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Assessing the Readiness of Central California Agricultural Educators to Teach Multilingual Learners

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Abstract

This study investigated the pedagogical readiness of United States secondary school-based agricultural education (SBAE) teachers to educate multilingual learners (MLs) in California's Central Region. The focus of this study addressed SBAE teacher qualifications, language proficiency, professional development experiences, and perceived competence to teach MLs. The theoretical frameworks for this study included culturally responsive teaching and andragogy as the lens when assessing SBAE teacher preparedness. The participants were licensed to teach SBAE with ML, but most needed more specific training and experience. Participants reported limited professional development related to multilingual learners. Findings also indicated that teachers feel most confident addressing the needs of fluent English speakers but need help with beginning-level ML students. Improving opportunities for professional development addressing culturally responsive teaching, academic vocabulary development, and ongoing training for SBAE teachers would help improve SBAE teachers' classroom pedagogy and enhance learning opportunities for MLs. Future research should explore the effectiveness of specific professional development programs and the impact of teacher preparedness on student outcomes for MLs.

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Introduction and Problem Statement

Academic achievement disparities persist in U.S. classrooms, with multilingual learners (MLs) often academically behind their English-proficient peers (Echevarria et al., 2024). To bridge this gap, educators need tailored instructional approaches to support MLs' language development by ensuring access to quality curricula (Echevarria et al., 2024; Zacarian, 2023). Improving instructional delivery methods from teacher-centered direct instruction to more interactive, student-centered methods (collaborative projects, peer teaching, and problem-based learning) can help improve student engagement and learning.

To better prepare teachers engaged with ML learners, pre-service secondary school-based agricultural education (SBAE) teacher educators should specifically address active learning methods with diverse learners, including MLs (Crunkilton, 1976; Howerton et al., 2019; Vommi & LaVergne, 2016). As teachers matriculate from pre-service to practicing educators, many U.S. teachers feel inadequately trained to meet ML learning needs (Barajas et al., 2020; Heineke & Vera, 2022). The outcome of lowered teacher confidence significantly impacts their ability to address diverse student needs effectively (Ray et al., 2022; Hendrix et al., 2024). When teachers lack confidence in implementing active learning strategies with MLs, it can exacerbate existing achievement gaps. Improving teacher confidence could increase students' academic performance and enhance post-secondary opportunities for these students (García & Kleifgen, 2018; Zacarian, 2023).

Failing to address the unique needs of ML learners may have profound consequences, including diminished engagement/motivation, higher dropout rates, and reduced educational success (Hammond, 2015). Recognizing and responding to individual student needs is paramount to achieving educational equity (Gay, 2018).

Theoretical Frameworks

Culturally responsive teaching (Gay, 2018) and andragogy (Knowles, 1980) served as the theoretical frameworks for this investigation. This study specifically examined how these frameworks inform the assessment of teacher preparedness in agricultural education, focusing on acquiring essential instructional skills and strategies needed to effectively meet the needs of ML students. Culturally responsive teaching emphasizes recognizing and valuing students' cultural backgrounds and experiences. This framework is particularly relevant to the study's objective of understanding how SBAE teachers can best support MLs in developing language proficiency and accessing a quality curriculum.

Andragogy, the art and science of teaching adults, provides a complementary lens for understanding the professional development needs of SBAE teachers. Knowles' (1980) assumptions and principles of learning specifically address adult learners' unique characteristics and motivations, emphasizing self-direction, experience-based learning, and problem-centered

approaches. This framework is particularly relevant to the study's focus on teacher confidence and developing effective instructional strategies for MLs.

Integrating culturally responsive teaching with andragogy underscores the importance of culturally responsive professional development that acknowledges students' cultural diversity and leverages educators' experiential learning and self-directed growth. This integrated approach fosters teacher confidence and promotes effective pedagogical practices in agricultural education.

Combining culturally responsive teaching and andragogy offers a comprehensive lens for assessing the readiness of secondary SBAE teachers to educate MLs. These frameworks highlight the importance of culturally relevant pedagogy, ongoing professional development, and teacher confidence in creating an inclusive and effective learning environment for all students.

Objectives and Purpose

This study investigated the qualifications, language proficiency, professional development experiences, and future needs of California's Central Region agricultural educators, offering insights into their specific challenges in serving MLs. To better understand the educational disparities between MLs and improve the pedagogical preparation of SBAE teachers, four objectives were investigated: (a) Identify the proportion of high school agricultural teachers with specific qualifications or training to teach students who are not fully proficient in English, (b) Identify participant characteristics for teachers and students. (c) Identify and describe the professional development in which agricultural educators in the Central Region of California are engaged, and (d) Describe the perceived level of instructor competence to teach students at various English proficiency levels.

Methods

We used a cross-sectional research design to address the study's objectives and collect participant data in May 2024 as defined by de Vaus (2013): not incorporating an element of time or longitude, dependence on pre-existing characteristic differences rather than implementing an intervention, and utilizing standing groups based on those pre-existing characteristics. The researchers developed a new instrument addressing professional development needs and multilingual learners.

The study's objectives were addressed by providing participants with positively worded statements addressing SBAE teacher preparedness to meet the instructional needs of ML students. Participant responses were collected using a Likert-type five-point interval measurement scale including (a) strongly disagree, (b) disagree, (c) neither agree or disagree, (d) agree, and (e) strongly agree (Lindner & Lindner, 2024).

Participants reported their personal characteristics, teaching experience, and professional development history. They also noted the percentage of students in their classes who speak languages other than English and those identified as MLs. Teachers can access this information through school records, enrollment forms, English language proficiency assessments, direct communication with students and families, and classroom observations.

Content and face validity were assessed (Creswell, 2014), and content validity was evaluated by SBAE and Special Education faculty at Auburn University, leading to minor revisions in the instrument's wording and formatting. These changes included grouping similar questions and aligning response options with standard practices. Researchers conducted a pilot study with SBAE teachers in Southern California (n = 15), and participants provided feedback through an open comment section at the end of the research instrument. Researchers made minor adjustments for clarity based on the pilot participant's feedback. Cronbach's alpha for internal consistency (α = .88) exceeded the minimum reliability threshold (Privitera, 2017), confirming the instrument's usability.

The instrument was electronically distributed using Qualtrics and followed the tailored design method to encourage participant responses (Dillman et al., 2014). The researchers provided a preannouncement email detailing the study's relevance to the potential participants. Potential participants received three follow-up reminders at seven- and ten-day intervals as response rates declined (Dillman et al., 2014). Potential participant contact information was obtained through a publicly available database containing SBAE teachers in California, including their names and email addresses. The survey was distributed to a sample of high school agricultural educators in the Central Region of California (n = 266), yielding 62 responses (23.3%). After excluding incomplete responses (f = 6), we retained 56 fully completed instruments (21%) for analysis. Due to the low response rate, caution is warranted about generalizing the findings beyond the response sample (Lindner et al., 2001; Lindner, 2002)

Findings

This study objectively analyzed SBAE teachers' qualifications, language proficiency, and professional development experiences in California's Central Region instrument, including 19 questions and statements organized into constructs based on the research objectives. These findings are explained in detail based on the data collected.

Objective One: Identify the proportion of high school agricultural teachers with specific qualifications or training to teach students who are not fully proficient in English.

California mandates additional certification for educators (California Department of Education, 2023), requiring that all ML services "be provided by teachers authorized for such instruction until students are reclassified as fluent in English." Participants (f = 56) reported 100% hold credentials to teach SBAE courses in California. Because of this, all respondents have certification to teach MLs. The authorization requirements vary by year acquired and type of certification, meaning that the professional development and experience teaching MLs varies for each respondent.

Objective Two: Identify participant characteristics for teachers and students.

The second objective focused on the characteristics of SBAE educators and their students, as reported by the teachers who completed the survey. Respondents provided self-reported information on years of teaching, race, ethnicity, languages spoken, and fluency in those languages. They also shared the languages their students speak, the percentage of multilingual learners in their classes, and the percentage of students they teach who speak languages other than English. Among the 56 valid responses, all questions received a 100% response rate, except for the question about years of teaching and the languages their students speak, which had 54 responses each.

SBAE Teacher Characteristics

Participants self-reported their personal and professional characteristics (Table 1) when completing the research instrument. Most participants were relatively new to the teaching profession, self-identified as White, and did not speak any language beyond English.

Table 1

Secondary SBAE Teacher Characteristics

Description	*f*	%
Years Teaching		
0-5	19	35.18
6-10	12	22.22
11-20	15	27.78
>20	8	14.81
Teacher Race		
White	44	78.57
Hispanic/Latinx	4	7.14
Multiple	3	5.35
Asian	2	3.57
Prefer not to answer	3	5.35
Teacher Ethnicity		
Not Hispanic / Latinx	47	83.93
Hispanic/Latinx	5	8.92
Prefer not to answer	4	7.14
Teacher Languages Spoken		
English Only	42	75.00
Conversational Spanish	12	21.43
Fluent Spanish	1	1.79
Conversational Mien	1	1.79

SBAE Student Characteristics

In addition to reporting their characteristics, secondary SBAE teachers in California's Central Region reported (Table 2) language information about their students. Teachers reported that Spanish is their predominant language, in addition to English, in their classes.

Table 2

Percent of ML Students

Percent of MLs	*f*	*%*
1-10	15	26.76
11-20	14	25.00
21-30	12	21.40
31-40	6	10.70
41-50	2	3.60
51-60	1	1.80
61-70	4	7.10
71-80	2	3.60
81-90	0	0.00
91-100	0	0.00

Note. *N* = 56

Not all students who speak a language other than English (Table 3) are classified as MLs. Some may have received language support earlier in their education, while others may have been designated fluent in English since primary school. Students who have been redesignated as "Fluent English Proficient" still need ongoing support in language development (Echevarria et al., 2024; Zacarian, 2023).

Table 3

Percent of Secondary SBAE Students Who Speak a Language Other Than English

Students Speaking Other Language	*f*	*%*
1-20	10	17.88
21-40	16	28.57
41-60	19	33.93
61-80	6	10.71
81-100	5	8.93

Note. *N* = 56

Objective Three: Identify and describe the professional development in which agricultural educators in the Central Region of California are engaged.

Participants were asked to identify and report the most common types of content-based and pedagogical training (Table 4) in which they have participated: animal science, plant systems/horticulture, and agricultural mechanics.

Table 4

Professional Learning Participation of Secondary SBAE Teachers in the Last 5 Years

PD Type	PD Specific	*f*	%
SBAE	FFA related	34	62.96
	SAE related	31	57.41
	Other tech skills related to SBAE	39	72.22
	Plant Systems/Horticulture	25	46.30
	Introduction to Agriculture	22	40.74
	Animal Science	20	37.04
	Agricultural Mechanics	22	40.74
	Environmental Sciences / Natural Resources	24	44.44
	Agribusiness	11	20.37
	Food Products	9	16.67
	Engineering	4	7.41
	Biotechnology	3	5.56
Pedagogical	Instructional practices	34	62.96
	Classroom management	28	51.85
	Meeting the needs of MLs	28	51.85
	Meeting the needs of students with disabilities	24	44.44

Note. n = 54, 2 participants did not complete the instrument

Participants reported their professional development experiences beyond content-based development, including instructional strategies, classroom management, and meeting the needs of MLs and students with disabilities. We categorized participant responses into SBAE-specific content and general pedagogical practices. The results indicate that SBAE teachers engage in various professional learning experiences. Notably, while much of the training focused on FFA (f = 34/54) and SAE (f = 31/54), an equal number of respondents reported participating in professional development related to pedagogical practices (f = 34/54) within the last five years.

When we asked an open-ended question about participants' professional learning related to MLs throughout their entire careers, 16 out of 52 respondents reported engaging in any such training beyond their credentialing program. Additionally, fewer than half of the respondents recalled receiving any ML-specific training during their credentialing process. Despite the

requirement for certification to teach MLs in the state, most participants did not recall receiving adequate preparation.

Objective Four: Describe the perceived level of instructor competence to teach students at various English proficiency levels.

Of the 56 respondents, 52 rated their confidence in meeting students' instructional needs at different levels of English proficiency (Table 5). Secondary SBAE teachers feel most confident addressing the needs of students with higher English proficiency.

Table 5

ML Levels and Teacher Confidence

	M	*SD*	Qualifier
Beginning	3.08	1.33	Neither Agree nor Disagree
Intermediate	3.65	1.01	Agree
Advanced	4.25	0.88	Agree
Recently Redesignated	4.58	0.73	Strongly Agree
Fluent English Speakers	4.88	0.43	Strongly Agree

Specifically, 50 out of 52 teachers "Strongly Agree" (Lindner & Lindner, 2024) that they are prepared to meet the needs of fluent English speakers (*M* = 4.88, *SD* = 0.43) and the students who were recently redesignated *(M* = 4.58, *SD* = 0.73). The same teachers report "Neither Agree nor Disagree" when asked about their confidence in meeting the instructional needs of beginning-level students. (*M* = 3.08, *SD* = 1.33). The "beginning level" ML students possessed the least fluency and required the most assistance.

Conclusions, Discussion, and Recommendations

This study highlights the critical need for ongoing and targeted professional development for SBAE teachers (Clemons, Heidenreich, et al., 2018) to effectively support MLs. As U.S. classroom demographics shift, teachers need the skills and confidence to address diverse student needs, which can influence their retention (Coleman et al., 2020; Hansen-Thomas et al., 2014; Clemons & Lindner, 2019). Failing to address the unique needs of MLs can have far-reaching consequences, including diminished engagement, higher dropout rates, and reduced educational success (Hammond, 2015).

Professional development is crucial for preparing teachers to work with MLs, regardless of experience, as teacher confidence improves with professional learning opportunities (Hansen-Thomas et al., 2014). Inconsistent access to continued professional education exacerbates the challenges in meeting the needs of MLs, particularly those with lower English proficiency.

Teacher education programs and school systems should prioritize culturally responsive teaching, integrating students' cultural and linguistic backgrounds into instruction (Gay, 2018). Ongoing and focused training is crucial given the predominantly White, English-speaking respondents and the increasing diversity of student populations in this study. Opportunities for professional growth should address instructional strategies for developing academic vocabulary, essential for making content accessible, particularly in agricultural education with its prevalent technical language (Clemons et al., 2024; Echevarría et al., 2024). For many MLs, academic vocabulary is a barrier to understanding content and broader academic concepts (Lindner et al., 2016).

Teachers should employ strategies to help students acquire specialized language through meaningful activities. Fostering vocabulary development helps MLs navigate complex texts and discussions, improving comprehension and preparing them for academic success (Hansen-Thomas et al., 2014). Building literacy skills using familiar terms can facilitate more meaningful professional development (Clemons, Lindner, et al., 2018). Longitudinal studies should track the impact of professional development on teacher confidence and competence.

Future research should explore the most effective types of professional development for serving MLs. Comparative studies across states or regions could illuminate best practices and guide the development of more effective programs. Further research is needed to address how race, ethnicity, and language proficiency could improve teacher preparation and student academic performance. Addressing these professional development needs is essential to cultivate a more equitable educational landscape where all students, regardless of language background, can thrive (Zacarian, 2023). Additionally, potential studies should investigate the long-term impact of professional development on teacher competence and student outcomes, explore the most effective types of training for serving MLs, and examine how teacher demographics and language proficiency influence student academic performance.

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References

Barajas, G., Crump, M. K., Vincent, S. K., & McCubbins, O. P. (2020). ¡Somos nosotros! Lived experiences of Latinx ELL youth enrolled in secondary agricultural education. *Journal of Agricultural Education, 61*(4), 143–155. https://doi.org/10.5032/jae.2020.04143

California Department of Education. (2023). *FAQs for English learner teacher authorizations*. https://www.cde.ca.gov/sp/el/er/elteachersfaq.asp

Clemons, C. A., McKibben, J. D., Hancock, C. E., & Lindner, J. R. (2024). Exploring agricultural literacy: Instructional practices for advancing student writing in agricultural education. *Journal of Southern Agricultural Research, 74.* http://jsaer.org/2024/04/22/exploring-agricultural-literacy-instructional-practices-for-advancing-student-writing-in-agricultural-education/

Clemons, C. A., & Lindner, J. R. (2019). Teacher longevity and career satisfaction in the secondary agricultural education classroom. *Journal of Agricultural Education, 60*(1), 186–201. https://doi.org/10.5032/jae.2019.01186

Clemons, C., Lindner, J. R., Murray, B., Cook, M. P., Sams, B., & Williams, G. (2018). Spanning the gap: The confluence of agricultural literacy and being agriculturally literate. *Journal of Agricultural Education, 59*(4), 238–252. https://doi.org/10.5032/jae.2018.04238

Clemons, C. A., Heidenreich, A. E., & Lindner, J. R. (2018). Assessing the technical expertise and content needs of Alabama agriscience teachers. *Journal of Agricultural Education, 59*(3), 87–99. https://doi.org/10.5032/jae.2018.03087

Coleman, B., Bunch, J., & Thoron, A. (2020). Identifying agriscience teachers' instructional practice professional development needs by certification type. *Journal of Agricultural Education, 61*(3), 86- 100. https://doi.org/10.5032/jae.2020.03086

Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches* (4th ed.). Sage.

Crunkilton, J. R. (1976). Undergraduate methods courses: Teaching our teachers to teach? *Journal of the American Association of Teacher Educators in Agriculture, 17*(2), 15–18. https://www.jae-online.org/attachments/article/1175/Crunkilton,J_Vol17_2_15-18.pdf

De Vaus, D. (2013). *Surveys in social research* (6th ed.). Routledge. https://doi.org/10.4324/9780203519196

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method*. John Wiley & Sons, Inc.

Echevarría, J., Vogt, M., & Short, D. (2024). *Making content comprehensible for English learners: The SIOP model* (6th ed.). Pearson.

García, O., & Kleifgen, J. A. (2018). *Educating emergent bilinguals: Policies, programs, and practices for English learners* (2nd ed.). Teachers College Press.

Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice* (3rd ed.). Teachers College Press.

Hammond, Z. (2015). *Culturally responsive teaching & the brain: Promoting authentic engagement and rigor among culturally and linguistically diverse students*. Corwin.

Hansen-Thomas, H., Grosso Richins, L., Kakkar, K., & Okeyo, C. (2014). I do not feel I am properly trained to help them!: Rural teachers' perceptions of challenges and needs with English-language learners. *Professional Development in Education, 42*(2), 308–324. https://doi.org/10.1080/19415257.2014.973528

Heineke, A. J., & Vera, E. M. (2022). Beyond language and academics: Investigating teachers' preparation to promote the social-emotional well-being of emergent bilingual learners. *Journal of Teacher Education, 73*(2), 145–158. https://doi.org/10.1177/00224871211027573

Hendrix, R., McKibben, J., & Swortzel, K. (2024). Agricultural educators' personal teaching efficacy towards individual STEM subjects. *Journal of Agricultural Education, 65*(2), 306–321. https://doi.org/10.5032/jae.v65i2.2383

Howerton, T., Clemons, C. A., & Lindner, J. R. (2019). Perceived factors that influence the success of vertical transfer students in agricultural education: A Delphi Study. *Journal of Agricultural Education, 60*(3), 32–46. https://doi.org/10.5032/jae.2019.0302

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy* (Rev. and Updated). Association Press.

Lindner, J. R. (2002). Handling of nonresponse error in the Journal of International Agricultural and Extension Education. *Journal of International Agricultural and Extension Education, 9*(3), 55–60.

Lindner, J. R., & Lindner, N. (2024). Interpreting Likert-type, summated, unidimensional, and attitudinal scales: I neither agree nor disagree, Likert or not. *Advancements in Agricultural Development, 5*(2), 152–163. https://doi.org/10.37433/aad.v5i2.351

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social research. *Journal of Agricultural Education, 42*(4), 43–53. https://doi.org/10.5032/jae.2001.04043

Lindner, J. R., Rodriguez, M. T., Strong, R., Jones, D., & Layfield, D. (2016). New technologies, practices, and products adoption decisions. *American Association for Agricultural Education National Research Agenda, 2020*, 19-27.

Privitera, G. J. (2017). *Research methods for the behavioral sciences* (2nd ed.). Sage.

Ray, B., Clemons, C. A., McKibben, J. D., Lindner, J. R., Fuhrman, N. E., & Barlow, R. J. (2022). Implementing forestry and natural resource curricula in Georgia. A quantitative analysis of perceived barriers towards implementation. *Journal of Agricultural Education, 63*(3), 149–165. https://doi.org/10.5032/jae.2022.03149

Vommi, H. K., & LaVergne, D. D. (2016, February 7–9). *Analyzing the needs of high school agricultural education teachers towards classroom diversity and inclusion* [Poster presentation]. Southern Region of the American Association for Agricultural Education, San Antonio, TX.

Zacarian, D. (2023). *Transforming schools for multilingual learners: A comprehensive guide for educators* (2nd ed.). Corwin Press.