

# Intent and Content of a Closed Facebook Group for School-Based Agricultural Education Instructors in California

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## Abstract

*An external network for school-based agricultural education (SBAE) teachers is integral to reducing teacher turnover. Because SBAE teachers are often isolated geographically from other teachers, it is important to identify other methods of communication with peers. The California Ag Ed Discussion Lab was created in 2016 to more closely address the unique needs of teachers in California. A dearth of literature exists about the use of closed Facebook groups for teachers, especially in agricultural education. The purpose of this study was to analyze posts in a closed Facebook group for SBAE teachers in California to determine the intent and content shared. This study employed quantitative content analysis using a conceptual framework to identify what members were posting about in the California Ag Ed Discussion Lab Facebook group by SBAE teacher role and how they communicated the information via communicative functions of social media. Data collected included three years of posts in the Facebook group. Findings indicated the SBAE teacher roles of Instruction and FFA were the most posted subject areas. Using the conceptual framework, data revealed 53.9% of posts coded to one of three categories: Mobilization/Instruction, Information Sharing/Instruction, and Mobilization/FFA and also coincided with events in the agricultural education teaching profession.*

**Keywords:** closed Facebook group; content analysis; informal mentoring; social media

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## **Introduction**

The agricultural education profession is a demanding, ever-changing vocation because it requires teachers to remain current in the industry and to provide insight into various agricultural content areas (Davis & Jayarante, 2015; Talbert et al., 2007). It also requires a substantial commitment of time and resources outside of regular school hours and the normal classroom (Croom, 2003; Delnero & Montgomery, 2001; Rayfield et al., 2014; Talbert et al., 2007). Collaboration and support from others within the school-based agricultural education (SBAE) profession can create emotional support, reduce job dissatisfaction, and help prevent what literature describes as teacher burnout (Boone & Boone, 2007; DeLay & Washburn, 2013; Kelly & Antonio, 2016). Ideally, SBAE teachers are paired with others in their profession for collaboration purposes, but this approach is not always practical because they often end up alone as the only SBAE teacher in their school or district, especially in the case of beginning teachers (Talbert et al., 2007).

Creating an external network of teachers in the same professional field has been shown to reduce teacher turnover (Ingersoll & Smith, 2004; Smith & Ingersoll, 2004). Teachers use social media to collaborate and generate ideas, connect and support each other, and seek advice from others in their profession (California Ag Ed Discussion Lab, n.d.; Hart & Steinbrecher, 2011; Kelly & Antonio, 2016). Specifically, Facebook groups connect members to like-minded professionals and a wealth of resources (Kelly & Antonio, 2016; Zell & Moeller, 2018). In August 2015, the Ag Education Discussion Lab Facebook group was created as a forum for SBAE teachers in the United States to share resources and provide mentors to beginning teachers (Ag Education Discussion Lab, 2020). In 2016, SBAE teachers in California discerned a need for a similar group that tailored more specifically to their unique needs (N. Ray, personal communication, September 11, 2019). As such, the California Ag Ed Discussion Lab Facebook group (CAEDL) was formed with the purpose to:

Share resources, collaborate and connect with those in California. With the addition of the new NGSS [Next Generation Science Standards] standards and so many schools adopting the new science courses this group can be a resource to help teachers navigate challenges, seek advice, share successes, and share resources. (California Ag Ed Discussion Lab, n.d.)

There is limited research about the use of Facebook groups as collaborative tools for teachers, especially in agricultural education. As a collaboration resource, teachers using the CAEDL Facebook group can share and request resources, information, and advice. Since the CAEDL Facebook group is intended for in-service SBAE teachers, the content of members' posts could offer insight into the information most commonly requested by SBAE teachers.

## **Conceptual Framework**

The communicative functions of social media (Ellison et al., 2013; Saxton & Waters, 2014) and six roles of the SBAE teacher derived from literature (Delnero & Montgomery, 2001; Talbert et al., 2007; Terry & Briers, 2010) help to understand the intention of the communication served as the building blocks for the conceptual framework for the study.

### **SBAE Teacher Roles**

The three-circle model of SBAE (National FFA Organization, n.d.), combined with research on SBAE teachers' roles, was used to develop the six SBAE teacher role categories used in the study. Although the three areas of SBAE are integral to the success of a complete program (Croom, 2008), the definition of teacher roles goes beyond the three-circle model (Delnero & Montgomery, 2001; Talbert et al., 2007; Terry & Briers, 2010). Further, research on the in-service needs of SBAE teachers also identified the numerous and multi-faceted responsibilities of SBAE teachers (Boone & Boone, 2007; Claycomb & Petty, 1983; DeLay & Washburn, 2013; Figland et al., 2019; Garton & Chung, 1996; Golden et al., 2014; Layfield & Dobbins, 2002; Stair et al., 2012). For this study, the roles of the

SBAE teacher were defined as Department Management, Facilities/Equipment, FFA, Instruction, SAE, and Non-Specific/Other.

Department management responsibilities of the SBAE teacher encompassed areas such as grants, student contracts, student recruitment, fundraisers, and parent groups. Facilities/Equipment included management of school facilities (e.g., school farm and greenhouse) and purchasing of equipment with particular attention to depreciable items, or those with more than one year of life (e.g., floral coolers, welders, greenhouse supplies, animal scales, and buildings). The FFA SBAE teacher role included any activities related to the SBAE leadership component, including career development events, officer teams, and conferences. The Instruction SBAE teacher role category included any consumable resources used for classroom instruction, as well as resources for teacher planning and instruction (e.g., course outlines, grading and assessment, lesson plans, and textbook recommendations). SAE included management and ideas for student projects (e.g., student record books, student contracts specific to SAEs, and student livestock). Finally, the Non-Specific/Other SBAE teacher role category included posts about teacher certification, job opportunities, teacher professional development, and sharing of general resources.

### Communicative Functions of Social Media

The communicative functions used for the conceptual framework of the study combined the communicative functions outlined by Saxton and Waters (2014) and Ellison et al. (2013). Specific classifications of communicative functions include Community Building, Information Sharing, Mobilization, and Promotion. Table 1 describes the four communicative functions.

**Table 1**

*Communicative Functions of Social Media Used for the Conceptual Framework in the Content Analysis of the California Ag Ed Discussion Lab Facebook Group*

Communicative Function	Description
Community Building	Does not necessarily elicit a response but shows an attempt to connect with others in a genuine manner to build the online community (Saxton & Waters, 2014).
Information Sharing	A one-way communication strategy with the purpose to simply share information (Saxton & Waters, 2014).
Mobilization	Facebook status updates in which users requested help or action from their network (Ellison et al., 2013).
Promotion	One-way in nature with the purpose to “encourage and empower those who see the message to do something for or on behalf of the organization” (Saxton and Waters, 2014, p. 287).

The Mobilization communicative function includes five subcategories: Factual Knowledge, Favor/Request, Opinion/Poll, Recommendation, and Social Coordination (Ellison et al., 2013). Table 2 includes the name, functional definition, and an example for each Mobilization subcategory.

**Table 2***Mobilization subcategories of Facebook Posts*

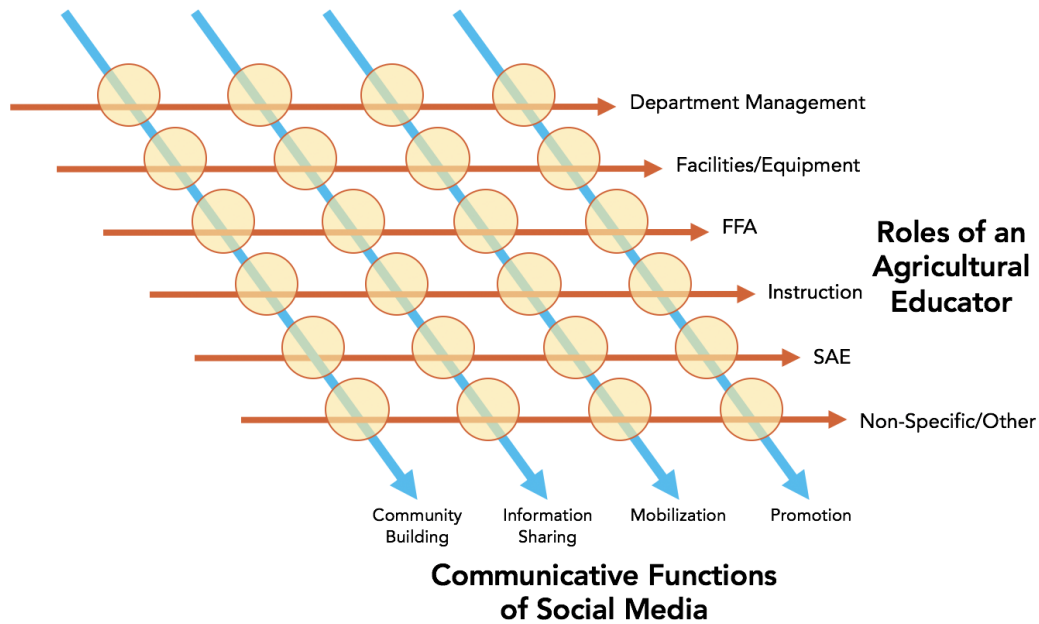
Mobilization Subcategory	Description <i>Examples of Communicative Function Defined for this Study</i>
Factual Knowledge	A question posed that assumes and expects a correct answer; objective as opposed to subjective. <i>“Where will State Convention take place this year?”</i> <i>“When does registration for MFE/ALA<sup>a</sup> open?”</i>
Favor/Request	A request for help or action from one’s network for any number of things, including physical assistance, needed item, or emotional support. <i>“Does anyone have a fun soil science lab they’d be willing to share?”</i> <i>“Does anyone have a copy of the FFA Creed in Spanish?”</i>
Opinion/Poll	A request for an opinion in reaction/response to a status update, a vote or a choice between two alternatives to be made, or a general solicitation of what people are doing. <i>“What do people think of the changes to State Convention?”</i> <i>“Should students be able to wear FFA shirts instead of Official Dress to meetings?”</i>
Recommendation	A subjective, open-ended request for suggestions, or, in the case of referrals/social connections, a request to be referred or introduced to a specific person. <i>“What hotel do you recommend for State Convention?”</i> <i>“Which Agriscience textbook do you use in your class?”</i>
Social Coordination	A search for others with similar agendas or motives for company (an invitation), with an assumed goal of collaboration or meeting. <i>“Who is attending the NAAE<sup>b</sup> Meeting in April?”</i> <i>“Who wants to meet after the workshop to write curriculum?”</i>

*Note.* Adapted from Ellison et al. (2013) and created for use in this study

<sup>a</sup>Made for Excellence and Advanced Leadership Academy Conferences

<sup>b</sup>National Association of Agricultural Educators

The conceptual framework (see Figure 1) was developed to visualize the relationship between the intent (communicative function) and content (SBAE teacher role) of posts.

**Figure 1***Roles of an Agricultural Educator Across the Communicative Functions of Social Media*

### Purpose and Objectives

The purpose of the study was to identify the intent (communicative function) and content (SBAE teacher role) of the posts made by SBAE teachers in the CAEDL Facebook Group over a three-year time period from January 1, 2017, to December 31, 2019. Five objectives guided this study:

1. Classify the communicative functions of posts in the CAEDL Facebook group.
2. Classify the SBAE teacher roles identified in CAEDL Facebook group posts.
3. Examine relationships among SBAE teacher roles and communicative functions.
4. Categorize conversations within each SBAE teacher role using content subcategories.
5. Describe the authorship of posts in the CAEDL Facebook group.

### Methods

We used quantitative content analysis to meet the identified research objectives. The quantitative coding protocol was developed and implemented using eight steps to create and test a coding scheme (Weber, 1990). The coding scheme used the conceptual framework developed for the study (see Figure 1). Croucher and Cronn-Mills (2019) suggested building a coding frame by first starting with a few pre-set codes based on the research question and then using open coding to allow additional codes to emerge as the study progresses. Therefore, within each SBAE teacher role category, subcategories were developed to identify each SBAE teacher role category further using a few initial pre-set codes coupled with additional open coding.

Post content from the CAEDL Facebook group was initially downloaded on January 10, 2020, using the third-party application Sociograph. From Sociograph, the timestamp, text, reactions, comments, and shares for each post were placed into the coding database. Post content from Sociograph was sorted by timestamp in reverse chronological order and then compared to the live CAEDL Facebook group to collect the author and types of reactions for each post. Through this process, we

realized 40 posts were not included in the Sociograph download. To mitigate this missing information, the timestamps and text from the downloaded posts were compared to those on the CAEDL Facebook group wall and added text and post characteristics (i.e., timestamp, author, text, reactions, comments, and shares) from the missing posts to the downloaded excel file. Once all 870 posts were accounted for, they were sorted in reverse chronological order, assigned a post ledger number to assist in the coding process and future analysis, and then merged into the coding transcript. A Microsoft Excel file was accessed to populate the coding transcript using the mail merge feature in Microsoft Word. The coding transcript included the ledger number, timestamp, and text for each post.

In addition to not disseminating the types of reactions, Sociograph did not gather any graphic content from the posts (i.e., photos, link previews, shared file previews, and video previews) that provided context to the posts. Therefore, once the downloaded text-based information was included in the coding transcript, screenshots of post content were captured from the live CAEDL Facebook group wall that included elements in addition to text. This step ensured photos and other visual elements not downloaded by Sociograph were included in the transcript to assess the context of the posts more accurately. This information was crucial for the content of the CAEDL Facebook group to be classified appropriately.

The study followed the research protocol from Riffe et al. (1998) and Weber (1990) to assess the reliability of the coding process. Following coder training, including practice coding, a transcript of posts outside the study's time frame, two doctoral graduate students and former SBAE teachers coded the posts using the codebook developed from the conceptual framework. Intercoder reliability was tested, and all variables met the recommended level of satisfactory agreement, shown in Table 3, using Cohen's kappa ( $\kappa > .60$ ) (McHugh, 2012). The coders compared and discussed all codes that failed to match between coders until they reached a consensus.

**Table 3**

*Reliability Scores of the CAEDL Quantitative Content Analysis*

Number of Codes	Communicative Function		Primary SBAE Teacher Role		SBAE Teacher Role Subcategories	
	$\kappa$	<i>OA</i>	$\kappa$	<i>OA</i>	$\kappa$	<i>OA</i>
60	0.8459	0.8833	0.8195	0.8333	0.7682	0.7833
120	0.8339	0.8750	0.7767	0.8333	0.7127	0.7333
400	0.7724	0.7725	0.6787	0.8325	0.6137	0.6375
870	0.7020	0.7747	0.7834	0.8379	0.6205	0.6460

*Note.* Reliability scores  $> .60$  are considered acceptable (McHugh, 2012).

$\kappa$  = Cohen's kappa, *OA* = observed agreement

## Findings

A total of 870 posts from January 1, 2017, to December 31, 2019, were coded. After coding for communicative functions and roles of the SBAE teacher, the coders determined 866 posts contained usable information. Four posts were removed from the database before data analysis as one contained no content, two contained broken links to content and were unable to be coded, and another was an administrative post that updated the group's name.

### Findings Related to Objective 1

Objective one was to classify the communicative functions of posts in the CAEDL Facebook group. The most frequent posts were those related to Mobilization ( $n = 564, 65.13\%$ ), followed by Information Sharing ( $n = 256, 29.56\%$ ), Promotion ( $n = 26, 3.00\%$ ), and Community Building ( $n = 20, 2.31\%$ ), as shown in Table 4. Two Mobilization subcategories (Favor/Request and Recommendation)

accounted for 82.80% of all Mobilization requests, equalling 53.93% of all posts in the CAEDL Facebook group from the period analyzed.

**Table 4**

*Frequency of Posts by Communicative Function in the CAEDL Facebook Group*

Communicative Function	<i>f</i>	% of total	% of Mobilization
Community Building	20	2.31	
Information Sharing	256	29.56	
Mobilization	564	65.13	
Factual Knowledge	42	4.85	7.45
Favor/Request	261	30.14	46.28
Opinion/Poll	52	6.00	9.22
Recommendation	206	23.79	36.52
Social Coordination	3	0.35	0.53
Promotion	26	3.00	
Total	866		

*Note.* Data represent the time frame of the study, January 1, 2017, to December 31, 2019.

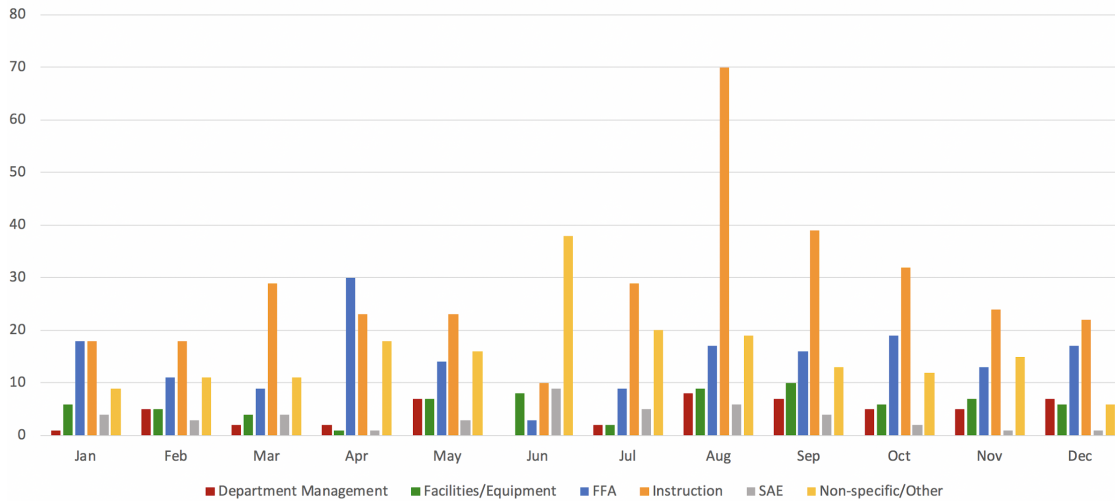
### Findings Related to Objective 2

The second objective was to classify the SBAE teacher roles identified in CAEDL Facebook group posts. When combined, Instruction (38.91%) and FFA (20.32%) accounted for more than one-half of the posts in the CAEDL Facebook group from January 1, 2017, to December 31, 2019. The Non-Specific/Other category ( $n = 188$ ) accounted for 21.71% of all posts.

The distribution of posts by SBAE teacher role is shown by month in Figure 2. The months of August, September, and October had the most influx of Instruction posts, with more than twice as many Instruction posts in August ( $n = 70$ ) than 10 other months, September excluded ( $n = 39$ ). August also had 3 times the number of Instruction posts than six other months (January, February, April, May, June, November, and December). The highest frequency of FFA posts occurred in April ( $n = 30$ ), which was 11 more than the month with the next highest frequency (October,  $n = 11$ ) and more than twice as many as six other months (February, March, May, June, July, and November) throughout the year.

**Figure 2**

*Number of Posts by SBAE Teacher Role by Month in the CAEDL Facebook Group*



**Findings Related to Objective 3**

Objective 3 was to examine relationships among frequencies of posts in each of the identified SBAE teacher roles across communicative functions. Community Building posts ( $n = 20$ ) were distributed across three of the six SBAE teacher role categories, with the most frequent number of posts ( $n = 17$ ) in the Non-Specific/Other category (see Table 5). The other three communicative function categories had posts distributed across all six SBAE teacher role categories. Nearly one-half of the Information Sharing posts ( $n = 256$ ) were in the Instruction category ( $n = 114$ , 13.16% of total posts). Mobilization posts ( $n = 564$ ) were distributed across the SBAE teacher roles with counts ranging from 35 (4.04% of total posts) to 221 (25.52% of total posts). Promotion posts had the second-lowest frequency overall but were still distributed across all six SBAE teacher role categories, with Non-Specific/Other being the most frequent SBAE category in the promotion communicative function ( $n = 12$ , 1.39%).

**Table 5**

*Post Frequency of the SBAE Teacher Roles Across Communicative Functions of the CAEDL Facebook Group*

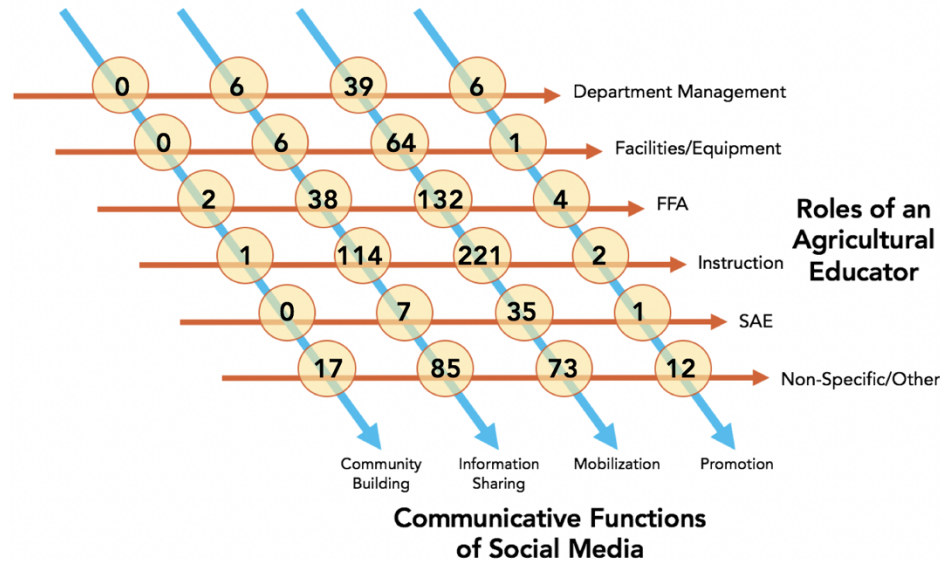
SBAE Teacher Role Category	Communicative Function							
	Community Building		Information Sharing		Mobilization		Promotion	
	<i>n</i>	% of total	<i>n</i>	% of total	<i>n</i>	% of total	<i>n</i>	% of total
Dept. Mgmt			6	0.69	39	4.50	6	0.69
Facilities/Equip.			6	0.69	64	7.39	1	0.12
FFA	2	0.23	38	4.39	<b>132</b>	<b>15.24</b>	4	0.46
Instruction	1	0.12	<b>114</b>	<b>13.16</b>	<b>221</b>	<b>25.52</b>	2	0.23
SAE			7	0.81	35	4.04	1	0.12
Other	17	1.96	85	9.82	73	8.43	12	1.39
<b>Total</b>	<b>20</b>	<b>2.31</b>	<b>256</b>	<b>29.56</b>	<b>564</b>	<b>65.13</b>	<b>26</b>	<b>3.00</b>

*Note.* Data represent time frame of the study, January 1, 2017, to December 31, 2019.

The cross categories are shown in Table 5 and Figure 3, with the most prominent categories shown in bold in Table 5. Mobilization posts in the Instruction category accounted for 25.52% of all posts ( $n = 221$ ), more than 10% more posts than the next highest category (Mobilization/FFA,  $n = 132$ , 15.24%). The Information Sharing communicative function had the next greatest number of posts in the Instruction SBAE teacher role category ( $n = 114$ , 13.16%). Further, 53.93% of all posts were coded to one of three categories: Mobilization/Instruction, Information Sharing/Instruction, and Mobilization/FFA.

**Figure 3**

*Graphic Representation of the Frequency of Posts in the CAEDL Facebook Group by Roles of an Agricultural Educator Across the Communicative Functions of Social Media*



*Note.* Data represent time frame of the study, January 1, 2017, to December 31, 2019.

**Findings Related to Objective 4**

Objective 4 sought to categorize conversations within each SBAE teacher role using content subcategories. In addition, Mobilization posts were distributed into five subcategories. Thirteen subcategories were identified in the Department Management SBAE teacher role category. The frequencies of the Department Management SBAE teacher role posts by communicative function are shown in Table 6. Fundraisers ( $n = 10$ ) had the greatest frequency of posts in the Department Management SBAE teacher role and were split among Promotion ( $n = 6$ ) and Recommendations ( $n = 4$ ). Posts in the combined subcategories of Grants and Funding ( $n = 7$ ) accounted for 13.73% of the Department Management posts and were all coded as Mobilization communicative function.

**Table 6**

*Frequency of Department Management SBAE Teacher Role Post Subcategories by Communicative Function*

Department Management Subcategory	Number of Posts						
	Total	FK	FR	IS	OP	P	R
AET <sup>a</sup> Record Books	1	1					
AET <sup>a</sup> Scanners	1						1
Booster Clubs/Parent Groups	2		1				1
Class Scheduling	8		2	1	2		3
Funding	4	2	1				1
Fundraisers	10					6	4
Grants (AIG <sup>b</sup> , CTEIG <sup>b</sup> , Writing, Managing)	3		2				1
Other	7		2	2			3
Parents/Stakeholders	7		2	2			3
Recruitment	1		1				
Roster	3	1	1	1			
Student Accounts	1				1		
Student Contracts	3		3				
<b>Total</b>	<b>51</b>	<b>4</b>	<b>15</b>	<b>6</b>	<b>3</b>	<b>6</b>	<b>17</b>

*Note.* Communicative Functions are abbreviated for space consideration: Factual Knowledge (FK), Favor/Request (FR), Information Sharing (IS), Opinion/Poll (OP), Promotion (P), Recommendation (R).

<sup>a</sup> Agricultural Experience Tracker

<sup>b</sup> Agricultural Incentive Grant

<sup>c</sup> Career and Technical Education Incentive Grant

Nine subcategories were identified in the Facilities/Equipment SBAE teacher role category. The frequencies of the SBAE teacher roles posts by communicative function are shown in Table 7. Learning laboratory areas, including the Ag Mechanics Shop, Greenhouses, and School Farms, accounted for 56.34% ( $n = 40$ ) of the Facilities/Equipment SBAE teacher role category. Greenhouse/Ornamental Horticulture/Floral had the highest frequency of posts ( $n = 21$ ) among all Facilities/Equipment categories, which included 20 Mobilization posts.

**Table 7**

*Frequency of Facilities/Equipment SBAE Teacher Role Post Subcategories by Communicative Function*

Facilities/Equipment Subcategory	Number of Posts					
	Total	FR	IS	OP	P	R
AET <sup>a</sup> Scanners	3			1		2
Ag Mechanics Shop	1					1
Ag Truck/Department Vehicles	4	1		1		2
Classroom Supplies/Furniture	11			1		10
Greenhouse/Ornamental Horticulture/Floral	21	5	1	3		12
Livestock owned by the school	2				1	1
School Farm	18	5		2		11
Storage	2	1	1			
Other	9	1	4			4
Total	71	13	6	8	1	43

*Note.* Communicative Functions are abbreviated for space consideration: Favor/Request (FR), Information Sharing (IS), Opinion/Poll (OP), Promotion (P), Recommendation (R).

<sup>a</sup> Agricultural Experience Tracker

Posts in the FFA SBAE teacher role category were sub-coded into 18 categories listed in Table 8. The greatest frequency of posts in this teacher role category was conferences ( $n = 72$ ). These posts were distributed across seven communicative functions, with the most frequent in Favor/Request ( $n = 21$ ) and Information Sharing ( $n = 20$ ). During the span of the study, members of the CAEDL also posted 33 times about career development and leadership development events and 25 times about managing the FFA chapter, including FFA chapter meetings/activities ( $n = 11$ ) and officer teams ( $n = 14$ ).

**Table 8***Frequency of FFA SBAE Teacher Role Post Subcategories by Communicative Function*

FFA Subcategory	Number of Posts							
	Total	CB	FK	FR	IS	OP	P	R
Banquet/Awards Ceremonies	6		1	2	1			2
Career Development Events	27		5	12	3		2	5
Chapter Meetings/Activities	11	1		3		1		6
Conferences	72	1	13	21	20	4	1	12
FFA Degrees (Requirements/Applications)	4		2	2				
FFA Jackets	3			2	1			
Field Day Specific	4				1			3
Fundraisers	3			2				1
General Resources	3			1	2			
Leadership Development Events	6			4	1			1
Officer Teams (Applications, Training, Management, etc.)	14			7	1	1		5
Other	10			1	3	1	1	4
Recruitment	3							3
Scholarships & Grants	5				5			
Social Media	1					1		
Student Accounts	1			1				
Student Contracts	1			1				
Student Motivation	2							2
<b>Total</b>	<b>176</b>	<b>2</b>	<b>21</b>	<b>59</b>	<b>38</b>	<b>8</b>	<b>4</b>	<b>44</b>

*Note.* Communicative Functions are abbreviated for space consideration: Community Building (CB), Factual Knowledge (FK), Favor/Request (FR), Information Sharing (IS), Opinion/Poll (OP), Promotion (P), Recommendation (R).

Member posts identified within the Instruction category accounted for nearly 40% ( $n = 337$ ) of all posts. As shown in Table 9, 10 subcategories were identified among these posts. Members shared 69 posts classified in the General Resources/Information Sharing cross-section. These resources included video links, project ideas, infographics, and other items that were not part of the specific Lesson Curriculum/Sub Plans and Unit Curriculum subcategories. The most frequent Favor/Request posts in the Instruction category was for 1 Lesson Curriculum/Sub Plans ( $n = 49$ ). Members also shared lesson curriculum and/or substitute teacher plans through the Information Sharing communicative function for a total of 32 posts. Overall, the Favor/Request and Recommendation communicative function accounted for more than one-half ( $n = 200$ ; 59.35%) of Instruction posts, with Information Sharing representing 33.83% ( $n = 114$ ) of the Instruction SBAE teacher role category.

**Table 9***Frequency of Instruction SBAE Teacher Role Post Subcategories by Communicative Function*

Instruction Subcategory	Number of Posts							
	Total	CB	FK	FR	IS	OP	P	R
Course Outlines/Pacing Guides	55		2	41	4	2		6
Field Trips	11			2	2	1		6
General Resources	106		1	17	69	4	1	14
Grading/Rubrics	4			1		1		2
Instructional Supplies	21			3	4	1		13
Lesson Curriculum/Sub Plans	102	1	1	49	32	3	1	15
NGSS <sup>a</sup>	3			1	1	1		
Testing/Assessment	16		1	7	2	1		5
Textbook Recommendations	12					1		11
Unit Curriculum	7			4				3
<b>Total</b>	<b>337</b>	<b>1</b>	<b>5</b>	<b>125</b>	<b>114</b>	<b>15</b>	<b>2</b>	<b>75</b>

*Note.* Communicative Functions are abbreviated for space consideration: Community Building (CB), Factual Knowledge (FK), Favor/Request (FR), Information Sharing (IS), Opinion/Poll (OP), Promotion (P), Recommendation (R).

<sup>a</sup>Next Generation Science Standards

Although the Other subcategory in the SAE teacher role category had the most posts ( $n = 11$ ), members of the CAEDL most often asked for student contracts in the SAE SBAE teacher role category, as shown in Table 10. These requests ( $n = 10$ ) were all coded to the Favor/Request category in the Mobilization communicative function. Overall, SAE posts ( $n = 43$ ) accounted for only 4.97% of all posts.

**Table 10***Frequency of SAE SBAE Teacher Role Post Subcategories by Communicative Function*

SAE Subcategory	Number of Posts							
	Total	FK	FR	IS	OP	P	R	
AET <sup>a</sup> Record Books	2	2						
Fair	7		1		2	1	3	
General Resources	5		2	3				
Ideas	5	1			3		1	
Livestock	1			1				
Livestock Camp	1			1				
Proficiencies	1						1	
Student Contracts	10		10					
Other	11	1	2	2			6	
<b>Total</b>	<b>43</b>	<b>4</b>	<b>15</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>11</b>	

*Note.* Communicative Functions are abbreviated for space consideration: Factual Knowledge (FK), Favor/Request (FR), Information Sharing (IS), Opinion/Poll (OP), Promotion (P), Recommendation (R).

<sup>a</sup>Agricultural Experience Tracker

The final teacher role category was the Non-Specific/Other category. Posts in this category summarized all other duties of the SBAE teacher, and provided a place for posts non-specific to one of the other SBAE teacher roles. The subcategories in the Non-Specific/Other category are identified in Table 11. Information Sharing was the most frequently used communicative function in the Non-Specific/Other SBAE teacher role category, including posts about professional development ( $n = 21$ ), the annual conference of the agriculture teachers' association ( $n = 17$ ), and job opportunities ( $n = 14$ ). Members also used the CAEDL to ask about and share information about credentials and industry certifications ( $n = 11$ ). The Other subcategory in the Non-Specific/Other category included posts about outside resources for teachers that did not fit into any category.

**Table 11**

*Frequency of Non-Specific/Other SBAE Teacher Role Post Subcategories by Communicative Function*

Non-Specific/Other Subcategory	Number of Posts								
	Total	CB	FK	FR	IS	OP	P	R	SC
CATA General (includes Golden Slate Newsletter)	6		1	3		1			1
CATA Summer Conference (includes Banquet, workshops, and the like)	32	2		9	17	2	1	1	
Commiserate	3				2	1			
Credentials/Certifications	11	2	2	3	2	1		1	
Funny/Humor	9	6			2		1		
General Resources	5			2	2	1			
Goodwill (Checking on others after disaster)	6	3	1		2				
Job Opportunities	18		1	1	14				2
Other	53	3	2	12	22	3	4	7	
Personal life/ Work-life balance	1			1					
Professional Development	38	1	1		21	2	6	5	2
Stipends/Salaries	4			2		2			
Vision 2030	2			1	1				
<b>Total</b>	<b>188</b>	<b>17</b>	<b>8</b>	<b>34</b>	<b>85</b>	<b>13</b>	<b>12</b>	<b>16</b>	<b>3</b>

*Note.* Communicative Functions are abbreviated for space consideration: Community Building (CB), Factual Knowledge (FK), Favor/Request (FR), Information Sharing (IS), Opinion/Poll (OP), Promotion (P), Recommendation (R), Social Coordination (SC).

### Findings Related to Objective 5

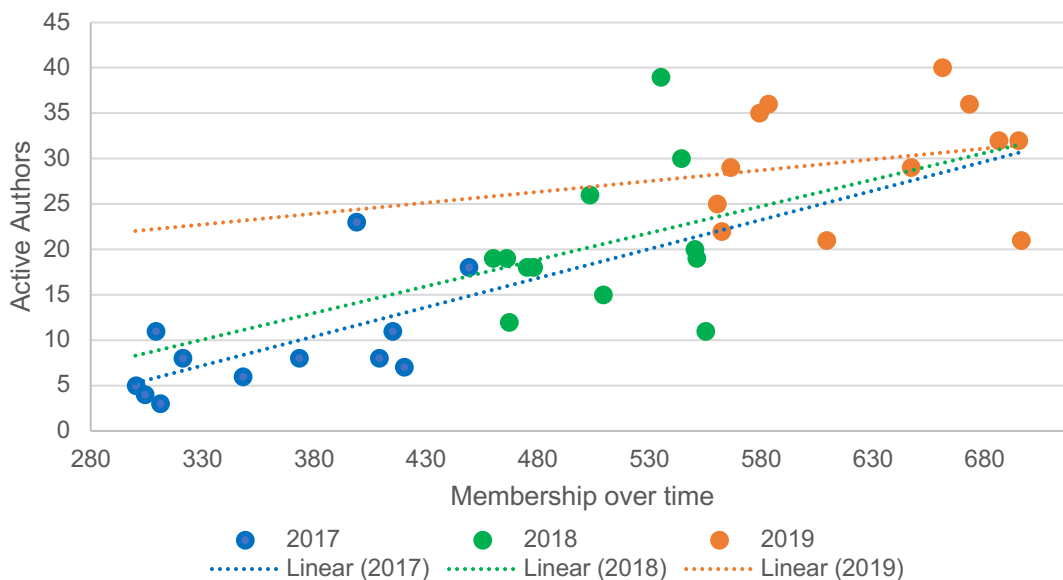
The final objective was to describe the authorship of posts in the CAEDL Facebook group from January 1, 2017, to December 31, 2019. There were 251 unique authors among the 866 posts analyzed, of which 250 were current group members as of January 10, 2020. One author left the group between posting in the group, and the date data were collected. Founding members, those who joined in the first month of the group (June 2016) accounted for 115 (46%) of the 250 authors. The 250 authors represent 35.82% of the total membership of the CAEDL Facebook group ( $n = 698$ ). Authors posting only once accounted for 45.42% ( $n = 114$ ). Thirty members, including the group moderator, accounted for more than one-half ( $n = 437$ , 50.46%) of CAEDL Facebook group posts from January 1, 2017, to December 31, 2019.

Post authors created an average of 3.45 posts ( $SD = 5.32$ ) during the time frame of this study, with one author posting 42 times and 114 authors posting only once. The member who authored the most posts ( $n = 42$ ) also received the most comments ( $n = 202$ ) and reactions ( $n = 605$ ). Authors received an average of 20 comments ( $SD = 31.45$ ) across all posts and with 18 authors receiving no comments on any of their posts. The reactions per author ranged from 0 to 605, with 43 authors receiving no reactions on their posts. On average, authors received 19.99 ( $SD = 56.23$ ) reactions to their posts. Five authors received no comments and no reactions to their posts.

Analysis of covariance was used to test the effect of year on the number of unique authors by month when controlling for the number of members in the group. The observations were independent, normally distributed (skewness  $< \pm |1.96|$  and kurtosis  $< \pm |1.96|$ ; (Kim, 2013; West et al., 1995), had equal variances (Levene's statistic,  $p > .05$ ), and the dependent variable (number of unique authors) and covariate (total membership) had a linear relationship as shown in Figure 4. All groups had a similar positive regression coefficient (2017,  $B = .064$ ; 2018,  $B = .059$ ; 2019,  $B = .024$ ) and there was no interaction between the dependent variable and the covariate ( $p > .05$ ). Results of the ANCOVA suggest the difference in the number of unique authors per month across years was not statistically significant when controlling for the number of members in the group ( $F(2,32) = .80, p > .05$ ).

**Figure 4**

*Relationship of Membership Over Time to Active Authorship in the CAEDL Facebook Group*



Founding members who joined in the first month of the group (June 2016) authored 508 posts (58.66%) in the CAEDL Facebook group from January 1, 2017, to December 31, 2019. These posts were authored by 115 authors, for an average of 4.42 posts per author. Furthermore, during 29 of the 36 months analyzed in this study, founding members posted more than non-founding members. The range of founding members posting each month varied from 3 to 24, with an average of 11.28 ( $SD = 4.75$ ) founding members posting each month. Non-founding member authorship ranged from 0 to 23 posts per month, with an average of 8.61 ( $SD = 7.00$ ) non-founding members posting each month.

Because posts before January 1, 2017, were not included in data collection, there is no way to assess the time between when all members join the group and make their first post. However, those

who joined after January 1, 2017, to December 31, 2019, waited an average of 13.60 months ( $SD = 8.43$ ) before making their first post.

### ***Authorship by Communicative Function***

More than one-half of the authors posted a favor/request ( $n = 135, 53.78\%$ ). Nearly one-half ( $n = 116, 46.22\%$ ) authored recommendation posts and in excess of one-third ( $n = 86, 34.26\%$ ) authored Information Sharing posts. Table 12 shows authorship by communicative function.

**Table 12**

#### *Authorship of CAEDL Facebook Group posts by Communicative Function*

Communicative Function	# of posts	# of authors <sup>a</sup>	# of posts per author	
			<i>M</i>	<i>SD</i>
Community Building	20	16	1.25	0.58
Information Sharing	256	86	2.98	5.13
Mobilization				
Factual Knowledge	42	27	1.56	0.97
Favor/Request	261	135	1.93	1.57
Opinion/Poll	52	39	1.33	0.81
Recommendation	206	116	1.78	1.52
Social Coordination	3	1	3 <sup>b</sup>	
Promotion	26	18	1.44	1.20

*Note.* Data represent time frame of the study, January 1, 2017, to December 31, 2019.

<sup>a</sup>Total number of authors is 251;

<sup>b</sup>All three Social Coordination posts were made by the same author.

### ***Authorship by SBAE Teacher Role Category***

A minimum of 30 authors contributed to each of the SBAE teacher role categories. Among the 251 unique authors who posted in the study's time frame, 141 different authors contributed to the Instruction SBAE teacher role category and contributed an average of 2.39 ( $SD = 2.99$ ) posts per person. Table 13 shows the total authorship by SBAE teacher role.

**Table 13**

#### *Authorship of CAEDL Facebook Group posts by SBAE Teacher Role*

SBAE Teacher Role	# of posts	# of authors <sup>a</sup>	# of posts	
			<i>M</i>	<i>SD</i>
Department Management	51	38	1.34	0.91
Facilities/Equipment	71	54	1.31	0.75
FFA	176	89	1.98	1.89
Instruction	337	141	2.39	2.99
SAE	43	30	1.43	0.82
Non-Specific/Other	188	92	2.04	2.86

*Note.* Data represent time frame of the study, January 1, 2017, to December 31, 2019.

<sup>a</sup>Total number of authors is 251.

### Conclusions, Discussion, and Implications

The CAEDL Facebook group is fulfilling its purpose to share information and resources for SBAE teachers in California (California Ag Ed Discussion Lab, n.d.). Although the population of the group ( $n = 600$ ) is only a portion of the total population of agricultural teachers in California ( $n = 926$ ; *History of California Agricultural Education*, n.d.), the CAEDL offers a forum for teachers to share resources and seek information about a multitude of topics. Findings of this study indicate the CAEDL is much more than an idea share for California SBAE teachers. Rather, this analysis of posts and authorship shows the group facilitates interaction of members to solve issues and offer advice when asked about topics ranging from coaching Career Development Events to planning lesson curriculum. The group also provides possible solutions to major problems facing beginning teachers (Boone & Boone, 2007; Myers et al., 2005; Talbert et al., 1994), especially by providing curriculum and lesson plan resources. The group provides opportunities to attain answers to time-sensitive questions and requests, especially when teachers away from their schools while participating in FFA and professional development conferences.

The high frequency of Mobilization posts shows members are willing to ask questions and request resources from peers. Further, the high frequency of Instruction posts indicates teachers are seeking and sharing instruction-related content in the CAEDL Facebook group more than any other topic. The areas of Mobilization/Instruction, Mobilization/FFA, and Information Sharing/Instruction account for more than one-half of all posts in the CAEDL Facebook group, with SAE posts accounting for less than 5% of all posts. Could this imbalance of posts indicate there is an imbalance in the three components of SBAE in California? Does the low number of SAE posts represent a decreased focus on the SAE component of SBAE, or are there other avenues teachers are using for information related to SAEs? Also, members post more requests in the Instruction and FFA SBAE teacher roles than any other SBAE teacher role. Are these areas more mobilized through the CAEDL Facebook group because members need additional assistance in these areas, or are members seeking new opportunities? If teachers really feel more competent in the FFA component of the three-circle model than other components (Birkenholz & Harbstreit, 1987; Garton & Chung, 1996; Joerger, 2002; Myers et al., 2005), why are there more FFA requests than SAE? Is the lack of SAE posts representative of less weight placed on the SAE component in California? Future research should address these questions, investigate why members are not inquiring about SAEs, or investigate other resources teachers use for SAE mentorship and support.

Teachers are accessing the CAEDL Facebook group to seek timely advice for curriculum and FFA events. Members of the CAEDL posted about instruction most in August, September, and October. Coincidentally, a challenge for beginning teachers (Myers et al., 2005) and mid-career teachers (Smalley & Smith, 2017) is the lack of preparation time at the beginning of the school year. An increase of Instruction posts during this time frame suggests teachers are connecting with the CAEDL Facebook group to acquire resources for the upcoming school year.

In addition to the increase of Instruction posts at the beginning of the school year, the frequency of posts also increases in concert with FFA and professional development events throughout the calendar year. For instance, the increase of FFA-related posts in April and October coincides with the California State and National FFA Conventions, respectively. The increase in Non-Specific/Other posts in June also matches members' focus on the annual teachers' association conference. This conclusion aligns with previous research that found an increase in the number of posts is often dependent on events occurring within the public sphere (Batorski & Grzywińska, 2018). The profession should use SBAE teacher Facebook groups to identify the needs of members during the calendar year and provide support from more experienced group members during time periods in which posts spike.

Connecting teachers through online communities limits the feelings of isolation often felt by teachers who have considered leaving the profession (DeLay & Washburn, 2013; Smith & Ingersoll,

2004). Early exposure to the CAEDL for young teachers could fuel teachers' confidence and expose them to a collaborative community from the beginning, increasing career satisfaction and commitment (DeLay & Washburn, 2013).

Future research should examine the career stage of teachers posting in the CAEDL Facebook group. Understanding the Mobilization requests made by beginning or early-career teachers could provide guidance for specific professional development offered during induction programs. Also, requests from multiple groups across various career stages could provide guidance for professional development for a broader audience. Further, identifying *expert* members who provide Information Sharing posts could serve as a recruitment tool to identify mentors for beginning and early-career teachers in those areas.

A small number of members account for the majority of posts in the CAEDL Facebook group. Nearly 64% of the members in the CAEDL Facebook group did not author any post during the time frame of this study. Further, nearly one-half of members ( $n = 114$ ; 45.42%) who contributed posts during the time frame of the study authored only one post. This pattern of a few members contributing a high number of posts is similar to other studies about participation in social network communities (Batorski & Grzywińska, 2018; Rensfeldt et al., 2018). Does this communication technology still provide value to members who are not posting in the group?

Founding members provide a groundwork of content and continually add value to the group by remaining active in the CAEDL Facebook group. This conclusion supports previous research from Ranieri et al. (2012) who found members who were in the group for a longer period of time were more active in the group. Almost one-half of the members ( $n = 115$ ; 46%) who posted during the time frame of this study joined the CAEDL Facebook group in June of 2016. These members accounted for 58.66% ( $n = 508$ ) of posts authored in the CAEDL Facebook group from January 1, 2017, to December 31, 2019. Bishop (2007) referred to these members as *elders* and credits them for regularly participating in a group and supporting other members. However, those who joined after January 1, 2017, waited more than one year (13.60 months;  $SD = 8.43$ ) before making their first post. Why are so few new members posting in the group? Are these members first observing in the group to understand the climate of other conversations? Does this imply new members need to adapt to the community before posting?

Finally, the dearth of literature concerning Facebook group analysis, more specifically closed Facebook groups and SBAE teacher Facebook groups, sheds a light on the need for additional research in the area of Facebook group engagement. Thus, it is recommended this study be replicated using other SBAE teacher groups to identify the important conversations at each state level. The findings from this study are specific to the CAEDL and emphasize the Instruction SBAE teacher role. Would other state SBAE teacher groups yield similar frequencies of communicative functions and SBAE teacher roles? Would other groups, especially those anecdotally known for SAE and/or FFA prominence, emphasize another aspect of the three-circle model? The use of the conceptual framework with other state teacher groups would identify how the SBAE teacher Facebook groups are being used by members. Lastly, the replication of this study using the national Ag Ed Discussion Lab could provide direction to the administrators of the group to begin promoting more targeted collaboration and mentor/mentee opportunities to teachers with specific mentorship needs, regardless of geography.

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