

Teacher Professional Vision: Linguistic Update

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Abstract: *In response pressures on teacher education programs to demonstrate accountability, the concept of teacher professional vision (TPV) was introduced. TPV is used to measure the ability among teachers to detect and interpret relevant events as part of their own professional learning. While the construct has been a reliable indicator of the relevance and effectiveness of teacher education programs (Stürmer, Köning, & Seidel, 2014), it has also received criticism for its lack of ecological validity because of its reliance on scripted video recordings. The purpose of this study is to introduce a research method appropriate for use among teacher educators which complements and situates the concept of TPV among PSTs within their own practice. In lieu of scripted classroom videos, entrance and exit essays were collected in 2016 and 2018 from 46 preservice teachers. Data analysis included a measurement of changes in TPV and a linguistic analysis of the responses. Findings revealed significant changes in the way that PSTs constructed the relationship between their teacher education program and practicum. There was a significant increase from entrance in the program to exit in the occurrence of responses in which preservice teachers positioned themselves as thinkers who are always assessing their confidence in the relationship between teacher education coursework and practicum with PSTs who relied on additive relationship to describe the relationship. Also, at entrance into the program, preservice teachers held high levels of confidence in their abilities to readily function as agents of change. This dropped significantly as responses became complicated by the regulations and realities of classroom instruction.*

Identifying how preservice teachers grow and change professionally in response to the influences of coursework and teaching experience remains a key question that all accredited teacher education programs must answer. While the outcomes of a teacher education programs are evaluated through formative and summative means (Gotwals & Birmingham, 2016; König, Lammerding, Nolde, Rohde, Straub, Tachtsoglou, 2016), calls have been made for assessment practices that extend beyond the traditional forms of assessment (Stürmer, et al, 2016) and provide practicum to integrate theory and practice for the teacher candidates (Stürmer, Seidel, & Holzberger, 2016; Todorova, Sunder, Steffensky, & Möller, 2017),

The concept of teacher professional vision (TPV) is an emerging body of research which extends traditional assessment in teacher education. The term was originally coined by Goodwin (1994) and referred to a way of interpreting social events in a manner related to a specific group of people. Sherin (2001) later used TPV to measure the ability of teachers to observe and interpret what is happening in the classroom as teachers are socialized into a particular discipline. Finally,

Stürmer, Königs, & Seidel (2013) extended TPV to include the measurement of the ability among teachers to detect and interpret that are part of their own professional learning.

TPV has received attention in teacher education research because of its potential for understanding the efficacy of teacher education (Stürmer, et al., 2013). To that end, research has found that when preservice teachers are made aware of their own TPV, they are more able to analyze their students' needs and provide appropriate levels of support (Kersting, Givvin, Sotelo, & Stigler, 2009). Conversely, when TPV is used as a tool to measure the effectiveness of teacher education programs, findings suggest that it is an effective means of demonstrating how preservice teachers who have completed more coursework have higher skills in providing explanations and predictions (Stürmer, Köning, & Seidel, 2014). As such, TPV is a vital component of teacher education that may be viewed as "the missing link between teachers' cognitive dispositions (i.e., their professional knowledge, beliefs and motivation) and their classroom activities" (Todorova, et al., 2017, p. 276).

To measure TPV, PSTs are asked to watch a number of videos of pre-recorded examples of classroom instruction and record their observations. Responses are coded along three subcomponents: 1) description, 2) explanation and 3) prediction. Descriptions occur when preservice teachers distinguish between the relevant components of a given learning situation without forming any opinions or judgments about the episode (Seidel & Stürmer, 2014). In the second subcomponent, PSTs link their observations to pedagogical theory and practice that they have learned through their coursework (Stürmer et al, 2016). Finally, prediction occurs when PSTs foresee the consequences of a perceived course of action in as far as it relates to student learning (Seidel & Stürmer, 2014).

As noted above, much of the previous research on TPV has been based on PSTs' analyses and responses to video recordings of classroom lessons and interactions that they do not participate in (Gotwals & Birmingham, 2016; Keppens, Consuegra, & Vanderlinde, 2019; Seidel & Stürmer, 2014). Researchers have called for TPV studies which draw on data which feature the instruction of the PSTs who are participating in the research. While they concede that classroom settings are the place where professional knowledge is both acquired and applied (Kaendler et al., 2016), most researchers have remained with video-based analysis as a tool to train PST in noticing particular aspects of a specific lesson (Baecher, Knoll & Patti, 2016; Kaendler et al., 2016; Keppens, et al., 2019; Lefstein & Snell, 2011). This is in spite of the criticism TPV has received for its lack of ecological validity (Baecher, Kang, Ward & Kern, 2018).

The purpose of this research is to introduce a research method appropriate for use among teacher educators which complements and situates the concept of TPV among PSTs within their own practice. More specifically, rather than utilizing classroom-based videos to measure TPV, the study draws on entrance essays from 2016 and exit essays from the same PSTs in 2018. A close-up analysis of language is introduced as a means to identify and describe the responses. Two questions are addressed. First, how do PSTs' TPV change from entrance to exit of their teacher education program? This will give data on the changes in the occurrences of the subcomponent of TPV between 2016 and 2018. Such a question gives a baseline of the PSTs' TPV and is consistent with previous research into TPV which draws on video data (e.g., Consuegra, & Vanderlinde, 2019; Seidel & Stürmer, 2014).

For the second question, linguistic analysis is used to explore how PSTs describe their levels of confidence as a function of the interplay between their experiences in their practica and their teacher education courses. This is in response to previous research in which preservice teachers are locked into responses to a video lesson that they did not participate in, making it

difficult to know how preservice teachers might respond when asked to examine their own instruction. What follows is an exploratory study of the changes in TPV among 46 PSTs over the course of two years. The study draws on entrance and exit essays in lieu of a video-based method instrument and introduces a close-up linguistic analysis of language to complement the data analysis and collection. Implications for the questions listed above are described in detail with the teacher educator in mind.

TPV AND THE COMPLEMENTARY USE OF MODALITY

While traditionally TPV has been measured through analysis of video of a particular learning situation (Stürmer et al, 2013, 2015), the exclusive use of video data has been controversial. Guiding preservice teachers through the analysis of a selected video segment fosters the ability to engage in reflection as a group and to deconstruct the elements of a particular lesson (Baecher, Knoll & Patti, 2016; Kaendler et al., 2016; Keppens, et al., 2019; Lefstein & Snell, 2011). Disparate videoclips can be used to juxtapose behaviors for the discussion of pedagogical decisions among the preservice teachers (Keppens et al, 2019). Videos can serve as the medium for both quantitative and qualitative data, depending on how the prompts are constructed (Seidel & Stürmer, 2014).

However, much of the research on using video analysis within the process of teacher education fails to provide a clear description of how the teacher educator actually facilitates the analysis of a specific video for preservice teachers, which in turn prevents the method from being used in other classrooms (Baecher, Kang, Ward & Kern, 2018). It is removed from the action of the PSTs' own experience during practicum or teacher education coursework (Blikstad-Balas, 2017). This research posits that identifying the use of TPV can be done adequately using the written work available to all teacher educators, in this case entrance and exit exams, in lieu of video-based data. Additionally, a close-up linguistic analysis of the language used in entrance and exit exams can offer insights into TPV that deepen an understanding of the connections between the teacher education coursework and practicum. A discussion of how a close-up linguistic analysis entrance and exit essays can be used to deepen an understanding of TPV follows.

The linguistic analysis draws on the concept of modality. There are nine modal verbs in English (can, could, may, might, must, shall, should, will and would) to signal the use of modality. Modal verbs allow speakers to draw on any number of linguistic resources and relate very precisely their perception and/or confidence in the strength of an idea or interpretation of an event. According to Narrog (2012), "Modality is a linguistic system referring to the factual status of a proposition. A proposition is modalized if it is marked for being undetermined with respect to its factual status" (p. 6).

There are a number of different types of modality, but, for the purposes of this research, just two are relevant. The first is the epistemic. Broadly speaking, epistemic includes statements in which speakers indicate their confidence in a single or many propositions. Within the context of this study, the epistemic was operationalized as instances which focus on level of confidence in TPVs' perception of theoretical knowledge, i.e., coursework, to practicum or substitute teaching. Sentences often use content as the subject. The dynamic is the second type of modality and concerns speakers' beliefs in their ability or willingness to act. Often, it involves the speakers in producing offers and predictions about their abilities. Operationalized within the context of this study, the use of dynamic modality was defined as follows: 'Participants predicted the consequences of the instructional activity for a student and also indicated their willingness or

ability to engage in such instruction'. Determining if a statement is dynamic or epistemic is a semantic problem in which the researcher must determine the speakers' intentions. Identifying a sentence which draws on modality is a simple matter of determining whether or not the sentence uses a modal as an auxiliary verb.

In order to illustrate how the use of entrance and exit essays written by the students and an analysis of modality can complement an understanding of TPV, two examples from two PSTs who were preparing to enter student teaching in the upcoming semester are presented. Quote one is an example of prediction from TPV and quote two is an explanation.

Classroom management can affect student learning because it allows the teacher to focus on instruction. I can obtain this experience by paying extremely close attention to my lead teacher's system they have in place (PST 75-2)

Viewed solely through the lens of TPV research, the quote represents an example of explanation. That is, the PST links an event that she witnessed in her practicum with the theoretical knowledge gained about classroom management in her teacher education coursework. While TPV research frequently links PST responses to specific courses by inventorying course content (e.g., Stürmer et al, 2013, 2015), in this particular case it would not be possible without referring to the entrance and exit essays. Moreover, it is not possible to know how confident the PST is without an examination of the both the essays and modality.

Data from the exit essay reveals that the student hopes to rely heavily on the supervising teacher. She writes,

I will be able to learn a lot from my lead teacher, and I want to be able to establish a strong relationship with her, especially because internship seems so daunting. (PST 75-2)

The quote speaks to the rich source of data entrance and exit essays can provide, informing the researcher of the PST's primary concerns and plans for practicum. Moreover, when paired with the first quote, there is much to learn about how an examination of modality can deepen an understanding of the PST's level of confidence in the material.

The first quote begins with a statement of what she has learned in her teacher education coursework. She uses the modal verb 'can' to signal her level of confidence in the relationship between classroom management and maintaining the students' attention on instruction. For the PST, 'can' should signal the researcher that it appears to be one possibility. The use of the modal verbs 'can' appears in the next sentence when the PST tells the reader that she expects to learn classroom management from the teacher. She confirms this statement a few sentences later in her essay when she uses 'will' to express, once again, her confidence in the relationship that she hopes to build with her lead teacher. It is not until that last sentence of this paragraph in which she tells the reader that she wishes that she had learned more about classroom management in her teacher education program.

Beyond understanding modality as a marker for confidence, it is also evident that it functions as indicator of an emerging complexity of thought. Use of the word 'can' suggests that there may be other ways of learning about how to maintain students' focus on instruction and suggests that the PST has already begun to develop a layered understanding of how teachers might gain their students' attention. This is an interesting contrast to the argument made by Stürmer et al.

(2013) in which they wrote, ‘preservice teachers tend to describe classrooms in rather limited and naïve terms’ (p. 470) and this appears to change as they gain experience in the classroom.

In conclusion, the use of data drawn from PSTs’ experience, in this case entrance and exit essays, and the analysis of modality represent a means augmenting current TPV research which relies heavily on the analysis of video data.

METHOD

PARTICIPANTS

The participants in this study were part of an undergraduate elementary education program which also required students to choose an additional endorsement in English Language Learning (ELL), Early Childhood Education (ECE) or Special Education (SPE). The competitive admission to this program accepts only 40-50 of the most qualified students each semester, which assures that there are available classes for all students to complete a two-year path to graduation and licensure. Of the 46 participants, 19 chose SPE, 16 pursued ECE, and 11 opted for the ELL specialty area.

DATA

Data were drawn from two sources, similar to a matched pre- and posttest design. As one part of the admission packet to the program, aspiring students wrote a four-page essay on the qualities they bring to teaching. The essay is referred to as a reflective essay, as it asked students to reflect on their coursework in teacher education, albeit limited, and any instructional experiences they may have had. Many had some practicum experience before writing this essay. The rubric, which was given to the students before they wrote the essay, included four criteria: 1) beliefs about teaching and learning, 2) strength and content-area knowledge, 3) attitudes and beliefs related to student diversity and author’s voice and 4) writing style. This essay served as the pretest for this study and will be referred to as the entrance essay hereto after.

A second required essay, labeled the exit essay since it was submitted prior to student teaching, served as the posttest. It was two pages in length and was assessed on the criteria below, which included evidence of dedication to continuous learning and a measurement of author’s voice and writing style (See Figure 2). For most PSTs, there was an approximate three-semester gap between the submission of the entrance essay and the exit essay. Moreover, by the time the PSTs began writing the exit essay, most had finished 51 credits of coursework in elementary education (math, science and social studies education), three courses in literacy and at least one endorsement area. Endorsement areas included special education, teaching English language learners and early childhood education. They will have spent a minimum of 180 hours in classrooms as part of their pre-internship practica and are formally observed and evaluated five times and informally observed every week.

Figure 1
Rubric used to assess readiness for entrance to IETP

	Not Evident (1)	Developing (2)	Acceptable (3)	Solid Foundation (4)	Highly Accomplished (5)
Beliefs about Teaching & Learning Score:	The author does not discuss personal beliefs about teaching and learning.	The author makes an attempt to describe his/her beliefs about teaching and learning, but without adequate support for the ideas presented.	The author adequately discusses his/her beliefs about teaching and learning.	The author makes clear his/her beliefs about teaching and learning and provides adequate support for the ideas presented.	The author provides a focused discussion of his/her beliefs about teaching and learning, with strong support for those beliefs that goes beyond personal experience.
Strength of Content-Area Knowledge Score:	The author does not provide evidence of his/her content-area knowledge.	The author makes an attempt to discuss his/her content-area knowledge but without adequate support for this knowledge.	The author adequately discusses content knowledge.	The author makes clear his/her knowledge in the content areas, and this knowledge adequately reflects levels of coursework taken. Support for content-area knowledge is presented.	The author provides a focused discussion of his/her content-area knowledge, and this knowledge superbly reflects levels of coursework taken. Support for content-area knowledge is outstanding.
Attitudes & Beliefs Related to Student Diversity Score:	The author does not discuss his/her attitudes and beliefs related to student diversity.	The author makes an attempt to discuss his/her attitudes and beliefs related to student diversity, but without adequate and/or accurate support for these attitudes and beliefs.	The author adequately discusses beliefs and attitudes regarding student diversity.	The author makes clear his/her attitudes and beliefs related to student diversity, and provides adequate and accurate support for these attitudes and beliefs.	The author provides a focused discussion of his/her beliefs related to student diversity, with strong and accurate support for these attitudes and beliefs backed by empirical evidence.
Author's Voice & Writing Style Score:	The writing is flat, with no sense of the author's personal beliefs. No evidence of the effective use of language; the text contains numerous grammatical and/or spelling errors.	The author makes an attempt to communicate ideas in a lively and interesting manner. The author demonstrates basic command of language, but text contains quite a few grammatical and/or spelling errors.	The author adequately communicates his/her point of view. The author demonstrates basic command of language, but text contains quite a few grammatical and/or spelling errors.	The author communicates ideas in an interesting and lively manner. The author uses language effectively. The text contains few grammatical and/or spelling errors.	The author takes a unique approach to communicating his/her beliefs. The author uses language in a sophisticated manner. The text is polished and contains no grammatical or spelling errors.

Figure 2.
Rubric used to assess readiness to enter student teaching

	Not Evident (1)	Developing (2)	Acceptable (3)	Solid Foundation (4)	Highly Accomplished (5)
Evidence of Dedication to Continuous Learning Score: _____	The author does not provide evidence of his/her dedication to continuous learning and internship goals.	The author makes an attempt to discuss his/her dedication to continuous learning and internship goals, but without adequate support.	The author adequately discusses evidence of dedication to learning and internship goals.	The author provides clear evidence of his/her dedication to continuous learning and internships goals, with adequate examples illustrating this dedication.	The author provides a focused discussion of his/her dedication to continuous learning and internship goals, with outstanding examples illustrating this dedication.
Author's Voice & Writing Style Score: _____	The writing is flat, with no sense of the author's personal beliefs. No evidence of the effective use of language; the text contains numerous grammatical and/or spelling errors.	The author makes an attempt to communicate ideas in a lively and interesting manner. The author demonstrates basic command of language, but text contains quite a few grammatical and/or spelling errors.	The author adequately communicates his/her point of view. The author demonstrates basic command of language, but text contains quite a few grammatical and/or spelling errors.	The author communicates ideas in an interesting and lively manner. The author uses language effectively. The text contains few grammatical and/or spelling errors.	The author takes a unique approach to communicating his/her beliefs. The author uses language in a sophisticated manner. The text is polished and contains no grammatical or spelling errors.

INSTRUMENT

Table 1 displays the constructs used to guide data collection. Constructs from TPV are taken from Stürmer et al, (2013). The corresponding definitions and terms for linguistic analysis are included as well. The linguistic terms are not meant to serve as an equivalent to previous research on TPV (Stürmer et al, 2013; Seidel & Stürmer, 2014). Rather, they acted as a complement, filling in the methodological gap described above. Additionally, the identification and analysis of the use of modality in connection with TPV informed the question as to how PSTs evaluate their confidence in the connections among teacher education courses and practica over the span of their teacher preparation program.

Table 1

Description of constructs

Levels of Teacher Professional Vision	Types of Modality	Search Terms
Description reflects teachers’ “ability to identify and differentiate between relevant classroom events. This requires knowledge of the components of effective teaching” (p. 469). (Sturmer, et. al., 2013)	Dynamic Modality: Participants predicted the consequences of the instructional activity for a student and also indicated their willingness or ability to engage in such instruction.	Selected modal verbs: will, would, could, can
Explanation: Items focus on the link between an observed event and theoretical knowledge” (p. 469) (Sturmer, et. al., 2013)	Epistemic modality: Instances focus on level of confidence in their perception of theoretical knowledge, i.e., coursework, to practicum or substitute teaching. Sentences often use content as the subject.	Selected modal verbs: will, would, could, can

DATA ANALYSIS

Data collection drew on the entrance and exit essays from all PSTs and involved two different stages. The purpose of the first stage was to identify changes in the PSTs’ TPV that occurred between the entrance and exit essays. In order to determine which stage of TPV (description, explanation or prediction) each student was at, entrance and exit essays were examined according to the constructs described in Stürmer et al, (2013;). Researchers met to identify exemplars from the essays of each stage of TPV to use as a guide. Next, the researchers worked independently and classified examples of PSTs’ work. After both researchers completed work, they met to discuss their findings. Only examples which both agreed upon were used in the analysis.

After all of the examples of TPV were collected, examples of epistemic and dynamic modality were drawn from the examples of the three levels of TPV. Initially, Word was used to identify occurrences of all nine modal verbs. Instances in which one of the modal verbs did not occur as an auxiliary verb were dismissed. For example, one PST wrote, “I learned many things about classroom management that will help me in my internship.” In this case, the ‘will’ does not precede the main verb ‘learned’ and so is not in the auxiliary position. Had the sentence been written, “I will learn many thing about classroom management that will help me in my internship,” ‘will’ would have been classified as a modal verb.

Next, the sentences were classified and totaled according to whether they were epistemic or dynamic using Table 1. Meaning in modality is derived semantically and so it is not possible to make a one-to-one correspondence between the modal verb and the subcategory of modality. To ensure reliability, both researchers coded these examples separately. Once coding was completed,

the researchers met to compare results. Differences were discussed and agreed upon before they were used as data.

RESULTS

Findings are reported at two levels. The first level includes the distribution of responses across three levels of TPV over the course of the two years. The total number of students who drew on each stage is reported descriptively. Just one PST used an example of description in the entrance essay. No examples of description were found in the exit essays. All students used examples of explanation and prediction in both entrance and exit essays.

For the second level, both the construction and occurrence of epistemic and dynamic modality were analyzed. Analysis of the construction of the responses revealed how PSTs described levels of knowledge as a function of the interplay between their experiences in their practica and their teacher education courses. Results of a paired sample t-test were used to measure changes in the levels of use of modality as they occurred in the levels of TPV across entrance and exit essays.

DESCRIPTION

The first analysis is done to identify instances of description in TPV. As mentioned, just one PST gave an explanation in her entrance essay. This is probably because it was unusual for PSTs to enter IETP before taking any coursework, so many already had some background in educational theory. The PST was entering the program. In the opening to her essay, the PST describes an incident from the 6th grade in which students in which she recounts witnessing students silently and passively sitting in class unwilling to ask questions at the risk of feeling ‘dumb’.

For years, I had seen teachers disregard students that did not participate daily, showed no interest in being in school, and did not get good grades. So, instead, they just would not participate and would continue to get pushed through grades. (Student 24-46, Entrance essay)

While the PST did not use the experience as an envoy in which to identify a point in educational theory and demonstrate how much has learned from her coursework, she told the reader of her experience tutoring the students and, by implication, her enthusiasm to become a teacher. Therefore, this meets the definition of description because the PST is able to differentiate between different classroom events (Stürmer et al., 2014, 2016). She writes,

In middle school, I took on the role of a teacher. I would work with these students after school....I would show them how to do things or help them solve problems. The thing is, these students were not "dumb" and it was not that they did not care; they just needed a little more attention than others (Student 24-46, entrance essay).

The use of the dynamic is evident in sentences two and three through the use of the modal verb ‘would’ as the PST indicates her willingness to work with students after school and her ability to ‘show them how to do things or solve their problems’. The remainder of the entrance essay does not reference possibly relevant educational theory such as student

engagement or motivation which might have placed the example at the next level of TPV, explanation. Instead, the PST moved on to other topics in education, e.g., diversity and literacy, and followed the path of most of her classmates, giving examples of teaching experiences and observations loosely connected to education theory. Because findings only indicate one instance of description among all of the students, a statistical analysis was not possible.

EXPLANATION

All PSTs included examples of explanations in both of their essays. Examples are drawn from two PSTs. Findings are reported on the frequency of use of dynamic modality, with explanations accompanied by an analysis of dynamic modality in order to give insights into the nuances of PSTs' confidence in the connections they made between their teacher education coursework and practica. Below, examples of explanations paired with epistemic modality are described in terms of levels of confidence are given for two PSTs.

The first PST, PST 43-15, is majoring in ECE. At the time that she wrote the entrance essay, she had had at least one practicum experience and a methods course in teaching English language learners. The practicum would have primarily involved the PST in observation of whole-class instruction and, at the teacher's discretion, some one-on-one tutoring or instruction. The practicum class is graded, supervised by a faculty member in the college and PSTs are observed working with students. As such, the PST has an introductory knowledge of the broader field of education but very limited experience with students.

She opens her entrance essay with a statement connecting her beliefs about teaching and learning, telling the reader that the two experiences are in a kind of conversation with each other. She writes, "I must acknowledge that most of my beliefs were established during my course work and then were affirmed during my practicum and other teaching experiences." Two examples follow, one from experiences with ELLs and another teaching literacy, which illustrate this conversation between practicum and coursework.

Her discussion of literacy opens with her admission that she "has a much stronger grasp on two of the areas that [she] feared most," literacy and science education. She references her practicum and writes, "When working in [my class], I now understand that literacy must be taught in many different modes in order to help students establish, comprehension, vocabulary, fluency, writing, and language related skills." The sentence provides an example of explanation consistent with Stürmer's et al., (2013; 2016) work in which she connects her current course with the instructional experiences of the young children she is teaching.

The sentences which follow begin a description of the relationship between course content and her practicum that is facilitated through epistemic reasoning. The patterning of these sentences moves between statements about her coursework to statements in which she uses the epistemic to assess her confidence in her thoughts about instruction.

Coursework Statement: My student needed opportunities to read at an instructional level and an independent level on materials of which she showed interest in order to establish new reading strategies and to use those strategies on texts that she could read independently (PST 43-15, Entrance essay).

Confidence level statement: To teach reading, one must be flexible (PST 43-15, Entrance essay).

Coursework statement: Students will need different scaffolds, activities, and strategies based on their own individual strengths and weaknesses (PST 43-15, Entrance essay).

Confidence level statement: We must recognize them and differentiate our literacy instruction based on those needs (PST 43-15, Entrance essay).

The back and forth patterning between statements about coursework and her confidence in those statements creates a powerfully nuanced argument. From the two propositions, the reader finds out what PST 43-15 has learned from her teacher education coursework in relationship to her experience teaching literacy skills to her practicum student. Her confidence is high in these relationships. This involved the important relationship between independent and instructional levels of literacy and how these connect to instruction.

In the follow-up ‘confidence’ statements, the reader learns of her level of confidence in what she has learned about literacy levels from her class. She uses the modal ‘must’ to assert her confidence in practicing patience and flexibility during instruction, and use of the modal ‘must’ communicates confidence in the necessity of differentiating instruction.

As the statistical data below will show, the occurrence of explanation paired with epistemic modality, levels of confidence, was low in entrance essays. More common among PSTs was a pattern that could be described as explanation-plus-follow-up statements. An example from PST 4-72, who references the same teacher education course that PST (43-15) did, shows the contrast between explanation-plus-follow-up and explanation-plus-level of confidence.

My practicum class...was an ability-leveled classroom where over 25% of my students had an Individualized Education Plan. This allowed me to practice the strategies I learned from my course work to best teach students with disabilities (Student 4-72, Entrance essay)

The relationship between the teacher education course and her practicum was clear to PST 4-72 albeit, but linear. The teacher education course gave her a venue to practice what she had learned. The sentences which follow list those instructional techniques. She explains, “I learned from my upper level special education classes by using practices such as: varied grouping, varied instruction to accommodate different learning styles, additional visual and text support, flexible assessment, and allowing for more student choice.”

The differences between the two explanations are striking both at the rhetorical and linguistic level. Rhetorically, PST 4-72 draws an additive relationship between her teacher education coursework and practicum rather than the dialogical one seen in the explanation from PST 43-15. For PST 4-72, learning to teach means gaining techniques from teacher education coursework that can be used in practicum. The distinction is important. For PST 4-72, the relationship between teaching and practice is a short equation that leaves out the PST as a thinker who is always assessing the relationship between the two. She does not describe her teacher education coursework and practicum teaching as a dialogical relationship in which one influences the other and she, unlike PST 43-15, is not at the center of ideas taken from coursework and practicum and constantly assessing her level of confidence in this connection.

Linguistically, the use of the description-plus-level-of confidence pattern affords the PST the ability to move from a discussion of teacher education coursework to practicum in a manner that is consistent and predictable to the reader. In the example above, PST 43-15 alternated her statements between the use of proposition and epistemic within paragraphs. Other PSTs used entire paragraphs to establish the propositions before moving on to discussions, also a paragraph in length, of their confidence in the propositions they have made. For the remainder of the PSTs, explanation was followed by a list of techniques and left little room for the deeper discussion of their confidence in the relationship between their coursework and teaching.

To be sure, there were also examples from PSTs who gave thoughtful and dialogically-driven explanations that did not use the explanation-plus-epistemic-modality pattern. Figure 1 represents an attempt to uncover such explanations, but at both rhetorical and linguistic levels such explanations were distributed in ways that were not predictable--much less comparable. The explanation-plus-level-of confidence pattern provided a stable means of identifying possible examples.

All PSTs produced used explanations in their exit and entrance essays. Use of epistemic reasoning paired with explanation in the pre- and post-test essays showed a significant increase from entrance to exit essay ($M_1=.38$, $SD=2.12$, $M_2=1.28$, $SD=.95$, $t(46)=3.24$, $p=.002$; $d=.47$). The increase was reflective of other PSTs' work and suggestive of the transformation that PSTs exhibit as they advance from newly admitted PSTs to PSTs prepared for internship.

Prediction An analysis of the interaction between the use of prediction with dynamic modality among PSTs in terms of both construction and the frequency of predictions was conducted. Analysis revealed that the high levels of ability and willingness, or dynamic modality, in predictions shown in entrance essay responses were eventually replaced with statements of obligation related to school policy and rules. An exploration of this change in the construction of the predictions follows.

The first example comes from the entrance essay of PST 75-55, a student seeking elementary and special education credentials. The essay opens with a statement of enthusiasm for becoming a teaching that is tempered by the practicum she is currently in. She tells the reader that while she is "ecstatic to join the education world" and "ready to take on the challenges that await [her]", she does not see the world through "rose-colored glasses" and understands the challenges ahead of her.

The first prediction comes from her observation in a Title 1 school. She explains that classroom management and lesson pacing are keys to learning and teaching. In the sentences which follow, she writes, "I have a philosophy that all students can improve upon where they are at currently, if only they are given the right tools and support. I will be the teacher who does everything in my power to support my student's individual needs." The final sentence is the use of dynamic modality. She uses the modal 'will' as an expression of her ability and intentions to become an excellent teacher. Notice that the function of the sentence is to express to the reader a very high level of confidence in her abilities.

In the exit essay, she returns to the use of the modal verb 'will', but it takes on a very different function in her exit essay. She replaces her statement about her high level of confidence to "do everything" in her power to support her students with a statement more grounded in the specific regulations and limitations of working in the context of a school. In her own words, "I will learn the proper protocols for completing necessary paperwork, get more insight on various

disabilities, and learn more strategies for educating appropriately to the traits of those various disabilities.” (Student 17-55, Exit essay)

Other students offered more specific details in their exit essays, but statements were similarly grounded in school regulation and classroom realities. For instance, PST 41-18 explained her experiences tutoring an ELL student and noted the need for a bilingual version of the book that they were reading. She observed that “students would seek out those books instantly” when it was time for silent reading and the need for a translator during instructional time. Her use of the dynamic came at the end of the paragraph in the form of a question. She asked, “Could we be doing more for Spanish-speaking kids?”.

In her exit essay, PST 41-18 did not return to her interest in working with ELL students. Instead, she focused on her concern for lesson planning. In her prediction, she wrote that it took her a very long time to write a lesson and this was having an undesired effect on her teaching. In contrast to her broad musing about what might be done for ELL students in her entrance essay, she grounded her statement in the practicalities of classroom management. She draws on the modal verb ‘can’ in her comment. She writes, “Perhaps through this internship, I can manage my time more efficiently when planning for instruction.”

As noted, a comparison of the means demonstrated a significant decrease in the occurrences of dynamic modality from entrance to exit essays ($M1 = 7.13$, $SD = 2.23$; $M2 = 1.17$, $SD = 6.41$; $t(46) = 5.45$; $p < .001$; $d = .80$). While the results seem counter-intuitive at first, they are probably best explained as a response to the completion of practicum and teacher education coursework.

DISCUSSION

To date, the research used to investigate the occurrences and changes in TPV has been dominated by the use of video. PSTs are asked to respond to a fixed set of classroom scenarios; their responses are analyzed in terms of the TPV framework and then compared with their classmates and/or more experienced teachers. Video-based research, however, has met with some controversy. Researchers have argued that findings cannot be clearly be generalized to other classrooms (Baecher, Kang, Ward & Kern, 2018) and, again because of the of video-based data collection, do not reflect the kinds of decisions teachers have to make in their own classrooms. The purpose of this study was to introduce a research method which situates the concept of TPV within the practice of teacher educators. As such, data collection relied on documents that are available to teacher educators, entrance and exit essays for a teacher education program. A linguistic analysis of the data explored the question of how levels of confidence change in PSTs assessment of the relationship between teacher education coursework and practicum.

In order to gain an overall picture of TPV, the total number of participants’ use of the subcomponents of TPV in entrance and exit essays were tallied. Findings revealed one use of description in the entrance essay and no occurrences in the exit essays. All participants used examples of explanation and prediction in entrance and exit essays. The increase in the use of explanation is consistent with findings by Stürmer, Köning, & Seidel (2014), but the decrease in the use of prediction is not consistent with TPV research which consistently found gains (e.g., Kersting, Givvin, Sotelo, & Stigler, 2009; Todorova, et al., 2017). Stürmer, Köning, & Seidel (2014) found gains in the use of prediction were sensitive to the particular teacher education course the students were enrolled in. These explanations were not compared across students participating

in different classes as they were in Stürmer, Köning, & Seidel (2014) nor were comparisons made across different content areas as they were in Kersting, Givvin, Sotelo, & Stigler (2009).

Following an accounting of the overall patterning of TPV, a complementary linguistic analysis of the subcomponents was taken and revealed significant changes in the way that PSTs constructed the relationship between their teacher education coursework and practicum. With just one example of description, significant findings could not be reported. However, findings revealed a significant increase in the use of epistemic modality in explanation over the course of the two years, ($M_1=1.38$, $SD=2.12$, $M_2=1.28$, $SD=.95$, $t(46)=3.24$, $p=.002$; $d=.47$). An examination of the patterning of how explanations were constructed in these exchanges contrasted dialogically-driven explanations in which PSTs positioned themselves as thinkers who are always assessing their confidence in the relationship between teacher education coursework and practicum with PSTs who relied on additive relationship to describe the relationship.

The occurrence and use of dynamic modality was examined in the predication subcomponent. Findings revealed a significant decrease in the use of dynamic modality in prediction essays ($M_1 = 7.13$, $SD = 2.23$; $M_2 = 1.17$, $SD = 6.41$; $t(46) = 5.45$; $p < .001$; $d = .80$) from entrance to exit essays. Data revealed that the PSTs' responses in entrance essays moved from high levels of confidence in their abilities in which they would readily function as agents of change to predictions which were complicated by the regulations and realities of classroom instruction. Stürmer, Köning, & Seidel (2014) similarly found increases in the use of prediction but argued instead that the change could be more clearly attributed to the content acquired during teacher education courses. Data from this study suggests that practicum experiences drove these changes and can be tracked through the close up analysis of dynamic modality in predictions.

The nuanced differences in the depth of the PSTs' explanations and predictions identified in this research were not discussed in Stürmer, Köning, & Seidel (2014) or other TPV research (e.g., Kersting, Givvin, Sotelo, & Stigler, 2009; Todorova, et al., 2017). This is a limitation of the current research method which is restricted to responses driven by video-based prompts. The use of entrance and exit essays paired with linguistic analysis provided a means of tapping into the rich and varied responses given by PSTs and opened new questions for TPV researchers. Is it possible, for instance, that PSTs move through stages in their thinking about the relationship between their coursework and practicum? The data within explanation would suggest that this is the case and teacher education courses are at least a potential source for these changes. Is it the case that practicum has a deflating effect on the confidence levels of PSTs? If so, what experiences within practicum have the strongest influences? How do these influences change after internship ends?

While these questions open a discussion the potential for using linguistic analysis to explore changes in how PSTs structure the relationship between their levels of confidence in the relationship between teacher education coursework and practicum experience, there are limitations that are closely tied to the purpose. As a study aimed at the teacher education audience, this research draws on data readily available to teacher educators. Entrance and exit essays were used as data to measure changes in the use of TPV. While such data produces a high ecological validity, it also raises questions on the extent to which the same results can be reproduced reliably. Stürmer, Köning, & Seidel (2014) relied on video recordings of classroom instruction and so changes in TPV response could be measured across the same prompt for all PSTs, thus creating a reliable set of measurements but is also criticized for ecological validity. The solution might be a hybrid approach which draws on video recordings for an initial measurement but then turns to a linguistic analysis to enhance ecological validity.

In conclusion, this exploratory examination has demonstrated the potential of linguistic analysis when paired with entrance and exit essays to tap into the highly nuanced changes in the TPV of PSTs over the course of their teacher education program. Linguistic analysis provided an ecologically valid means of examining these changes while still informing the literature into TPV which relies on video-based data (e.g., Kersting, Givvin, Sotelo, & Stigler, 2009; Todorova, et al., 2017). PSTs revealed themselves as dynamic learners who undergo a process of change from entrance into teacher education to exit that is defined by their broader experiences in classrooms as well as their teacher education coursework.

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Table 2

Description of constructs

Levels of Teacher Professional Vision	Types of Modality	Search Terms
Prediction: Items assessing prediction assess participants' ability to predict the consequences of observed events for student motivation and learning .	Dynamic Modality: Participants predicted the consequences of the instructional activity for a student and also indicated their willingness or ability to engage in such instruction.	Selected modal verbs: will, would, could, can
