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A Comparison of Curricular Resource Use of Florida School-Based Agricultural Education Teachers by Career Stage

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Abstract

There is considerable variability in the design and quality of resource provided to teachers. There is also a lack of empirical backing guiding the process of curricular resource design, specifically as it relates to teachers in different stages of their careers. The purpose of this study was to explore curricular resource use by Florida SBAE teachers based on experience level. A census of Florida school-based agricultural education teachers was conducted. The instrument asked teachers to identify which resources they used and provided follow-up instruments for the resources selected to determine the pedagogical design capacity related to each resource. Respondents were found to use similar amounts of resources across all career stages. When comparing means related to PDC, a significant difference was only found for one resource. Overall, these findings showed that teachers use similar amounts of resources regardless of career stage and PDC for various resources remains stable across career stages. There is a slight increase in the frequency of use for teachers in the early career stage. This study provides an overview of how PDC changes depending on the resource being used across career stages. Resources should continue to be developed to teachers across all career stages.

Keywords
Curriculum; Curricular Use; Pedagogical Design Capacity; Career Stages

Introduction

There has been a teacher shortage, particularly among teachers in School-Based Agricultural Education (SBAE) (Eck & Edwards, 2019). There was a total of 60 full-time and three part-time agricultural educator positions still vacant nationally in 2019 due to a lack of agricultural educators (Foster et al., 2020). The workload involved in SBAE has been cited as one of the main reasons for leaving the profession, particularly the paperwork and planning required (Cole, 1984). This workload can be difficult for beginning teachers to balance (Boone, 2009). Reasons attributed to leaving the profession can vary by career stage. Fessler and Christiansen (1992) described eight career stages teachers experience. These stages are pre-service, induction, competency building,
enthusiastic and growing, career frustration, career stability, career wind-down, and career exit (Fessler & Christiansen, 1992). Teachers move through the various stages of their careers in a nonlinear pattern and can move between stages. However, in the induction stage, teachers are typically within their first few years

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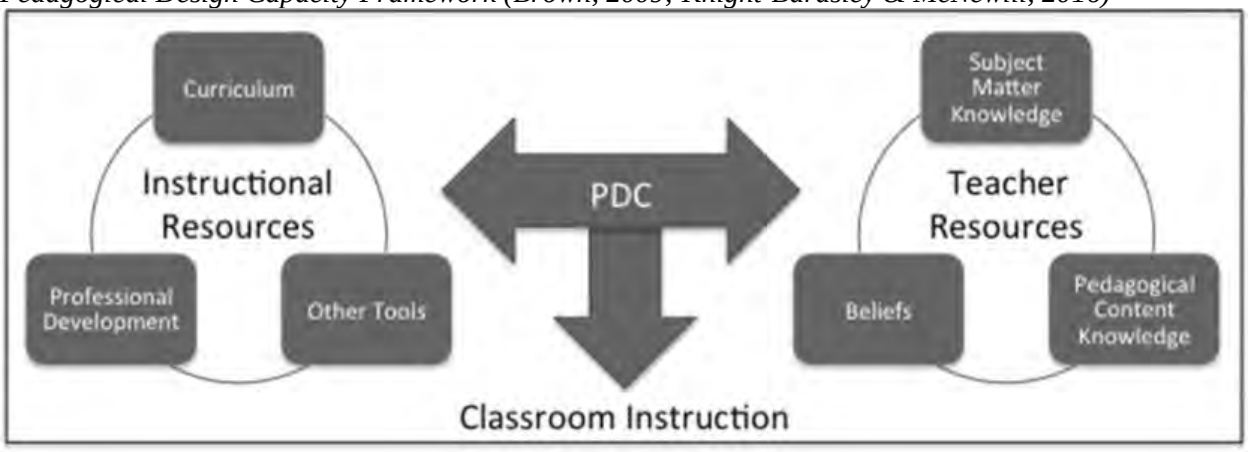
of teaching or teachers can experience this stage if they switch to another grade level or subject (Fessler & Christiansen, 1992). Teachers in this stage are focusing on acceptance by their students and peers. Teachers in the competency building stage focus on finding new materials, new ideas, gaining, and gaining confidence in their knowledge and skills (Fessler & Christianson). According to Fessler and Christiansen's (1992) career cycle model, teacher burnout and job frustration occur during the career frustration stage. Although Croom (2003) found if agricultural education teachers had a high degree of personal accomplishment and efficacy, burnout may not be a concern. Croom (2003) also noted among SBAE teachers, there was a moderate level of emotional exhaustion in their work. Emotional exhaustion is one of the main symptoms of teacher burnout. Burnout is the response to continuous stressors caused by one's job. Characteristics of burnout can be emotional exhaustion, lower levels of self-efficacy, and cynicism (Maslach et al., 2001). Teacher burnout can result in negative instructional planning behaviors that can negatively affect the quality of instructional events that happen in the classroom (Maslach et al., 1996). These can include procrastination, lack of planning, and overuse of offloading. Offloading has been described as a teacher relying on the curricular materials, as is, for instruction with no modifications or analysis (Brown & Edelson, 2003). Offloading instructional responsibility is not always a bad thing, as this can create a multitasking environment when used in a productive way (Brown & Edelson, 2003). However, when teachers offload their instructional responsibility consistently, the teacher's Pedagogical Design Capacity, (PDC) is not fully implemented, resulting in a loss in quality of instruction. PDC is the capacity that enables teachers to craft instructional activities through perceiving and mobilizing pre-existing resources (Brown & Edelson, 2003). When teachers utilize their full PDC in planning instruction, the lessons are more specialized to each program and classroom learning goals and objectives. Further research is needed to determine how teachers use available resources to develop instruction, how these resources impact their PDC, and if there are difference in resource use by teachers across career stages.

Literature Review

This study was theoretically guided by Brown's (2009) and Knight-Bardsley and McNeil's (2016) PDC framework, which represents the relationship between teacher resources, instructional resources, and the classroom instruction delivered as a result (see figure 1). Teaching is a process of design (Brown & Edelson, 2003). This process includes teachers selecting and customizing curricular resources to meet student/classroom goals, which engages a teacher's PDC. According to Brown and Edelson (2003), there are different ways teachers can use curricular materials when designing instruction: offloading, adapting, or improvising. Offloading is a transfer of curriculum design responsibility from the teacher to the materials they are using, adapting is the addition of a teacher's design elements to the implementation of the curriculum, and improvising is the deviation from the original lesson plans with a majority of the design process being contributed by the teacher (Brown & Edelson, 2003). When teachers offload or input little to no customization in curricular resources, they are unable to design the curriculum to meet the students' or program's individual needs. However, when adapting resources or using resources as a starting point for instructional design through improvisation, teachers can better personalize the curriculum for their objectives.

Figure 1

Pedagogical Design Capacity Framework (Brown, 2009; Knight-Bardsley & McNewill, 2016)



The quality of resources for SBAE teachers varies highly, from cook-book lesson plans that lend to a high level of offloading to customizable resources that can be adapted to better meet the needs of the program. According to Easterly and Simpson (2020), several resources lead to offloading behaviors, such as AET, iCEV, and Agriculture in the Classroom. In New Mexico, it was found that Curriculum for Agricultural Science Education (CASE) courses led to offloading behaviors as well, and Pinterest had the least amount of offloading (Thornton et al., 2020). When resources such as these lead to offloading behaviors, a teacher's full PDC is not recognized and used when planning instruction.

Previous studies (Easterly & Simpson, 2020; Thornton et al., 2020) with SBAE teachers, found New Mexico SBAE teachers used an average of 7.5 resources in instructional planning (Thornton et al., 2020) and Utah SBAE teachers used an average of 4.9 resources in instructional planning (Easterly & Simpson, 2020). In both New Mexico and Utah, 50% or more of SBAE teachers were found to use Agriculture Experience Tracker (AET) and Agriculture in the Classroom (Easterly & Simpson, 2020; Thornton et al., 2020). Despite this research, there has not been any previous research examining the relationship between experience level and the use of curricular resources in SBAE teachers.

Purpose and Research Objectives

The purpose of this study is to explore curricular resource use by Florida SBAE teachers based on experience level. The study will examine how teachers develop their Pedagogical Design Capacity. This study was guided by the American Association for Agricultural Education Research Agenda research priority area 5, efficient and effective agricultural education program (Thoron et al., 2016). This study was guided by the following objectives:

1. Describe the resources used by Florida SBAE teachers.
2. Describe the Pedagogical Design Capacity of Florida SBAE teachers by career stage.
3. Compare Pedagogical Design Capacity of Florida SBAE teachers by career stage.

Methodology

This study examined the relationship between Florida SBAE teachers' PDC and their career stage. A census of SBAE teachers in Florida was taken between December 2020 and February 2021. The population frame was taken from the Florida Agriculture Teacher Directory. The instrument used for this study was distributed online using the website Qualtrics and was sent out with an initial contact email inviting participants to participate in the study following the tailored design method (Dillman et al., 2014).

Notice letters were mailed to each of the teachers with a $1 cash incentive. There were 248 respondents yielding a response rate of 49.6%. Known demographic variables of non-respondents and respondents were compared to test for non-response bias (Johnson & Shoulders, 2019; Rogelberg & Stanton, 2007). Chi-square tests indicated no significant difference in gender (X^2 (1, N = 500) = 1.18, p < .05) and FFA district (X^2(5, N = 500) = 1.52, p < .05). The data were considered representative of the population and the results were generalized.

A researcher-developed instrument was implemented to determine the use of curricular resources by Florida SBAE teachers. An instrument similar to this was used in previous studies with SBAE teachers in both Utah (Easterly & Simpson, 2020) and New Mexico (Thornton et al., 2020). The instrument asked the participants to select the resources they use to plan and deliver instruction from a list of 23 resources, plus options for textbooks and other resources not included in the list. The list was devised by the researchers who know of the resources used by teachers and the validity of this list was confirmed by a panel of experts outside of the study, including the state agricultural education coordinator and a teacher educator in the state who did not participate in the study. Using skip-logic in Qualtrics, the participants were requested to answer follow-up questions for the resources they use in the classroom. They were then asked to rate their frequency of use using the responses of *once per semester or less*, *twice per semester*, *monthly*, *weekly*, and *daily*, which were given a numerical value of 1-5 respectively; these data were analyzed as a continuous variable using real limits. Participants were then asked to rate the organization and structure of the resource using a 0-100 sliding scale where 0 was attached to *Very Poor* and 100 was attached to *Very Good*. To measure the level of adaptation, participants were asked to rate their level of modification to the resource using a 0-100 sliding scale where 0 was attached to *No modification* and 100 was attached to *A lot of Modification*. To measure the level of offloading, participants were then asked to rate their familiarity with the content/resource being used, using a 0-100 sliding scale with 0 attached to *Not Familiar* and 100 to *Familiar*. To measure the level of improvisation, participants were asked to specify how much they modified their instruction when teaching while using the resource, using a 0-100 sliding scale with 0 attached to *No Modification* and 100 to *A lot of Modification*. The use of sliding scales compared to radio buttons was to make the questionnaire more engaging for the participants, as well as improve the data quality following the guidance of Roster et al. (2015). The instrument was reviewed by a panel of experts and was deemed to be a valid measure of PDC.

Katz (1972) model of teacher developmental stages was used to group teachers by year as Fessler & Christiansen's model does not provide years as a guide for the various levels of teacher career stages. Teachers in years one through three were in survival stage, four through eight years were in renewal, and late phase in nine years plus of experience (Katz, 1972). An additional category was added for teachers with more than 18 years of experience titled wind down. Katz's model of teacher developmental stages is used to define the levels of groups we are examining. There were 55 teachers in survival stage, 52 in renewal, 53 in late phase, and 73 in wind down.

Results

Describe the resources used by Florida SBAE teachers.

All participants were asked on the instrument to select the resources they use in the classroom from a list of resources and to list any additional resources they use within the classroom. Teachers in survival stage indicated using a mean of 8.6 resources (SD = 3.8). Teachers in renewal stage, indicated using a mean of 8.7 resources (SD = 3.8). Late-stage teachers indicated using a mean of 8.7 resources (SD = 4.8). Teachers in the wind down stage indicated using a mean of 8.5 resources (SD = 3.8). The number of resources used by participants ranged from 0 to 29, which is displayed in table 1, grouped by career stage.

Table 1

Distribution of the Number of Curricular Resources Utilized by Florida SBAE Teachers by career stage.

	Survival		*Renewal*		*Late Phase*		*Wind-Down*	
Number of Resources	*f*	%	*f*	%	*f*	%	*f*	%
0	1	1.8	0	0	0	0	0	0
1	1	1.8	1	1.9	2	3.8	0	0
2	1	1.8	1	1.9	2	3.8	1	1.4
3	1	1.8	2	3.8	1	1.9	5	6.8
4	3	5.5	4	7.7	4	7.5	5	6.8
5	4	7.3	3	5.8	5	9.4	3	4.1
6	7	12.7	4	7.7	5	9.4	9	12.3
7	6	10.9	7	13.5	5	9.4	7	9.6
8	5	9.1	5	9.6	3	5.7	11	15.1
9	3	5.5	7	13.5	2	3.8	6	8.2
10	3	5.5	1	1.9	5	9.4	8	11.0
11	6	10.9	1	1.9	6	11.3	3	4.1
12	3	5.5	6	11.5	5	9.4	6	8.2
13	5	9.1	3	5.8	4	7.5	1	1.4
14 or more	6	10.9	7	13.5	4	7.5	8	11.0

Follow-up questions were asked to respondents for each resource they selected using skip-logic in Qualtrics, which included the frequency of use (see table 2). Respondents who are in survival stage of teaching, most frequently used the School/District Curriculum (M = 4.78; SD = 0.44), which aligns with *weekly* as defined by the real limits, and CAERT (M = 3.25; SD = 0.96), which aligns with *monthly* as defined by the real limits. Respondents in the renewal stage reported most frequently using CASE (M = 4.20; SD = 0.84), which aligns with *weekly* as defined by the real limits, and the School/District Curriculum (M = 4.00; SD = 0.82), which aligns with *weekly* as defined by the real limits. Respondents in stage 3 reported most frequent use of the School/District Curriculum (M = 3.93; SD = 1.00), which aligns with *monthly* as defined by the real limits, and Agriculture Experience Tracker (M = 3.17; SD = 0.84), which aligns with *monthly* as defined by the real limits. Respondents in the wind down stage reported most frequently using the School/District Curriculum (M = 4.13; SD = 0.81), which aligns with *weekly* as defined by the real limits, and iCEV (M = 3.41; SD = 1.02), which aligns with *monthly* as defined by the real limits.

Table 2

Frequency of Use of Curricular Resources by Florida SBAE Teachers by career stage.

	Teachers 1-3		Teachers 4-8		Teachers 9-17		Teachers 18+	
Curricular Resource	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Agriculture in the Classroom	2.95	0.94	2.87	1.41	2.32	1.22	2.43	1.11
iCEV	3.16	1.07	3.68	1.03	2.91	1.26	3.41	1.02
USDA	2.03	0.87	2.28	1.28	2.03	0.89	2.00	1.02
NAAE Communities of Practice	3.04	0.88	2.71	0.94	2.32	1.03	2.38	0.90
Pinterest	2.81	1.20	2.50	1.35	2.29	1.08	2.54	1.14
Teachers Pay Teachers	2.46	1.04	2.67	1.18	2.45	1.22	2.29	0.85

Georgia Ag. Ed.	2.64	1.09	2.10	0.91	2.00	1.00	2.28	1.05
National FFA Resources	2.76	0.99	2.79	1.08	2.55	0.67	2.43	0.84
One Less Thing	2.90	1.41	2.62	1.28	2.35	1.12	2.04	1.14
AEST	2.94	1.18	2.50	1.23	3.10	1.18	2.71	1.10
Agriculture Experience Tracker (AET)	2.75	1.03	2.92	0.90	3.17	0.84	2.86	1.24
Nutrients for Life	1.58	0.90	1.79	0.80	1.30	0.68	2.06	1.12
CTE Online	2.92	1.17	2.17	1.40	1.90	1.20	2.46	1.13
CAERT	3.25	0.96	3.00	1.00	2.86	1.02	3.08	1.24
Glen Rose FFA	1.92	0.67	2.30	1.16	1.63	0.92	2.31	1.03
School/District Curriculum	4.78	0.44	4.00	0.82	3.93	1.00	4.13	0.81
FFA Blue 365	1.90	0.74	2.50	1.35	2.00	0.71	1.50	0.76
Agednet	3.14	0.69	2.71	1.50	2.18	1.08	2.83	1.27
OSHA	1.75	0.71	2.00	1.53	1.40	0.70	1.56	0.73
AEC Online Resources	2.45	1.04	2.22	1.30	1.00	0.00	2.33	1.21
Animal Care Technologies	3.00	1.41	3.33	1.21	2.83	1.17	3.08	1.12
CASE	2.00	0.82	4.20	0.84	1.67	1.033	2.71	1.70

Note- Responses were reported on a scale from 1-5 and were only measured by the teachers who utilized the resource.

Describe the Pedagogical Design Capacity of Florida SBAE teachers by career stage.

Respondents were asked to rate their level of resource modification before teaching for the resources they selected to operationalize adapting behavior. A question about familiarity of content resources was used to indicate levels of offloading behavior, which translates to higher familiarity indicates low levels of offloading behavior. Respondents were asked a question about the level of improvisation to indicate levels of improvising. Among survival stage teachers, between 1-3 years of teaching, the resource with the lowest level of adaptation is iCEV (M = 35.4; SD = 20.4) and the resource with the highest level of adaptation was Pinterest (M = 68.6; SD = 26.2). The resource with the lowest level of familiarity with content was AEST (M = 59.6; SD = 23.0) and the resource with the highest level of familiarity with content was One Less Thing (M = 81.7; SD = 20.3). The resource with the lowest level of improvisation was iCEV (M = 58.0; SD = 26.6) and the resource with the highest level of improvisation was Pinterest (M = 75.6; SD = 20.9). This data is displayed in table 3.

Table 3

Patterns of Pedagogical Design Capacity for Resources used by Survival Stage SBAE Teachers

		Level of Lesson Modification (Adapting)		Familiarity with Content (Offloading)		Level of Improvisation (Improvising)	
Curricular Resource	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Agriculture in the Classroom	37	49.6	20.4	63.1	25.5	65.1	20.9
iCEV	25	35.4	32.6	79.6	21.6	58.0	26.6
USDA	29	55.6	31.7	63.4	19.1	64.5	24.4
NAAE Communities of Practice	28	53.5	21.0	74.2	18.9	61.1	22.8
Pinterest	32	68.6	26.2	77.3	22.3	75.6	20.9
Teachers Pay Teachers	28	44.6	21.6	67.4	22.2	59.4	27.1
Georgia Ag. Ed.	22	51.7	24.8	74.9	22.0	69.1	18.2
National FFA Resources	29	44.9	24.9	75.7	26.0	58.7	24.3
One Less Thing	20	38.0	24.4	81.7	20.3	60.8	24.3
AEST	16	51.8	29.8	59.6	23.0	63.1	31.7

Note- Responses were reported on a scale from 0-100 and were only measured by the teachers who utilized the resource.

Renewal stage teachers, between 4-8 years of teaching, reported the resource with the lowest level of adaptation was iCEV (*M* = 29.9; *SD* = 21.2) and the resource with the highest level of adaptation was Pinterest (*M* = 69.8; *SD* = 25.4). The resource with the lowest level of familiarity with content was USDA (*M* = 57.5; *SD* = 18.6) and the resource with the highest level of familiarity with content was iCEV (*M* = 75.0; *SD* = 25.9). The resource with the lowest level of improvisation was AEST (*M* = 45.5; *SD* = 24.6) and the resource with the highest level of improvisation was Pinterest (*M* = 69.0; *SD* = 23.6). This information is displayed in table 4.

Table 4

Patterns of Pedagogical Design Capacity for Resources used by Renewal SBAE Teachers

		Level of Lesson Modification (Adapting)		Familiarity with Content (Offloading)		Level of Improvisation (Improvising)	
Curricular Resource	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Agriculture in the Classroom	30	51.4	18.7	63.9	27.1	62.4	23.2
iCEV	25	29.9	21.2	75.0	25.9	49.4	23.4
USDA	25	66.4	30.9	57.5	18.6	57.9	20.4
NAAE Communities of Practice	28	56.4	22.6	66.4	25.3	58.8	26.0
Pinterest	24	69.8	25.4	68.6	23.0	69.0	23.6
Teachers Pay Teachers	30	52.4	27.0	71.7	20.3	56.1	22.8
Georgia Ag. Ed.	20	56.8	21.4	68.6	54.3	54.3	18.2
National FFA Resources	19	46.1	28.0	71.6	20.9	51.9	24.0
One Less Thing	21	45.1	27.6	72.1	23.6	55.5	28.2
AEST	14	59.1	21.6	66.8	26.4	45.5	24.6

Note- Responses were reported on a scale from 0-100 and were only measured by the teachers who utilized the resource.

Late-stage teachers, between 9-17 years of teaching, reported the resource with the lowest level of adaptation was National FFA Resources (*M* = 36.2; *SD* = 18.5) and the resource with the highest level of adaptation was Pinterest (*M* = 70.6; *SD* = 25.6). The resource with the lowest level of familiarity with content was USDA (*M* = 56.0; *SD* = 22.4) and the resource with the highest level of familiarity with content was iCEV (*M* = 74.7; *SD* = 24.2). The resource with the lowest level of improvisation was AEST (*M* = 46.2; *SD* = 23.6) and the resource with the highest level of improvisation was Pinterest (*M* = 65.6; *SD* = 25.5). This data is in table 5.

Table 5

Patterns of Pedagogical Design Capacity for Resources used by Late Stage SBAE Teachers

		Level of Lesson Modification (Adapting)		Familiarity with Content (Offloading)		Level of Improvisation (Improvising)	
Curricular Resource	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Agriculture in the Classroom	31	47.3	19.5	61.0	29.7	61.7	26.2
iCEV	34	38.3	30.2	74.7	24.2	53.4	26.1
USDA	30	44.0	27.5	56.0	22.4	55.9	21.9
NAAE Communities of Practice	25	54.5	30.3	65.6	28.3	60.0	25.1
Pinterest	24	70.6	25.6	70.5	19.9	65.6	25.5
Teachers Pay Teachers	22	42.8	21.6	60.6	31.3	60.2	24.8
Georgia Ag. Ed.	21	55.2	24.1	62.5	24.2	60.7	12.8
National FFA Resources	22	36.2	18.5	58.9	22.1	54.1	21.4
One Less Thing	17	38.2	20.7	66.2	25.5	57.0	25.8
AEST	21	35.6	23.7	64.0	26.0	46.2	23.6

Note- Responses were reported on a scale from 0-100 and were only measured by the teachers who utilized the resource.

Wind-down stage teachers, 18 years or more of teaching, reported the resource with the lowest level of adaptation was One Less Thing (*M* = 32.8; *SD* = 22.9) and the resource with the highest level of adaptation was Pinterest (*M* = 69.4; *SD* = 20.9). The resource with the lowest level of familiarity with content was Pinterest (*M* = 60.2; *SD* = 27.6) and the resource with the highest level of familiarity with content was National FFA Resources (*M* = 75.5; *SD* = 23.6). The resource with the lowest level of improvisation was Georgia Ag. Ed. (*M* = 47.6; *SD* = 25.2) and the resource with the highest level of improvisation was Pinterest (*M* = 58.9; *SD* = 23.0). This data is arranged in table 6.

Table 6

Patterns of Pedagogical Design Capacity for Resources used by Wind-Down Stage SBAE Teachers

		Level of Lesson Modification (Adapting)		Familiarity with Content (Offloading)		Level of Improvisation (Improvising)	
Curricular Resource	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Agriculture in the Classroom	42	38.9	22.9	65.0	32.3	56.7	22.9
iCEV	34	34.9	25.8	66.7	28.3	53.7	26.0
USDA	30	53.0	26.1	64.5	23.8	54.5	24.2
NAAE Communities of Practice	29	48.0	21.0	68.1	24.1	56.7	23.5
Pinterest	24	69.4	20.9	60.2	27.6	58.9	23.0
Teachers Pay Teachers	17	53.1	34.0	62.1	32.0	52.9	28.0
Georgia Ag. Ed.	32	40.0	20.3	63.9	29.1	47.6	25.2
National FFA Resources	23	33.7	24.3	75.5	23.6	53.0	23.8
One Less Thing	25	32.8	22.9	69.7	24.9	57.0	21.9
AEST	31	42.8	30.0	67.5	26.4	52.3	28.1

Note- Responses were reported on a scale from 0-100 and were only measured by the teachers who utilized the resource.

Compare Pedagogical Design Capacity of Florida SBAE teachers by career stage.

To compare PDC of teachers by career stage an analysis of variants was conducted (see tables 7, 8 & 9). There were no statistically significant differences between career stage groups for the resources Ag. in the Classroom, iCEV, USDA, NAAE Communities of Practice, Pinterest, Teachers Pay Teachers, National FFA Resources, One Less Thing, and AEST for offloading, adapting, and improvising. However, there was a statistically significant difference between groups for adapting related to the Georgia Ag. Ed. Resource as determined by the one-way ANOVA ($F(3,83) = 2.82$, $p = .043$).

Table 7

Means, Standard Deviations, and One-Way Analyses of Variance of Level of Lesson Modification for Resources used by Florida Agriculture Teachers by career stage.

	1-3		4-8		9-17		18+			
Curricular Resource	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p-value*
Agriculture in the Classroom	49.6	20.4	51.4	18.7	47.3	19.5	38.9	22.9	2.54	.06
iCEV	35.4	32.6	29.9	21.2	38.3	30.2	34.9	25.8	.44	.73
USDA	55.6	31.7	66.4	30.9	44.0	27.5	53.0	26.1	2.37	.08
NAAE Communities of Practice	53.5	21.0	56.4	22.6	54.5	30.3	48.0	21.0	.62	.61
Pinterest	68.6	26.2	69.8	25.4	70.6	25.6	69.4	20.9	.03	.99
Teachers Pay Teachers	44.6	21.6	52.4	27.0	42.8	21.6	53.1	34.0	.88	.46

Georgia Ag. Ed.	51.7	24.8	56.8	21.4	55.2	24.1	40.0	20.3	2.82	.04
National FFA Resources	44.9	24.9	46.1	28.0	36.2	18.5	33.7	24.3	1.31	.28
One Less Thing	38.0	24.4	45.1	27.6	38.2	20.7	32.8	22.9	.85	.47
AEST	51.8	29.8	59.1	21.6	35.6	23.7	42.8	30.0	2.25	.09

Note- Responses were reported on a scale from 0-100 and were only measured by the teachers who utilized the resource.

Table 8

Means, Standard Deviations, and One-Way Analyses of Variance of Familiarity with Content for Resources used by Florida Agriculture Teachers by career stage.

	1-3		4-8		9-17		18+			
Curricular Resource	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p-value*
Agriculture in the Classroom	63.1	25.5	63.9	27.1	61.0	29.7	65.0	32.3	.11	.96
iCEV	79.6	21.6	75.0	25.9	74.7	24.2	66.7	28.3	1.36	.26
USDA	63.4	19.1	57.5	18.6	56.0	22.4	64.5	23.8	1.08	.36
NAAE Communities of Practice	74.2	18.9	66.4	25.3	65.6	28.3	68.1	24.1	.70	.56
Pinterest	77.3	22.3	68.6	23.0	70.5	19.9	60.2	27.6	2.35	.08
Teachers Pay Teachers	67.4	22.2	71.7	20.3	60.6	31.3	62.1	32.0	.92	.44
Georgia Ag. Ed.	74.9	22.0	68.6	54.3	62.5	24.2	63.9	29.1	1.11	.35
National FFA Resources	75.7	26.0	71.6	20.9	58.9	22.1	75.5	23.6	2.53	.06
One Less Thing	81.7	20.3	72.1	23.6	66.2	25.5	69.7	24.9	1.48	.23
AEST	59.6	23.0	66.8	26.4	64.0	26.0	67.5	26.4	.36	.78

Note- Responses were reported on a scale from 0-100 and were only measured by the teachers who utilized the resource.

Table 9

Means, Standard Deviations, and One-Way Analyses of Variance of Level of Improvisation used by Florida Agriculture Teachers by career stage.

	1-3		4-8		9-17		18+			
Curricular Resource	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p-value*
Agriculture in the Classroom	65.1	20.9	62.4	23.2	61.7	26.2	56.7	22.9	.88	.46
iCEV	58.0	26.6	49.4	23.4	53.4	26.1	53.7	26.0	.47	.70
USDA	64.5	24.4	57.9	20.4	55.9	21.9	54.5	24.2	1.08	.36
NAAE Communities of Practice	61.1	22.8	58.8	26.0	60.0	25.1	56.7	23.5	.16	.92
Pinterest	75.6	20.9	69.0	23.6	65.6	25.5	58.9	23.0	2.43	.07
Teachers Pay Teachers	59.4	27.1	56.1	22.8	60.2	24.8	52.9	28.0	.34	.80
Georgia Ag. Ed.	69.1	18.2	54.3	18.2	60.7	12.8	47.6	25.2	5.32*	.00
National FFA Resources	58.7	24.3	51.9	24.0	54.1	21.4	53.0	23.8	.39	.76
One Less Thing	60.8	24.3	55.5	28.2	57.0	25.8	57.0	21.9	.16	.92
AEST	63.1	31.7	45.5	24.6	46.2	23.6	52.3	28.1	1.38	.26

Note- Responses were reported on a scale from 0-100 and were only measured by the teachers who utilized the resource.

A Tukey post hoc test did not indicate a significant difference between any of the subgroups. There was also a statistically significant difference between groups for improvising related to the Georgia Ag. Ed. Resource as determined by the one-way ANOVA ($f(3,88) = 5.32$, $p = .002$). A Tukey post hoc analysis revealed that teachers in the wind-down stage improvised significantly more than teachers with 9-17 years of experience ($f = 21.5$, $p = .001$). There were no statistical differences between any of the other groups.

Conclusions/Recommendations

The purpose of this study was to explore curricular resource used by Florida SBAE teachers based on experience level to determine similarities or differences in the curricular use of Florida SBAE teachers. The distribution of resources is similar across career stages. The mean number of resources used by each career stage was higher than what was found in Utah (Easterly & Simpson, 2020) and New Mexico (Thornton et al., 2020). Teachers in their first three years of teaching had a higher frequency of use for most of the resources. Teachers in years 4-8 showed slightly higher levels of modification of resources. The comparison of means for the components of PDC were somewhat stable across career stages. Only two significant differences occurred, one of which had a significant difference in the post hoc analysis. The analysis showed less improvisation as experience levels increased. This could indicate that teachers with more experience already have their resources in place and have less need for modification when they teach. Further research is needed to understand how teachers use resources to plan instruction. The methods of this study provide a broad overview of the resources used by teachers. This breadth limits the diagnostic

ability to fully measure a teachers PDC related to a specific resource. Future studies could be conducted to gain further insight into the teacher-tool relationship and could inform further curricular resource design.

To better understand the implications of these findings, future studies could be conducted to examine how PDC is developed and maintained in various career stages of SBAE teachers. Beginning teachers should be encouraged to explore resources and modify them when appropriate, while teachers in later career stages should continue to find resources that can work in their classroom/program while modifying the resources to best fit the program and student goals. Since teachers across career stages did not demonstrate offloading behavior for resources, resource designers should consider designing approaches that move away from offloading. Further research is needed to establish design models that can be adapted by teachers to fit the goals of their program. There were not major fluctuations of PDC across the career stages. Since teachers tend to employ their PDC similarly regardless of career stages, resource designers should also move to design resources that benefit teachers of all experience levels rather than focusing on teachers who are at a certain experience level. Specifically, these findings do not support the development of materials focused on beginning agriculture teachers but rather holistic models that provide materials to all teachers. Educators of pre-service teachers should be supporting and teaching pre-service teachers how to better modify these lessons and how to find curricular resources to use in the classroom. Additionally, support systems may be needed to help teachers with alternative certifications find appropriate resources and use them to plan meaningful instruction.

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