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Teacher Education Practices for Preparing Secondary-Level Preservice Teachers to Lead Whole Class Discussions

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Abstract

This qualitative embedded, single-case study examined the perceptions and experiences of four secondary-level preservice teachers leading whole class discussions in education classes in a private Midwestern college. Despite the research on the importance of dialogic instruction, preservice teachers are inadequately prepared to facilitate discussions. Little research exists on how to help secondary-level preservice teachers develop effective discussion skills. The significance of this study highlights an increase in secondary-level preservice teachers' abilities to lead whole class discussion through questioning strategies correlated with Bloom's Taxonomy (1956) and practice-based teaching methods. More research is needed on the effects of practice-based teaching methods and preparing secondary-level preservice teachers to lead discussions in real classrooms.

Keywords

Cover Page Footnote

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Introduction

Teacher education standards require preservice teachers to become proficient in core teaching practices and communication skills that enable them to lead whole class discussions and promote critical thinking (Council of Chief State School Officers, 2013; Stanulis et al., 2012). Research has demonstrated that classroom dialogue is foundational to learning and increases students' academic achievement (Alexander, 2015; Davin & Troyan, 2015; Higham et al., 2014; Howe et al., 2019; Mercer & Dawes, 2014; Stanulis et.al, 2012; Teo 2019b). Despite the research on the importance of dialogic instruction, educational studies have indicated that secondary-level preservice teachers have been inadequately prepared to lead whole class discussions (Carlgren, 2013; Caughlan et al., 2013; Higham et al., 2014; Stanulis et.al, 2012).

Research has shown secondary-level preservice teachers lack experience and are hesitant to take risks by opening up whole class discussions (Newman, 2016; Tannebaum & Cridland-Hughes, 2015). While studies have largely pertained to primary-level discussion, little research exists on how to help secondary-level preservice teachers develop effective discussion skills (Carlgren, 2013; Caughlan et al., 2013; Higham et al., 2014; Howe & Abedin, 2013). Bloom's Taxonomy of Educational Objectives (1956) has been applied in classrooms to develop questions around cognitive levels (Gilson et al., 2014; Lee & Kinzie, 2012). Education courses have implemented practice-based methods to assist preservice teachers with discussion strategies (Kearney, 2015).

This research article is based on a portion of a broader qualitative embedded, single-case study with the purpose of gaining insight on secondary-level preservice teachers' perceptions and experiences in leading whole class discussions. The problem statement was to understand why secondary-level preservice teachers struggled with leading stimulating, whole class discussions. The study describes the processes in which secondary-level education majors led whole class discussions with their peers who served as 'students' during two teacher education courses. The significance of the study highlights an increase in preservice teachers' abilities to lead whole class discussion through the development of questions and practice-based teaching methods.

Literature Review

Discussion Patterns and Secondary-level Instruction

Secondary-level preservice teachers are undergraduate students in teacher education programs who are seeking teacher licensure in secondary-level (grades 6-12) content areas. Their views of instruction have been influenced by prior experiences as students. Preservice teachers reported that 85% of college courses were lecture-based (Tannebaum & Cridland-Hughes, 2015), and

only 3.65% of instruction involved time for discussion (Goodman, Murphy, & D'Andrea, 2014). Educators' classroom practices are often emulated by preservice teachers (Hogg & Yates, 2013; Tannebaum & Cridland-Hughes, 2015). Educators have different purposes and interpretations of discussion (Boyd & Markarian, 2015) or expectations that fit the academic discipline (Sherry, 2019). Teacher-directed instruction is generally viewed as a combination of discussion and lecture followed by student work (Roberson, 2014). Research suggests that teacher-directed instruction is preferred by secondary-level teachers (Caughlan et al., 2013; Higham et al., 2014).

Since the 1970's, traditional discussions have been regulated by initiation-reply-evaluation (I.R.E.) and initiation-response-feedback (I.R.F.) patterns of discourse (Mehan, 1979; Sinclair & Coulthard, 1975). An illustration of I.R.E/F. is the teacher initiates a question in anticipation of a desired answer, the student replies, and the teacher evaluates or follows up on the accuracy of the response. The teacher dominates the discussion and controls the topic and the direction of the conversation (Caughlan et al., 2013; Gilson et al., 2014; Higham et al., 2014; Sedova et al., 2014). Teacher-directed discussion leans toward I.R.E.: "Teachers most often ask lower-order, convergent questions that rely on students' factual recall of prior knowledge rather than asking higher-order, divergent questions that promote deep thinking, requiring students to analyze and evaluate concepts" (Tofade, Elsner, & Haines, 2013. p. 1).

Novice teachers and experienced teachers, alike, acknowledge the challenges of leading whole class, engaging discussions (Caughlan et al., 2013; Davin & Troyan, 2015; Stanulis et al., 2012). Teachers face the dilemma of meeting their curriculum goals or setting aside time for whole class discussions that allow students to share their ideas and questions (Howe & Abedin, 2013). Secondary-level teachers have indicated that discussions are time-consuming and difficult for presenting new content (Caughlan et al., 2013; Higham et al., 2014); however, discussions help secondary-level students practice their reasoning skills and understand concepts (Lemley, 2014). Shifting toward more student-centered approaches obliges secondary-level teachers to pose questions that are open to collaborative thinking and student insights (Forzani, 2014; McDonald et al., 2013; Teo, 2013a). Secondary-level students' developmental needs for autonomy are supported by empowering students to discuss ideas (Lemley et al., 2014; Sedova et al., 2014).

Research reports it may take an entire year for one secondary-level teacher to adapt to new methods of facilitating discussion (Higham et al., 2014). Some researchers maintain that students and teachers engage in classroom discourse "… for the construction of knowledge and the understanding of the curriculum content, instead of knowledge and curriculum content being transmitted from teachers to students" (García-Carrión, 2020, p. 3). A large study investigating 87 secondary-level preservice teachers who were guided by practice-based teaching methods of leading discussion found that students were more involved in academic dialogue when they were encouraged to talk with each other, instead of just answering the teacher's questions, which extended whole class discussion for 15 minutes or more (Caughlan et al., 2013).

Types of Questions and Bloom's Taxonomy
Preservice teachers are called upon to generate questions that stimulate classroom discussions (Caughlan et al. 2013; Sedova et al., 2013), connect to students' experiences (Forzani, 2014) and promote higher levels of thinking (Alexander, 2015; Davin & Troyan, 2015; Howe et al., 2019, Wang & Wang, 2013). Bloom's theory has been widely applied in educational settings for

identifying ranges of thinking and reasoning skills and forming questions (Gilson et al., 2014; Lee & Kinzie, 2012). Bloom's cognitive levels (1956) are foundational for creating questions from simple and concrete levels (Knowledge, Comprehension) to complex and abstract levels of thinking (Application, Analysis, Synthesis, Evaluation). Researchers have recommended utilizing lower level questions to ensure that students can recall, give examples, or define vocabulary before presenting higher level questions requiring students to compare, analyze, justify, and evaluate their responses (Tofade et al., 2013) or balancing lower level questions with those that press for higher levels of thinking (Roberson, 2014; Tofade et al., 2013).

Research from two studies correlated Bloom's Taxonomy (1956) with primary-level classroom interactions and instruction. One study proposed that the size of the group affected the types of questions teachers asked. More closed-ended questions occurred during whole class discussions compared to smaller group conversations (Gilson et al., 2014). Another primary-level study found that different levels of questions were useful in scaffolding - or building and extending – the discussion. Researchers recognized that closed-ended questions prompted a predetermined, lower level, or factual response, and open-ended questions, calling for predicting and reasoning, motivated a variety of diverse student responses (Lee & Kinzie, 2012).

In this review, only one study investigated secondary-level preservice teachers' development of discussion skills based on Bloom's cognitive levels of thinking (Engin, 2013). This qualitative study occurred in a teacher training program in Turkey and explored how preservice teachers used Bloom's theory to develop a range of lower and higher level discussion questions to address secondary-level learning objectives (Engin, 2013). The questions were scaffolded around the context and expectations of the discussion, which guided the flow of the dialogue (Engin, 2013).

A large study of secondary-level English preservice teachers identified three dialogic moves as significant for engaging students in discussion: authentic (open-ended) questions, revoicing, and uptake questions (Caughlan, et al., 2013). The purpose of revoicing is to repeat, paraphrase or clarify a response (Caughlan, et al., 2013). Teacher revoicing is suggested as a starting point for preservice teachers in discussion (Ferris, 2013), along with follow-up questions (Hlas & Hlas, 2012). Uptake questions acknowledge contributions by making connections between student ideas (Caughlan et al., 2013). Uptake questions emphasize collaborative interactions and are also linked to higher student achievement (Demszky et al., 2021). Another strategy is to formulate questions beginning with 'how' and 'why' to promote critical thinking (Mueller, 2016).

Practice-based Teaching Methods
Practice-based teaching methods are instructional approaches focused on opportunities for students to observe and practice modeled strategies and reflect on feedback, thus enabling preservice teachers to actively learn, rehearse, and refine skills (Caughlan et al., 2013; Davin & Troyan, 2015; Lampert et al., 2013; Zeichner, 2012). Research from two studies revealed that practice-based methods in teacher education programs helped preservice teachers to develop abilities to lead whole class discussions (Caughlan et al., 2013; Davin & Troyan, 2015), although, another study revealed that student teachers regretted a lack of opportunities for practicing strategies in coursework (Hogg & Yates, 2013). Practice-based teaching methods include initial conversations among preservice teachers for them to express their concerns and

uncertainties (Whitney, Olan, & Fredricksen, 2013), and experimenting with discussion methods first in college classrooms before trying out the strategies in real classrooms (Williamson, 2013).
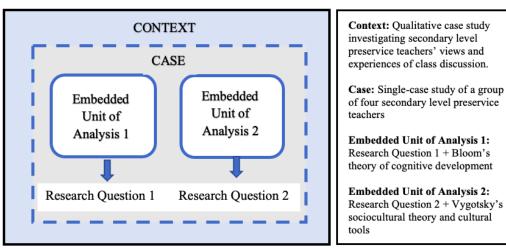
Preservice teachers are guided by practice-based methods of modeled strategies, simulations, or videos, and then rehearse strategies and reflect on feedback (Caughlan et al., 2013; McDonald, et al., 2013; Zeichner, 2012). Preservice teachers observe, reflect, and analyze other peer-students' practices as part of the learning process (Hogg & Yates, 2013; Lampert et al., 2013). A multiple case study examined secondary-level Foreign Language preservice teachers' application of practice-based methods in the fourth week of their college semester. The instructor and peers coached and provided feedback to the preservice teachers before they led discussions in real classrooms (Davin & Troyan, 2015). Practice-based methods in coursework have shown positive results and lead to an increase in preservice teachers' instructional effectiveness (Kearney, 2015).
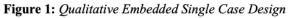
Methodology

The purpose of this case study was to gain insight on preservice teachers' perceptions and experiences in leading whole class discussions with peers, and to address the problem of why they struggled leading discussion. This research article emphasized Research Question 1: *How do secondary-level preservice teachers use specific questions to lead whole class discussions?*

Research Design

A qualitative embedded, single-case design was the preferred research method for exploring and interpreting participants' experiences and perceptions in a naturalistic setting (Yin, 2011). An illustration of this research design is shown in Figure 1. An embedded single-case study includes multiple parts or units of analysis within a case (DePoy & Gitlin, 2016; Yin, 2009). Yin (2009) recommended a qualitative design to guide research procedures by defining the units of analysis (i.e., single-case, multiple-case, holistic, embedded). This qualitative case study had two units of analysis: the first unit of analysis linked to Research Question 1 and Bloom's Taxonomy (1956) of cognitive development relevant to preservice teachers' use of higher and lower level questions in discussion. The second unit of analysis focused on Research Question 2 (in the original study) and Vygotsky's sociocultural theory (1978) of social interactions, use of language, and tools.

Figure 1: *Qualitative Embedded Single Case Design*

This research article elaborated on the single case and one unit of analysis associated with Bloom's Taxonomy (1956), the first research question, and a range of cognitive levels and types of questions used by secondary-level preservice teachers in developing discussion questions.

Research Methods and Instruments
The researcher documented observations of participants' responses and behaviors relevant to the study. The data collection included the researcher's observation notes, question exercises (Appendix A), participants' observation feedback notes (Appendix B), and semi-structured interview recordings and transcripts. The researcher collected participants' feedback notes at the end of each practice session for interpretation and analyses. The researcher utilized a color-coding system to identify patterns, sub-categories, and categories within the data (Fram, 2013) and constant comparison analysis to interpret the data (Yin, 2011). Color-coded categories were highlighted, line-by-line, to discern common patterns and themes among the data. Specific categories were designated for Bloom's lower level or higher level questions, and various types of questions such as revoicing and uptake. Other categories were identified as common themes emerged from the data (Fram, 2013). Multiple sources of rich evidence and the triangulation of data strengthened the credibility of the findings (DePoy & Gitlin, 2016; Yin, 2009).

Sample
The purposive sample in the case study included four participants who were college juniors and secondary-level preservice teachers in content areas of Math, Business, and Social Science. They were assigned codes of S1, S2, S3, S4 to protect confidentiality. The investigator included a purposive sample of this population, which was dependent on the number of participants who agreed to participate in the qualitative single-case study with informed consent (Klehr, 2012). The population was appropriate in relationship to the study's purpose of examining secondary-level preservice teachers' experiences and perceptions of leading discussions. The same four participants were concurrently enrolled in both the secondary methods class and the Educational Psychology class, which which met on alternating days, and pertinent to the study.

Limitations
One limitation was the delay in collecting data until the fifth week of the semester while awaiting I.R.B. approval. Another limitation was a small sample size making transferability uncertain, but possible. A third limitation was a potential for researcher bias regarding dual roles of researcher and instructor. The researcher safeguarded against bias by following ethical steps and assurances.

Ethical Assurances
The researcher followed ethical procedures for conducting the study by gaining approval from the university Institutional Review Board, obtaining participants' informed consent, and ensuring confidentiality. The researcher followed ethical steps to ensure the trustworthiness, credibility, and transparency of the research. The researcher maintained an accurate and detailed record of observations and reflective notes. The semi-structured interview protocol included the audio-recording and transcribing of participant responses to the same open-ended questions. The dual roles of the researcher and self-same course instructor were significant for providing an insider's knowledge; however, to counteract bias and confirm the accuracy of the data analyses and

findings, member-checking was employed (Yin, 2011). A doctoral colleague examined the findings and interview data to compare and confirm the researcher's interpretations (Yin, 2011).

Practice Discussion Sessions

All four participants planned micro-lessons from selected topics that would interest their peers based on the book, *The 7 Habits of Highly Effective Teens* (Covey, 2014). They developed discussion questions and rehearsed their lessons with the four peers in the methods class. The second time, the participants led similar discussions with a different group of 5 to 8 peer-students resembling a small class. Finally, each participant generated questions for a 10-minute opening whole class discussion with the Educational Psychology class of 20 peer-students, typical of a larger and more diverse group. For each practice session, participants rehearsed, observed, and evaluated each other's lessons using the feedback note forms (Appendix B). Follow-up conversations and self-reflections over the feedback were a critical part of the practice cycle.

Timeframe

During a 10-week timeframe, participants developed questioning strategies for leading classroom discussions through practice-based methods with opportunities to observe, rehearse strategies and questioning skills, and reflect on feedback (Caughlan et al., 2013; Davin & Troyan, 2015; Forzani, 2014; Zeichner, 2012). The participants led whole class discussions with their peers as 'students' during two teacher education courses. A guiding framework was designed for the methods course and Educational Psychology course including opportunities for practice-based teaching methods allowing the researcher to observe and record detailed notes on participants' perceptions and experiences in leading whole class discussions with their peers (Table 1).

A key objective of the secondary methods course connected to Research Question 1 and aimed to familiarize participants with Bloom's Taxonomy through questioning exercises (Appendix A). The participants were encouraged to explore, generate, and apply various types and levels of questions in preparation for discussions. In addition, participants were observing classroom discussions in related field experiences in their secondary-level content areas during weeks 5-8. The instructor in the Educational Psychology class also modeled using discussion questions and strategies. The entire practice-based discussion sessions occurred throughout weeks 8-12. Finally, the researcher conducted individual semi-structured interviews during weeks 15-16.

Table 1: *Course Content and Data Collection Significant to the Study*

Semester	Methods Class Content and Practice Experiences	Evidence/Data Collection
Week 5	Review of Bloom's Taxonomy Participants' 3rd classroom field experience	Informal discussion notes Participant Reflection #3
Week 6	Generating Bloom's cognitive levels-questions Beginning to plan discussion topics for lessons Participants' 4th classroom field experience	Researcher notes Participant questions Participant discussion plans Participant Reflection #4
Week 7	Using dialogic tools with discussion Participants' 5th classroom field experience	Participant discussion plans Participant Reflection #5
Week 8	Practicing discussion lessons in methods class Make-up 5th classroom field experience	Peer feedback notes Participant Reflection #5
Week 9	Practicing discussion lessons for small class of 5-8	Peer feedback notes Researcher's notes
Week 10	Practicing discussion lessons for small class of 5-8 Practicing discussion lesson for larger class of 21 S1 and S4 lead classroom discussions	Peer feedback notes Researcher's notes S1 and S4's self-reflections
Week 11	Practicing discussion lesson for larger class of 21 S3 leads classroom discussions	Peer feedback notes Researcher's notes S3's self-reflection notes
Week 12	Practicing discussion lesson for larger class of 21 S2 leads classroom discussions	Peer feedback notes Researcher's notes S2's self-reflection notes
W. 13-14 W. 15-16	Processing experiences; ending coursework Semi-structured interviews at end of study	Semi-structured interviews

Findings

This research article primarily focused on the findings from the study's Research Question 1: *How do secondary-level preservice teachers use specific questions to lead whole class discussions?*

The research article summarized two major themes emerging from the triangulated data from the researcher's observation notes, participants' semi-structured interviews, and peer feedback notes collected by the researcher after each practice session for interpretation and analyses. Participant-led discussions demonstrated various combinations of lower and higher level questions and the utilization of revoicing strategies. Practice-based teaching methods were perceived to have benefited preservice teachers' abilities to lead whole class discussion with their peers.

Discussion of Research Themes
Theme 1: Mixing lower and higher level questions and revoicing expands responses.
A common theme emerged of participants employing a mix of lower and higher level questions of different types to stimulate discussion. The first two weeks of the study laid the groundwork for a review of Bloom's theory. Participants were able to identify, develop, and apply questions of lower and higher levels using Bloom's Taxonomy through question exercises (Appendix A), informal practices, and rehearsals in leading class discussions. Participants demonstrated the ability to combine lower and higher level questions, in discussions they led, during Weeks 8-12.

In the initial practice discussions, two participants used lower level questions, and two generated higher level questions related to Bloom's cognitive levels (Table 2). More responses were noted on higher level questions requiring students to apply and evaluate the topic of discussion. The researcher documented notes of the collaboration between participants as they drafted lesson plans and deliberated over discussion questions.

Table 2: *Participants' First Practice Discussion with Bloom's Levels of Questions*

Participant Code	Bloom's lower level questions	Bloom's higher level questions	Bloom's cognitive levels correlating to questions	Number of peers responding
S1	1		Knowledge	1
S2		1	Application	2
S3		1	Evaluation	4
S4	1		Comprehension	0

Tables 3 and 4 below addressed Research Question 1 on the specific questions that secondary-level preservice teachers used in leading whole class discussions and correlated with Bloom's Taxonomy (1956). Both tables listed the number of lower and higher level questions and their functions in stimulating discussion. Table 3 depicted participants' perceptions of questions used to lead smaller class discussions, and Table 4 showed participants' perceptions of the larger class discussion questions. Higher level questions stimulated the clarification and expansion of ideas.

Table 3: *Participants' Feedback - Perceptions of Smaller Class Discussion Questions*

Participant Code	Number of lower level questions	Number of Higher level questions	Bloom's levels that generated discussion	Function of questions that best stimulated discussion
S1	4	2	Comprehension, Application	Clarify and Expand
S2	3	6	Application, Analysis, Evaluation	Clarify and Expand, Connect to others' ideas
S3	3	4	Application, Analysis	Clarify and Expand
S4	2	4	Analysis, Evaluation	Clarify and Expand, Connect to others' ideas

The participants perceived their questions, with the smaller class, as more engaging compared to the larger class discussions with peers. Three of the four participants increased their use of higher level questions in the smaller class discussion and admitted they felt 'more relaxed' and focused on the questions and topic of the discussion. S1 and S2 utilized the highest level of thinking in questions of 'evaluation' in seeking opinions and student insights.

Table 4: *Participants' Feedback - Perceptions of Larger Class Discussion Questions*

Participant Code	Number of lower level questions	Number of Higher level questions	Bloom's levels that generated discussion	Function of questions that best stimulated discussion
S1	6	6	Application, Analysis, Synthesis, Evaluation	Clarify and Expand, Connect to others' ideas
S2	5	7	Comprehension, Application, Analysis, Evaluation	Clarify responses, Clarify and Expand, Connect to others' ideas
S3	5	2	Knowledge, Comprehension	Clarify responses
S4	4	7	Application, Analysis	Clarify and Expand

Participants S1 and S2 produced a fairly balanced set of questions and made significant gains in the number and variety of higher level questions to stimulate discussion in the larger class. S4 also increased the higher level questions. S3 struggled to expand discussion with a majority of lower-level knowledge and comprehension questions.

Table 5 addressed Research Question 1 and provided an overview of participant responses from the semi-structured interview question: *What have you learned about asking specific questions when leading a whole class discussion?*

Table 5 data showed that participants demonstrated an understanding of specific questions that generated a one or two-word answer or lower level response. They identified how lower level questions were less likely to extend discussion when compared to questions that called for explaining reasons, viewpoints, and using critical thinking.

Preservice teachers employed Bloom's theory to develop and scaffold questions to address their learning objectives, which contributed to the flow of the discussion. Participants demonstrated an understanding of how authentic or open-ended questions invited higher levels of thinking and the importance of using 'revoicing' to follow-up on student responses. Participants often prompted students to elaborate responses by asking a lower level question followed by a higher level question starting with 'why' or 'how.'

Table 5: *Semi-structured Interview Question 3 - Research Question 1*

Participant Code	#3. *What have you learned about asking specific questions when leading a whole-class discussion?* (Research Question 1)	Sub-unit of Analysis: Bloom Sub-unit of Analysis: Vygotsky
S1	•Type of question asked depends on the teacher's goal • One-answer questions are less likely to lead to discussion •Ask lower-level questions first, and then more 'open-ended' questions on how to *solve* math problems	 •Bloom: Lower level- Knowledge •Vygotsky: *Scaffolding* from lower to higher level questioning •Bloom: Higher –Application
S2	•Type of question asked will affect the length of the answer •'What is this' questions elicit one-word answers • 'Explain', 'how do you feel' or 'How can you…' type questions lead to more discussion	 •Bloom: Lower level – Knowledge, Comprehension •Bloom: Higher levels - Analysis, Synthesis, Evaluation
S3	•Questions that are 'debatable' or 'choose a side' lead to discussion. •Concern that discussions can stray away from the intended topic	•Bloom: Higher – Analysis, Synthesis, Evaluation
S4	•One or two-word answers come from questions about vocabulary •More 'open-ended' questions show understanding of word meaning •'How do you feel this works' type questions lead to more discussion •Questions prompting two different sides or views increase discussion	•Bloom: Lower level- Knowledge, Comprehension •Bloom: Higher level - Application •Bloom: Higher level - Analysis, Evaluation •Bloom: Higher level – Analysis, Synthesis, Evaluation

Participants' responses from the semi-structured interviews revealed they understood the functions of lower and higher level questions and reasons for combining these:

> What's the [concept]? ...if I want them to walk me through it, I would say 'How do you solve this?' to get them to analyze it. I would like to maybe start with the less open-ended questions, and as they feel more comfortable in my classroom, move into those open-ended ones.

> Depending on the questions you ask, will depend on how long the answer is... 'What is this?' I get one-word answers. To tell them to explain or... 'How do you feel... what do you think, do you agree'…gets them thinking.

Participants were observed using 'revoicing' in practice discussions as documented in the researcher's and participants' feedback notes. They had also become familiar utilizing 'revoicing' to clarify students' responses and encourage elaboration.

"Did I hear what you said?" [repeating student's comment] "So you think that eye contact is important for effective listening?" [wait time] "Can you explain more?"

"You thought that [concept] was [repeating comment] So you think it's a proactive approach?" [Rephrasing comment] "Like someone who is close-minded?" "Why do you think that?"

The researcher noted a few examples of 'uptake' questions and follow-up questions intentionally used to acknowledge and connect student responses to others' ideas to stimulate discussion.

"Let's talk about what CR said… JG disagreed with your idea – is he right?"

"Did you hear what BS said?" (calling on student) "Can you add to his thought?"

Only participant S2 was consistent in using uptake questions in discussions by attempting to connect student ideas. Three out of four participants demonstrated gradual progress in using a mix of lower and higher level questions and revoicing to stimulate discussions.

Theme 2: Practice-based methods are beneficial for preparing preservice teachers to lead whole class discussion.
A second theme emerged on the benefits of practice-based teaching methods, which was supported by data from the semi-structured interviews, the researcher's notes, and peer feedback notes. The theme also connected to the problem of why preservice teachers struggled with leading whole class discussions. Participants practiced questions and led whole class discussions and were given time to self-reflect and share their fears together.

Participants were invited to talk about their struggles such as "learning to accept mistakes [I] make in teaching and moving forward," and "being nervous to take on high school kids" and how to manage classroom control. One participant felt unsure about how to handle or redirect unexpected comments or questions that were purposely contradictory: "the 'what if' questions weren't really helpful." Providing a space for preservice teachers to discuss their challenges and uncertainties helped to alleviate some concerns.

The practice-based framework provided regular opportunities for participants to give and receive feedback on questioning strategies. Participants welcomed constructive feedback from their peers and instructor and became more comfortable sharing their perspectives. Practice-based approaches included offering encouragement on questioning strategies:

 "Good job on waiting for the answer! Direct the conversation flow – if no one is responding, ask somebody from a different area of the room."

"You made her explain herself and got a small class discussion going…nice job of getting everyone involved."

A final question from the semi-structured interviews resulted in responses that confirmed the benefits of practice-based methods leading to gradual gains in participants' abilities: *Do you believe you are ready to lead a whole class discussion in your content area? Why or why not?*

> S1: I'm getting more and more ready… I think all the teacher education classes here kind of gear us towards leading our classrooms in a way that's more inquiry-based, rather than just teacher-led instruction.

> S2: Yes, I do, [feel ready to lead discussion] but I still want to learn more. I want to learn how to deal with all types of students…who think differently…I think doing the mini lesson with the bigger class really helped a lot. We have a pretty diverse student group ...seeing their different viewpoints. It's really helped a lot.

> S3: I think practicing in front of my peers took away a lot of my fear... I worry about getting up in front of people and kind of flopping on my face. That's a big fear I have and I've kind of learned to overcome it a little bit.

> S4: I feel like I could lead a fairly decent discussion based off what I learned in this class, and what I already know from my other classes in… [the content area]. It's given me a lot of things to think about, some kinds of techniques to use, and kind of gave me an understanding of where I am as a teacher – almost.

Overall, the findings concluded that participants had benefited from practice-based experiences and felt more prepared to lead whole class discussions. Participants admitted they were still developing their skills and needed to learn more about future interactions with high school students and facilitating discussions in real classroom settings.

Discussion

The implication of results from the qualitative case study on secondary-level preservice teachers leading whole class discussion are presented and discussed in the following key points.

• **Educators can prepare preservice teachers to lead discussions by using Bloom's theory to develop lower and higher level questions and introduce 'revoicing' and 'uptake' strategies.** Participants increased their knowledge of Bloom's theory of cognitive levels through exercises and practices designed to prepare them for leading discussions. The participants generated a combination of lower and higher level questions and utilized revoicing. Lower level questions ensured students' recall of content knowledge, and higher level questions expanded discussion through skills such as comparing, analyzing, or evaluating (Roberson, 2014; Tofade et al., 2013). The study concurred with the research stating a valuable starting point for preservice teachers in discussion is utilizing the revoicing strategy to clarify and expand responses (Ferris, 2013). The study's timeframe limited the participants' exposure and practice of 'uptake' strategies, which could have potentially advanced preservice teachers' discussion skills (Demszky et al., 2021).

• It is important to implement and extend practice-based methods in education courses for preservice teachers to practice developing questions and leading discussions with others. Teacher educators can best prepare preservice teachers by implementing interactive, practice-based discussion strategies in their courses (Tannebaum & Cridland-Hughes, 2015). College instructors can provide opportunities for students to ask questions, engage in discussion, and reflect and share ideas. Practice-based teaching methods result in preservice teachers being more successful in teaching due to rehearsals and feedback during coursework (Davin & Troyan, 2015). Research supports preservice teachers experimenting and being coached on discussion methods first in college classrooms before trying out strategies in real classrooms (Davin & Troyan, 2015; Williamson, 2013). The practices in leading discussion with peers have value; however, preservice teachers need to have discussion experiences with secondary-level students.

• Teacher educators should recognize that preparing secondary-level preservice teachers to lead discussion is a slow, gradual process of observing and exploring discussion strategies. Research has indicated it may take an entire year for one secondary-level teacher to adapt to new methods of facilitating discussion (Higham et al., 2014). This qualitative single case study occurred over a 10-week time span during a college semester. The participants made progress in demonstrating the ability to produce questions that enabled them to lead whole class discussions. However, an additional or extended methods course would have provided more time for preservice teachers to continue to explore and implement discussion strategies, and reflect on what they learned, which potentially could have a greater impact on discussion skill outcomes.

Recommendations and Contributions to Preservice Teacher Education

Two practical recommendations are presented in this research article based on the qualitative study on secondary-level preservice teachers leading whole class discussion with their peers:

> 1. Extend and prioritize practice-based teaching as a vital part of the curriculum in teacher education coursework with follow-up or concurrent opportunities for preservice teachers to lead discussions with students in secondary-level classrooms.

> 2. Expand preservice teacher instruction on whole class discussion to include the practice of authentic, open-ended questions, revoicing, and uptake strategies while reinforcing the development of questions informed by Bloom's lower and higher levels of cognition.

The study's contributions are generalizable to (a) secondary-level educators who lead classroom discussions, (b) college instructors who model, evaluate, and facilitate preservice teachers' discussion skills, (c) cooperating teachers who are models and mentors for student teachers, and (d) preservice teachers who will transfer the knowledge and skills gained from teacher education coursework into classroom discussion practices. Future research is recommended for extending practice-based teaching of discussion and questioning strategies linked to Bloom's theory in teacher education programs, and providing opportunities for preservice teachers to lead discussions in relevant settings including interactions with secondary-level students.

Conclusion

Teacher education standards require preservice teachers to become proficient in communication skills enabling them to lead whole class discussions (CCSSO, 2013); however, secondary-level preservice teachers have had little experiences or instruction in discussion skills (Carlgren, 2013; Caughlan et al., 2013, Higham, et al., 2014; Stanulis et al, 2012). This qualitative embedded, single-case study was significant in contributing to the research on teacher education instruction and discussion practices for secondary-level preservice teachers. Bloom's (1956) theory of cognitive levels was foundational for preservice teachers' instruction and development of specific discussion questions. Practice-based teaching methods implemented during teacher education coursework strengthened preservice teachers' abilities to facilitate discussion.

Future research could focus on establishing an instructional framework for discussion pedagogy specifically for secondary-level preservice teachers in teacher education programs. More research is needed on the effects of practice-based teaching methods and preparing secondary-level preservice teachers to lead discussions in real classrooms. An increase in research on teacher education pedagogy can inform educational policies and practices (Darling-Hammond, 2016; Sleeter, 2014), and address the gaps in research on discussion practices at secondary levels (Carlgren, 2013; Caughlan et al., 2013; Higham et al., 2014; McDonald et al., 2013).

References

Alexander, R. J. (2015). Teaching and learning for all? The quality imperative revisited. *International Journal of Educational Development, 40,* 250-258. doi:10.1016/j.ijedudev.2014.11.012

Bennett, C. A. (2013). Teachers' perspectives of whole-class discourse: Focusing on effective instruction to improve student learning. *Action in Teacher Education, 35*, 475-488. doi:10.1080/01626620.2013.846765

Bloom, B. S. (1956). Educational objectives and curriculum development. *Taxonomy of Educational Objectives Handbook*, 25-43.

Boyd, M. P., & Markarian, W. C. (2015). Dialogic teaching and dialogic stance: Moving beyond interactional form. *Research in the Teaching of English, 49*(3), 272-296.

Carlgren, T. (2013). Communication, critical thinking, problem solving: A suggested course for all high school students in the 21st century. Interchange, 44, 63-81. doi:10.10007/s10780-013-9197-8

Caughlan, S., Juzwik, M. M., Borsheim-Black, C., Kelly, S., & Fine, J. G. (2013). English teacher candidates developing dialogically organized instructional practices. *Research in the Teaching of English, 47*(3), 212-246.

Council of Chief State School Officers. (2013, April). *Interstate Teacher Assessment and Support Consortium InTASC model core teaching standards and learning progressions for teachers 1.0: A resource for ongoing teacher development.* Washington, DC: Author.

Covey, S. (2014). *The 7 habits of highly effective teens.* New York, NY: Franklin Covey Co.

Darling-Hammond, L. (2016). Research on teaching and teacher education and its influences on policy and practice. *Educational Researcher, 45*(2), 83-91. doi:10.3102/0013189X16639597

Davin, K. J., & Troyan, F. J. (2015). The implementation of high-leverage teaching practices: from the university classroom to the field site. *Foreign Language Annals, 48*(1), 124-142. doi:10.1111/flan.12124

Demszky, J., Liu, J., Mancenido, Z., Cohen, J., Hill, H., Jurafsky, D., & Hashimoto, T. (2021, August). Measuring conversational uptake: A case study on student-teacher interactions. *Proceedings of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing*, 1638–1653. doi:10.18653/v1/2021.acl-long.130

DePoy, E., & Gitlin, L. N. (2016*) Introduction to research: Understanding and applying multiple strategies* (5th ed.). St. Louis, MO: Elsevier Inc.

Engin, M. (2013). Questioning to scaffold: An exploration of questions in pre-service teacher Training feedback sessions. *European Journal of Teacher Education*, *36*(1), 39-54. doi:10.1080/02619768.2012.678485

Ferris, S. J. (2013). Revoicing: A tool to engage all learners in academic conversations. *The Reading Teacher, 67*(5), 353-357. doi:10.1002/TRTR.1220

Forzani, F. M. (2014). Understanding core practices and practice-based teacher education: Learning from the past. *Journal of Teacher Education, 65*(4), 357-368. doi:10.1177/0022487114533800

Fram, S. M. (2013). The constant comparative analysis method outside of grounded theory. *Qualitative Report*, *18*, 1-25.

García-Carrión, R., López de Aguileta, G., Padrós, M., & and Ramis-Salas, M. (2020). Implications for social impact of dialogic teaching and learning. *Frontiers in Psychology, 11*(140), 1-11. doi.org/10.3389/fpsyg.2020.00140

Gilson, C. M., Little, C. A., Ruegg, A. N., & Bruce-Davis, M. (2014). An investigation of elementary teachers' use of follow-up questions for students at different reading levels. *Journal of Advanced Academics*, *25*(2), 101-128. doi:10.1177/1932202X14532257

Goodman, S. B., Murphy, B. K., & D'Andrea, L.M. (2014). Discussion dilemmas: an analysis of beliefs and ideals in the undergraduate seminar. *International Journal of Qualitative Studies in Education (QSE)*, *27*(1). doi:10.1080/09518398.2012.731529

Higham, R. J. E., Brindley, S., & Van de Pol, J. (2014). Shifting the primary focus: assessing the case for dialogic education in secondary classrooms. *Language and Education, 28*(1), 86-99. doi:10.1080/09500782.2013.771655

Hlas, A.C. & Hlas, C.S. (2012). A review of high-leverage teaching practices: Making connections between mathematics and foreign languages. *Foreign Language Annals, 45*(1), 576-597. doi:10.111/j.1944-9720.2012.01180.x.

Hogg, L., & Yates, A. (2013). Walking the talk in initial teacher education: Making teacher educator modeling effective. *Studying Teacher Education, 9*(3), 311-328. doi:10.1080/17425964.2013.831757

Howe, C., & Abedin, M. (2013). Classroom dialogue: A systematic review across four decades of research. *Cambridge Journal of Education, 43*(3). doi:10.1080/0305764X.2013.786024

Howe, C., Hennessy, S., Mercer,N., Vrikki, M., & Wheatley, L. (2019). Teacher–Student dialogue during classroom teaching: Does it really impact on student outcomes? *Journal of the Learning Sciences, 28*:4-5, 462-512. doi:10.1080/10508406.2019.1573730

Kearney, E. (2015). A high-leverage language teaching practice: Leading an open-ended group discussion. *Foreign Language Annals*, *48*(1),100. doi:10.1111/flan.12128

Lampert, M., Franke, M., Kazemi, E., Ghousseini, H., Turrou, A., Beasley, H., Cunard, A., & Crowe, K. (2013). Keeping it complex: Using rehearsals to support novice teacher l earning of ambitious teaching. *Journal of Teacher Education*, *64*(3), 226-243.

Lee, Y., & Kinzie, M. (2012). Teacher question and student response with regard to cognition and language use. *Instructional Science*, *40*(6), 857-874.

Lemley, J. B., Schumacher, G., & Vesey, W. (2014). What learning environments best address 21st century students' perceived needs at the secondary level of instruction? *NASSP Bulletin, 98*(2), 101-125. doi:10.1177/0192636514528748

McDonald, M., Kazemi, E., & Kavanagh, S. S. (2013). Core practices and pedagogies of teacher education: A call for a common language and collective activity. *Journal of Teacher Education, 64*(5), 378-386. doi:10.1177/0022487113493807

Mehan, H. (1979). *Learning lessons: Social organization in the classroom.* Cambridge, MA: Harvard University Press.

Mercer, N., & Dawes, L. (2014). The study of talk between teachers and students, from the 1970's until the 2010's. *Oxford Review of Education, 40*(4), 430-445. doi:10.1080/03054985.2014.934087

Mueller, R. G. (2016). Making them fit: Examining teacher support for student questioning. *Social Studies Research and Practice, 11*(1), 40-55.

Newman, R. (2016). Working talk: developing a framework for the teaching of collaborative talk. *Research Papers in Education, 31*(1), 107-131. doi:10.1080/02671522.2016.1106698

Roberson, S. (2014). Improving teaching and learning: Three models to reshape educational practice. *Education, 134*(3), 340-358.

Sedova, K., Salamounova, Z., Svaricek, R. (2014). Troubles with dialogic teaching. *Learning Culture and Social Interaction, 3*, 274-285. doi:10.1016/j.lcsi.2014.04.001

Sherry, M. (2019). Emergence and development of a dialogic whole-class discussion genre. *Dialogic Pedagogy: An International Online Journal, 7*, 27-57. doi:10.5195/dpj.2019.256

Sinclair, J., & Coulthard, M. (1975). *Towards an analysis of discourse*. London, England: Oxford University Press.

Sleeter, C. (2014). Toward teacher education research that informs policy. *Educational Researcher, 43*(3), 146-153. doi:10.3102/0013189X14528752

Stanulis, R. N., Little, S., & Wibbens, E. (2012). Intensive mentoring that contributes to change in beginning elementary teachers' learning to lead classroom discussions. *Teaching and Teacher Education*, *28,*32-43. doi:10.1016/j.tate.2011.08.007

Tannebaum, R. P., & Cridland-Hughes, S. A. (2015). Preservice social studies teachers' conceptions of and experiences with discussion as a pedagogical approach: A case study. *International Journal for The Scholarship of Teaching & Learning*, *9*(2), 10-17.

Teo, P. (2013a). Stretch your answers: Opening the dialogic space in teaching. *Learning, Culture and Social Interaction, 2*(2), 91-101. doi:10.1016/j.lcsi.2013.02.002

Teo, P. (2019b). Teaching for the 21st century: A case for dialogic pedagogy. *Learning, Culture and Social Interaction,21,* 170-178. doi:10.1016/J.LCSI.2019.03.009

Tofade, T., Elsner, J., & Haines, S. (2013). Best practice strategies for effective use of questions as a teaching tool. *American Journal of Pharmaceutical Education*, *77*(7), 1-9.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wang, K., & Wang, X. (2013). Promoting knowledge construction and cognitive development: A case study of teacher's questioning. *Theory and Practice in Language Studies, 3*(8), 1387-1392. doi:10.4304/tpls.3.8.1387–1392

Whitney, A. E., Olan, E. L., & Fredricksen, J. E. (2013). Extending the conversation: Experience overall, preservice teachers and the prizing of the "practical." *English Education, 45*(2*),* 184-200.

Williamson, P. (2013). Enacting high leverage practices in English methods: The case of discussion. *English Education*, *46*(1), 34-67.

Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Los Angeles, CA: Sage.

Yin, R. K. (2011). *Qualitative research from start to finish.* New York, NY: Guillford Press.

Zeichner, K. (2012). The turn once again toward practice-based teacher education. *Journal of Teacher Education, 63*(5), 376-382. doi:10.1177/0022487112445789

Appendix A: Question Exercises and Bloom's Taxonomy

Question Practice Exercise: The purpose of this exercise is to generate questions from Bloom's Cognitive Levels, and scaffold questions in ways that encourage learners to make connections, share ideas, and strengthen collaborative thinking. Below are examples of teachers' questions for different purposes. Create your own set of questions following the pattern on questions #1-4 and connect to Bloom's and your content area/lesson/topic.

1. TEACHER QUESTION (May start with a lower-level, knowledge-based content question):
Where is Christmas Island? (Knowledge-recall)
How big is the island? When was it discovered? Who discovered it?
Have you ever visited Christmas Island?
Can you describe the island's main features? (Comprehension- describe)

2. TEACHER QUESTION continues to EXPAND on response; label Bloom's higher levels:
How does the island compare to Hawaii? (Comprehension/Application)
How did you know this information? (Analysis) Why do you think that? (Analysis, Evaluation)
What do you need to find out first to solve this? (Application, Analysis)
Based on what you know, can you predict why it was named Christmas Island? (Application)
How would you prepare for a trip to an island? (Analysis, Synthesis – links to prior experiences).
Why would Christmas Island be a suitable/unsuitable place to live? (Analysis, Evaluation)

3. TEACHER QUESTION targets higher levels for students to support and justify responses:
Have you tried a problem like this before? Can you apply those steps in a new situation?
What if you had started with _____ instead of that _____? How would it be different?
Where did you find that evidence? Could you go a little further to support your answer?
How can you prove that? Would you restate that again?
How would you explain the strategy you used to solve this?
What is the relationship between _____ and _____?
Is this true for every case? Why or why not?
Why did you organize your idea that way? How did you come to that conclusion?
Take your time to think about it. We'll wait. Explain more so we understand better.

4. TEACHER QUESTION helps make connections to others' responses and collaborate.
How can we add on to Mike's idea? What do you like about Mike's idea?
What do you disagree or agree with in what other students have said?
What is the relationship between _____ idea and _____? How does it connect with your idea?
I have a question about what you said. Clarify (tell more or explain) that part for the class.
What has been said that still confuses you? What other questions do you have?
How is your evidence different/the same as _____ idea? How can you expand on that?
What might be an alternative idea to what has already been said? Why do you think that?

Appendix B: Feedback Note Form

Feedback sheet for discussions: ' Teacher': _____ Practice session: _____

1. Write down at least 3 questions or parts of the questions the 'teacher' asked during discussion:

_____

_____

_____

2. What types of questions encouraged more students to respond, or led to deeper student responses?

3. What dialogic tools were used in the discussion? Which do you think was the most effective and why?

4. How did the teacher use revoicing to repeat or rephrase any students' responses?

5. How did the teacher ask students to clarify or explain or prompt them to expand their responses?

6. How did the teacher get students to connect their responses to others' ideas, instead of just the teacher?

7. At what point in the discussion did the students appear to get more interested and involved?

Other comments or suggestions: