

Applying Mediation Analysis Techniques to Demonstrate the Impact of CASE Curriculum Implementation on School-Based Agricultural Educators' Work-Life Balance Factors

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Literature Review and Need for Study

A signpost of the ongoing challenge of teacher retention is the current national shortage of over 200 school-based agricultural education (SBAE) teachers (Smith et al., 2026). While efforts must be implemented to recruit teachers, work must be done to retain teachers in the classroom.

Professional development offers an opportunity for building the skillset of teachers (Booth et al., 2021) with a goal of retaining them (Pedota, 2015; Shuls & Flores, 2020; Smalley et al., 2026).

The purpose of this study was to examine the impact of Curriculum for Agricultural Science Education (CASE) implementation on work-life balance (WLB) factors, specifically, the amount of time teachers save preparing for their classes as a result of implementing CASE. The demands of the profession are vast, and as a result, burnout is an ongoing challenge among SBAE teachers (Queen et al., 2025). Time teachers save through using the pre-developed and scaffolded CASE curriculum can allow them to reinvest the time they would be spending developing or preparing curriculum into other areas of their life (Smalley et al., 2026) and can have implications for retention (Demerouti et al., 2001). While work has examined the teacher shortage (Smith et al., 2026), the impact CASE training has on teachers' content knowledge (Bird & Rice, 2021; Bloom et al., 2025; Nelson et al., 2022; Tummons et al., 2020) and CASE implementation (Lambert et al., 2014; Smalley et al., 2023; Smalley et al., 2025), there has not been work linking these areas.

Conceptual Framework

Demerouti et al.'s (2001) job demands-resources model of burnout serves as the framework for this study. In their model, they posit how job resources and job demands interact to influence the performance and longevity of a teacher. Job demands are influenced by factors such as work pressures, conflicts, and emotional demands, while job resources include coaching, support, and collaboration (Demerouti et al., 2001). The model suggests the job resources provided to teachers can serve as a buffer to mitigate some of the job demands faced by teachers, such as lesson planning, student assessment, setting up meaningful learning experiences such as laboratories, and reteaching content. These job demands can increase a teacher's exhaustion (Demerouti et al., 2001). However, when teachers receive job resources, the job demands and overall level of exhaustion are lessened, and a teacher's level of engagement within the profession increases.

Methods

This IRB-approved quantitative descriptive study utilized a 95-item survey instrument developed and tested by one of the authors to examine the perspectives of CASE-certified SBAE teachers. Instrument items assessed CASE implementation in relation to teacher retention factors addressed in the conceptual framework (Demerouti et al., 2001). A total of 1,515 CASE-certified teachers were contacted via email and reminded up to two times to participate (Dillman et al., 2014), and 870 usable responses resulted in a response rate of 57.43%. The instrument was reviewed by a panel of experts to assure content and face validity (Thyer, 2010), and a field test of the instrument yielded Cronbach's alphas values of 0.70 to 0.95 among each of the scales, with an overall instrument coefficient of 0.88, making it a reliable instrument (Nunnally, 1978).

All data were treated as continuous (Norman, 2010). Three data pieces were collected and evaluated. Teachers reported: (a) their perceived level of WLB on a 5-point scale, (b) CASE implementation level as a percentage of the curriculum they implemented into their classes, and (c) time invested into curriculum before and after implementation, which was then used to

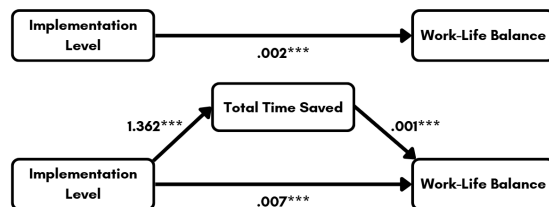
calculate time saved in SPSS (i.e., how many minutes they spent on a weekly basis preparing for the class in which they implemented CASE before they were certified and how many minutes of preparation after their certification, and the difference was calculated and reported as “time saved”). Mediation analysis was applied as a method of regression analysis to better understand the influence of underlying variables (M; i.e., time saved) amidst the relationship between other variables (X and Y; i.e., implementation level and perceived WLB). For mediation analysis, the SPSS PROCESS v5.0, Model 4 macro (5,000 bootstraps) was used; this is the recommended package to explore how additional variables intervene or influence relationships (Hayes, 2022).

Results

Mediation analysis examined if teachers’ total time saved (M) mediated the relationship between implementation level (X) and WLB (Y); unstandardized and standardized z-score coefficients were calculated. Results suggest implementation level is a significant predictor of time saved ($B = 1.362$; $SE = .3087$; $\beta = .239$; $p < .001$). Implementation level ($B = .007$; $SE = .0011$; $\beta = .227$; $p < .001$) and time saved ($B = .001$; $SE = .00002$; $\beta = .221$; $p < .001$) were also significant predictors of WLB. Further, the indirect effect of implementation level on teachers’ reported WLB was significant ($B = .002$; 95% CI [.0009, .0022]), suggesting partial mediation (Figure 1).

Figure 1

Mediation Analysis of CASE Implementation, Time Saved, and Work-Life Balance



Note. R^2 for WLB is .13; all paths are significant at $p < .001$

Conclusions and Recommendations

The purpose of this study was to examine the impact of CASE implementation on WLB, specifically through evaluating time savings associated with curriculum implementation. Findings suggest greater implementation of CASE is associated with increased levels of time savings, which can be associated with improved work-life balance (Demerouti et al., 2021; Queen et al., 2025; Smalley et al., 2026). As such, these time-savings were found to partially account for the association between CASE implementation and WLB (see Figure 1). Further, higher levels of WLB may be associated with greater engagement in future SBAE professional development experiences (Smalley et al., 2026), and reinforce the positive cycle of support and retention experienced during professional development (Demerouti et al., 2021).

Findings present several recommendations for research and practice. Recommendations for future research include: (a) utilizing a qualitative approach to explore the impact CASE has on career hygiene factors that are not as easily quantifiable, such as overall well-being and job satisfaction and (b) conducting a longitudinal analysis to see if implementation of the CASE curriculum has an impact on WLB (Creswell & Creswell, 2018). Recommendations for practice include: (a) CASE implementing strategic marketing efforts to school administrators to show the value the programming can have on WLB and (b) CASE offering additional grants and scholarships for teachers to receive additional certifications, so more teachers can take advantage of the benefits of CASE and aid in their WLB (Demerouti et al., 2021), while addressing financial barriers expressed in previous work (Smalley et al., 2023).

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