

Motivations that Matter: Exploring Why SBAE Teachers Engaged in NGSS and 5E-Based Professional Learning

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Introduction, need for research

This research was aimed at exploring teachers' motivation for participating in a three part 12-hour workshop session at their summer [state] Agricultural Teachers' Association Conference, titled *Storylines that Stick: Real-World Agricultural Phenomenon Meets NGSS*. The integration of NGSS has become increasingly important and has necessitated professional learning opportunities for school-based agricultural education (SBAE) educators (Barrick et al, 2018). To support the integration of NGSS within SBAE, the 5E instructional model has become increasingly important (National Research Council, 2012). The 5E model, rooted in constructivist learning, leverages phenomena to guide instruction (Bybee et al., 2015). The 5E model is particularly relevant to agriscience classrooms and the implementation of phenomenon driven instruction as it connects learning to students lived experiences, fosters cultural responsiveness (Hammond, 2014), and aligns instruction with community contexts (Next Gen Science, 2017). The recruitment materials for the workshop advertised several benefits to teachers, including those listed in Table 1. This exploratory research sought to better understand teachers' motivations for choosing to participate.

Theoretical framework

This research is framed with self-determination theory (Ryan & Deci, 2017). Self-determination theory (SDT) proports individuals that are most motivated when experiencing *autonomy, competence, and relatedness*. Autonomy relates to individuals feeling in control of their actions, competence relates to feeling capable of a task, and relatedness is about feelings connectedness and belongingness. This professional learning session advertised opportunities for specific professional learning topics, time to implement learning with the support of coaches, and opportunities to collaborate with peers and facilitators.

Methodology

This research is part of a larger descriptive survey research project related to a professional learning experience related to 5E. The workshop participants were recruited through the [state] Agricultural Educators Association listserv. A total of 27 SBAE teachers signed up, reaching the pre-determined course cap. Prior to the session, participants responded to an online survey distributed through Qualtrics. Within the survey, teachers used the drag and drop function to rank their motivators for enrolling in the workshop series (see Table 1 for provided motivator items). Data was downloaded into SPSS, and frequencies calculated for each item's ranking. Results are reported in Table 1 as frequency within ranked priority, one representing the highest priority, nine representing the lowest. Realizing the exploratory nature of this data, we utilized an aggregated approach (Marden, 1995; Orme, 2009) intended to explore the top and bottom third rankings. To accomplish this, we summed the frequency of rankings in the top three positions (ranks 1-3), and similarly for the bottom three (ranks 7-9).

Results/Findings

Table 1 describes the frequency of participants' motivators for participating in the workshop. Two motivators with the highest frequencies included professional learning on the topic of phenomenon ($f = 22$), followed by the topic of the 5E ($f = 20$). Among the lowest ranked motivators were eligibility to purchase college units ($f = 20$), professional learning credit for state funding ($f = 18$), and the free response had the poorest ranking ($f = 25$).

Table 1*Rank Frequency of Phenomenon Storyline Workshop Participant Motivations (N = 27)*

Motivator Items	1	2	3	4	5	6	7	8	9	Aggregated ^a	
										High	Low
Professional learning on the topic of phenomenon	1	9	2	0	2	3	0	0	0	22	0
Professional learning on the topic of 5E instruction	3	1	7	2	4	0	1	0	0	20	1
Dedicated time to develop instructional materials for my classroom (lesson/unit plans)	5	0	7	6	2	3	2	2	0	12	4
Paid stipend	8	0	3	4	2	5	3	1	1	11	5
Professional learning about cheese making	0	5	2	6	8	4	0	2	0	7	2
Professional learning about hydroponics	0	0	3	5	5	8	4	2	0	3	6
Professional Learning Credit for state funding	0	2	0	2	4	1	5	7	6	2	18
Eligibility to purchase college units	0	1	3	1	0	2	6	1	3	4	20
Free Response	0	0	0	1	0	1	6	2	1	0	25

Note. ^a sum of frequencies in ranks 1 to 3 for high, and 7 to 9 for low.

Conclusions

The results of this exploratory study suggest that teachers are motivated primarily by learning content, collaboration, and to a lesser extent, stipend. Considering SDT (Ryan & Deci, 2017), while not directly measured by this scale, autonomy was present in workshop, as participants had the choice of cheese or hydroponics for session 1 or the 3-part series. Competence in the areas of phenomenon and 5E seemed to be the biggest motivators. In reference to relatedness, teachers ranked highly having time to develop materials, which included collaboration with facilitators and peers. Professional learning credit for college units and state funding were among the least motivating factors for participating, which is not surprising considering these motivators are not among the three that Ryan & Deci (2017) focus on.

Implications/Recommendations/Impacts on the Profession

The implications for this research underline the well documented need for professional learning opportunities that align with participants felt need in areas that build their competence. Researchers should continue to explore teacher motivations for participating in professional learning in high need areas like the integration of the NGSS within SBAE (author et al., 2024; National Research Council, 2017). Consideration should also be given to the development of grant-funded programs and the motivators that they provide to their potential participants.

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Expectancy value theory (EVT) (Wigfield & Eccles, 2000) framed this study as a model to help explain motivation. EVT posits that two main items influence one's motivation to pursue a task: their expectancy for success in the task and their perceived value of the task. In this study, EVT was used to explain why teachers were motivated to engage in a specific professional learning session.

The general learning of the content and some items considered more extrinsic, like stipends, can be seen as contributing to the intrinsic, attainment, and utilitarian values commonly seen within the frame of EVT (Wigfield & Eccles, 2000).