Building Content Knowledge and Pedagogical Skills in K-8 Educators Through Individualized Professional Development Using Self-Selected eCourses

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This proposal's outcome goal is to build content knowledge and pedagogical skills in K-8 educators through individualized professional development using self-selected eCourses in socio-structured learning cohorts using a framework based on Bruner's learning theories.

Background

It is not enough for teachers to possess knowledge of the content they teach. Equally important is for them to understand the context in which it is applied while also meeting their students' needs. This pedagogy, coupled with content knowledge, allows teachers to maximize their impact in the classroom (Ball & Bass, 2000). According to Bruner (1996, 2004), learning does not efficiently and optimally occur if the content is learned out of context. A connection between the student and content needs to be made whereby it becomes authenticated. The connection necessitates the need for teachers to have solid pedagogical skills. Understanding various learning theories and how students respond enables teachers to connect with their students in meaningful ways. It also needs to be noted that one learning theory is not more valid than another and all have their applications. Therefore, teachers need to be exposed to many theories and synthesize them to meet their instructional needs and personalities (Bruner, 1985).

Developing these new pedological skills often presents teachers with pedological dilemmas (Windschitl, 2002) where teachers find themselves constricted by curriculum guidelines and timeframes which leave them attempting to integrate innovative ideas into old structured systems. However, the effort is worth the struggle as students become active learners the stronger the pedagogical skills a teacher possesses (Windschitl, 2002). Furthermore, when teachers feel more confident or have higher self-efficacy, they are more willing to explore or change instruction practices (Sandholtz & Ringstaff, 2014).

Contrary to teachers being told that teaching is a cooperative profession, the reality is that it is very solitaire. Much of teachers' work is done in isolation. Moments of solitude to reflect and work are beneficial; however, ideas are best when combined with others (Bruner, 1983). Teachers desire professional development and want to learn from one another, but some feel that what they need is not available (Dorph et al., 2011; Sandholtz & Ringstaff, 2014). A fully submerged, long-term professional development that utilizes a collaborative environment is needed.

Traditional professional development models are set up to train teachers to replicate the professional development training in their classrooms. This does not consider teachers as knowledgeable professionals who, as active learners, can synthesize and adapt the training at hand (Van Duzor, 2010; Howe & Stubbs, 1997). Teachers need to feel like they are active

participants in professional development who have an active voice to the facilitators via feedback. This dynamic feedback maximizes the impact of professional development and empowers teachers through inquiry-based self-reflection (Brand & Moore, 2011; Farmer, Gerretsen, & Lassak, 2003).

Developers of professional development need to stress that contributions by all are the strength of the community; the designers or facilitators of the professional development merely act as just that, a facilitator or leader, and that learning is being done by all (Farmer, Gerretsen, & Lassak, 2003). Teachers' expectations regarding professional development affect how willingly teachers interact with the professional development and influence how much teachers take away or learn from the professional development (Nipper et al., 2011). If teachers understand the professional development's purpose and goals in advance, negative feelings can be abided as their learning will have a higher level of authenticity and applicability (Nipper et al., 2011).

When a lack of ownership occurs, teachers can develop learned helplessness. Allowing teachers to take charge of their profession and utilize an inquiry style of professional development will promote engagement and ownership. Teachers need to be trusted to make the right decisions and treated as professionals. This will lead teachers to be more confident and knowledgeable, and their students will be more successful as a by-product. As working professionals with college degrees, teachers bring a wealth of knowledge and expertise with them to professional development. This knowledge needs to be accessed and built upon. (Bruner, 1996). The professional development itself needs to be scaffolded as the teacher progresses through the professional development. In addition, learning must be authentic and occur in context if it is to be retained (Bruner, 1996, 2004); keeping in mind that because teachers have diverse backgrounds and experiences, they make different meanings when presented with professional development ("Culture, mind, and education," 2009, p. 161). Therefore, giving teachers the flexibility to choose more professional development is critical to its overall success.

Purpose

The purpose of the professional development will be to build content knowledge and pedagogy. The target audience for the professional development modules is K-8 teachers of language arts, science, and mathematics, relevant school support staff, and parents as permitted.

Based on their individual experiences, culture, and beliefs, teachers bring a wealth of knowledge and perspectives. While the instructor acts as the facilitator, it is anticipated that within the framework of the professional development course, students will be able to guide their learning and discourse while making connections between themselves, the content, and theories. Professional development is imperative in furthering yourself within a career. Changing views, advances in knowledge, and the evolution of technology are a few examples of education that does not end with our diploma (Jovanova-Mitkovska, 2010). The profession of education is a strong example. The intersection of content knowledge, pedagogy, culture, and politics is under great scrutiny from many facets; criticism and praise come from politicians, administrators, and the public (Pring, 2012).

Given the size of the profession, 3.1 million full-time equivalent public-school teachers (National Center for Education Statistics, 2016), it can be expected that there are some

underperforming teachers. These teachers need to be supported. Competency will increase if teachers can focus on self-identified needs of refinement, opportunities of growth based on areas of interest, development applicable to their classroom, and socio-structured learning cohorts. eCourses provide the flexibility and professional learning network necessary to facilitate this evolution in professional development.

Need

A mid-sized school district's improvement plan was identified and included improving professional development necessitating targeted objectives.

School districts often expect teachers to teach in a constructivist manner while the district is not set up to support such a style. Teachers are scolded for cookie-cutter lessons but are given cookie-cutter professional development (Belland, Burdo, & Gu, 2015). The employee survey from the district shows that professional development is underperforming. The company that conducts the survey has specifically targeted it as an area of improvement (see appendix). The following are notes from the analysis:

> "While employees reported satisfaction with working for (the district), there were lower scores related to feeling there are long-term career opportunities for professional growth within the district."
>
> "The best opportunities to improve employee engagement relate to…reviewing professional development offering to help employees meet the learning needs of their students, and ensuring that meeting the needs of students is one of the district's top priorities."

While many challenges occur with working with diverse teachers of varying expertise, the benefits of professional development in its current form are inconclusive (Belland, Burdo, & Gu, 2015), and therefore a proposed change is sought.

Proposed Solution

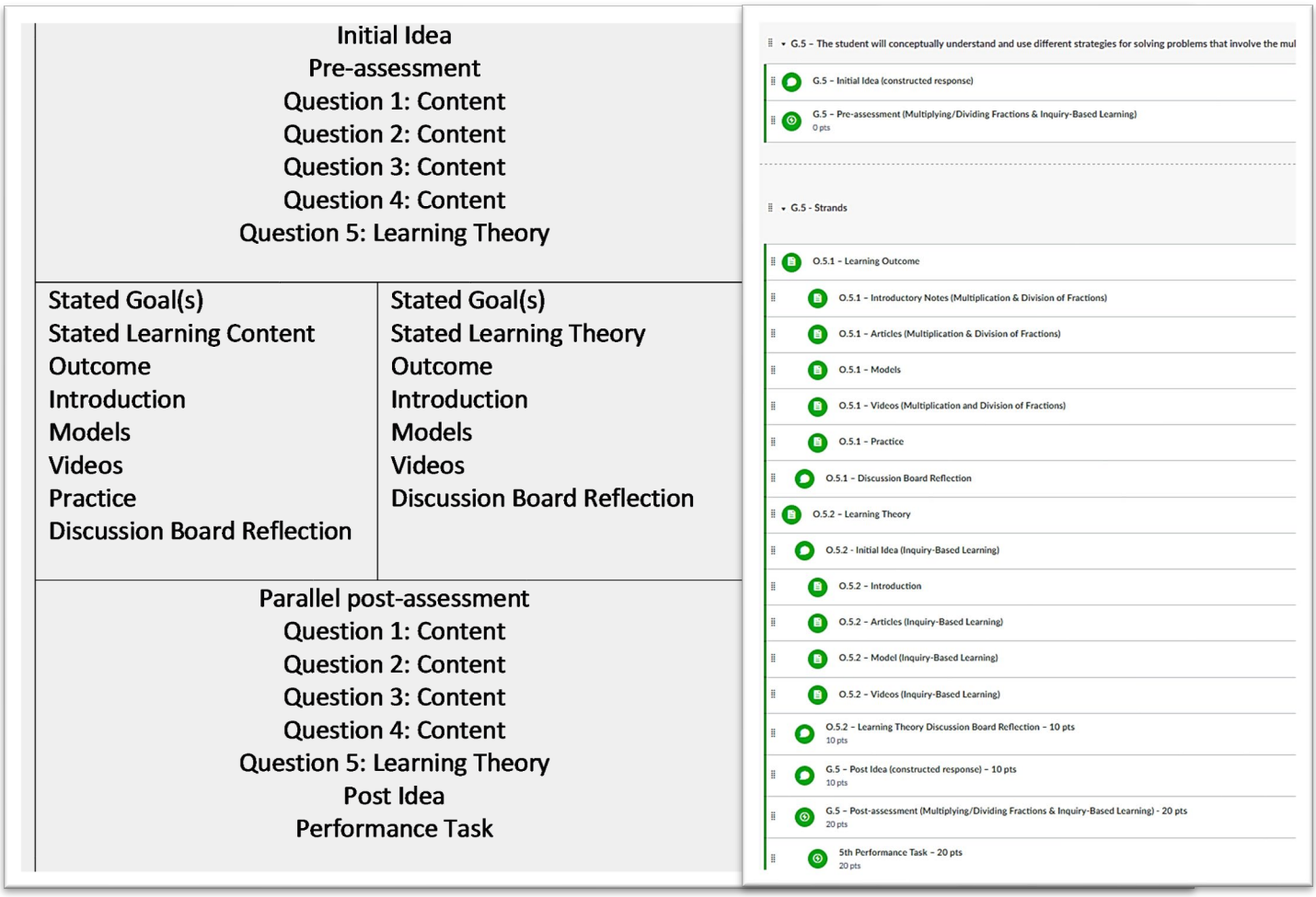
Using Discovery Learning in a socio-structured setting, teachers will target self-identified needs of refinement, opportunities of growth based on areas of interest, and development applicable to their classroom. Constructivist socio-structured approaches have yielded positive gains in teacher development and student achievement in several recent studies (Brand & Moore, 2011; Desimone, 2009; Dorph et al., 2011; Farmer, Gerretsen, & Lassak, 2003; Sandholtz & Ringstaff, 2014; Van Driel, Meirink, Van Veen, & Zwart, 2012). This proposal looks to build on these successes.

Pre-assessments will determine placement into cohorts and pathways. These will elevate stress that may occur with some teachers from having too much choice; it provides a non-linear framework to work within (Owston, Wideman, Murphy, & Lupshenyuk, 2008; Van Driel, Meirink, Van Veen, & Zwart, 2012). The formative assessment will also determine the zone of proximal development (Vygotsky, 1978) within their cohort: Beginner, Intermediate, Advanced.

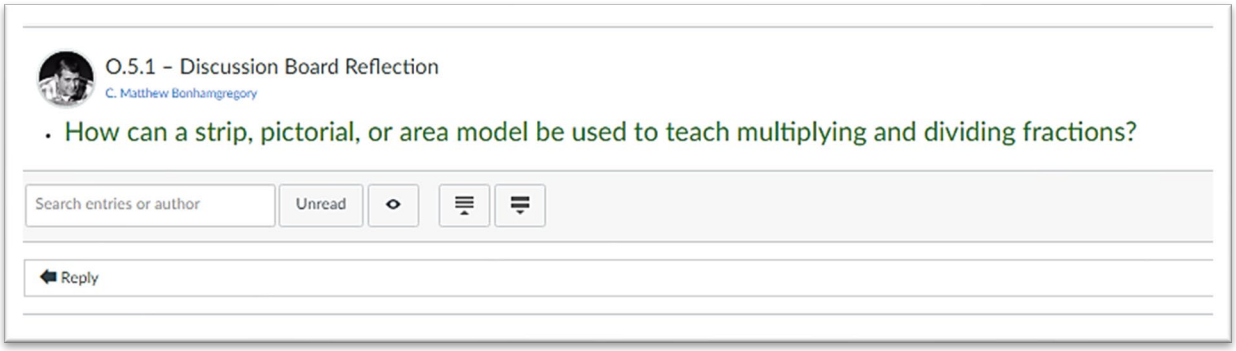
The professional development courses will utilize very few multiple-choice assessments to fully realize learning rather than relying on constructive responses based on higher-level question sets. Helping to build on new skills and ideas, the old concepts will be integrated and

built upon. These connections will make learning new material easier and connect topics (Takaya, 2008).

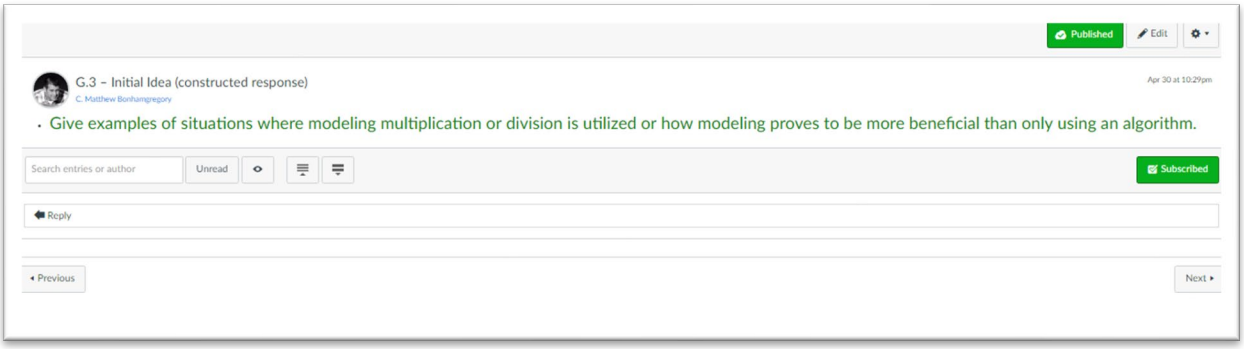
The format of each professional development module will follow a repetitive format allowing the user to become comfortable with the modules while developing an understanding of course expectations (Freiberg & Driscoll, 2004). The modules are constructed as follows:



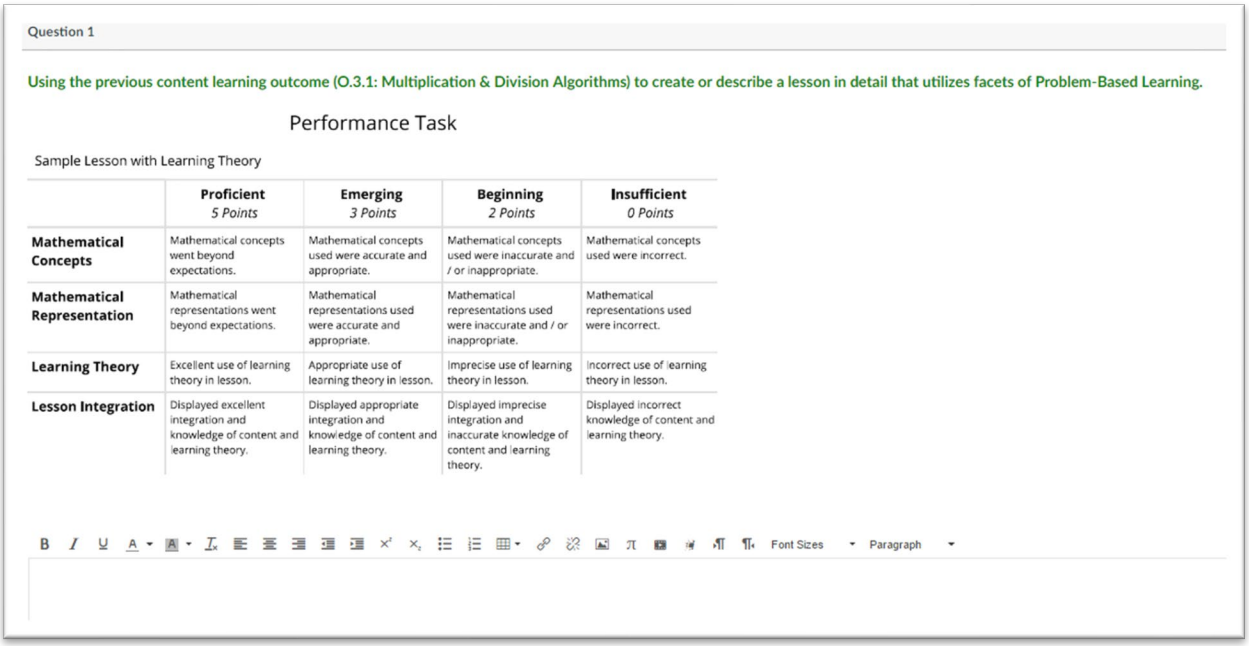
Teachers will interact with others in their cohort through discussion boards, and scheduled online meetings as facilitators determine.



Each module has an assessment containing five constructed response questions. It also contains a graded discussion board prompt.



There is a performance task at the end of each module. It requires the teacher to create a hypothetical setting to create an introductory lesson using the learning theory and content from that set.



	Proficient *5 Points*	Emerging *3 Points*	Beginning *2 Points*	Insufficient *0 Points*
Mathematical Concepts	Mathematical concepts went beyond expectations.	Mathematical concepts used were accurate and appropriate.	Mathematical concepts used were inaccurate and / or inappropriate.	Mathematical concepts used were incorrect.
Mathematical Representation	Mathematical representations went beyond expectations.	Mathematical representations used were accurate and appropriate.	Mathematical representations used were inaccurate and / or inappropriate.	Mathematical representations used were incorrect.
Learning Theory	Excellent use of learning theory in lesson.	Appropriate use of learning theory in lesson.	Imprecise use of learning theory in lesson.	Incorrect use of learning theory in lesson.
Lesson Integration	Displayed excellent integration and knowledge of content and learning theory.	Displayed appropriate integration and knowledge of content and learning theory.	Displayed imprecise integration and inaccurate knowledge of content and learning theory.	Displayed incorrect knowledge of content and learning theory.

Environment

Students will need computers with internet access and the ability to run Canvas along with a Google account. Optional software is a mobile device for recording video or photographs for bulletin board discussions and assessments.

Each module is approximately 8-9 hours long. In total, there are five modules. This course is recommended to be completed over one long semester or the summer. This gives a teacher some flexibility to miss an occasional week as dictated by their schedule. In addition, this course was designed to allow students to work at their own pace; however, an administrator may want to pace the course. In this event, keep in mind that each module is designed to be completed over, at a minimum, two weeks.

Framework

The course structure will be as important as the material itself when considering its success (Takaya, 2008). The most significant leap in learning occurs in the moment of self-discovery, not when the information has been given (Bruner, 1995). Therefore, when designing the module, the following characteristics of successful online learning as outlined by Vrasidas and Zembylas (2004) were used as a guide:

Participant Ownership	Teachers will be placed in cohorts to maximize engagement and self-responsibility based on shared goals. Interest surveys will help teachers connect with content, thereby facilitating authenticity. Learning goals and purposes will be clearly defined and available before the start of the course.
Socio-Structured Setting	Teachers will interact with others in their cohort through discussion boards, and scheduled online meetings as facilitators determine.
Appropriate Technology	Training on how to use the software well before the class begins allows teachers to become familiar and to seek assistance, thereby decreasing cognitive load. The class will be structured in a socio-structure setting utilizing Canvas and Google Hangouts.
Cognitive Apprenticeship	Cohorts will have teachers of varying expertise. A teacher's support level (content delivered) will vary based on their experience and knowledge. They will receive one of three modified modules: beginning, intermediate, advanced.
Authenticity	Teachers will choose professional development relevant to their instruction and content. They will apply their learning at the end of each module in hypothetical lessons that they may implement in their class(es).
Feedback	Facilitators will be approachable and accessible. They are to position themselves as co-learners within the group rather than the "keeper of knowledge." Class norms and expectations will be disseminated before the course begins. Opportunities for feedback will be given to adjust the course to meet the cohort's needs.
Self-Reflection	Teachers will write to reflection prompts at the start and end of each module. Additionally, throughout the modules, teachers will answer reflection prompts at selected stopping points in the module.
Evaluate / Revise	Through monitoring and feedback, the professional development will be adjusted to meet the needs of the learnings.
Assessment Methods	Teachers will be assessed using various assessment methods – all constructed-response type questions.

Anticipated Benefits

- Teachers having a more active role in choosing professional development shows them that they are trusted professionals and increases transferability of content from professional development to the classroom (Van Duzor, 2010).
- Peer learning facilitates active and effective professional development (Belland, Burdo, & Gu, 2015).
- Exploring different instructional models allows teachers to adapt learned pedagogical skills directly into their content lessons (Farmer, Gerretsen, & Lassak, 2003).
- Reflective teaching strategies in a socio-structured setting enable teachers to synthesize materials from the professional development with their professional knowledge (Farmer, Gerretsen, & Lassak, 2003; Van Driel, Meirink, Van Veen, & Zwart, 2012).
- Teachers will access valuable prior knowledge and participate in social learning (Bruner, 1996)
- Personalized professional development spirals back to build on prior lessons (Bruner, 1996)

Timeline

The professional development will be introduced to middle school teachers, followed by grades 3-5, then K-2. During January professional development, teachers are introduced to the new system, with placement testing conducted during spring professional development day. Individual training takes place as needed during the spring. Teachers begin working on professional development during the summer or fall semester for exchange days or the school board's determination.

Research

Data will be gathered through pre-assessments and post-assessments, which will be administered during each module. Data gathered will be used to evaluate students' growth of knowledge and to revise their professional development. Data will be gathered during the course using the discussion board. Constructive responses using the rubric will be collected and compared to the initial idea. A survey regarding teachers' attitudes towards the modules and course will be administered before and after. This data will be analyzed to determine if the modules impacted their development and feedback for revision.

Future Research

Research is needed on the impact of professional development on the self-efficacy of elementary school teachers (Sandholtz & Ringstaff, 2014). Little current research exists that focuses on teachers' learning. The research is most often in conjunction with how it affects student achievement (Goldsmith, Doerr, & Lewis, 2013). Belland, Burdo, and Gu (2005) noted that there is a need to study the effects of professional development on a more significant number of teachers.

Conclusion

Using Bruner's evolutionary instrumentalism as a reference allows us to see how we can exponentially expand and further the profession if we pool and share our knowledge if professional development extends across campuses, districts, and states (Bruner, 1983). Mobile devices have shown to be beneficial in disseminating professional development; however, substantial research in this area is lacking (Baran, 2014). In addition, most research has been limited to mobile devices as a teaching tool. This area needs to be researched and tapped into as local boundaries do not bind professional development. Teachers are at their best when they communicate and learn from one another; they achieve greatness when motivated and in supportive teams.

Successful professional development is sustained over time, is goal-orientated, requires the learner to be an active participant, occurs in a socio-structured setting, and is classroom applicable (Desimone, 2009; Sandholtz & Ringstaff, 2014; Van Driel, Meirink, Van Veen, & Zwart, 2012). Teachers who utilize an inquiry-stylized professional development are more likely to use inquiry-type strategies within their classroom (Farmer, Gerretsen, & Lassak, 2003; Van Driel, Meirink, Van Veen, & Zwart, 2012). Districts need to trust that teachers can think and synthesize information learned during professional development and move away from "I show, you do" models (Bruner, 1996).

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Appendix:

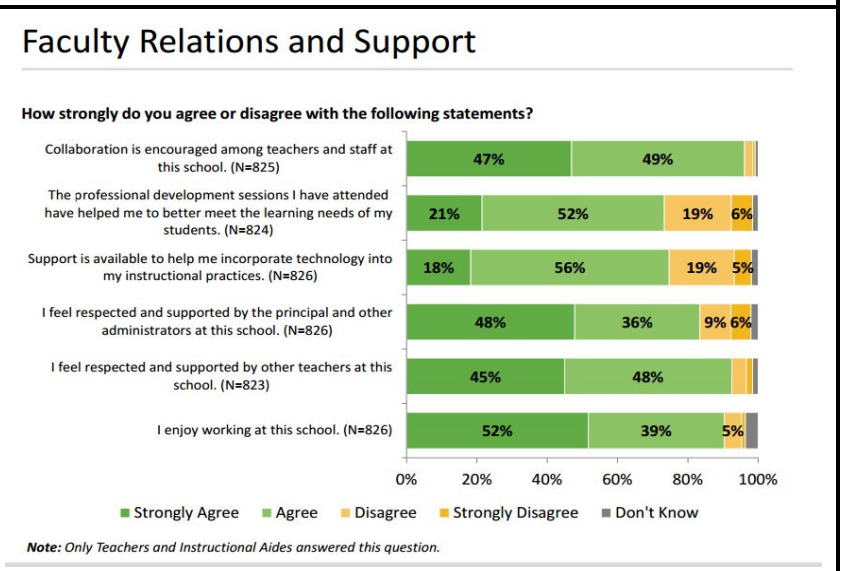
2014

Below are statements related to faculty relations and support. As you respond, please think about your experiences this school year.

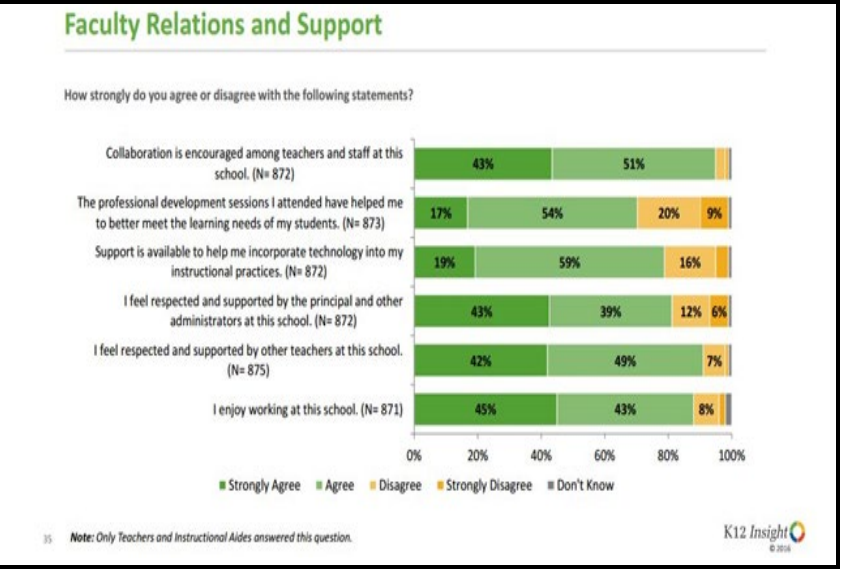
How strongly do you agree or disagree with the following statements?

		Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know	Total
(a)	Collaboration is encouraged among teachers and staff at this school.	406 46%	419 47%	36 4%	21 2%	3 0%	885
(b)	The professional development sessions I have attended have helped me to better meet the learning needs of my students.	167 19%	441 50%	201 23%	68 8%	8 1%	885
	Support is available						

2015



2016



Where to Focus Efforts to Increase Engagement

Survey items (engagement drivers) examined aspects of the school and workplace environment to identify focus areas to help improve engagement. Each driver was rated on a four-point scale, with higher values indicating a stronger level of agreement.

The relationship between each employee's driver rating and his/her overall engagement score was analyzed and measured by calculating a correlation between the two items. The value can range from -1.0 to 0 to +1.0. The closer to ±1.0, the stronger the relationship.

Based on scores, the drivers were classified as having a low or high driver rating and a strong or weak correlation to overall engagement. The categorization is based on a median driver rating of 3.11 and a median correlation to engagement of 0.47.

	Strong Correlation with Engagement
Low Driver Rating	Primary Focus
High Driver Rating	Secondary Focus

Those items with low driver ratings and a strong correlation with engagement (yellow) should be areas of primary focus in order to improve employee engagement. Those items with high driver ratings and strong correlation with engagement (green) should be areas of secondary focus in order to maintain the current level of employee engagement.

Best Opportunity to Improve Employee Engagement

	Driver Rating	Correlation to Engagement
I believe work is distributed fairly at my school or department.	**3.07**	**0.53**
Meeting the needs of students is one of the district's top priorities.	**3.11**	**0.47**
The District Office expects all employees to share ideas to improve overall performance.	**2.97**	**0.53**
The professional development sessions I have attended have helped me to better meet the learning needs of my students.	**2.90**	**0.49**
I believe I can influence decisions at my school or department.	**3.05**	**0.55**

Except from the District Improvement Plan:

Employee Satisfaction

While employees reported satisfaction with working for Hays CISD, there were lower scores related to feeling there are long-term career opportunities for professional growth within the district. Additionally, compensation continued to be an area of opportunity with lower ratings than the previous survey year.

Only one of six district office departments received an increase in employee satisfaction ratings. Of the other five, one maintained the same rating as last year while the other four experienced decreased satisfaction.

When reviewing overall engagement by job categories, the groups with the lowest engagement ratings were non-instructional campus professionals and auxiliary support.

The best opportunities to improve employee engagement relate to fairer distribution of work at campuses and departments; improving the ways in which the district office and campus leaders invite employees to share ideas to improve overall performance; reviewing professional development offerings to better help employees meet the learning needs of their students, and ensuring that meeting the needs of students is one of the district's top priorities.