavioral HLPs consist of a range of practices from establishing a consistent, respectful, and organized classroom environment to conducting functional behavioral assessments for students with more moderate needs.

The greatest number of HLPs make up the Instructional domain. Twelve practices are recommended to support instruction. These recommendations include such research-based practices as explicit instruction, flexible grouping, assistive and instructional technology, and intensive intervention. See CEC (2016) for the full list of recommendations for each of the four domains.

Following the identification of these HLPs, teacher educators began to examine the most effective methods for training preservice teachers to notice, operationalize, and implement these practices into their own teaching. Teacher educators agree that grounding this learning within the context of authentic field experiences is critical (American Association of Colleges of Teacher Education, 2010; Brownell et al., 2019).

Furthermore, work by Grossman et al. (2009) identified three phases of pedagogy to instruct core practices. First, their work highlighted the importance of representing the practice to novice teachers through some form of modeling. The second phase of the model focuses on allowing the preservice teachers opportunities to decompose practice into smaller components. The third aspect of their pedagogical model is defined as approximations of practice. Approximations of practice are opportunities for students to engage with and reflect upon the practices.

Brownell et al. (2019) recommended a similar framework for preparing teachers to use HLPs, emphasizing both the modeling phase and the need for students to engage and analyze the use of the practices. Their framework emphasizes the importance of feedback and the identification and implementation of *interleaving practices*.

Dunlosky et al. (2013) defined *interleaving* as the process by which teachers implement one or more of the practices simultaneously during their instruction. For example, a teacher may be providing explicit instruction while also promoting active engagement and using assistive technology. In addition to the four features of their framework, Brownell et al. (2019) also highlighted the need for repeated and scaffolded practice, allowing the complexity of the learning to increase slowly over time.

Central to both of these recommended pedagogical models, is the need for preservice teachers to notice and make sense of the interaction of HLPs. Noticing is a practice by which a teacher can identify practices and observe a specific connection within a teaching environment (Barnhart & van Es, 2015; Hamre et al., 2012). Often, preservice teachers are in classrooms for the purpose of observation but may not know what to focus their attention on and how to interpret interleaving practices as well as more experienced teachers (Brownell et al., 2019). Bogert et al. (2014) found through their work on examining the visual perceptions of teachers, that experienced teachers can more easily distribute their noticing of practices across the span of the entire classroom. Their work found that novice educators are more likely to focus on irrelevant events and focus on only a small portion of the classroom.

Both frameworks by Grossman et al. (2009) and Brownell at al. (2009) suggest that providing opportunities for preservice teachers to decompose observations in a systematic, scaffolded way will promote attention to effective practices rather than superficial aspects of the instructional environment. Creating these opportunities where preservice teachers can learn to observe and notice effective teaching practices may also result in increased implementation of these practices in their own teaching (Hamre et al., 2012; Jamil et al., 2015; Wiens et al., 2021).

Despite the robust suggestions from the research community on the continuum of pedagogy needed to prepare preservice teachers, implementation can still be challenging with increased remote learning and limited school access for our preservice teachers (Rice et al., 2020). These are challenges online and hybrid teacher preparation programs have faced for some time (Vu & Fisher, 2021), which has led to research developing options for authentic field experiences in online coursework (Burns, 2011; Geiger & Dawson, 2020).

Virtual Field Experiences

With the increase in online and hybrid offerings in teacher preparation, the field has seen an increase in the use of Virtual Field Experiences (VFE; Burns et al., 2016; McGarr, 2020; Vu & Fisher, 2021). VFEs are authentic opportunities for preservice teachers to engage in practice without needing access to a school-based setting. Another benefit is the flexibility

offered by allowing preservice teachers the opportunity to review the teaching experience multiple times and for all students to have a common experience to reflect upon together (Tripp & Rich, 2012).

Billingsly and Scheuermann (2014) described three ways that VFEs are typically embedded in a course. One type of virtual experience is when video recordings of classrooms are created and viewed remotely. A second type of VFE uses a live video feed from a K-12 classroom that preservice teachers observe synchronously and remotely. The third type of virtual experience utilizes simulated models with virtual teachers. Billingsly and Scheuermann highlighted the strengths and weaknesses of the three models. The current study focused on a series of VFE activities in which videos of authentic classroom teaching were integrated into online coursework comprising learning content, observation, application, and reflection activities.

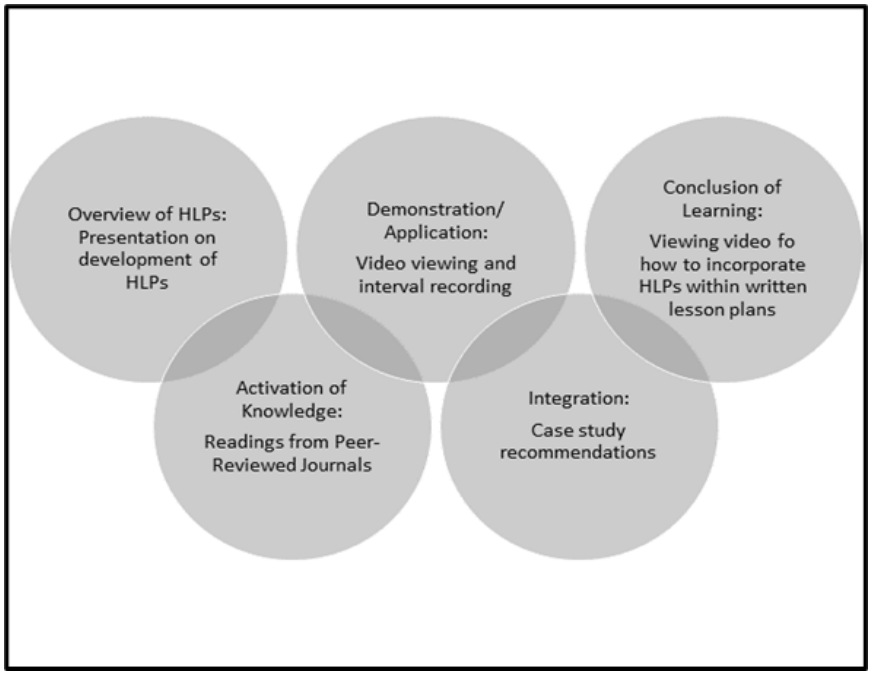
Elements of Virtual Field Experiences

VFEs providing teaching models that include viewing, reflecting, and application of skills learned from the observation have been shown to improve instructional skills and knowledge among preservice teachers (Nagro et al., 2017; Santagata et al., 2007). The current VFE was created within an online hybrid teacher preparation program and followed a six-part consistent design model inspired by Merrill's (2002) instructional design principles. This approach to designing the VFE was chosen specifically based on how it supported the principles of both Grossman's (2009) and Brownell et al.'s (2009) frameworks, including opportunities for explicit modeling, decomposition of practice, and identification of interleaving practices.

The VFE was created in a way that required linear navigation of the candidates through the following phases of instruction: (a) Overview of HLP, (b) Activation of Knowledge, (c) Demonstration/Application, (d) Integration, and (e) Conclusion of Learning (see Figure 1).

The asynchronous video modeling portion of the VFE occurred during the demonstration phase. These open-access videos of teaching were specifically designed to highlight one HLP that had been introduced more in depth during the activation phase of the model. The videos were specifically chosen because of the interleaved practices that were implemented, often simultaneously, while the HLP from the activation phase was highlighted. Preservice teachers in this study participated in three VFEs, each highlighting a different HLP during the activation phase of learning.

Figure 1
The Six Phases of the Virtual Field Experience



Current Study

Traditionally, special education teacher preparation programs emphasize explicit instructional approaches to teaching, and preservice teachers are not always exposed to classrooms using more inquiry-based methods (Ricommini et al., 2017). However, as more educational standards and policies emphasize the need for increased conceptual understanding and generalization of skills, there is a shift to a more constructivist approach to teaching in many school districts (Huinker, 2018). Understanding that HLPs can be implemented in both settings and operationalizing what they look like in each setting is key to preservice teachers' ability to implement and reflect upon their effectiveness (Brownell et al., 2019).

The research questions in this study included the following:

1. To what extent do preservice teachers notice HLPs being implemented during instruction, as compared to expert teachers?
2. Is there a difference in the extent to which preservice teachers observe HLPs during explicit and inquiry-based instruction? Small group vs. whole group?

Theoretical Framework

A teacher's ability to notice specific practices is commonly accepted as a measure of their professional expertise (Berliner, 2001). Grounded in a cognitive psychological perspective (Van Es & Sherin, 2002), noticing is a process that develops over different stages of cognition and reflection, providing opportunities for teachers to attain and observe specific teaching practices (Sherin et al., 2011). Teachers are confronted with an overwhelming amount of sensory data at any one moment, and therefore, training teaching professionals to make sense of and notice specific practices or events can assist them in making quick decisions in their own practice (Sherin & Star, 2011).

The analysis of videos in teacher preparation serves as an opportunity to systematically introduce the concept of noticing to preservice teachers (Santagata et al., 2021). This study balanced that perspective with an expertise-related perspective (Berliner, 1988) that identified the expertise and experience of a teacher as the precursor of their ability to notice instructional elements during classroom teaching. This perspective suggests that the more knowledge teachers have of a practice, the more likely they are to identify it within the complex nature of classroom settings.

Methods

Participants and Setting

The current study took place in a graduate special education methods course at a Midwestern US university. The graduate course included candidates pursuing a master's degree in special education and candidates seeking an initial teaching license. Thirty-four preservice teachers (25 female and nine male) participated in the study and were enrolled in the methods course. The course was the first in a series of four methods courses that participants would take within the program. All the participants were completing coursework to receive their special education teaching credential.

Twenty of the participants worked in an education setting as a full-time substitute or paraprofessional, or they held a valid teaching credential in another field (i.e., physical education, science, or English). The remaining 14 participants did not work in educational settings and were pursuing their initial teaching credential. Participants had not been exposed to VFEs in prior coursework or within previous online programs. The objective for the course was to introduce novice special education teacher candidates to the 22 HLPs for special education (McLeskey et al., 2017).

Using a within-subjects design, this study took place over an 8-week period. A within-subjects design allows all participants to receive the intervention, compared to a between-subjects design, where only one group of participants would have access to the intervention (Greenwald, 1976). With only one section of this course offered each term, this design allowed all preservice teachers access to this learning opportunity. Preservice teachers enrolled in the course participated in

three VFEs and engaged in activities that allowed the research team to analyze candidates' ability to notice HLPs across a variety of educational settings (i.e., explicit, inquiry-based, and small group instructional settings). Furthermore, the research team collected descriptive data on the candidates' recommendations for use of HLPs within case studies following the VFEs.

Description of Virtual Field Experiences

Prior to engaging in the first VFE, preservice teachers received a short faculty-led presentation introducing HLPs. The presentation described the history behind their development, provided information on the four domains (assessment, collaboration, instruction, and social/emotional), and introduced each HLP using descriptions from the CED and CEEDAR (Collaboration for Effective Educator Development, Accountability, and Reform) Center website, www.highleveragepractices.org. Preservice teachers engaged in three VFEs throughout the 8-week online course. The VFE's were each designed to incorporate all the phases of instruction described in Figure 1.

Table 1 provides a summary of the activities the preservice teachers engaged with during each phase across the three VFEs. The Overview and Conclusion of Learning were opportunities for students to engage with content related to HLPs but did not require students to respond in a systematic way. For this reason, data were not collected on participant learning during these phases. The Integration phase provided students with a case study and an opportunity to collaborate with peers in the course to determine the most effective HLPs to implement to support the student in the given scenario. Given the collaborative nature of learning activity, data from this phase were not collected. To answer the research questions of this study, data from Phases 2 and 3 were collected. See Table 1 for an overview of activities at each phase of the three VFEs.

The VFEs were the only three modules within the methods course that discussed or referenced HLPs. The remaining weeks of the course highlighted concepts such as lesson planning, individual education plan (IEP) writing, and the special education process/eligibility. During Weeks 2, 4, and 6 of the 8-week course, the candidates participated in VFEs each time, completing all the six phases of learning depicted in Figure 1.

Data Collection

Participants used 1-minute interval coding to document the HLPs observed over eight, 1-minute intervals. A spreadsheet containing all 22 HLPs was created with eight cells for each 1-minute interval (see Appendix). If students observed the HLP during the 1 minute, they placed an X in the representative cell in that row. Each interval column could have multiple HLPs observed within the same 1-minute period. If a student did not observe an HLP within the interval, they simply left the cell blank.

Table 1
Overview of VFEs

Learning Phase	VFE 1	VFE 2	VFE 3
Overview An overview of all 22 HLPs and links to trainings provided by the CEEDAR center. Participants operationalize HLPs together.	Participants could review HLP overview module.	Participants could review HLP overview module.	Participants could review HLP overview module.
Activation Participants were assigned 2-3 readings highlighting one specific HLP.	Highlights HLP 16, *Explicit instruction*	Highlights HLP 18, *Strategies to promote active student engagement*	Highlights HLP 20, *Provide positive and constructive feedback to guide students' learning and behavior*
Demonstration Participants watched an 8-minute video clip and completed HLP interval recording sheet.	Classroom video highlights explicit instruction to teach 2nd grade vocabulary.	Classroom video highlights inquiry-based approach to teach 6th grade math.	Classroom video highlights small group instruction in 1st grade math.
Integration Participants were given a brief case study and in small groups had to identify effective HLPs to support the student in the scenario.	Varied	Varied	Varied
Conclusions of Learning	Short video on how to include explicit instruction into lesson plans.	Short video on how to include engagement strategies in lesson plans.	Short video on how to plan for good feedback during lesson planning.

A group of experts was compiled to also complete the interval coding for each of the three videos included in the VFEs. The expert group was selected based on their knowledge of HLPs and implementation in classroom practice as observed by the primary researcher. The expert group included the primary researcher, two tenured special education classroom teachers, and one graduate student in school psychology. The school psychology graduate student was not observed implementing practices in classrooms but read several materials on HLPs and worked with the group to operationalize each practice. Prior to interval coding, each practice was operationalized and defined by the expert team and recorded in a coding dictionary.

Before the individual coding of HLPs began, the expert group met and watched a short video example together. We completed the interval coding and then conducted a reliability check to ensure they were coding practices accurately. This training activity yielded a 92% agreement among the expert group. The practice most commonly over-observed

during the training by experts was the use of scaffolded instruction. The team worked to clarify the operational definition of scaffolded instruction and then reviewed examples within the video together.

The experts completed individual coding of the three, 8-minute videos used within the VFEs. To determine interrater reliability, the total number of agreements among the expert team was tallied. Three of the four members having a similar observation in an individual cell defined an agreement. The total number of agreements was then divided by the total number of cells on the interval coding document for the three observations (eight cells x 22 HLPs multiplied by three videos = 528). This produced an interrater reliability percentage of 90.5% (478 agreements/528 possible observations).

The expert coding process was used to establish a combined expert observational key to which the student observations would be compared. For each VFE video, the HLPs that were observed by all of the experts during an interval were included in the combined observational key, whereas discrepant observations were discussed among the expert panel to decide which observation should be included in the key.

Data Analysis

The interval-coding sheet shown in Figure 1 included all 22 HLPs; however, the preservice teachers identified only HLP 9, 11-18, and 20-22 throughout all three VFEs. Many of the HLPs are practices that take place outside of the classroom and prior to instruction and are not always observed during instructional time. Therefore, the HLPs not observed were removed from the analysis. Additionally, the video clips did not include assistive or instructional technology, so HLP 19 was also removed from analysis. The completed observation record for each student only included the 12 HLPs and was compared to the expert observational key to create three variables related to accuracy.

An overall measure of accuracy was calculated for each student that indicated the degree to which the student observations matched the expert observational key. The measure was calculated as a total count of cells that matched the expert key. With 12 HLPs and 8 observational intervals, the maximum accuracy score was 96. Individual accuracy scores were then converted to a percentage value.

Similar to the overall accuracy measure, an accuracy value was calculated for each of the included 12 HLPs by participant. Eight observational intervals were available for each HLP, thus a participant whose observations for each HLP matched the expert key would have an HLP accuracy value of 8.

Results

The research questions examined in this study were exploratory in nature and expanded the research on how preservice teachers notice recommended practices within a variety of educational settings. While the implementation of HLPs into teacher preparation programs is well

underway, little research has examined if preservice teachers are able to operationalize and notice these specific practices within actual teaching environments. The first research question examined the extent to which preservice teachers notice HLPs being implemented during instruction compared to expert teachers. The second question examined preservice teachers' accuracy in identifying these skills across educational settings that embedded different instructional models (i.e., explicit teaching versus inquiry-based models).

Preservice Teachers' Accuracy Compared to Expert Score

Consistently across all VFEs, the use of strategies to promote active student engagement (HLP 18) was observed with the highest accuracy. Further, observed teaching of cognitive and metacognitive strategies to support learning (HLP 14) and the use of scaffolded supports (HLP 15)consistently had low levels of observational accuracy.

Accuracy measures for each of the HLPs are shown in Table 2 for the three VFE activities. In the table, the average number of preservice teachers who accurately identified the presence or absence of the HLP compared to the Expert Score (8) is indicated. This includes the correct observations across all eight intervals.

Table 2
Mean Number of Accurate Observations of HLPs Compared to Expert Score (8)

HLP	9	11	12	13	14	15	16	17	18	20	21	22
VFE 1	4.71	5.91	5.21	5.44	4.38	4.47	6.74	6.03	7.38	4.18	5.91	5.74
VFE 2	3.80	4.49	3.09	4.57	2.77	3.11	5.11	6.03	7.14	5.54	4.51	7.06
VFE 3	3.79	6.15	5.79	3.62	2.38	3.79	4.26	5.12	7.15	7.21	4.59	4.41

In VFE 1, which featured a video of whole-group explicit instruction, the use of strategies to promote active engagement (HLP 18), flexible grouping (HLP 17), and explicit instructional components (HLP 16) were most frequently observed and coded correctly by the participants compared to the experts. The lowest levels of accuracy were coded for the observed use of metacognitive strategies (HLP 14), scaffolded instruction (HLP 15), and intensive instruction (HLP 20).

Accuracy of observation was somewhat similar in VFE 2 that featured a classroom video of whole-group inquiry learning. HLPs 17 and 18 were also most accurately observed, along with the observed use of positive and constructive feedback (HLP 22). Similarly, HLPs 14 and 15 were the least accurately observed along with use of systematically designed instruction (HLP 12).

For VFE 3 that focused on a video of small-group instruction, HLPs 20 and 18 were most accurately observed. The identification of long- and short-term learning goals (HLP 11) was also among the most accurately observed practices. Similar to VFEs 1 and 2, HLPs 14 and 15 were the least accurately observed. Teaching social behaviors (HLP 9) and adapting curriculum tasks (HLP 13) were also among the least accurately observed practices when compared to expert scores.

Accuracy Comparison Across Settings

As shown in Table 3, the mean accuracy scores were highest in VFE 1, whereas the accuracy scores for VFE 2 had the highest degree of variability in terms of both range and standard deviation. The data were evaluated for normality using the Shapiro-Wilk statistic and were found to be normally distributed (VFE1, p = .64; VFE 2, p = .09; VFE 3, p = .73). A one-way within-subjects ANOVA was used to evaluate the differences between VFE scores. The assumption of sphericity was met as indicated by Mauchly's test of sphericity, $X^2(2) = 1.38$, p = .50.

The within-subjects test indicated that a significant difference existed, $F(2, 66) = 8.08$, p = .001. The post hoc analysis indicated that the mean difference between VFE 1 and VFE 2 ($M_{diff} = 8.9$) and the mean difference between VFE 1 and VFE 3 ($M_{diff} = 8.1$) were significant. There was no significant difference between VFE 2 and VFE 3 ($M_{diff} = 0.8$).

Table 3
*Descriptive and Normality Statistics for Accuracy Scores (*N = *34)*

VFE	Mean (*SD*)	Range	Shapiro-Wilk
VFE 1	68.8 (1.5)	36	$W = .976$, $p = .64$
VFE 2	59.9 (2.1)	60	$W = .946$, $p = .09$
VFE 3	60.7 (1.8)	49	$W = .979$, $p = .73$

Discussion

The purpose of this study was to examine the extent to which preservice teachers could accurately identify HLPs across a variety of classroom settings that embedded different instructional models (i.e., explicit teaching versus inquiry-based models). Findings from this study indicate that preservice teachers consistently notice strategies to promote active engagement (HLP 18), regardless of the teaching approach or group size. Further, results suggest that preservice teachers have the greatest difficulty noticing the use of cognitive and metacognitive strategies (HLP 14) and scaffolded supports (HLP 15). HLP 14 and 15 were inaccurately observed among all three VFEs by the preservice teachers, suggesting they may not be aware of what those practices actually look like in practice.

Furthermore, it is important to note that candidates observed only HLPs 9-22 (with the exception of HLP 10 & 19). No HLPs from the collaboration or assessment domains were observed within the VFEs; however, experts

did notice these elements, while only a few times, within the videos. This result is most likely due to the fact that many of these practices, such as collaboration with families (HLP 3) or conducting functional behavioral assessments (HLP 10), take place outside of the actual lesson implementation or were simply not observed within the short 8-minute video segment.

Another interesting finding from the current study was the statistical difference in accuracy across educational settings. Preservice teachers noticed practices more accurately in the explicit instructional setting compared to classrooms using an inquiry-based approach or small group instruction.

Based on the standards that guide teacher preparation programs in special education, it was not surprising that preservice teachers were much more accurate in their noticing of HLPs within VFE 1 (explicit instruction) compared to VFE 2 (inquiry-based instruction). Explicit instruction has widely been accepted across the field of special education as one of the most effective approaches to supporting students with disabilities across a range of educational settings (Archer & Hughes, 2011; Hughes et al., 2017; Ricommini et al., 2017). However, in many content areas, such as science or mathematics classrooms, a more inquiry-based approach to instruction is often implemented (Chowdhury, 2016; Taylor et al., 2012; Watt et al., 2013).

While explicit teaching practices can and are still used within these environments, they may look or sound differently. Research on effective teaching approaches that are emphasized in special education teacher preparation coursework strongly encourage the implementation of explicit instruction in K-12 learning environments with no specific recommendations for the use of inquiry-based approaches (McLeskey & Brownell, 2015). Furthermore, while many preservice teachers in special education may have the opportunity to observe inquiry-based instruction, they are likely to be placed in settings with a more traditional, explicit form of teaching (Nagro & deBettencourt, 2017).

There were also significant differences in accuracy between VFE 1 and 3 (small group instruction). The individualized nature of the small group setting may have prevented preservice teachers from observing some of the practices often used in a whole class approach (i.e., instructional technology and flexible groupings) compared to experts. Furthermore, small group instruction is already scaffolded and directed toward individual learning needs, and therefore, participants may not have observed as many of those practices within the actual implementation of the lesson, rather they would occur or be observed at the planning stage.

Early research on teacher noticing suggests that novice teachers may not know what to attend to when observing complex teaching environments (Brownell et al., 2019), and may benefit from tools that promote attention to important teaching practices (Benedict-Chambers, 2016). The activation phase of the VFEs structured the experience for candidates in this study by helping to operationalize what the specific practice looked and sounded like when implemented in an inclusive classroom.

Our findings suggest that these activation activities may have led to increased accuracy in observation of the highlighted practice. All three HLPs used during the activation phases (16, 18, and 20, respectively) were among the top three most accurately observed HLPs within the respective VFEs. For example, HLP 20 was not observed in the top three rankings for accuracy in VFE 1 and VFE 2, but when introduced during the activation phase of VFE 3 was ranked as the most accurately observed HLP within that field experience. While these results do need to be interpreted with caution, there is evidence to suggest that the activation phase influenced the accuracy in observation.

Implications for Practice

Findings from this study suggest that using VFEs within online/hybrid teaching or as supplemental forms of observation within teacher preparation programs can help to introduce HLPs through a scaffolded, shared experience. Similar to previous research on teacher noticing, there was a great deal of variability between expert and novice observations of practices (Berliner, 1994; Lachner et al., 2016). VFEs provide an opportunity for preservice teachers to gain additional exposure to classroom practices and increase their accurate noticing, but also serve as a tool to evaluate the instructional needs of individual programs.

Examining the accuracy of how preservice teachers noticed these practices and across settings allows teacher preparation programs to target specific practices that warrant further instructional support. In this case, HLP 14 and 15 were consistently inaccurately observed compared to experts, suggesting that further guidance and increased observation of these practices is necessary.

The significant difference in accuracy across educational settings should also be noted. With an increase in dual licensure programs and students with disabilities receiving core instruction in general education settings, which often imbed inquiry-based approaches, it is critical to prepare special education preservice teachers to observe and implement features of good teaching across a range of settings. Furthermore, learning to apply and operationalize HLPs within flexible groupings (i.e., whole group, small group, and one-on-one) should become an important component of classroom and field experiences.

Participants' observations of HLPs mostly contained within the Instructional Domain suggest that future VFEs should allow for a greater range of observations, such as IEP meetings, parent-teacher conferences, databased decision-making, and other HLPs not always observed within classroom teaching. Additionally, providing interval-coding sheets with only limited HLPs, or one domain, may increase the accuracy of noticing. Brownell et al. (2019) noted in their framework for introducing HLPs the need to slowly increase the complexity over time. Furthermore, providing a platform by which preservice teachers can communicate about why they feel a practice was observed or not could strengthen the overall learning experience.

Limitations

Three main limitations within the current study should be addressed. First, the exploratory nature of the research and the within-subjects design limits our ability to make comparisons between the value of VFEs with other field experience observations. Second, the small sample size of students and their enrollment in the same program limits the generalizability of the results. The specific training and readings selected by the research team may have influenced our identification of specific HLPs across certain settings.

Third, the small sample of professionals used to develop the "expert score" reduces the reliability of our comparisons. The professionals in the expert group may have observed specific HLPs more or less accurately based on their own training and experience. Additionally, their level of exposure to these practices outside of the control of the study varied and may have influenced their identification of HLPs across the settings.

Conclusion and Future Research

The use ofVFEs as a supplement to more traditional field placements provides authentic opportunities to strengthen what preservice teachers notice when observing and working in a variety of school settings. Furthermore, they serve as a rich experience within fully online or hybrid programs to support the development and understanding of HLPs. VFEs can be used within teacher preparation programs to provide a shared field experience that promotes discussion and interpretation of specific practices. This is particularly important in early teacher education courses when these experiences may be limited.

VFEs also can be used by programs to formatively assess the identification of practices by preservice teachers compared to experts. This information can help teacher preparation programs to determine not only where they need to improve their explicit teaching of specific HLPs but also to adjust the exposure and opportunities for preservice teachers to notice and identify practices across settings. It is not always possible to control how often preservice teachers can observe each practice. However, the video-based component of the VFE can increase the ability for teacher educators to provide authentic experiences that contain specific HLPs.

Future research examining the implementation of these experiences in both preservice and in-service training programs is warranted. The more that can be learned about which HLPs teachers notice the more training can be shaped to meet the needs of the field. Furthermore, a growing body of research suggests a relationship between teachers' accuracy at identifying specific practices and analyzing those interactions in the classroom with the implementation of the practices within their teaching (Hamre et al., 2021; Jamil et al., 2015; Wiens et al., 2021).

Limitations within the current study prevented us from capturing data on classroom implementation. Additional research on the relationship between noticing HLPs and the implementation of these practices will also allow us to validate the use of experiences such as VFEs in our curriculum.

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Appendix

HLP Interval Coding Sheet

HLP	Description	0:00-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00	5:01-6:00	6:01-7:00	7:01-8:00
HLP1	Collaborate with professionals to increase student success.								
HLP2	Organize and facilitate effective meetings with professionals and families.								
HLP3	Collaborate with families to support student learning and secure needed services.								
HLP4	Use multiple sources of information to develop a comprehensive understanding of a student's strengths and needs.								
HLP5	Interpret and communicate assessment information with stakeholders to collaboratively design and implement educational programs.								
HLP6	Use student assessment data, analyze instructional practices, and make necessary adjustments that improve student outcomes.								
HLP7	Establish a consistent, organized, and respectful learning environment.								
HLP8	Provide positive and constructive feedback to guide students' learning and behavior.								
HLP9	Teach social behaviors.								
HLP10	Conduct functional behavioral assessments to develop individual student behavior support plans.								
HLP11	Identify and prioritize long- and short-term learning goals.								
HLP12	Systematically design instruction toward a specific learning goal.								
HLP13	Adapt curriculum tasks and materials for specific learning goals.								
HLP14	Teach cognitive and metacognitive strategies to support learning and independence.								
HLP15	Provide scaffolded supports.								
HLP16	Use explicit instruction.								
HLP17	Use flexible grouping.								
HLP18	Use strategies to promote active student engagement.								
HLP19	Use assistive and instructional technologies.								
HLP20	Provide positive and constructive feedback to guide students' learning and behavior.								
HLP21	Teach students to maintain and generalize new learning across time and settings.								
HLP22	Provide intensive instruction.								